AGENDA
CITY OF GLENWOOD SPRINGS
REGULAR CITY COUNCIL MEETING
NOVEMBER 4, 2021
101 W. 8TH STREET
6:15 PM

The agenda is subject to *change, including the addition of items 24 hours in advance or the deletion of items at any time. The order and times of agenda items listed are approximate and intended as a guideline for the City Council.*

ATTENTION: To ensure your written comments are included in the City Council packet, public comments must be received by 4 p.m. (closing time of City Hall) on the day before City Council meetings. Comments may be submitted to ryan.muse@cogs.us or delivered to the City Clerk's Office at 101 W. 8th Street.
Written comments may be submitted after this deadline and will be shared via email to City Council but are not guaranteed to make it into the meeting packet. Submit comments at any time directly to City Council via email at citycouncil@cogs.us.

ZOOM INSTRUCTIONS

1. You are invited to a Zoom webinar.

   When: Nov 4, 2021 06:15 PM Mountain Time (US and Canada)

   Topic: 2021/11/04 Regular Council Meeting

   Please click the link below to join the webinar:

   https://us02web.zoom.us/j/85671828863

   Or One tap mobile :

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   Dial(for higher quality, dial a number based on your current location):

   US: +1 346 248 7799 or +1 669 900 6833 or +1 253 215 8782 or +1 312 626 6799 or +1 929 205 6099 or +1 301 715 8592

   Webinar ID: 856 7182 8863

   International numbers available: https://us02web.zoom.us/u/kbO3UsckmQ

WORK SESSION

3:45	2.	Agenda Review/Future Agendas	Information/Discussion
4:00	3.	Airport Commission	Information/Discussion
4:45	4.	Break	

5:00	5.	Joint Work Session with Garfield County Commission -Parking Enforcement at the 7th Street and Colorado Lot -Midland Avenue - Update on intersections at 3 Mile Road and 4 Mile Road -South Bridge -Homeless Camp at Sopris View -Airport	Information/Discussion
6:00	6.	Break	

REGULAR SESSION

6:15	7.	Roll Call	
	8.	Pledge of Allegiance	
	9.	Agenda Changes & Conflicts	
	10.	Citizens Appearing Before Council (for items not on the Agenda-comments limited to 3 minutes)	
	11.	Council Comments	
	12.	Consent Agenda	Discussion and/or Action
		A. October 21, 2021 Council Minutes	
		B. Resolution 2021-19; A Resolution of the City Council of Glenwood Springs, Colorado, Supporting a CWCB Watershed Restoration Grant Program Application and the Acceptance and Appropriation of Any Grant Funds Awarded for the Three Mile Creek Confluence Restoration Project	

ACTIONS AND/OR PRESENTATIONS

	13.	Planning Item 09-20 - Annexation Agreement for 214 Center Drive (PIN: 2185-061-00-042).	Discussion and/or Action
	14.	Ordinance 2021-08: Annexing Property to the City, Second Reading	Discussion and/or Action
	15.	Ordinance 2021-09: Zoning a Parcel of Land Annexed Into the City, Second Reading	Discussion and/or Action
	16.	Planning File 60-20 - Consideration of a Major Site/Architectural Plan Review application for the construction of 300-unit multi-family development in 14 separate buildings in Glenwood Meadows.	Discussion and/or Action
	17.	Consideration of Going Fare Free on Ride Glenwood	Discussion and/or Action
	18.	Fuel Tank Upgrades	Discussion and/or Action
	19.	2022 Budget Approval	Discussion and/or Action
	20.	Ordinance 13 - Series of 2021; An Ordinance of the City of Glenwood Springs, Colorado, Acting by and Through its Utility Enterprise, Approving a Loan, Evidenced by a Note, to Finance System Capital Improvements; Approving the Note Form and Loan Repayment From the Operation of the City's Water and Facilities; and Providing Other Details and Approving Documents Relating to the Loan.	Discussion and/or Action
	21.	Ad Hoc Affordable Housing Committee	Discussion and/or Action
	22.	Report from City Administration	
		A. City Manager	
		B. City Attorney	

C. Correspondence Incoming/Outgoing

23. Adjournment

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item:	Airport Commission
Action Requested:	NA
Department:	City Administration
Presented By:	Debra Figueroa, City Manager
Background Info:	City Council will hold their annual meeting with the Airport Commission.
Issues:	NA
Staff Recommendation:	NA

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Joint Work Session with Garfield County Commission
-Parking Enforcement at the 7th Street and Colorado Lot
-Midland Avenue - Update on intersections at 3 Mile Road and 4 Mile Road
-South Bridge
-Homeless Camp at Sopris View
-Airport

Action Requested: NA

Department: City Administration

Presented By: Debra Figueroa, City Manager

Background Info: This is an annual worksession with Garfield County Commissioners.

Issues: NA

Staff Recommendation: NA

City Council

STAFF REPORT

City of Glenwood Springs

November 4, 2021

Agenda Item: October 21, 2021 Council Minutes

Action Requested: October 21, 2021 Council Minutes

Department: City Clerk

Presented By:

Background Info:

Issues:

Staff Recommendation:

MINUTES

CITY OF GLENWOOD SPRINGS

REGULAR CITY COUNCIL MEETING

OCTOBER 21, 2021

101 W. 8TH STREET

6:15 PM

Note: Official meeting minutes are located on the City website via YouTube video at the following link: https://www.youtube.com/user/GlenwoodSprings1885/videos. The times in agenda items indicate approximately where the item can be found on the YouTube video timeline.

REGULAR SESSION

:06 Roll Call

Present: Mayor Godes, Mayor Pro-Tem Willman, Councilor Kaup, Councilor Wussow, Councilor Hershey, Councilor Davis, Councilor Stepp. Also present were Debra Figueroa, City Manager; Jenn Ooton, Asst. City Manager; Steve Boyd, Chief Operating Officer; and Karl Hanlon, City Attorney.

:06 Pledge of Allegiance

Mayor Godes led the Pledge.

:07 Agenda Changes and Conflicts

Councilor Stepp excused herself from the consent agenda because she was absent from the last meeting.

:07 Citizens Appearing Before Council

Gary Vick, Glenwood Springs resident, commented that the petition to change the City Charter should have been approved and cited examples in volume ten that he believed should have been allowed. Vick requested a phone call with all the Councilors.

Peter Schoup, Glenwood Springs resident, commented on how the City threw out all the signatures he had collected. Schoup stated that the signature count had been manipulated by the City, and that the future of the airport should be up to the citizens and not a four to three vote by Council.

John Mueller, Glenwood Springs resident, asked for clarification from Mayor Godes's statement regarding eleven million dollars of improvements for airport users and stated these improvements were never recommended by the Airport Commission. Mueller stated that neither the airport users or Commission had been consulted on the ballot issues, so citizens should vote against them, and if voted down, it would not be a vote against the airport but against irresponsible ballots issues from staff.

Charles Knuth, Garfield County resident, commented on his business, personal, and educational usage of the airport. Knuth stated that the cost of the tunnel should be budgeted in the South Bridge project and that the remainder of improvements could be achieved with City approval and existing airport enterprise funding and proposed private development.

David Merrick, Glenwood Springs resident, member of the Airport Commission, commented that the Airport Commission was not consulted in this process, and the improvements included in the tax are either not wanted or needed, or could be funded by private enterprise.

Joel Shute, Glenwood Springs resident, member of the Airport Commission, conveyed his discontent for the City Council and Staff for the approach to this ballot initiative. Shute stated that the Airport Commission was not consulted in the process.

Shane Evans, Garfield County resident, stated that the airport has been beneficial to his business, and for general medical situations. Evans stated that the airport is historically self-supporting and not a burden on taxpayers. Evans commented that the current proposed ballot measures have not been consulted with the airport users or commission.

City Attorney Karl Hanlon stated that there have been many attacks on City Clerk Ryan Muse's decision on the airport petition. Hanlon stated that Muse followed the rules that are followed across the state with every petition in every home rule municipality. Hanlon stated that the Garfield and Hecht the law firm, representing the petition, had an opportunity to legally challenge both Clerk Muse's first and second decision and they chose not to. Hanlon stated that Muse went through the petition in excruciating detail in an attempt to do a fair and even job. Hanlon stated that Garfield and Hecht requested a Colorado Open Records Request, requesting emails to look for evidence that is being claimed against Muse. None was found. Hanlon stated that these accusations are offensive and unworthy given that staff worked tirelessly to do a good job on the petition, and he would like Council and the public to know that unfounded attacks against staff are uncalled for.

:30 Council Comments

Mayor Pro-Tem Willman commented that he did not look at the petitions, given how it is not Council's job, but he know that Clerk Muse worked long hours to ensure everything was done accurately. Willman stated that he is aware that there were two opportunities to challenge the decision, and neither were taken. Willman commented that petitions can be filed again. Willman commented that during the last

Tourism Promotion Board meeting, there was a request to change the name to Tourism Management Board.

:32 Mayor Pro-Tem Willman moved, seconded by Councilor Stepp, to direct staff to construct the appropriate ordinance to change the name of the Tourism Promotion Board to the Tourism Management Board.

Councilor Kaup asked if the change in name would be accompanied by a change in duties.

Mayor Pro-Tem Willman responded that the Tourism Board would keep the same duties, but management better encompasses their work.

Motion passed unanimously.

Mayor Pro-Tem Willman asked if there was any interest in pursuing a puppy mill ordinance. There was no response. Willman commented that there were two policy positions brought up to the CML representing Glenwood Springs. The first issue was regarding changes to the mill levy as it relates to vacation rentals becoming commercial properties versus residential properties. Willman stated the policy committee, the board, and the CML decided not to pursue this issue, however, there would be several bills coming before the legislature this year regarding this issue. The second issue was to amend the Colorado Constitution under Tabor for municipalities to bring to voters whether or not to have a real estate transfer tax. Willman stated that the belief was that this would not get the required two thirds vote, however, CML believes housing is a critical issue and this is an issue that Glenwood should promote.

Councilor Kaup stated that Clerk Muse works to the highest integrity and to the letter of the law. Kaup went on to say that herself and her fellow Councilors had no contact with Muse regarding the petition. Kaup stated that the airport is not a fight but a community conversation. Kaup updated the Council on the status on the property behind Walmart. Kaup stated that there was a meeting with City Manager Debra Figueroa, AVLT, and the County among others, and the outcome was for County Commissioner Tom Jankovski, County Attorney Tari Williams, and Kaup to visit with the property owner in order to protect the property. AVLT suggested they could take a donation and spend the time with the property owner to make the land a conservation easement. Kaup stated that as long as the City is willing to hold a trail easement, trails would be able to be constructed and the land would become a resource rather than a burden. Kaup commented that she would like to have both a Council movement on the trail easement and a Council movement on no trespassing signs.

City Manager Figueroa commented that staff will put up the signs.

City Attorney Hanlon commented that he spoke with County Attorney Williams about the legal engagement needed for the proceeding steps and the property owner will most likely want to come before Council to accept an easement and the next step is up to the property owner.

Councilor Kaup wanted reassurance from Council that could be given to AVLT showing the City would be interested in holding trail easements.

Councilor Stepp asked if the current discussion included maintenance on the easement and added that she would like to see this project move forward.

Attorney Hanlon answered in the negative.

Mayor Pro-Tem Willman commented that he is ok with moving forward but is concerned about the costs and cannot commit to ultimately voting for it.

Councilor Wussow commented that she has had the opportunity to talk with other Councilors about branded t-shirts and sweatshirts for the chamber and the City employees. Wussow stated that as a City Councilor, she is a politician who is available to criticism, but the staff are doing a job and if there is a problem, refrain from insults to the staff.

Councilor Stepp commented that she supports the City employees. Stepp relayed that she will be present during a recovery continuum meeting with Manager Figueroa and the County Manager next week regarding detox.

Mayor Godes stated that Clerk Muse is a great City Clerk who often puts in 12-to-14-hour days and does a fantastic job. Godes stated that Attorney Hanlon has impeccable integrity, and Karp.Neu.Hanlon Attorneys At Law is one of the best law firms around. Godes stated that the voters need to be heard about the airport and suggested that Council have a listening session on November 8th and 10th at the Community Center and Sopris Elementary School to hear the Citizens input about the airport. Godes would like to have the Airport Commission come to a work session on November 4th. Council agreed.

:51 Motion for Consent

:51 Councilor Hershey moved, Seconded by Mayor Godes, to approve the consent agenda.

Motion passed unanimously.

:51 Planning and Zoning Commission Appointment

:52 Councilor Wussow moved, Seconded by Councilor Kaup, to appoint Amy Connerton to the Planning and Zoning Commission as an alternate.

Motion passed unanimously.

:52 08-20 Consideration of an Annexation and the initial zoning/Rezoning of 15.818 acres to Commercial (CO) District and Planned Unit Development (PUD) District at 214 Center Drive (PIN: 2185-061-00-042). Debris Flow Update and Response

City Attorney Karl Hanlon gave a recap of what had taken place with the annexation item up to this point.

City Senior Planner Trent Hyatt, Community Development, gave a synopsis of the changes that have happened to the site proposal since the application came before Council.

Mayor Pro-Tem Willman asked about the resolution of the ownership of Mel Ray and the elimination of the Mel Ray sidewalk. Hyatt replied that there was an ownership issue with an easement. Hanlon added that it would be a County issue. Willman mentioned the emergency access to Highway 6. Karl Hanlon replied that the correct verbiage is direct access not emergency. Willman requested clarification of the dedication of public space in the mall

redevelopment. Hyatt replied that due to the uncertainty of the mall redevelopment the question should addressed to the developer.

Councilor Stepp asked what the affordable housing amount was. Hyatt replied that the number was a for sale product and believed the number was three.

Mayor Godes asked if the three houses would be sold at current rates and then capped or buyers would receive discounts. Hyatt replied that the sale value is restricted by the AMI but subject to a down payment with mortgage rates similar to rental rates.

Attorney for the Developer, Haley Carmer, and Developer, Barry Rosenberg addressed the changes to the PUD plan which included the reduction of proposed unit density to twenty-two per acre, the use of on-site water, shared water rights with the City and the compilation of a master plan.

Mayor Godes asked for the acreage of the two lawn areas shown. Carmer responded that they were about one point three acres. Rosenberg commented that larger public space would be part of the master plan.

Mayor Pro-Tem Willman asked about the inclusion of a public park. Rosenberg replied that the provision of a main street going to the mall with restaurants and commerce on the sides would replace the idea of a public park.

Councilor Kaup asked if there should be something regarding the public space size in the proposal. Rosenberg replied that there was a good faith effort included but until a master plan was developed, it would limit any decision. Carmer said it is #9 in the recommended conditions of approval.

Mayor Godes asked what is meant by “meaningful” in the conditions. Hanlon replied this is what would be credible and important to the community.

Mayor Pro-Tem Willman asked what the future master plan would be. Hanlon replied that it would be both property parcels referenced together.

Councilor Wussow asked if the existing municipal code designated the provision for the open space. Hanlon replied that the PUD would provide that provision.

1:24 Councilor Hershey moved, seconded by Councilor Stepp, to deny approval of Ordinance 08-20 Consideration of an Annexation and the initial zoning/Rezoning of 15.818 acres to Commercial (CO) District and Planned Unit Development (PUD) District at 214 Center Drive (PIN: 2185-061-00-042).

Councilor Stepp stated that she cannot support the proposal because Council needs more time to work out the infrastructure situation.

Mayor Pro-Tem Willman stated he will not support this motion because the density has been reduced and the for-sale units have been increased since his last motion to deny.

Councilor Kaup stated she will not be supporting this motion because it brings much needed improvements to the area.

Ayes: Hershey, Wussow, Stepp

Nays: Willman, Kaup, Godes, Davis

Motion Failed 4-3

Mayor Pro-Tem Willman requested a point of order as he stated he was threatened with recall by Councilor Hershey. Willman then requested a recess.

1:32 Recess

1:39 Item Continued

Councilor Hershey stated any disagreement with Mayor Pro-Tem Willman had been resolved.

Mayor Godes wanted to know what conditions Councilors would like to see.

Councilor Kaup commented that she would like to see ten percent at 120 instead of 130 and to strike the word emergency from access to Highway 6 so it read as just access to Highway 6. Kaup would like to see in section 11, a time frame for the applicant to submit a master plan. Hanlon suggested between six and eight months. Kaup agreed with eight. Kaup also wanted the vesting period to change to five years in section 12.

Mayor Pro-Tem Willman clarified that the direct access to Highway 6 in section 7D is included in this PUD annexation. Willman wanted one acre of open space dedicated to park land in addition to the one acre dedicated to the fire department regardless of the mall redevelopment. Rosenberg stated that of the one point three acres mentioned earlier, the area around the swimming pool would not be dedicated to the public. Mayor Godes added there should be two acres of outdoor public space with up to one acre dedicated for the potential fire station. Councilor Wussow asked that the contiguous should be include. Hanlon agreed and reworded the comment to read up to one acre for the potential fire station with the balance acreage to be contiguous.

Councilor Davis commented that Council has worked for years to figure out how to redevelop the mall, and he believed that they need to have faith in the developer. Davis stated that he believed the drop in density and units is problematic for the revitalization of the mall and affordable housing.

Councilor Stepp commented that the City needed more housing and wanted to see that thirty percent of the apartments have two or three bedrooms for families. Rosenberg replied that fifty percent are two or three bedrooms. Stepp asked that the master plan address childcare. Rosenberg stated that this is being considered. John Diemoz stated that childcare for children aged under three is hard to manage and economics become an issue. Stepp asked about resources for the Police Department. Debra Figueroa replied that first the City needed to fill to open positions in the Police Department.

Wussow commended the developers for listening and making changes. Wussow agreed that the amenities will help the community but added that the development will challenge the community as well. Wussow encouraged the developer to continue to work with the community to make the transition as painless as possible.

Councilor Hershey commented that a conversation with CDOT will be necessary regarding the direct access to Highway 6. Hanlon commented that CDOT would be involved when a percentage change occurred.

Mayor Godes asked if there would be affirmative votes if three hundred units were in the motion.

2:05 Councilor Davis moved, seconded by Councilor Kaup, to reverse the recommendation of the Planning and Zoning Commission and approve the request for an annexation as outlined in Ordinance 2021-08 of 15.818 acre parcel into the municipal limits of the City of Glenwood Springs with the following additions: a total count of three hundred units, a total outdoor public space of two acres with up to one contiguous acre of parkland or open space, vesting rights of no more than five years, a deed restriction of two percent real estate transfer assessment on the second transfer of the fore sale units that are not designated affordable, an affordable housing mix of ten percent of the units at eighty percent AMI and ten percent of the units at one hundred and twenty percent AMI, a master plan submitted within eight months, and with the recommended findings and conditions listed on pages one and two of the City Council list of Motions on October 7, 2021.

Councilor Wussow voiced her disappointment in her fellow Councilors and stated that she understands housing is an issue but accommodations for renting is not everyone's American Dream.

Councilor Stepp stated that such a big issue should have been a longer conversation.

Ayes: Davis, Willman, Godes, Kaup

Nays: Stepp, Hershey, Wussow

Motion Passed 4-3.

2:12 Councilor Kaup moved, seconded by Mayor Pro-Tem Willman, to reverse the recommendation of the Planning and Zoning Commission and approve the request for an initial zoning and re-zoning as outlined in Ordinance 2021-09 of 3.53 acres to commercial district and 12.285 acres to planned unit development PUD district with the recommended findings and conditions listed on page three of the City Council list of Motions on October 7, 2021, with the PUD be conformed to the Motion and recommendations on the annexation ordinance, with recommended findings and conditions as shown in the City Council list of Motions on October 7, 2021.

Councilor Kaup commented that the City and the developer have agreed on a good vision and in the right direction for the City and that six more affordable houses are a win. Kaup commented that from a sustainable standpoint, multifamily homes use less resources. There will be sixty units that are affordable for the workforce, for families and new additions to the community.

Ayes: Davis, Willman, Godes, Kaup

Nays: Wussow, Stepp, Hershey

Motion Passed 4-3

2:19 Recess

2:26 2022 Budget Hearing

Debra Figueroa presented on the split in Accommodation Tax.

2:28 Mayor Pro-Tem Willman moved, seconded by Councilor Hershey, to direct staff to split the gross tourism revenue with eighty-five percent going to the tourism fund, and fifteen percent retained. Of that fifteen percent seven and a half percent will go to the FAB grant with the other seven and a half percent going to other matters and impacts of tourism in the community.

Councilor Davis asked clarification as he understood that FAB was taken off of an eighty-five fifteen split. Willman replied that he did not agree with that because it took too much money from the tourism budget, and he would like the percentages as they are now. Davis replied he is concerned that seven and a half percent always allocated to the FAB.

Mayor Godes stated he would not support the motion as has always come before any split and that FAB, fireworks and the July 4th celebrations should all share in seven and a half percent.

Councilor Kaup commented that any change to the accommodations tax should be a new conversation.

Mayor Pro-Tem Willman stated that historically it had been an eighty-twenty split and then it changed to the seven and a half percent off the top and the rest to the tourism budget.

Councilor Davis commented that more tourism created more negative impact.

Councilor Wussow commented she would support the motion because of the seven and a half percent that goes to the tourism impact and that percentages allows for increased costs over time, but this should not be treated as a slush fund.

Councilor Stepp wanted a million dollars in the budget for tourism advertising, therefore will support the motion.

Motion Passed unanimously.

2:28 Tourism Management Study

City Manager Debra Figueroa presented that the item was removed from the budget during the work session and there is one hundred thousand dollars set aside for a tourism management study for Council to focus on. Figueroa stated that Council needs to determine what they want tourism management to look like. Hanlon added that other mountain communities treated this as a critical issue and use the study to find out how they can manage tourism and the impact of tourism.

Mayor Pro-Tem Willman commented that there is a State study throughout the valley on the impact of tourism and Council should wait for it to be released in November or December this year.

Mayor Godes agreed to wait and see the results of the study, then the amount can be adjusted. Godes would also like to see how strategies are implemented.

Councilor Davis asked if the Chamber and Tourism Board support the study. Mayor Pro-Tem Willman replied that he believed that they hope the study will respond to questions they have.

Councilor Stepp commented that questions need to be answered before a decision.

Councilor Wussow commented that she would like to see the study completed but not at a ten percent hit to the tourism budget and it should come from the seven and a half percent but there are too many unknown variables to decide now.

Councilor Hershey commented that he would defer to the Tourism Board but agreed that there is not a rush to do this now.

2:45 Mayor Godes moved, seconded by Mayor Pro-Tem Willman, to at this time, not include the study in the budget, to wait to get the regional study back and bring this item back before Council to see if further action is needed.

Motion passed unanimously.

2:45 Circulator Bus

Debra Figueroa presented that the original budget had a fifty-thousand-dollar circulator bus study that came out of bus tax and in the work session it was proposed that twenty-five thousand come from the DDA budget and twenty-five thousand from the tourism budget.

Mayor Godes commented he does not support a circulator bus as the money could be better spent on other public transport services for citizens.

Councilor Kaup commented that she would be okay if the money came from tourism, to keep tourist vehicles away from downtown.

Mayor Pro-Tem Willman commented that it should be outside the boundary of the DDA and that community's needs should come first. Willman also stated that if tourists used the bus, it could cut the need for downtown parking.

Mayor Godes asked not to put this in the budget now and to give the DDA an opportunity to discuss the proposal and ask for a recommendation from the Tourism Management Board.

2:51 Mayor Godes moved, seconded by Councilor Davis, to not include the Circulator Bus in the budget at this time, until such time we can get recommendations from the appropriate advisory boards that were being contemplated to ask.

Councilor Kaup asked to include the Transportation Commission

2:51 Mayor Godes moved, seconded by Councilor Davis, to amend his motion to include the Transportation Commission.

2:52 Mayor Godes moved, Seconded by Councilor Davis, to not include in the budget at this time, wait for recommendations from the Tourism Management Board, the Transportation commission and the DDA, before it comes back to Council for another conversation.

Motion passes unanimously

2:52 Public Budget Hearing

Debra Figueroa presented that the budget had been presented to Council and is now open to public comment. Figueroa requested clarification if the seven and a half percent not going to FAB should be placed in the reserve. Mayor Pro-Tem Willman consented.

2:53 Mayor Godes opened public comment.

Laurie Watts, Glenwood Springs resident, stated that she wanted to speak on the West Glenwood development. Mayor Godes stated that public comment is only for adoption of the budget.

2:56 Mayor Godes closed public comment.

Councilor Kaup asked how the four-hundred-thousand-dollar transfer from the Tobacco Tax Fund to the General Fund is to be spent and if it will fall or stay at a specific level. Chief Operating Officer, Steve Boyd, replied that it was a transfer to help defer the cost for police officers and public safety and that it would be pushed down as much as possible. Kaup asked if there was funding for the Summer of Music. Figueroa replied that it came from the FAB grant every year. Kaup asked what several revenue line items in the Fleet budget totaling seven hundred fifteen thousand dollars, were. Boyd replied Fleet does not have a revenue stream, so the General fund and other funds are charged depending on the number of vehicles and equipment each department has, to cover depreciation and purchase of new vehicles and equipment. Kaup would like transparency for the public document with a managerial and graphics representation to make it user friendly. Figueroa replied that Steve Boyd adds that to the presentation later.

Councilor Wussow commented that as the Ruedi Water and Power Liaison, the contribution has been five-thousand-five hundred dollars for the last twenty years and due to increased expenses over time, she would like the contribution increased to six thousand and fifty dollars.

3:01 Councilor Wussow moved, seconded by Mayor Godes, to amend the RWPA contribution from five-thousand-five hundred to six-thousand-fifty dollars.

Motion passes unanimously.

Mayor Pro-Tem Willman requested that for budget approval on November 4, the airport budget be voted on separately. Hanlon replied that would be up to Council to decide a line-item vote. Willman clarified that he would not agree to put capital funding projects to support the airport and would vote against the budget if he had to. Figueroa suggested having the airport budget as a different line-item. Hanlon commented that the discussion could take place later.

3:05 Lodging and Attractions Tax Ad Hoc Committee Revised

City Manager Debra Figueroa recapped the approval of a Housing Ad Hoc Committee. Sumner Schachter presented the revised proposal to include input, a reasonable rationale and support for a viable way to consider an Accommodation and Attractions Tax and to include representatives from various industries.

Mayor Godes commented that Council does not know what the problem is and suggested a representative from the School District for their experience. Schacter replied that they would talk to the School District, to the community, and employers, and that this will a long-term process. Schacter stated

that the committee will define parameters on how and where money can be used and warned that the list will be broad of how the funds could be used.

Mayor Pro-Tem Willman commented that he does not agree to the tax revenue being used for only affordable and workforce housing. Willman stated he was concerned that the current members of the committee were only representing affordable housing and and that the funds should be used not only for housing but other purposes such as the downtown circulator and building maintenance. Schachter replied that workforce and affordable housing is the number one issue and that's how the committee was suggested to him.

Mayor Godes suggested refocusing the conversation on the makeup of the committee.

Councilor Kaup suggested an addition to the committee goals to recommend a percentage breakdown. Mayor Godes responded that this would make the committee be involved in political decisions and their purpose is to study how to generate and utilize housing. Schachter responded that issues like revenue sharing may arise, but the primary focus is a dedicated source of housing. Councilor Wussow commented on whether the goal of the committee should be to make recommendations on a percentage of monies dedicated towards housing. Schachter replied that the goal is to recommend to the Council. Councilor Hershey added that the Council are out of touch with what the community wants, and this will go nowhere.

3:24 Councilor Stepp moved, seconded by Councilor Kaup, to approve this new committee selection including a restaurant industry representative and change the second sentence of the priorities to the main purpose of such taxes will be to provide a dedicated source of funding for increasing inventory and availability of affordable and working housing.

Ayes: Kaup, Stepp, Wussow, Willman

Nays: Godes, Davis, Hershey

Motion passed 4-3

3:27 Housing Manager Discussion

Debra Figueroa presented and commented that the name would need to be changed to reflect a higher-level job who knows how to implement Council goals and to get housing deals to move. Figueroa added that funding for this position for one year could come from reserves, but would not want to hire someone based on reserves and without a stable funding source.

Mayor Godes suggested to use part of the portion of the eighty-five-fifteen tourism budget split.

Councilor Stepp suggested using the Garfield County Housing Authority to help until the City is ready to have the funding for the position. Figueroa replied that that is not what they do. Stepp suggested using the Housing Authority in the interim until a permanent source of funding is available.

Jenn Ooten, Assistant City Manager, commented that there is funding available for a housing management contract with Garfield County Housing Authority.

Councilor Stepp commented that the City is not at the point to employee a staff member.

Councilor Davis agreed that the City is not at that point and suggested a consultant or contractor to perform the job.

Mayor Godes commented that funding is available through the seven and a half percent plus reserves needed to commit to and invest in the number one community priority.

Mayor Pro-Tem Willman commented that the item should wait a year for the 2023 budget.

Councilor Hershey agreed.

Councilor Kaup commented that the position should wait until a funding stream is in place and if needed, a consultant should be hired.

3:38 Mayor Godes moved, seconded by Councilor Kaup, to delay the conversation to a future time.

Ayes: Hershey, Kaup, Wussow, Willman, Stepp

Nays: Davis, Godes

Motion Passed 5-2

3:38 Ordinance #12 - Series of 2021 Enabling ballot measures and setting forth authorized uses of tax proceeds.

3:38 Mayor Pro-Tem Willman moved, seconded by Mayor Godes, to approve Ordinance #12 - Series of 2021 Enabling ballot measures and setting forth authorized uses of tax proceeds.

Motion passed unanimously

3:39 Approval to Construct the Devereux Trail Section in Two Rivers Park

Debra Figueroa presented that the City received a one-hundred-fifty thousand dollar grant for the sidewalk, Steve Beckley has given three-hundred-thousand, and the budget has four-hundred-thousand. Figueroa stated that the City is fifty-thousand dollars short to award the project to the low bidder and asked for the fifty-thousand dollars from the reserve fund.

Mayor Godes asked if the project is a top priority in the strategic plan. Figueroa replied it is as it is infrastructure.

3:40 Mayor Pro-Tem Willman moved, seconded by Councilor Kaup, to transfer fifty-thousand dollars from the reserve fund to the Devereux Trail project.

Ayes: Davis, Willman, Stepp, Kaup, Wussow

Nays: Godes, Hershey

Motion passed 5-2

3:01 Report from City Administration

City Manager

City Manager, Debra Figueroa, requested that Council sign a thank you card for any Board or Commission member who retires or leaves.

City Attorney

City Attorney, Karl Hanlon, commented on an investigation after citizen complaints regarding door hangers and mailers related to the election and whether they break the Fair Campaign Practices Act. Hanlon wanted the public to know the matter is being investigated. Figueroa added that the Fire Marshall confirmed that after a year, there are still code violations, despite one of the flyers stating there were no issues. Councilor Kaup wanted to know who is responsible. Figueroa stated that the jet fuel was privately owned but sits on County land but the fueling takes place on City property. Councilor Wussow requested more information about responsibility and liability. Figueroa pointed out that the Fire Marshall may take steps to address the issue as it is a code violation.

Correspondence Incoming/Outgoing

None

3:47 Adjournment

3:47 Councilor Stepp moved, seconded by Councilor Hershey, to adjourn.

Motion Passed unanimously.

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Resolution 2021-19; A Resolution of the City Council of Glenwood Springs, Colorado, Supporting a CWCB Watershed Restoration Grant Program Application and the Acceptance and Appropriation of Any Grant Funds Awarded for the Three Mile Creek Confluence Restoration Project

Action Requested: **Action Item 1** - Resolution Supporting a CWCB Watershed Restoration Program Grant Application totaling $405,340 and the Acceptance and Appropriation of Any Grant Funds Awarded for the Three Mile Creek Confluence Restoration Project.

Department: Economic and Community Development

Presented By: Trent Hyatt, Senior Planner

Background Info:

Three Mile Creek Confluence Comprehensive Planning and Design Project

In Fall 2018 and then again in Spring 2019, the City applied for and received two separate grant awards from Pitkin County, via the Healthy Rivers Board, totaling $55,000 to address erosion and degradation near the Three Mile Creek confluence area with the Roaring Fork River. The City provided emergency erosion improvements in October 2018 to stop the loss of valuable park space, however, a long term plan was still needed to determine the best means of accommodating the heavy use of the site.

The City commenced the Three Mile Creek Confluence Comprehensive Planning and Design Project in May 2019. The planning process followed and included public meetings both onsite (July 20, 2019) and at Sopris Elementary (December 2, 2019) and public surveys to better the needs and desires of park users and adjacent neighborhoods and related improvement costs (Three Mile Planning Report and Appendices attached hereto). Following completion of public outreach for the project, 90 percent construction document design and cost estimates (also attached) were developed based on the findings.

Three Mile Creek Confluence Restoration Project

Throughout the public outreach and project design, the prevailing project theme leaned towards protecting and enhancing the Three Mile area as opposed to adding new site amenities. Achieving 90% construction document design gave the City a better understanding of anticipated project costs related to that goal. At 90% design, build out of the project was anticipated to cost approximately $631,771. Associated work includes but is not limited to over 734 feet of streambank protection along the Roaring Fork River and Three Mile Creek, protection of high traffic pedestrian areas, fencing/protection of sensitive areas, educational signage, porta-let screening, final design and permitting, and the filling of and improved drainage for the failing detention pond (commonly referred to as "The Swamp"). Most important to the health of the riparian ecosystem, a significant portion of the project cost is associated with riparian restoration revegetation, plantings, and irrigation.

Subsequent Grant Applications

During the fall of 2020, the City applied for three separate grants (two from the Colorado Water Conservation Board (CWCB) and one from the National Fish and Wildlife Foundation) to construct various work items outlined in the 90 percent plans above. We were successful with the two CWCB applications ultimately receiving a total award of $190,000, the maximum permitted via grant funding stipulations and the City's matching funds ($35,000 via City's Manager discretionary funds and $25,750 in-kind volunteer and professional services). The previous grant applications represented

work costs ($240,750) scaled down to that award amount and meeting the various grant specifications.

Path Forward

The previous grant award amount is only approximately 37 percent of the current estimated total project cost as of the most recent engineer's cost estimate ($644,209) related to the 100% construction set. Staff would like to complete the entirety of the project to limit disturbances the Three Mile Creek Confluence ecosystem, recreationalists, and Atkinson Trail users. City Council's 2022 budget includes additional funding for the Three Mile project totaling $150,000. These funds can be applied towards substantial completion of the project or be leveraged as a cash match for grant funding for one of the same CWCB grants received in 2021 to cover the shortfall of approximately $255,340 to complete the project in it entirety. Regardless, staff intends to bid the project in late January/early February and construct the project in August and September of next year.

Issues: See above.

Staff Recommendation: Staff recommends approval of the resolution supporting various grant applications totaling approximately $800,000 and the acceptance and appropriation of any grant funds awarded to the City for the Three Mile Creek Confluence Restoration Project.

RESOLUTION 2021 - 19

A RESOLUTION OF THE CITY COUNCIL OF GLENWOOD SPRINGS, COLORADO, SUPPORTING A COLORADO WATER CONSERVATION BOARD WATERSHED RESTORATION PROGRAM GRANT APPLICATION AND THE ACCEPTANCE AND APPROPRIATION OF ANY GRANT FUNDS AWARDED FOR THE THREE MILE CREEK CONFLUENCE RESTORATION PROJECT

WHEREAS, the City has submitted several Grant Applications toward completion of the Three Mile Creek Confluence Restoration Project (the "Project"); and

WHEREAS, the Project contemplates protecting and enhancing the Three Mile Creek confluence area, including 734 feet of streambank protection along the Roaring Fork River and Three Mile Creek, protection of high traffic pedestrian areas, fencing/protection of sensitive areas, educational signage, porta-let screening, final design and permitting, and the filling of and improved drainage for the failing detention pond; and

WHEREAS, a significant portion of the Project focuses specifically on improvements to the health of the riparian ecosystem through riparian restoration revegetation, plantings, and irrigation; and

WHEREAS, only a portion of the necessary funds for completion of the project were from the Colorado Water Conservation Board (the "CWCB") Water Supply Reserve Fund and Watershed Restoration Program grant programs in 2020 due to a small amount of matching funds from the City; and

WHEREAS, the City now has an opportunity to match funds at a significantly higher level through City Council's 2022 budget for the Project; and

WHEREAS, the City supports the completion of the Project if a grant is awarded by the CWCB, or any other grant source, and has appropriated $150,000 for the Project.

NOW, THEREFORE, IT IS RESOLVED BY THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, THAT:

Section 1. The above recitals are hereby incorporated as findings by the City.

Section 2. The City strongly supports the Colorado Water Conservation Board Watershed Restoration Program grant application in the amount of $405,340 for completion of the Project and has appropriated $150,000 for the Project.

Section 3. The City Council of the City of Glenwood Springs will authorize the expenditure of funds necessary to meet the terms and obligations of any grant awarded pursuant to a Grant Agreement with the CWCB or any other entity providing a grant.

Section 4. If a grant is awarded, the City of Glenwood Springs hereby authorizes the Mayor or Mayor Pro Tem to sign a Grant Agreement with the CWCB.

INTRODUCED, READ, AND PASSED THIS ___ DAY OF NOVEMBER 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

_____
Jonathan Godes, Mayor

ATTEST:

_____
Ryan Muse, City Clerk

THREE MILE CREEK CONFLUENCE

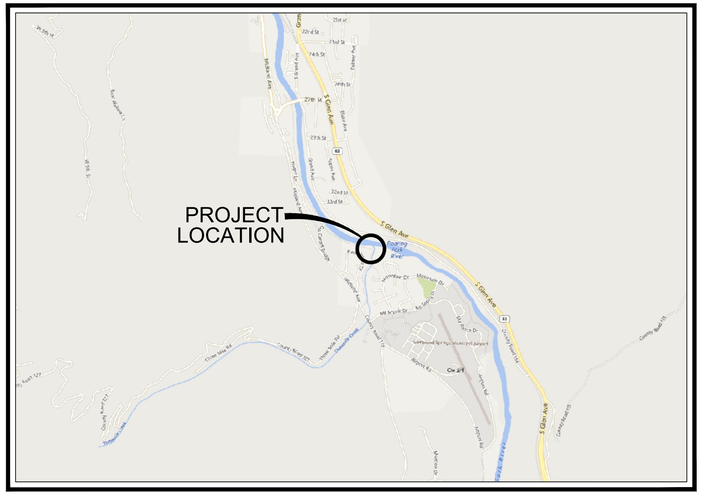
BID SET

GLENWOOD SPRINGS, CO

PROJECT NOTES

1. THE INTENTION OF THE THREE MILE CREEK CONFLUENCE PLANNING PROJECT IS TO PROVIDE A MORE SUSTAINABLE AND RESILIENT SPACE FOR THE GLENWOOD SPRINGS COMMUNITY AT THE THREE MILE CREEK AND ROARING FORK CONFLUENCE.
2. THE AREA IS CURRENTLY USED BY A WIDE VARIETY OF COMMUNITY MEMBERS, RANGING FROM COMMERCIAL BOATING OPERATORS, TO PRIVATE BOATERS, TO ANGLERS, TO RESIDENTS IN THE ADJACENT NEIGHBORHOODS, TO USERS OF THE ATKINSON TRAIL. THE USES AT THE CONFLUENCE ALSO VARY AND INCLUDE FISHING, PICNICKING, BOATING, DOG WALKING, PLAYING WITH CHILDREN, AND ENJOYING NATURE. THIS PROJECT WAS INITIATED PARTLY IN RESPONSE TO THE INCREASING USE AND A GROWING POPULARITY OF THE AREA. THERE IS INTEREST FROM BOTH THE CITY AND THE COMMUNITY IN PROTECTING THIS AREA WHILE RETAINING SUSTAINABLE AND RESPONSIBLE ACCESS AND USE.
3. EARLY IN THE PLANNING PROCESS, THE CONSULTANT TEAM AND THE CITY DEVELOPED THE FOLLOWING PROJECT GOALS STATEMENT IN ORDER TO CAPTURE THE GOALS AND VISION OF THE PROJECT: "DEVELOP A HOLISTIC AND RESILIENT PLAN THAT ADDRESSES CURRENT AND FUTURE IMPACTS FROM THE USE OF THE THREE MILE CREEK CONFLUENCE AREA WHILE PROVIDING ECOLOGICALLY DIVERSE AND NATURALLY SUSTAINABLE HABITATS, IMPROVED WATER QUALITY, TRAIL CONNECTIVITY, RECREATIONAL ACCESS, AND EDUCATION REGARDING OUR MOST VALUABLE NATURAL RESOURCE, WATER."
4. AS THE PROJECT AREA IS A COMMUNITY RESOURCE, COMMUNITY MEMBERS WERE INVITED TO GIVE INPUT AND DIRECTION TO THE PROJECT TEAM. THE CONCEPTUAL DESIGN REPORT SUMMARIZES THE COMMUNITY OUTREACH EFFORTS, THE RESULTS OF THOSE EFFORTS, AND THE FINAL RECOMMENDATIONS FOR THE PROJECT SITE. IN ADDITION TO COMMUNITY OUTREACH, THE PROJECT TEAM WORKED WITH COLORADO PARKS AND WILDLIFE (CPW) TO GATHER THEIR INPUT AND DETERMINE THE MOST APPROPRIATE COURSES OF ACTION FOR THIS SENSITIVE AND ENVIRONMENTALLY IMPORTANT AREA. THIS COORDINATION HAD A SPECIAL FOCUS ON THE FISH SPAWNING AND HABITAT VALUES OF THE THREE MILE CREEK CONFLUENCE AREA. A MEMO FROM CPW IS INCLUDED AS AN APPENDIX TO THIS DOCUMENT.
5. THESE PLANS CONSTITUTE BID DESIGN PLANS FOR THE PROJECT AREA.
6. GROUND SURVEY WAS COMPLETED IN THE LATE WINTER OF 2020, AFTER SNOWMELT, BUT BEFORE RUNOFF ON THE ROARING FORK RIVER. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY THE SURVEY PRIOR TO CONSTRUCTION. ANY DISCREPANCIES IN THE SURVEY AND EXISTING CONDITIONS WILL NEED TO BE COORDINATED WITH THE ENGINEER AND OWNER.
7. THE OVERALL INTENT OF THE BANK STABILIZATION AND REVEGETATION EFFORTS ARE TO PROVIDE A RIVERINE CORRIDOR SYSTEM THAT IS RESILIENT AND STABLE, BUT ALSO AESTHETIC. THE INTENT OF THE BANK STABILIZATION IS TO MIMIC EXISTING STABLE CONDITIONS UP AND DOWNSTREAM OF THE PROJECT AREA. THE INTENT OF THE BOULDERS IN ALL STABILIZATION MEASURES ARE TO PROVIDE A SOLID BACKSTOP AGAINST PROROGATION OF BANK EROSION INTO THE PARK AREAS. THE ACTUAL BOULDERS THEMSELVES SHALL BE BURIED AND HIDDEN FROM SIGHT EXCEPT FOR AREAS THAT INCLUDE BOULDERS AS STEPS.
8. AS WITH TYPICAL STREAM RESTORATION AND ECOLOGICAL UPLIFT PROJECTS CONDITIONS MIGHT HAVE CHANGED BETWEEN SURVEY, DESIGN AND IMPLEMENTATION. THE CONTRACTOR WILL NEED TO BE FLEXIBLE AND EXPECT MINOR FIELD CHANGES BASED ON DIRECTION FROM ENGINEER AS THE BANKS MIGHT HAVE SHIFTED, ERODED OR AGGRADED. CLOSE COORDINATION BETWEEN THE DESIGN TEAM AND THE CONTRACTOR WILL BE REQUIRED.
9. QUANTITIES ASSOCIATED WITH DEVELOPING A FINAL, COMPLETE PROJECT WILL NEED TO BE PROVIDED TO THE ENGINEER THROUGHOUT THE PROJECT. THE CONTRACTOR WILL NEED TO COORDINATE IMPORT OF MATERIALS WITH THE ENGINEER AND OWNER.

VICINITY MAP



MAP SOURCE: GOOGLE MAPS, © GOOGLE 2020

NORTH

2000 0 2000 4000 FT

CONTACTS

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CONTACT: TRENT HYATT
(970)384-6427

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CHINOOK LANDSCAPE ARCHITECTURE
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ECOLOGIST
RAMBOLL GROUP
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DENVER, CO 80202
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CONTACT: RANDY MANDEL
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SURVEYOR
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CARBONDALE, CO 81623
(970)704-0311
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(970)704-0311

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FOR BID
NOT FOR CONSTRUCTION

CALL COLORADO
811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

WRIGHT WATER ENGINEERS, INC.
818 COLORADO AVE. P.O. BOX 219
GLENWOOD SPRINGS, CO 81602
(970)945-7755 FAX(970)945-9210

NO.	BY	DATE	DESCRIPTION	COMMENTS
1				

NOT FOR CONSTRUCTION

		DATE
DESIGN	SDS	10/01/21
DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

COVER SHEET

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. G1

Plot Date/Time: 10/04/2021, 08:21:57 AM, G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\GENERAL DWG-G1 COVER SHEET

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH SPECIFICATIONS PROVIDED AS PART OF THE PROJECT DOCUMENTS. THE MAJORITY OF THE SPECIFICATIONS WERE DEVELOPED FROM THE MILE HIGH FLOOD DISTRICT SPECIFICATIONS DUE TO THE PROJECT BE RIVERINE AND ECOLOGICAL UPLIFT. THE MILE HIGH FLOOD DISTRICT SPECIFICATIONS SHALL BE USED TO SUPPLEMENT ANY SPECIFICATIONS NOT PROVIDED. THE COLORADO DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" 2019 EDITION, SHALL BE ADHERED TO FOR THE PLACEMENT OF THE TYPE C INLET. INFORMATION CONTAINED WITHIN THE STAMPED SIGNED PLAN SET TAKES PRECEDENCE FOLLOWED BY MILE HIGH FLOOD DISTRICT SPECIFICATIONS AND THEN COLORADO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS THAT ARE PERTINENT TO THIS WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNERS. THE OWNERS RESERVE THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE STANDARDS AND SPECIFICATIONS.
3. THE CONTRACTOR SHALL HAVE ONE SIGNED COPY OF THE APPROVED PLANS, ONE COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS REQUIRED AT THE JOB SITE AT ALL TIMES.
4. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL MEET WITH THE OWNER'S REPRESENTATIVE AND RECORD NOTES AND PICTURES OF EXISTING CONDITIONS OF THE SITE AND ADJACENT PROPERTY DURING PRE-CONSTRUCTION MEETING.
5. UNAUTHORIZED CHANGES AND USES: THE ENGINEER WHO PREPARED THESE PLANS WILL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS AND SPECIFICATIONS MUST BE IN WRITING AND MUST BE APPROVED BY THE OWNER AND THE PREPARER OF THESE PLANS.
6. THE CONTRACTOR SHALL NOTIFY THE OWNERS REPRESENTATIVE IMMEDIATELY OF ANY FIELD CONDITION NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS.
7. THE CONTRACTOR SHALL PERFORM ALL WORK WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE DRAWINGS AND IN THE CONTRACT DOCUMENTS. IF THE CONTRACTOR DAMAGES ANY EXISTING SITE OR PUBLIC/PRIVATE AMENITIES (PAVEMENTS, CURBS, CURB AND GUTTER, SOD, GRASS, LANDSCAPING, TREES, FENCES, ETC.) OUTSIDE OR WITHIN THE EASEMENTS OR CONSTRUCTION LIMITS, THEY SHALL REMOVE AND REPAIR SUCH TO THE SATISFACTION OF THE INDIVIDUAL PROPERTY OWNERS.
8. ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS NOTED OTHERWISE IN THE PLANS OR SPECIFICATIONS.
9. ALL ITEMS NOT INCLUDED IN THE BID TAB AND NECESSARY TO PROVIDE A COMPLETE AND FUNCTIONAL PROJECT OR NOTED AS 'INCIDENTAL' IN THE PLANS OR SPECIFICATIONS WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT ARE INCLUDED IN THE WORK.
10. DIMENSIONS AND NOTATIONS SUPERSEDE SCALE OF THE DRAWINGS. ALL GRADES SHOWN ARE FINISHED GRADES EXCEPT WHERE OTHERWISE NOTED ON THE DRAWINGS.

SITE CONDITIONS

1. ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO THE PUBLIC RIGHT-OF-WAY, RESULTING FROM THE PROJECT, SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR. THE CONTRACTOR SHALL IMMEDIATELY FIX ANY EXCAVATION, OR PAVEMENT FAILURE CAUSED BY THE PROJECT, AND SHALL PROPERLY BARRICADE THE SITE UNTIL CONSTRUCTION IS COMPLETE.
2. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITIONS AT, AND ADJACENT TO, THE JOB SITE, INCLUDING BUT NOT LIMITED TO TRENCH EXCAVATIONS AND SHORING, TRAFFIC CONTROL, SECURITY, AND SAFETY OF ALL PERSONS AND PROPERTY, DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE OWNERS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN OR NEAR THE CONSTRUCTION SITE.
3. THE CONTRACTOR SHALL PROVIDE A SANITARY FACILITY AT THE SITE AT ALL TIMES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCEPTANCE, CONVEYANCE, AND CONTROL OF ALL SURFACE AND SUBSURFACE WATER FLOWS IN AND ENTERING THE AREA AFFECTED BY THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OPERATIONS OR ANY OTHER ACCEPTABLE MEANS TO PREVENT POLLUTION OF THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NEEDED DEWATERING OPERATIONS INCLUDING ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS. THE CONTRACTOR SHALL MAINTAIN AND PROVIDE DRAINAGE THROUGH THE SITE DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION CONTROL THROUGHOUT THE CONSTRUCTION DURATION AND SHALL INSTALL EROSION CONTROL MEASURES AS NECESSARY. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM OR RECEIVING WATERS DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT.
6. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR, ACCUMULATE IN, THE FLOW LINES AND PUBLIC RIGHTS OF WAYS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER.
7. UNDERGROUND UTILITIES IN THE AREA OF CONSTRUCTION WILL NEED TO BE LOCATED BY THE CONTRACTOR. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE PROTECTION OF ANY UTILITIES AFFECTED BY THE EXECUTION OF THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES AND AGENCIES AND FOR THE COORDINATION OF ALL WORK IN THE PROXIMITY OF THE UTILITIES. THE CONTRACTOR SHALL NOTE THAT ALL UTILITIES MAY NOT APPEAR ON THESE PLANS. UTILITIES SHOWN ARE APPROXIMATE AND BASED ON INFORMATION PROVIDED BY OTHERS.

PROJECT SPECIFIC NOTES

1. THE OVERALL INTENT OF THE PROJECT IS TO STABILIZE ERODING BANKS, REVEGETATE AREAS AND PROVIDE BETTER AMENITIES FOR A NATURAL PARK IN THE CONFLUENCE OF THREE MILE CREEK AND THE ROARING FORK RIVER.
2. THE OVERALL DESIGN SHALL MIMIC NATURE. IT IS RECOMMENDED TO VIEW THE CORRIDOR ALONG THE ROARING FORK RIVER TO UNDERSTAND THE ENVIRONMENT THE DESIGN TEAM IS TRYING TO REPLICATE. THESE PLANS ARE ENGINEERED PLANS, BUT PROVIDE ROOM FOR VARIATION WITH APPROVAL FROM THE ENGINEER TO MIMIC NATURE. MINIMUM SLOPES, DEPTHS AND HEIGHTS SHALL BE ADHERED TO BUT THERE IS FLEXIBILITY IN PLANFORM ASPECTS WITH APPROVAL FROM THE ENGINEER.
3. IT SHALL BE UNDERSTOOD THAT THERE WILL BE SOME FIELD FITTING AS PART OF THE CONSTRUCTION. THE ENGINEER WILL BE PRESENT DURING ALL MAJOR CONSTRUCTION OPERATIONS AS EXPLAINED IN THE SPECIFICATIONS.
4. ALL WORK TAKING PLACE, ESPECIALLY WORK SOON TO BE BURIED, SHALL BE DOCUMENTED WITH PHOTOS AND MEASUREMENTS.
5. COMPACTION OF SUBGRADE TO BE VERIFIED BY GEOTECHNICAL ENGINEER AND PROVIDED BY THE CONTRACTOR. COST WILL BE INCIDENTAL TO WORK BEING PERFORMED.
6. AS BUILT SURVEY AND DRAWINGS FOR ALL WORK COMPLETED WILL BE REQUIRED AND SUPPLIED BY THE CONTRACTOR. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION SURVEYING.
7. OVERALL LIMITS OF DISTURBANCE NOT SHOWN ON PLANS DUE TO NATURE OF THE WORK. FIELD FITTING WILL BE REQUIRED TO OBTAIN DESIRED NATURAL INTENT. LIMITS OF DISTURBANCE WILL BE MARKED IN THE FIELD BY DESIGN TEAM PRIOR TO CONSTRUCTION.
8. EROSION AND SEDIMENT CONTROL OUTSIDE EROSION CONTROL BLANKET, STREAM SUBSTRATE, AND REVEGETATION ASPECTS SHALL BE APPLIED AS NEEDED TO KEEP SEDIMENT FROM LEAVING THE SITE. AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN DEVELOPED FOR THE CONTRACTOR TO USE BUT SHOULD BE UPDATED AS NECESSARY. A COLORADO STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES WILL NEED TO BE APPLIED FOR BY THE CONTRACTOR. THE CONTRACTOR WILL NEED TO PLAN FOR TIME OF SUBMITTAL.
9. ALL DIMENSIONS ARE APPROXIMATE AND SHOULD PROVIDE NATURAL VARIATION IN FINAL CONSTRUCTION AS DIRECTED BY THE ENGINEER.
10. OVERALL EARTHWORK NUMBERS ARE PROVIDED FOR REFERENCE ONLY. THE AMOUNT OF MATERIAL TO BE IMPORTED AND EXPORTED TO THE SITE MIGHT VARY FROM QUANTITIES PROVIDED. THE CONTRACTOR WILL NEED TO PROVIDE PROOF OF MATERIAL QUANTITIES HAULED TO AND FROM SITE. ACTUAL QUANTITY, COLOR AND SIZE OF MATERIAL, AS APPLICABLE, TO BE IMPORTED SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO BRINGING ON SITE.
11. WORK WILL BE PERFORMED DURING LOW WATER. THEREFORE THE MAJORITY OF THE WORK AREA SHOULD BE ACCESSIBLE VIA DRY CONDITIONS. GRANTED IT IS ASSUMED DEWATERING WILL NEED TO OCCUR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ACQUIRE A DEWATERING PERMIT FROM THE STATE.
12. STREAM SUBSTRATE WITH NATIVE UPLAND SOIL MAY BE ACQUIRED FROM EXCAVATION REQUIRED TO EMPLACE BANK STABILIZATION FEATURES. ENGINEER MUST VERIFY MIXTURE PRIOR TO PLACEMENT.
13. ACCESS TO THE PROJECT AREA WILL BE VIA AN EXISTING PEDESTRIAN TRAIL FROM MIDLAND AVENUE. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THE TRAIL AND REPLACE ANY DAMAGED SECTIONS TO THE CITY SPECIFICATIONS. THE CONTRACTOR WILL NEED TO DEVELOP AND IMPLEMENT A PEDESTRIAN CONTROL PLAN FOR THE PROJECT AREA IN COORDINATION WITH THE ENGINEER AND OWNER. COST FOR PEDESTRIAN CONTROL AND ACCESS SHALL BE INCLUDED IN THE COSTS FOR MOBILIZATION.
14. A TRAFFIC CONTROL PLAN MIGHT ALSO BE REQUIRED TO IMPORT MATERIALS ON SITE AND WILL BE THE CONTRACTORS RESPONSIBILITY TO DEVELOP.
15. PERMITS WILL BE REQUIRED FOR THIS WORK AND ADHERED TO BY THE CONTRACTOR. THE ENGINEER HAS ACQUIRED THE US ARMY CORPS OF ENGINEERS 404 PERMIT, THE FLOODPLAIN PERMIT AND GRADING PERMIT. THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING A CONSTRUCTION STORMWATER DISCHARGE PERMIT. CONTRACTOR IS REQUIRED TO DEVELOP DEWATERING PERMIT IF NEEDED. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND OWNER ON PERMITS PRIOR TO START OF ANY WORK.
16. POST CONSTRUCTION IRRIGATION OF THE PROJECT AREA WILL BE REQUIRED FOR THREE YEARS FOLLOWING COMPLETION OF THE PROJECT AND IS RESPONSIBILITY OF THE CONTRACTOR. SEE LANDSCAPE NOTES AND SPECIFICATIONS FOR MORE INFORMATION.

MASTER LEGEND

- 5100 — EXIST MAJOR CONTOUR
- 5100 — EXIST MINOR CONTOUR
- EXISTING CONCRETE
- EXISTING VEGETATION
- EXISTING TRAIL
- EXISTING PIPE
- EXISTING BOULDER
- EXISTING FENCE
- EDGE OF WATER
- 5100 — PROP MAJOR CONTOUR
- 5100 — PROP MINOR CONTOUR
- PROP 30" AND 36" BOULDERS
- PROP STREAM SUBSTRATE
- PROP STREAM SUBSTRATE WITH NATIVE UPLAND SOIL
- PROP NATIVE UPLAND SOIL
- S400B EROSION CONTROL BLANKET
- KOIRMAT 700 EROSION CONTROL BLANKET
- XX SILT FENCE OR EROSION CONTROL LOG

*INDIVIDUAL SHEETS AND DISCIPLINES HAVE NOTATIONS AND LEGENDS AS NEEDED

BID QUANTITIES

ITEM #	ITEM DESCRIPTION	QUANTITY	UNIT
1	MOBILIZATION	1	LS
2	DEWATERING	1	LS
3	SURVEYING	1	LS
4	TRAFFIC AND PEDESTRIAN CONTROL	1	LS
5	EROSION AND SEDIMENT CONTROL	1	LS
6	ABANDON 18" CMP CULVERT	48	LF
7	REMOVE 3 CONCRETE SUPPORTS	1	LS
8	REMOVE CONCRETE/METAL DEBRIS	1	LS
9	REMOVE 36" RCP CULVERT AND CONCRETE ENCASEMENT	1	LS
10	REMOVE SPLIT RAIL FENCING	1	LS
11	REMOVE TREE	4	EA
12	REMOVE DIVERSION STRUCTURE	1	LS
13	REMOVE 18" CMP	5	LF
14	STREAM SUBSTRATE (D50 = 12") WITH NATIVE UPLAND SOIL	335	CY
15	STREAM SUBSTRATE (D50 = 6") (BEDDING AND CHINKING)	78	CY
16	STREAM SUBSTRATE (D50 = 12")	243	CY
17	B30 BOULDER (D50 = 30")	203	CY
18	B36 BOULDER (D50 = 36")	19	CY
19	NATIVE UPLAND SOIL	272	CY
20	KOIRMAT 700 EROSION CONTROL BLANKET	449	SY
21	S400B EROSION CONTROL BLANKET	2,825	SY
22	STRAW	2,825	SY
23	THREE MILE EARTHWORK	46	CY
24	18" HDPE FLARED END SECTION	1	EA
25	18" HDPE PIPE	41	LF
26	CDOT TYPE C INLET	1	EA
27	ZONE 3: UPLAND SEEDING	10,896	SF
28	ZONE 1&2: WETLAND AND RIPARIAN SEED	12,435	SF
29	SWALE SEED	4,560	SF
30	COMPOST	20	CY
31	WETLAND PLUGS	842	EA
32	SMALL TREES AND SHRUBS	390	EA
33	TREES	23	EA
34	WILLOW CUTTING	3,730	EA
35	WILLOW FASCINES	150	LF
36	PROTECTION FENCING	23	EA
37	MULCH	5	CY
38	INVASIVE SPECIES MANAGEMENT	1	AC
39	IRRIGATION	1	LS
40	SPLIT RAIL FENCE	1,100	LF
41	FLAGSTONE REPAIR	100	SF
42	NEW FLAGSTONE PAVING	200	SF
43	RESTROOM ENCLOSURE	35	LF
44	FOOT TRAIL	250	LF
45	BOULDER SEAT	5	EA
46	BOULDER BOAT TIE-OFF	11	EA
47	PICNIC TABLE	1	EA
48	EDUCATION INTREPRETIVE SIGN	2	EA
49	BATOING SIGN	1	EA
50	SPAWING INFO SIGN	1	EA
51	WAYFIDNING SIGNAGE	1	LS
52	CRUSHER FINES	35	CY

QUANTITY NOTES:

1. QUANTITIES PROVIDED WILL BE ONLY MEASUREMENT AND PAYMENT FOR THE PROJECT. OTHER ELEMENTS INCUDING MATIAERL, LABOR OR EQUIPMENT REUQIRED TO PROVDIE A COMPLETE PROJECT WILL EB CONSIDERED INCIDNETAL.
2. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO MEASURE QUANITEIS AND PROVIDE INFOMRAITON TO ENGINEER PRIOR TO PAYMENT. PROPER DOCUMENTATION WILL NEED TO BE DISCUSSED WITH ENGINEER AND OWNER.

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THREE MILE CREEK CONFLUENCE

NOTES AND LEGEND

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. G2

Plot Date/Time: 10/04/2021, 09:52:29 AM; G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\GENERAL.DWG-G2 NOTES AND LEGEND

ROARING FORK RIVER

DETAILED PLAN VIEW 1, SEE SHEET C5

DETAILED PLAN VIEW 2, SEE SHEET C6

OVERALL NOTES:
1. MAJORITY OF WORK CONSIST OF BANK STABILIZATION AND REVEGETATION.
2. THERE ARE THREE LARGE AREAS BEING FILLED AND REVEGETATED WITHIN THE PROJECT AREA.
3. TWO PIPES WILL BE ABANDONED IN PLACE AND A THIRD REMOVED.
4. WORK ALSO INCLUDES REMOVAL OF INVASIVE SPECIES.
5. SOME WORK WILL REQUIRE FIELD FITTING TO EXISTING CONDITIONS.

≈64' OF BANK STABILIZATION #2 (TRANSITION FROM BANK STABILIZATION #1 TO #2 BASED ON FIELD CONDITIONS)

BOULDER SEATS AND BOAT TIE-OFFS

BACKFILL VOIDS BETWEEN EXISTING BOULDERS WITH 6" STREAM SUBSTRATE

≈118' OF BANK STABILIZATION #1

BOULDERS STEPS

DEVELOP RIVER ACCESS AREA

REDEVELOP RIVER ACCESS AREA

ATKINSON TRAIL

FILL ATKINSON DITCH TO TOP OF NEW GRATE INLET PROVIDING POSITIVE DRAINAGE FROM THE EAST

REPLACE ERODED AND ANGULAR RIPRAP WITH STREAM SUBSTRATE

≈48' OF BANK STABILIZATION #4

≈49' OF BANK STABILIZATION #5

≈93' OF BANK STABILIZATION #5

≈42' OF BANK STABILIZATION #3

≈27' OF BANK STABILIZATION #3

≈30' OF BANK STABILIZATION #2

EXISTING RETURN FLOW TO BE GRADED FOR DRAINAGE

≈80' OF BANK STABILIZATION #3

≈94' OF BANK STABILIZATION #6

≈57' OF BANK STABILIZATION #3

HOLE TO BE FILLED AND NEW CRUSHER FINES TRAIL ACCESS

BOULDER STEPPING STONES TO CROSS THREE MILE CREEK

EXISTING DIVERSION CHANNEL TO BE FILLED TO PROVIDE POSITIVE DRAINAGE TOWARDS THREE MILE CREEK

THREE MILE CREEK

PROPOSED SITE PLAN AREAS

PROPOSED REVEGETATION AREAS

PROPOSED BANK STABILIZATION AND RESTORATION AREAS

PLAN

20 0 20 40 FT

NORTH

NOTES:
TRAIL WILL NEED TO BE PROTECTED IN PLACE DURING CONSTRUCTION. PEDESTRIAN CONTROL PLAN WILL BE REQUIRED.

PROJECT LOCATION

ACCESS TO THE SITE VIA TRAIL

MIDLAND AVENUE

OVERVIEW PLAN

500 0 500 1000 FT

NORTH

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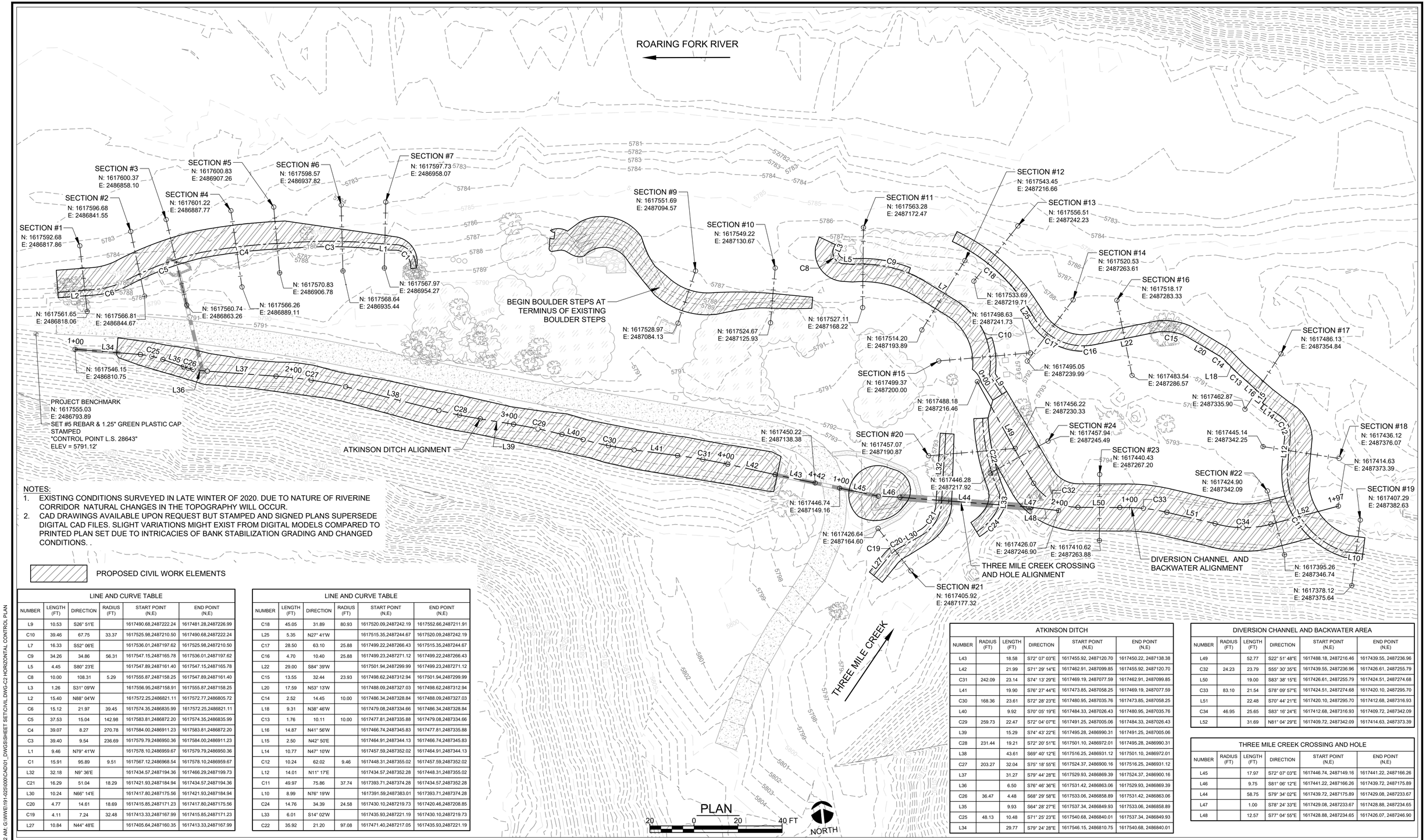
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THREE MILE CREEK CONFLUENCE

OVERALL PLAN VIEW

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NOTES:

1. EXISTING CONDITIONS SURVEYED IN LATE WINTER OF 2020. DUE TO NATURE OF RIVERINE CORRIDOR NATURAL CHANGES IN THE TOPOGRAPHY WILL OCCUR.
2. CAD DRAWINGS AVAILABLE UPON REQUEST BUT STAMPED AND SIGNED PLANS SUPERSEDE DIGITAL CAD FILES. SLIGHT VARIATIONS MIGHT EXIST FROM DIGITAL MODELS COMPARED TO PRINTED PLAN SET DUE TO INTRICACIES OF BANK STABILIZATION GRADING AND CHANGED CONDITIONS. .

PROPOSED CIVIL WORK ELEMENTS

LINE AND CURVE TABLE

NUMBER	LENGTH (FT)	DIRECTION	RADIUS (FT)	START POINT (N,E)	END POINT (N,E)
L9	10.53	S26° 51'E		1617490.68,2487222.24	1617481.28,2487226.99
C10	39.46	67.75	33.37	1617525.98,2487210.50	1617490.68,2487222.24
L7	16.33	S52° 06'E		1617536.01,2487197.62	1617525.98,2487210.50
C9	34.26	34.86	56.31	1617547.15,2487165.78	1617536.01,2487197.62
L5	4.45	S80° 23'E		1617547.89,2487161.40	1617547.15,2487165.78
C8	10.00	108.31	5.29	1617555.87,2487158.25	1617547.89,2487161.40
L3	1.26	S31° 09'W		1617556.95,2487158.91	1617555.87,2487158.25
L2	15.40	N88° 04'W		1617572.25,2486821.11	1617572.77,2486805.72
C6	15.12	21.97	39.45	1617574.35,2486835.99	1617572.25,2486821.11
C5	37.53	15.04	142.98	1617583.81,2486872.20	1617574.35,2486835.99
C4	39.07	8.27	270.78	1617584.00,2486911.23	1617583.81,2486872.20
C3	39.40	9.54	236.69	1617579.79,2486950.36	1617584.00,2486911.23
L1	9.46	N79° 41'W		1617578.10,2486959.67	1617579.79,2486950.36
C1	15.91	95.89	9.51	1617567.12,2486968.54	1617578.10,2486959.67
L32	32.18	N9° 36'E		1617434.57,2487194.36	1617466.29,2487199.73
C21	16.29	51.04	18.29	1617421.93,2487184.94	1617434.57,2487194.36
L30	10.24	N66° 14'E		1617417.80,2487175.56	1617421.93,2487184.94
C20	4.77	14.61	18.69	1617415.85,2487171.23	1617417.80,2487175.56
C19	4.11	7.24	32.48	1617413.33,2487167.99	1617415.85,2487171.23
L27	10.84	N44° 48'E		1617405.64,2487160.35	1617413.33,2487167.99

LINE AND CURVE TABLE

NUMBER	LENGTH (FT)	DIRECTION	RADIUS (FT)	START POINT (N,E)	END POINT (N,E)
C18	45.05	31.89	80.93	1617520.09,2487242.19	1617552.66,2487211.91
L25	5.35	N27° 41'W		1617515.35,2487244.67	1617520.09,2487242.19
C17	28.50	63.10	25.88	1617499.22,2487266.43	1617515.35,2487244.67
C16	4.70	10.40	25.88	1617499.23,2487271.12	1617499.22,2487266.43
L22	29.00	S84° 39'W		1617501.94,2487299.99	1617499.23,2487271.12
C15	13.55	32.44	23.93	1617498.62,2487312.94	1617501.94,2487299.99
L20	17.59	N53° 13'W		1617488.09,2487327.03	1617498.62,2487312.94
C14	2.52	14.45	10.00	1617486.34,2487328.84	1617488.09,2487327.03
L18	9.31	N38° 46'W		1617479.08,2487334.66	1617486.34,2487328.84
C13	1.76	10.11	10.00	1617477.81,2487335.88	1617479.08,2487334.66
L16	14.87	N41° 56'W		1617466.74,2487345.83	1617477.81,2487335.88
L15	2.50	N42° 50'E		1617464.91,2487344.13	1617466.74,2487345.83
L14	10.77	N47° 10'W		1617457.59,2487352.02	1617464.91,2487344.13
C12	10.24	62.02	9.46	1617448.31,2487355.02	1617457.59,2487352.02
L12	14.01	N11° 17'E		1617434.57,2487352.28	1617448.31,2487355.02
C11	49.97	75.86	37.74	1617393.71,2487374.28	1617434.57,2487352.28
L10	8.99	N76° 19'W		1617391.59,2487383.01	1617393.71,2487374.28
C24	14.76	34.39	24.58	1617430.10,2487219.73	1617420.46,2487208.85
L33	6.01	S14° 02'W		1617435.93,2487221.19	1617430.10,2487219.73
C22	35.92	21.20	97.08	1617471.40,2487217.05	1617435.93,2487221.19

ATKINSON DITCH

NUMBER	RADIUS (FT)	LENGTH (FT)	DIRECTION	START POINT (N,E)	END POINT (N,E)
L43		18.58	S72° 07' 03"E	1617455.92, 2487120.70	1617450.22, 2487138.38
L42		21.99	S71° 29' 14"E	1617462.91, 2487099.85	1617455.92, 2487120.70
C31	242.09	23.14	S74° 13' 29"E	1617469.19, 2487077.59	1617462.91, 2487099.85
L41		19.90	S76° 27' 44"E	1617473.85, 2487058.25	1617469.19, 2487077.59
C30	168.36	23.61	S72° 28' 23"E	1617480.95, 2487035.76	1617473.85, 2487058.25
L40		9.92	S70° 05' 19"E	1617484.33, 2487026.43	1617480.95, 2487035.76
C29	259.73	22.47	S72° 04' 07"E	1617491.25, 2487005.06	1617484.33, 2487026.43
L39		15.29	S74° 43' 22"E	1617495.28, 2486990.31	1617491.25, 2487005.06
C28	231.44	19.21	S72° 20' 51"E	1617501.10, 2486972.01	1617495.28, 2486990.31
L38		43.61	S69° 40' 12"E	1617516.25, 2486931.12	1617501.10, 2486972.01
C27	203.27	32.04	S75° 18' 55"E	1617524.37, 2486900.16	1617516.25, 2486931.12
L37		31.27	S79° 44' 28"E	1617529.93, 2486869.39	1617524.37, 2486900.16
L36		6.50	S76° 46' 36"E	1617531.42, 2486863.06	1617529.93, 2486869.39
C26	36.47	4.48	S68° 29' 58"E	1617533.06, 2486858.89	1617531.42, 2486863.06
L35		9.93	S64° 28' 27"E	1617537.34, 2486849.93	1617533.06, 2486858.89
C25	48.13	10.48	S71° 25' 23"E	1617540.68, 2486840.01	1617537.34, 2486849.93
L34		29.77	S79° 24' 28"E	1617546.15, 2486810.75	1617540.68, 2486840.01

DIVERSION CHANNEL AND BACKWATER AREA

NUMBER	RADIUS (FT)	LENGTH (FT)	DIRECTION	START POINT (N,E)	END POINT (N,E)
L49		52.77	S22° 51' 48"E	1617488.18, 2487216.46	1617439.55, 2487236.96
C32	24.23	23.79	S55° 30' 35"E	1617439.55, 2487236.96	1617426.61, 2487255.79
L50		19.00	S83° 38' 15"E	1617426.61, 2487255.79	1617424.51, 2487274.68
C33	83.10	21.54	S78° 09' 57"E	1617424.51, 2487274.68	1617420.10, 2487295.70
L51		22.48	S70° 44' 21"E	1617420.10, 2487295.70	1617412.68, 2487316.93
C34	46.95	25.65	S83° 16' 24"E	1617412.68, 2487316.93	1617409.72, 2487342.09
L52		31.69	N81° 04' 29"E	1617409.72, 2487342.09	1617414.63, 2487373.39

THREE MILE CREEK CROSSING AND HOLE

NUMBER	RADIUS (FT)	LENGTH (FT)	DIRECTION	START POINT (N,E)	END POINT (N,E)
L45		17.97	S72° 07' 03"E	1617446.74, 2487149.16	1617441.22, 2487166.26
L46		9.75	S81° 06' 12"E	1617441.22, 2487166.26	1617439.72, 2487175.89
L44		58.75	S79° 34' 02"E	1617439.72, 2487175.89	1617429.08, 2487233.67
L47		1.00	S78° 24' 33"E	1617429.08, 2487233.67	1617428.88, 2487234.65
L48		12.57	S77° 04' 55"E	1617428.88, 2487234.65	1617426.07, 2487246.90

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THREE MILE CREEK CONFLUENCE

CIVIL HORIZONTAL CONTROL PLAN

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THREE MILE CREEK CONFLUENCE

SWMP

JOB NO. 191-025.000
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SHEET NO. C3

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ROARING FORK RIVER

EXISTING OUTFALL PROTECTION TO BE REMOVED AND REPURPOSED ON SITE

REMOVE DEAD TREE

REMOVE 3 CONCRETE SUPPORTS

REMOVE RUSSIAN OLIVE

REMOVE 5' OF DAMAGED PIPE AND REPLACE

REMOVE AND REPLACE TABLE, FLAGSTONE AND TRASH CAN

INTEGRITY OF EXISTING BANK TO BE PROTECTED TO THE MAXIMUM EXTENT PRACTICAL UNDER SUPERVISION OF ENGINEER.

REMOVE CONCRETE DEBRIS

REMOVE HEADGATE DEBRIS

REMOVE EXISTING INLET

REMOVE EXISTING SPLIT RAIL FENCE

REMOVE PORTION OF EXISTING 36" RCP FROM DIVERSION STRUCTURE THROUGH CREEK CROSSING (42 LF). ABANDON REMAINDER IN PLACE WITH FLO-FILL (18 LF)

REMOVE SPLIT RAIL FENCE

ABANDON EXISTING 18" CMP IN PLACE WITH FLO-FILL, 48 LF

REMOVE EXISTING CRUSHER FINE PATH

REMOVE EXISTING DIVERSION STRUCTURE

THREE MILE CREEK

INVASIVE SPECIES REMOVAL

NOTES:
1. ALL STRUCTURES NOT IDENTIFIED FOR REMOVAL SHALL BE PROTECTED IN PLACE (BENCHES, TRAIL, BOULDER WALL, ETC.)
2. INVASIVE SPECIES REMOVAL SHOWN FOR REFERENCE ONLY ECOLOGIST WILL MARK INVASIVE SPECIES FOR REMOVAL. SEE LANDSCAPE PLANS FOR MORE INFORMATION.
3. ALL TREE REMOVALS SHALL INCLUDE STUMP GRINDING TO A MINIMUM DEPTH OF 8".

PLAN

20 0 20 40 FT

NORTH

NOTES:
1. EXISTING MATERIAL AT LOCATIONS OF BANK STABILIZATION MEASURES AND STREAM SUBSTRATE PLACEMENT TO BE REMOVED AND REPURPOSED ONSITE AND MIXED WITH STREAM SUBSTRATE TO FORM STREAM SUBSTRATE WITH NATIVE UPLAND SOIL AT DIRECTION OF ENGINEER .

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THREE MILE CREEK CONFLUENCE

REMOVAL PLAN

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1 D1 ≈118 OF BANK STABILIZATION #1

≈64' OF BANK STABILIZATION #2 (TRANSITION FROM BANK STABILIZATION #1 TO #2 BASED ON FIELD CONDITIONS) 2 D1

7 D1 BOULDER STEPS FOR RIVER ACCESS

REMOVE 5' OF EXISTING PIPE AND ADD NEW HDPE PIPE AND HDPE FLARED END SECTION

DEVELOP RIVER ACCESS AREA

EXISTING 18" CMP TO REMAIN

1+00

EXISTING PIPE FROM WEST TO BE EXTENDED AND CONNECTED TO INLET (EXISTING PIPE SIZE AND INVERT TO BE VERIFIED BY CONTRACTOR)

EXISTING INLET TO BE REMOVED AND REPLACED WITH CDOT TYPE C INLET

2+00

UNDERDRAIN TO FOLLOW ATKINSON DITCH ALIGNMENT

FILL ATKINSON DITCH TO TOP OF GRATE INLET PROVIDING POSITIVE DRAINAGE FROM THE EAST

3+00

PROPOSED CONTOURS OF ATKINSON DITCH SHOWN TO THE TENTHS

ATKINSON DITCH ALIGNMENT, SEE SHEET C7

ATKINSON TRAIL

BACKFILL BETWEEN AND EXISTING BOULDERS WITH 6" D50 STREAM SUBSTRATE

7 D1 BOULDERS STEPS

PLAN

10 0 10 20 FT

NORTH

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THREE MILE CREEK CONFLUENCE

DETAILED PLAN VIEW 1

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REPLACE ERODED AND ANGULAR RIPRAP WITH STREAM SUBSTRATE

3 D1 ≈42' OF BANK STABILIZATION #3

≈48' OF BANK STABILIZATION #4 4 D1

≈49' OF BANK STABILIZATION #5 5 D1

≈93' OF BANK STABILIZATION #5 5 D1

≈30' OF BANK STABILIZATION #2 2 D1

FILL EXISTING AVULSION WITH STREAM SUBSTRATE WITH NATIVE UPLAND SOIL

3 D1 ≈27' OF BANK STABILIZATION #3

≈57' OF BANK STABILIZATION #3 3 D1

EXISTING RETURN FLOW TO BE GRADED FOR DRAINAGE

≈94' OF BANK STABILIZATION #6 6 D1

EXISTING DIVERSION CHANNEL TO BE FILLED TO PROVIDE POSITIVE DRAINAGE TOWARDS THREE MILE CREEK

THREE MILE CREEK CROSSING AND HOLE ALIGNMENT, SEE SHEET C9

HOLE TO BE FILLED AND NEW CRUSHER FINES TRAIL ACCESS

DIVERSION CHANNEL AND BACKWATER AREA SEE SHEET C9

3 D1 ≈80' OF BANK STABILIZATION #3

CREEK TO BE WIDENED SLIGHTLY TO MATCH WIDTH AT EXISTING CROSSING AND TAPER INTO EXISTING GRADE UP AND DOWNSTREAM

PLAN

10 0 10 20 FT

NORTH

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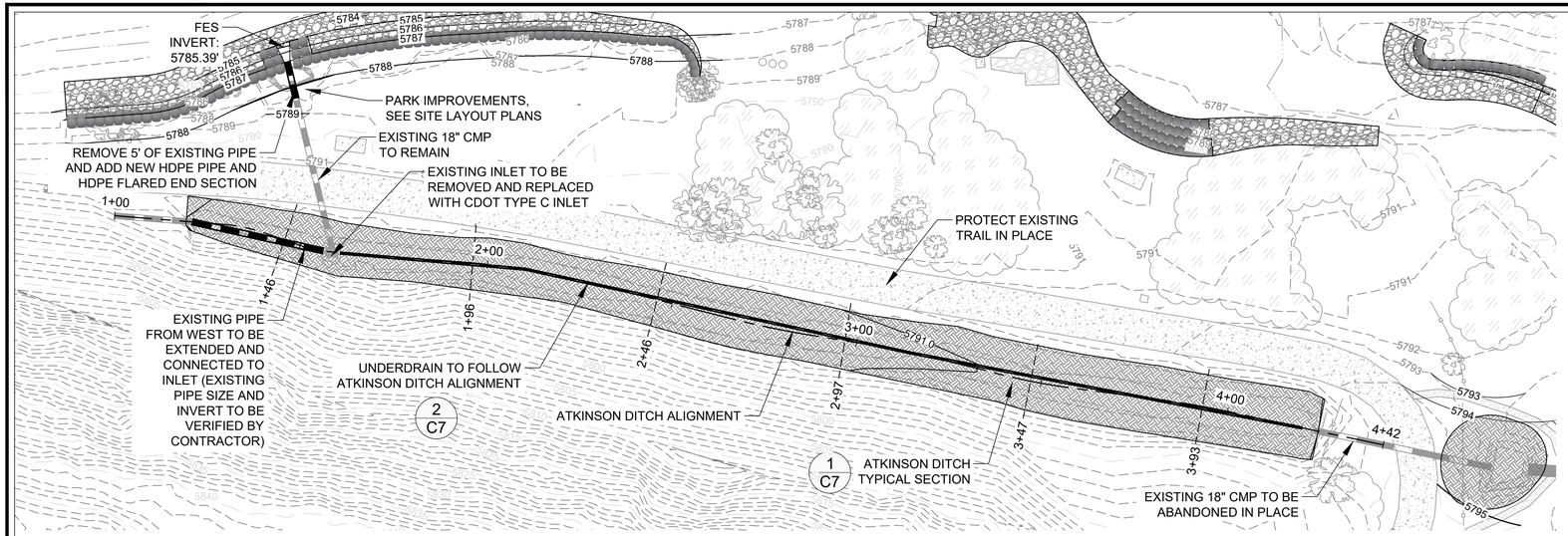
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THREE MILE CREEK CONFLUENCE

DETAILED PLAN VIEW 2

JOB NO. 191-025.000
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SHEET NO. C6

Plot Date/Time: 10/04/2021, 08:23:35 AM; G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\CIVIL DWG-C6 DETAILED PLAN VIEW 2



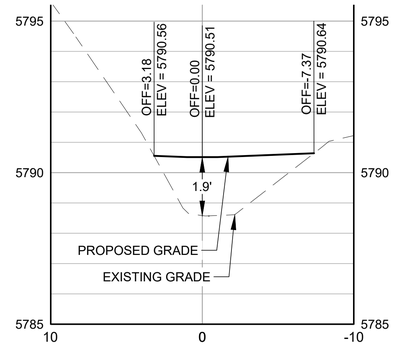
* CONTOUR INTERVAL TO TENTH DECIMAL FOR VISUALIZATIONS DUE TO MINOR CHANGES IN TOPOGRAPHY THROUGH ATKINSON DITCH

PLAN

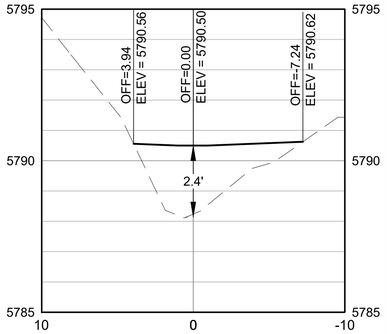
20 0 20 40 FT

NORTH

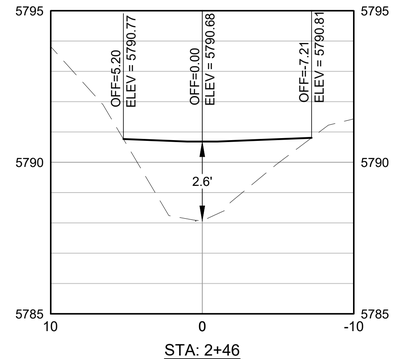
* CROSS SECTIONS ARE LEFT TO RIGHT LOOKING DOWN THE ALIGNMENT



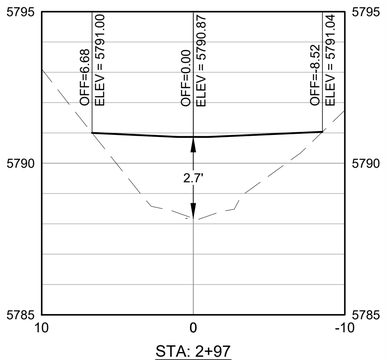
STA: 1+46



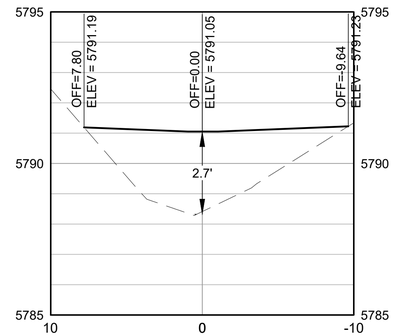
STA: 1+96



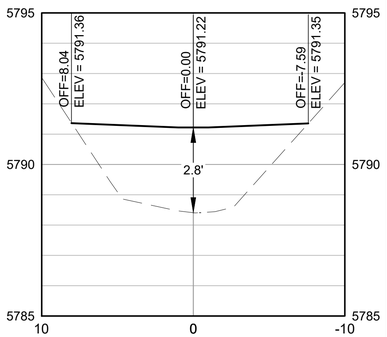
STA: 2+46



STA: 2+97



STA: 3+47



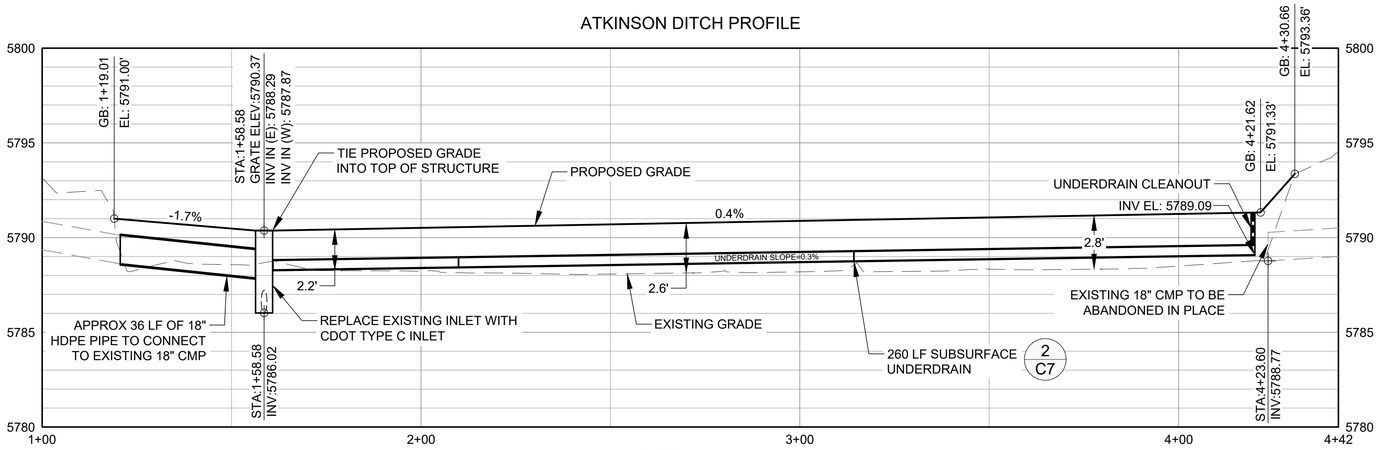
STA: 3+93

SECTIONS

5 0 5 10 FT HORIZONTAL

2.5 0 2.5 5 FT VERTICAL

ATKINSON DITCH PROFILE



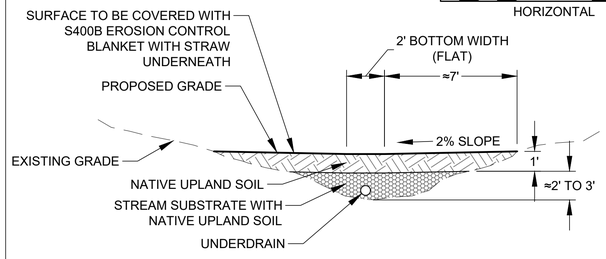
PROFILE

20 0 20 40 FT HORIZONTAL

4 0 4 8 FT VERTICAL

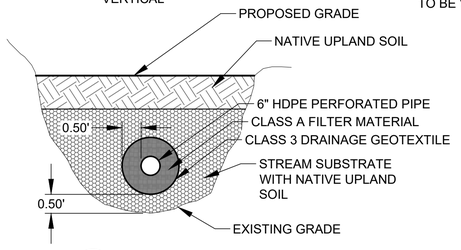
NOTES:

1. EXISTING 18" CMP COMING FROM THE WEST IS BURIED AND TO BE EXPOSED BY CONTRACTOR TO VERIFY INVERTS PRIOR TO ORDERING INLET. SHOP DRAWINGS TO BE PROVIDED BY CONTRACTOR AND DESIGN TO BE VERIFIED BY ENGINEER.



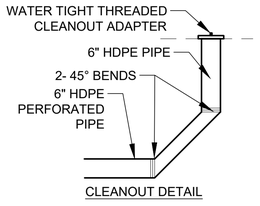
1 C7 ATKINSON DITCH TYPICAL SECTION

SCALE 1" = 4'



2 C7 UNDERDRAIN

SCALE 1" = 2'



CLEANOUT DETAIL

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		DATE
DESIGN	SDS	10/01/21
DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

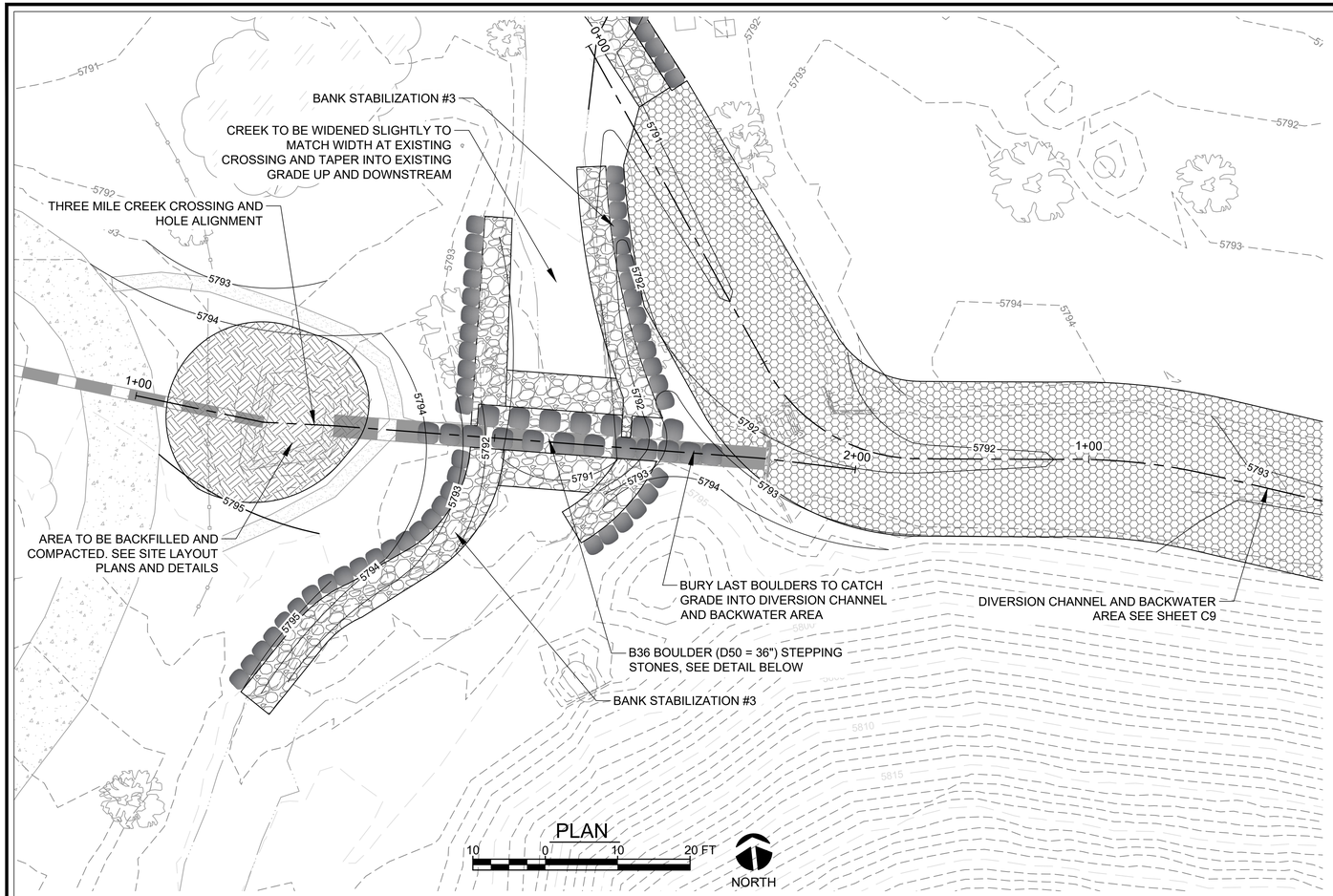
PLAN AND PROFILE - ATKINSON DITCH

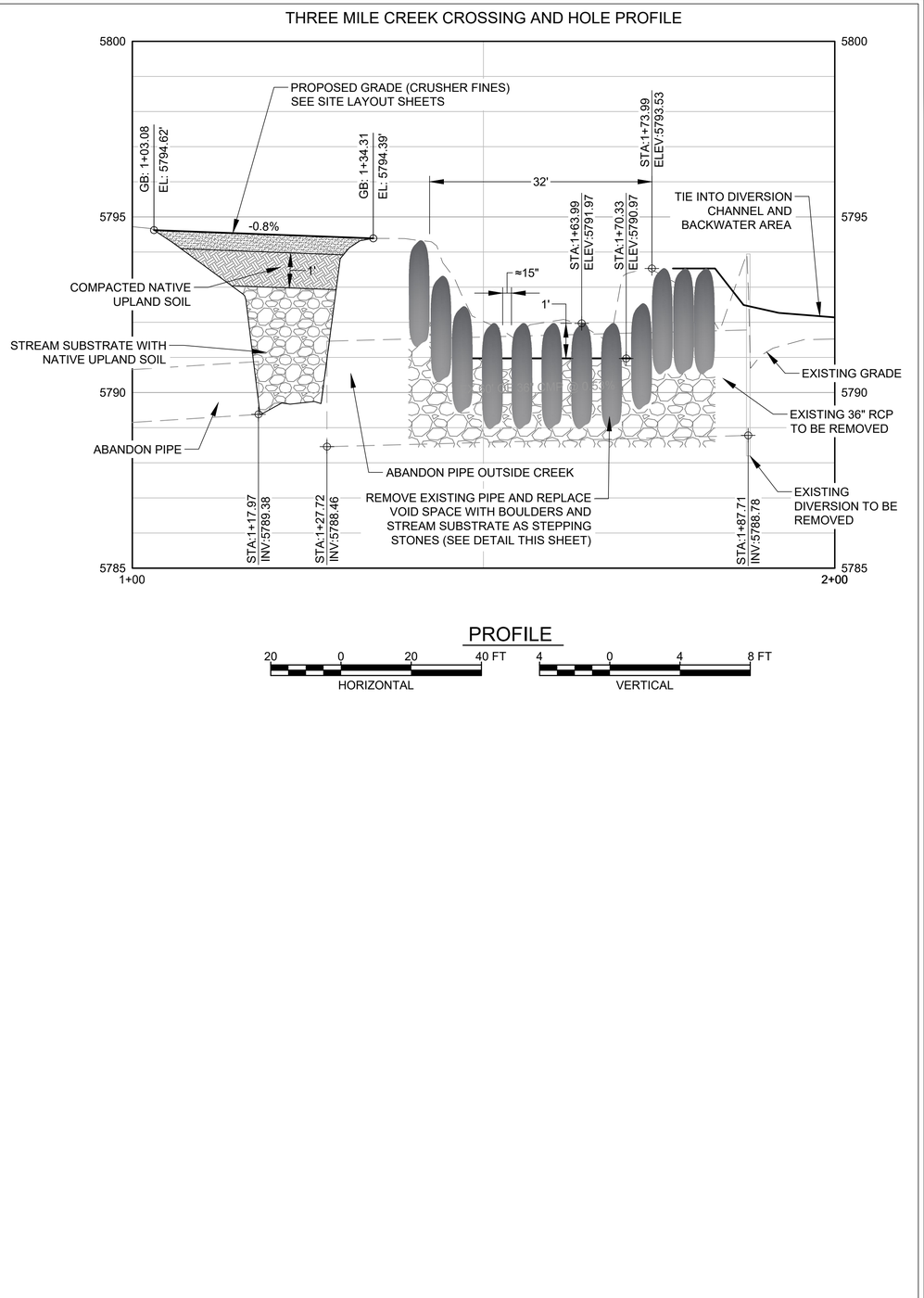
JOB NO. 191-025.000

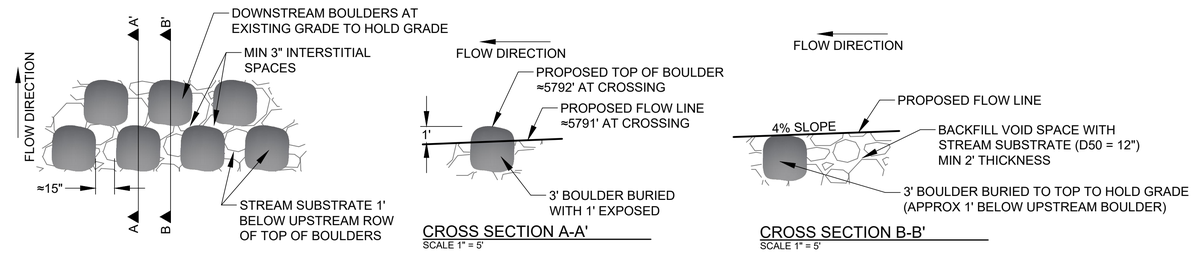
REVISION NO. ----

SHEET NO. C7

Plot Date/Time: 10/04/2021, 08:23:45 AM G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\CIVIL DWG-C7 PLAN AND PROFILE - NORTH







STEPPING STONE DETAIL
SCALE 1" = 5'

STEPPING STONE NOTES:

1. SECTION SHOWN IS AT EXISTING RCP CROSSING AND IS OVER WIDENED COMPARED TO TYPICAL SECTION.
2. TYPICAL TOP WIDTH UP AND DOWNSTREAM OF CROSSING IS APPROXIMATELY 15'.
3. TOP WIDTH WITH BE SLIGHTLY INCREASED AT CROSSING AND MASSAGED INTO EXISTING GRADE WITHIN 5' TO 10' UP AND DOWNSTREAM.
4. INTENT IS TO PROVIDE STEPPING STONES 1' ABOVE CREEK THAWLEG WITH APPROXIMATELY 15" BETWEEN EDGE OF BOULDERS. STREAM SUBSTRATE BETWEEN BOULDERS WILL BE STABILIZED WITH ROW OF STAGGERED BOULDERS DOWNSTREAM.
5. PROFILE OF CREEK AT CROSSING WILL ALSO BE LOWERED TO REMOVE FISH BARRIER AND BALANCE SLOPE DUE TO RCP CROSSING.
6. MAXIMUM OF 12" VERTICAL SEPARATION BETWEEN TOP OF BOULDERS AND STREAM SUBSTRATE.
7. HORIZONTAL SEPARATION BETWEEN EDGE OF BOULDERS TO HAVE MINIMUM OF 12" AND MAXIMUM OF 18".

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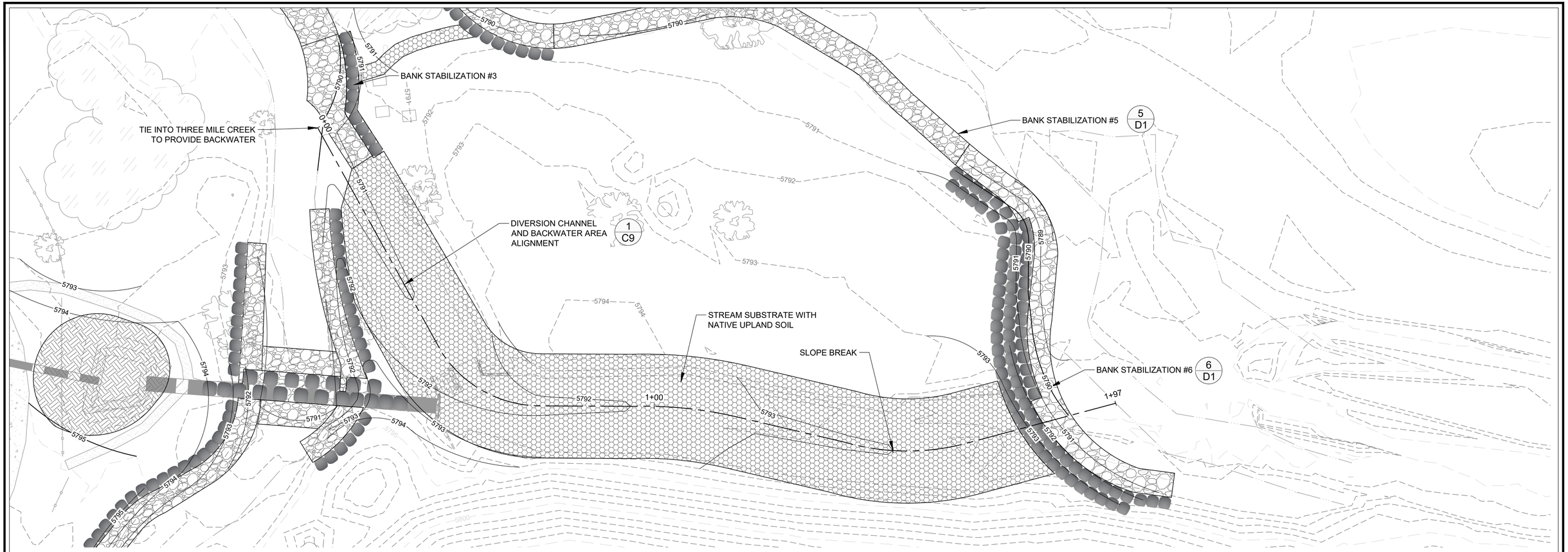
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DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

PLAN AND PROFILE - THREE MILE CREEK CROSSING AND HOLE

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. C8

Plot Date/Time: 10/04/2021, 08:23:52 AM; G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\CIVIL DWG-C8 PLAN AND PROFILE - SOUTH

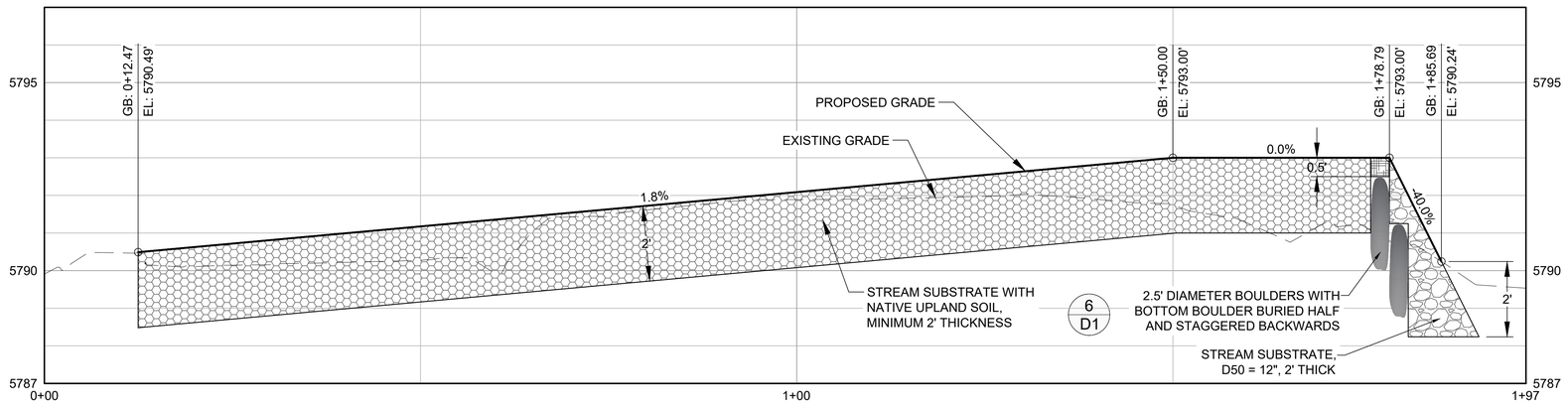


PLAN

10 0 10 20 FT

NORTH

DIVERSION CHANNEL AND BACKWATER AREA



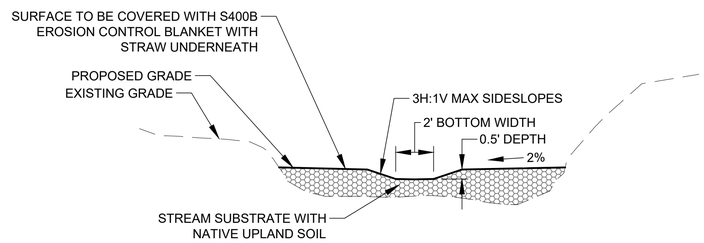
PROFILE

10 0 10 20 FT HORIZONTAL

2 0 2 4 FT VERTICAL

NOTES:

1. TYPICAL CHANNEL WITH INSET CHANNEL ONLY APPLICABLE FROM STATION STA 1+50.00 TO STA 12.47. SECTION FROM STA 1+50.00 TO STA 1+78.79 TO BE FLAT GRADED.
2. EXISTING MATERIAL CAN BE MIXED WITH STREAM SUBSTRATE (D50 = 12") TO MAKE STREAM SUBSTRATE WITH NATIVE UPLAND SOIL MIX.



DIVERSION CHANNEL AND BACKWATER AREA TYPICAL SECTION

1 / C9 SCALE 1" = 4'

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DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
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THREE MILE CREEK CONFLUENCE

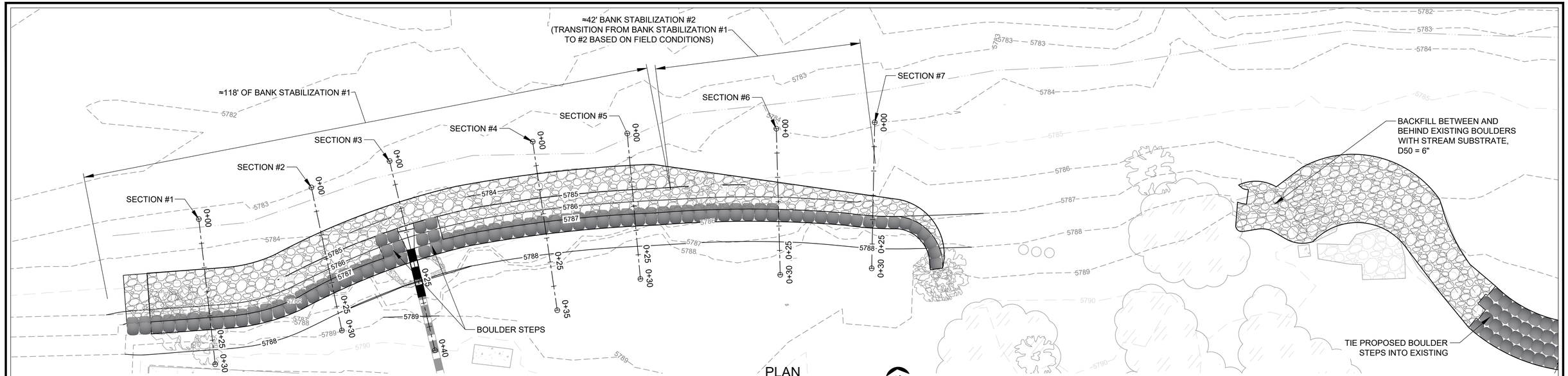
PLAN AND PROFILE - DIVERSION CHANNEL AND BACKWATER AREA

JOB NO. 191-025.000

REVISION NO. ----

SHEET NO. C9

Plot Date/Time: 10/04/2021, 08:23:57 AM; G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\CIVIL DWG\C9 PLAN AND PROFILE - DIVERSION CHANNEL AND BACKWATER AREA

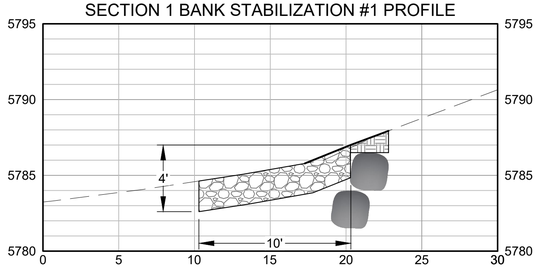


PLAN

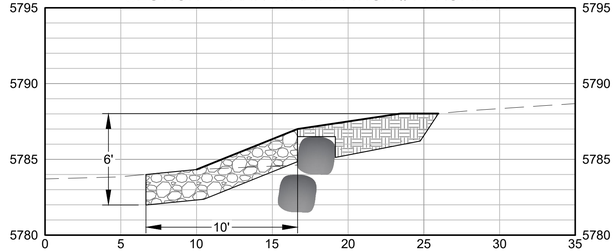
10 0 10 20 FT

NORTH

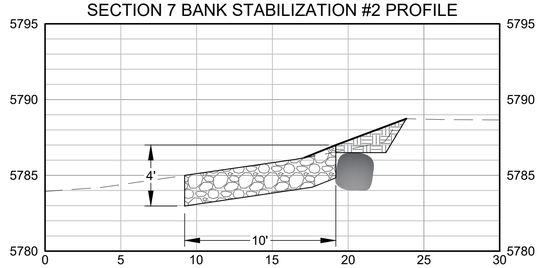
SECTION 1 BANK STABILIZATION #1 PROFILE



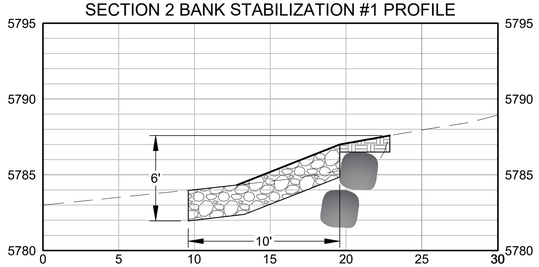
SECTION 4 BANK STABILIZATION #1 PROFILE



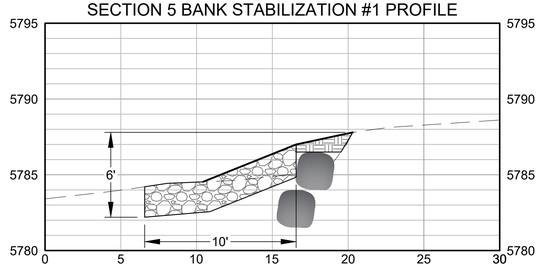
SECTION 7 BANK STABILIZATION #2 PROFILE



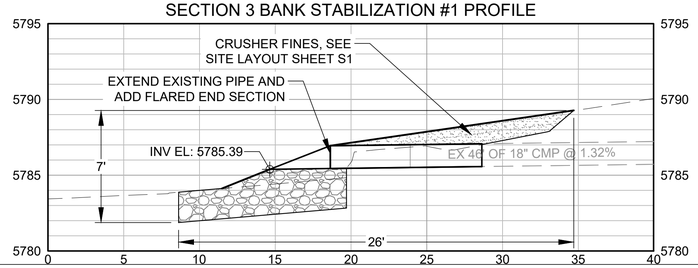
SECTION 2 BANK STABILIZATION #1 PROFILE



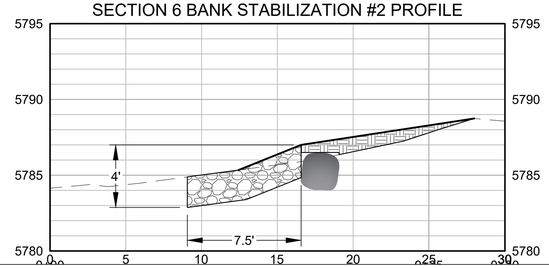
SECTION 5 BANK STABILIZATION #1 PROFILE



SECTION 3 BANK STABILIZATION #1 PROFILE



SECTION 6 BANK STABILIZATION #2 PROFILE



SECTION NOTES:

1. SEE DETAIL SHEETS FOR ROCK SIZES, SLOPES AND ADDITIONAL INFORMATION.
2. ALL BOULDERS TO BE SET AT 6" BELOW PROPOSED GRADE. INTENT IS TO LIMIT BOULDER VISIBILITY. AS DIRECTED BY ENGINEER BURY BUILDER 6" TO PROVIDE STREAM SUBSTRATE BACKFILL FOR REVEGETATION ASPECTS.
3. A MINIMUM OF 2' THICKNESS OF STREAM SUBSTRATE.
4. SOME WORK WILL REQUIRE EXCAVATION OF EXISTING GRADE TO PLACE STREAM SUBSTRATE AT EXISTING GRADE.
5. STREAM SUBSTRATE WITHIN ROARING FORK AND CREEK CORRIDORS TO NOT HAVE FINES.
6. EXCAVATED NATIVE SOIL FOR PLACEMENT OF BOULDERS AND STREAM SUBSTRATE CAN BE MIXED WITH STREAM SUBSTRATE TO MAKE STREAM SUBSTRATE WITH NATIVE UPLAND SOIL.
7. ALL BANK STABILIZATION WILL INCLUDE EROSION CONTROL BLANKET AS SHOWN ON THE DETAILS. BANK STABILIZATION WILL INCLUDE KOIR MAT 700 FROM THE FRONT FACE OF THE BOULDER WITH A WIDTH OF 5'. S400B EROSION CONTROL BLANKET WILL BE USED FOR OTHER DISTURBED AREAS WITH REVEGETATION ASPECTS.

SECTIONS

5 0 5 10 FT HORIZONTAL

2.5 0 2.5 5 FT VERTICAL

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DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

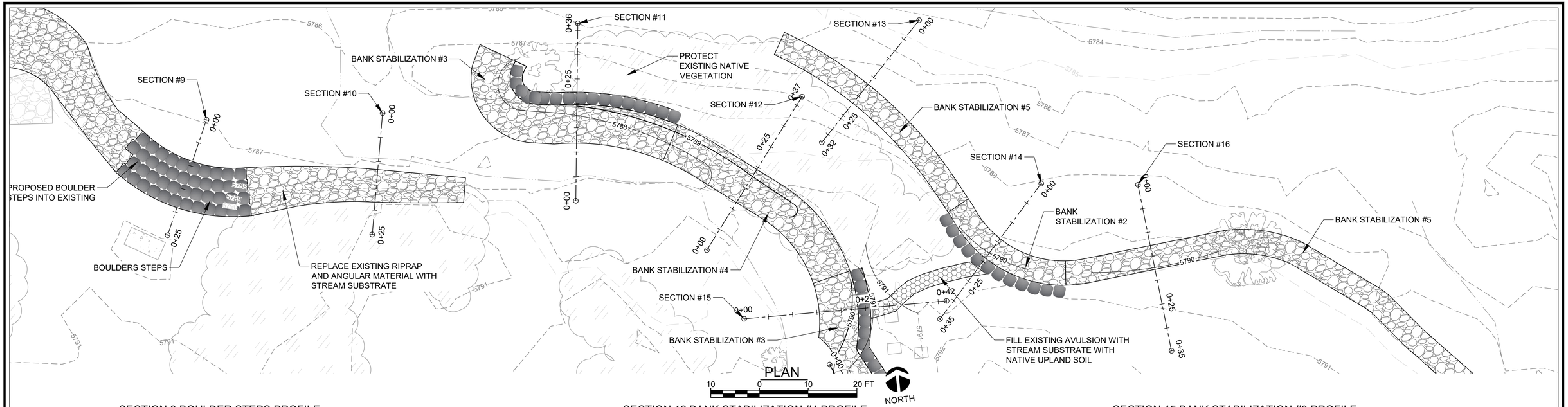
ACTUAL SECTIONS

JOB NO. 191-025.000

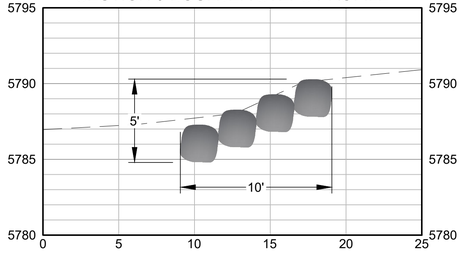
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SHEET NO. C10

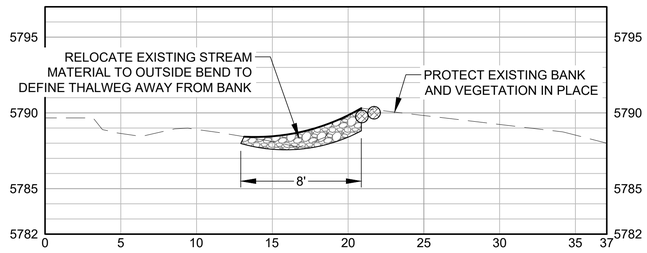
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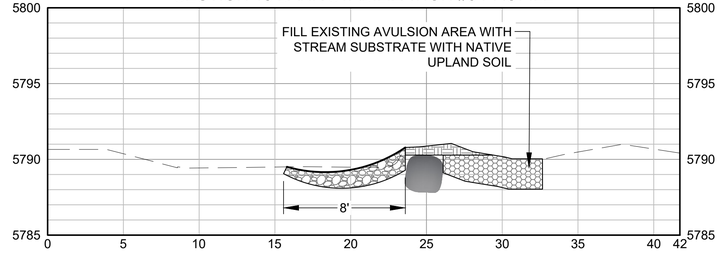
SECTION 9 BOULDER STEPS PROFILE



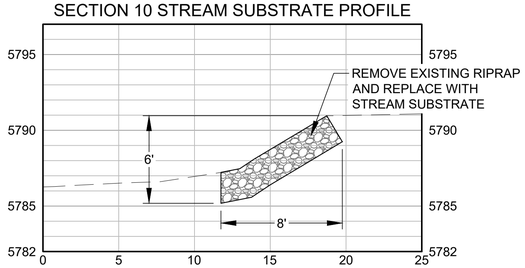
SECTION 12 BANK STABILIZATION #4 PROFILE



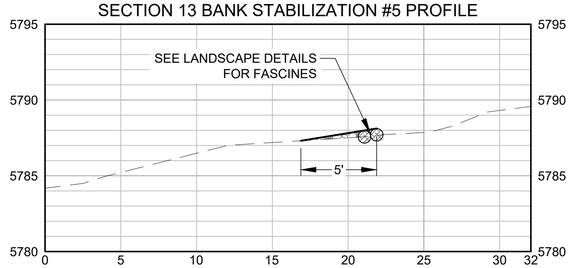
SECTION 15 BANK STABILIZATION #3 PROFILE



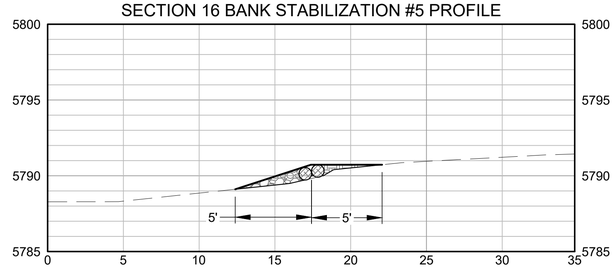
SECTION 10 STREAM SUBSTRATE PROFILE



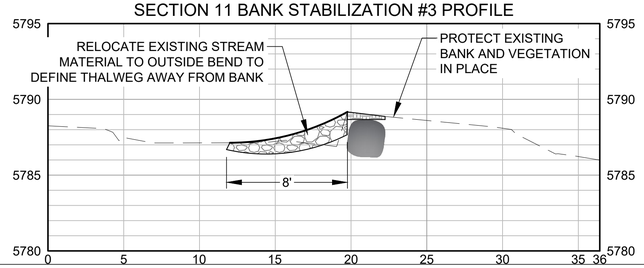
SECTION 13 BANK STABILIZATION #5 PROFILE



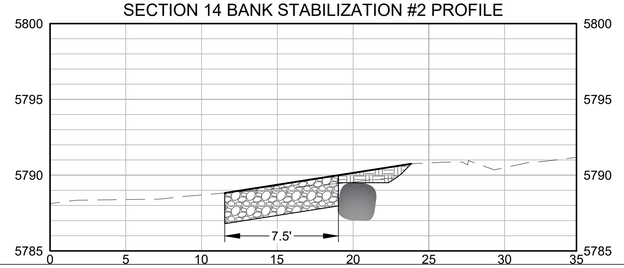
SECTION 16 BANK STABILIZATION #5 PROFILE



SECTION 11 BANK STABILIZATION #3 PROFILE



SECTION 14 BANK STABILIZATION #2 PROFILE



SECTION NOTES:

1. SEE DETAIL SHEETS FOR ROCK SIZES, SLOPES AND ADDITIONAL INFORMATION.
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SECTIONS

5 0 5 10 FT HORIZONTAL

2.5 0 2.5 5 FT VERTICAL

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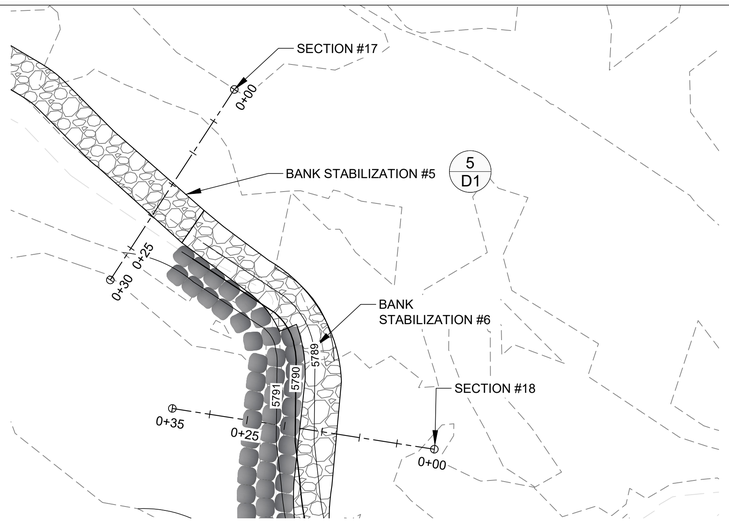
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CHECK	DTL	10/01/21
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THREE MILE CREEK CONFLUENCE

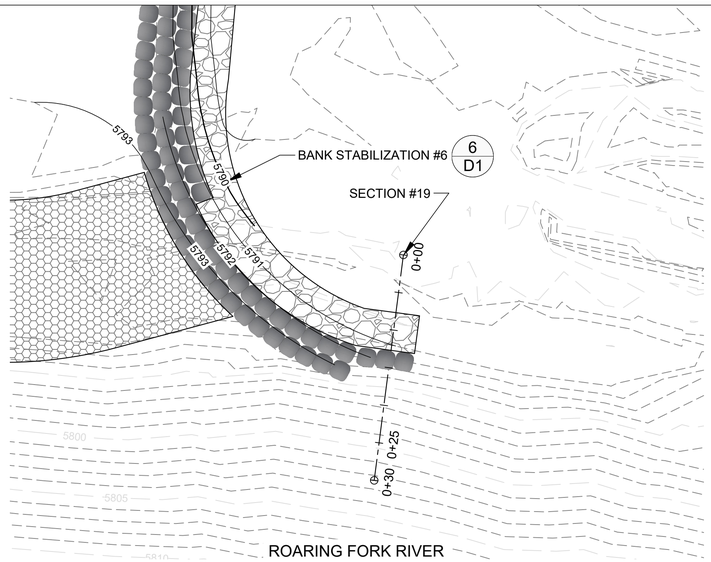
ACTUAL SECTIONS

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. C11

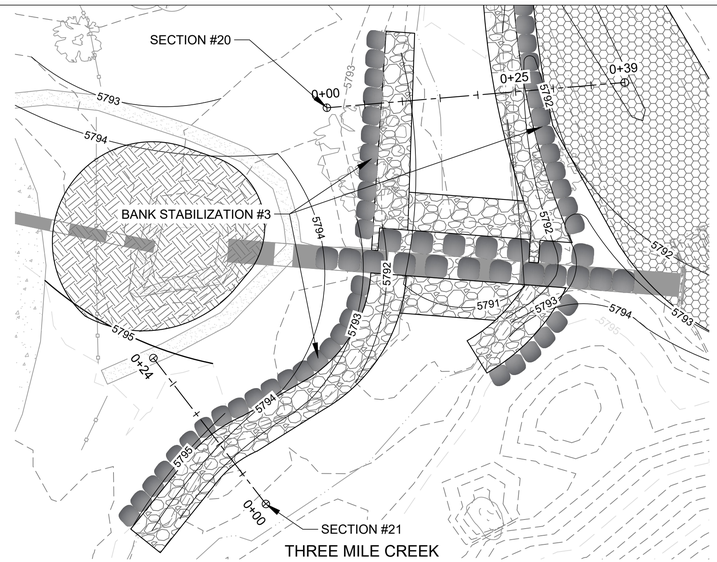
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ROARING FORK RIVER



ROARING FORK RIVER



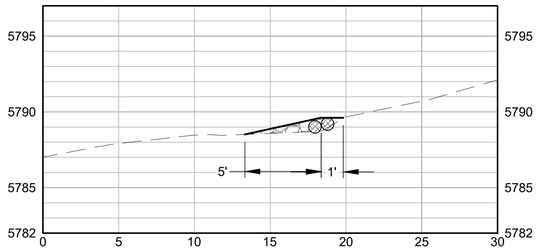
THREE MILE CREEK

PLAN

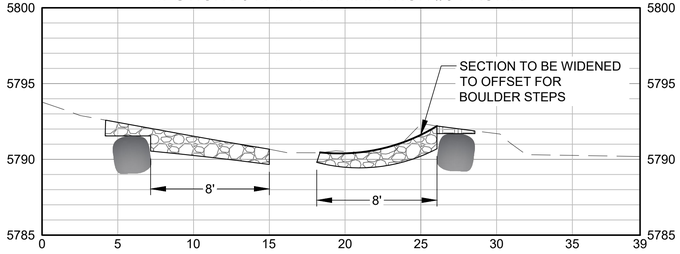
20 0 20 40 FT

NORTH

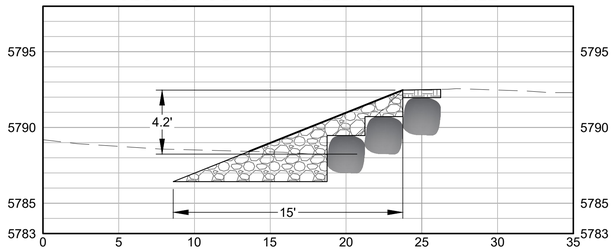
SECTION 17 BANK STABILIZATION #5 PROFILE



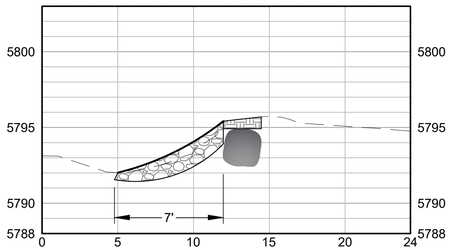
SECTION 20 BANK STABILIZATION #3 PROFILE



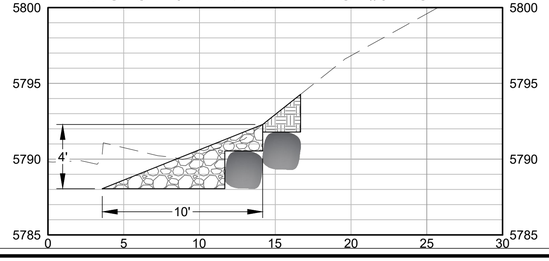
SECTION 18 BANK STABILIZATION #6 PROFILE



SECTION 21 BANK STABILIZATION #3 PROFILE



SECTION 19 BANK STABILIZATION #6 PROFILE



SECTION NOTES:

1. SEE DETAIL SHEETS FOR ROCK SIZES, SLOPES AND ADDITIONAL INFORMATION.
2. ALL BOULDERS TO BE SET AT 6" BELOW PROPOSED GRADE. INTENT IS TO LIMIT BOULDER VISIBILITY. AS DIRECTED BY ENGINEER BURY BUILDER 6" TO PROVIDE STREAM SUBSTRATE BACKFILL FOR REVEGETATION ASPECTS.
3. A MINIMUM OF 2' THICKNESS OF STREAM SUBSTRATE.
4. SOME WORK WILL REQUIRE EXCAVATION OF EXISTING GRADE TO PLACE STREAM SUBSTRATE AT EXISTING GRADE.
5. STREAM SUBSTRATE WITHIN ROARING FORK AND CREEK CORRIDORS TO NOT HAVE FINES.
6. EXCAVATED NATIVE SOIL FOR PLACEMENT OF BOULDERS AND STREAM SUBSTRATE CAN BE MIXED WITH STREAM SUBSTRATE TO MAKE STREAM SUBSTRATE WITH NATIVE UPLAND SOIL.
7. ALL BANK STABILIZATION WILL INCLUDE EROSION CONTROL BLANKET AS SHOWN ON THE DETAILS. BANK STABILIZATION WILL INCLUDE KOIR MAT 700 FROM THE FRONT FACE OF THE BOULDER WITH A WIDTH OF 5'. S400B EROSION CONTROL BLANKET WILL BE USED FOR OTHER DISTURBED AREAS WITH REVEGETATION ASPECTS.

SECTIONS

5 0 5 10 FT — HORIZONTAL

2.5 0 2.5 5 FT — VERTICAL

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818 COLORADO AVE. P.O. BOX 219
GLENWOOD SPRINGS, CO 81602
(970)945-7755 FAX(970)945-9210

NO.	BY	DATE	DESCRIPTION	COMMENTS
1				

NOT FOR CONSTRUCTION

		DATE
DESIGN	SDS	10/01/21
DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

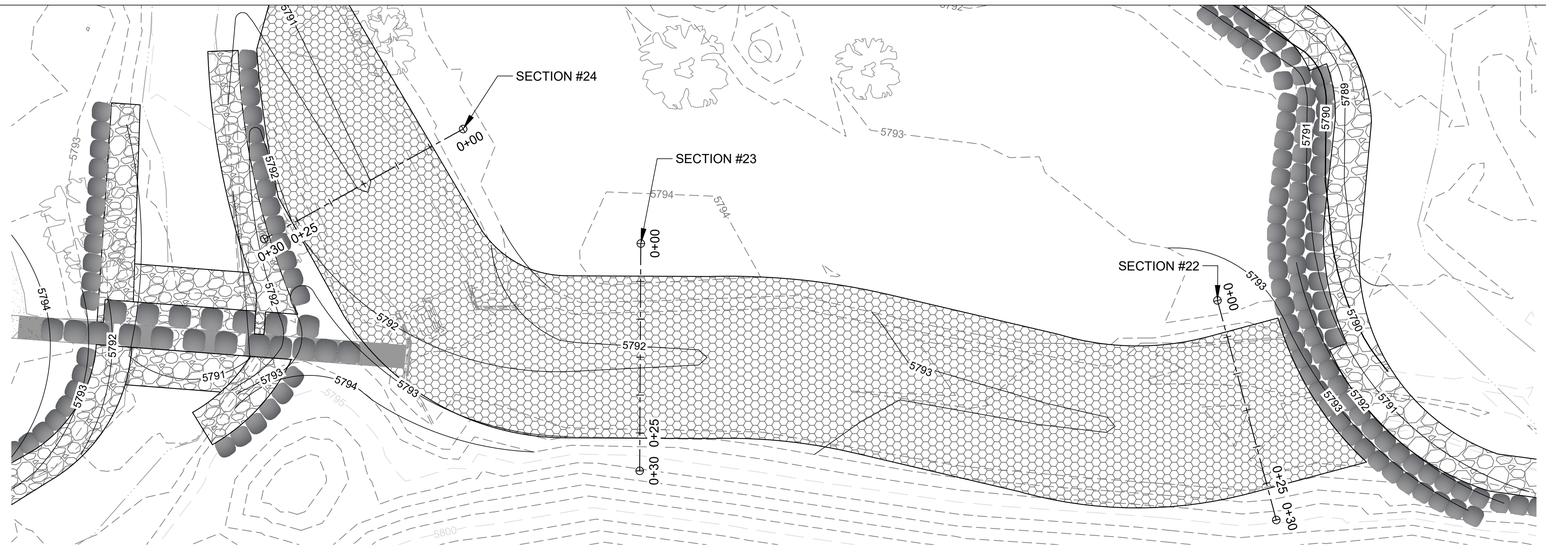
ACTUAL SECTIONS

JOB NO. 191-025.000

REVISION NO. ----

SHEET NO. C12

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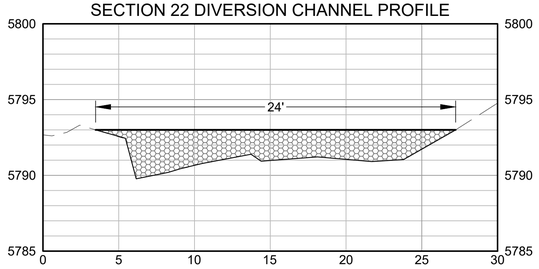


PLAN

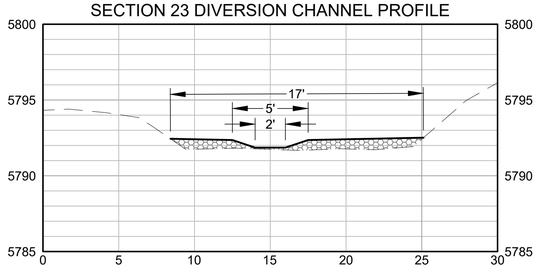
20 0 20 40 FT

NORTH

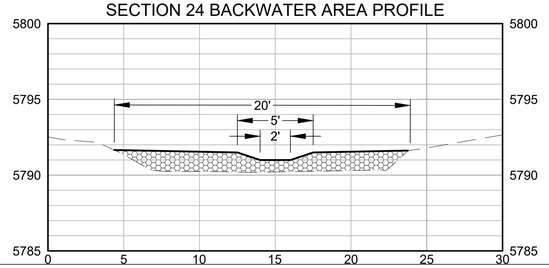
SECTION 22 DIVERSION CHANNEL PROFILE



SECTION 23 DIVERSION CHANNEL PROFILE



SECTION 24 BACKWATER AREA PROFILE



SECTION NOTES:

1. SEE DETAIL SHEETS FOR ROCK SIZES, SLOPES AND ADDITIONAL INFORMATION.
2. ALL BOULDERS TO BE SET AT 6" BELOW PROPOSED GRADE. INTENT IS TO LIMIT BOULDER VISIBILITY. AS DIRECTED BY ENGINEER BURY BUILDER 6" TO PROVIDE STREAM SUBSTRATE BACKFILL FOR REVEGETATION ASPECTS.
3. A MINIMUM OF 2' THICKNESS OF STREAM SUBSTRATE.
4. SOME WORK WILL REQUIRE EXCAVATION OF EXISTING GRADE TO PLACE STREAM SUBSTRATE AT EXISTING GRADE.
5. STREAM SUBSTRATE WITHIN ROARING FORK AND CREEK CORRIDORS TO NOT HAVE FINES.
6. EXCAVATED NATIVE SOIL FOR PLACEMENT OF BOULDERS AND STREAM SUBSTRATE CAN BE MIXED WITH STREAM SUBSTRATE TO MAKE STREAM SUBSTRATE WITH NATIVE UPLAND SOIL.
7. ALL BANK STABILIZATION WILL INCLUDE EROSION CONTROL BLANKET AS SHOWN ON THE DETAILS. BANK STABILIZATION WILL INCLUDE KOIR MAT 700 FROM THE FRONT FACE OF THE BOULDER WITH A WIDTH OF 5'. S400B EROSION CONTROL BLANKET WILL BE USED FOR OTHER DISTURBED AREAS WITH REVEGETATION ASPECTS.

SECTIONS

5 0 5 10 FT HORIZONTAL

2.5 0 2.5 5 FT VERTICAL

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GLENWOOD SPRINGS, CO 81602
(970)945-7755 FAX(970)945-9210

NO.	BY	DATE	DESCRIPTION	COMMENTS
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		DATE
DESIGN	SDS	10/01/21
DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

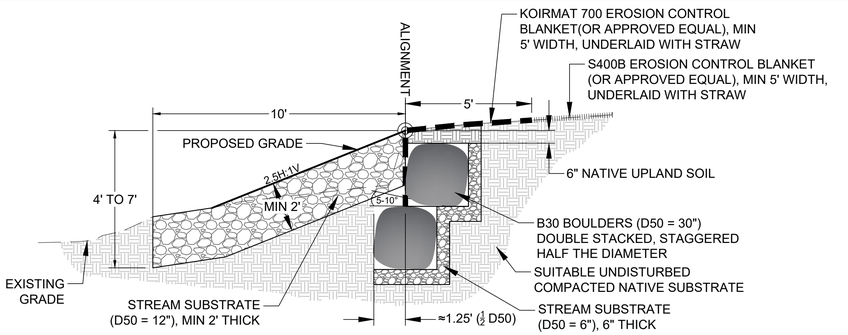
ACTUAL SECTIONS

JOB NO. 191-025.000

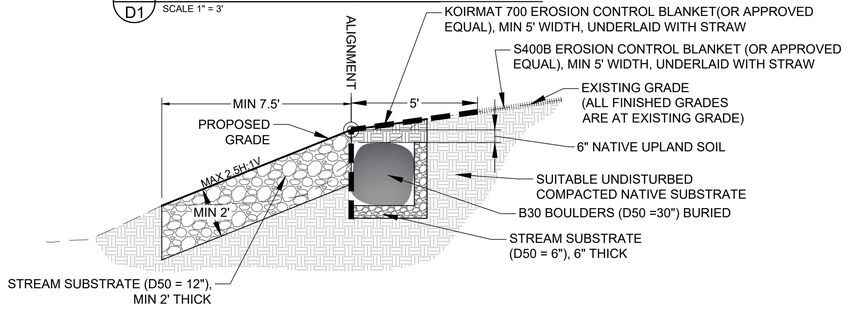
REVISION NO. ----

SHEET NO. C13

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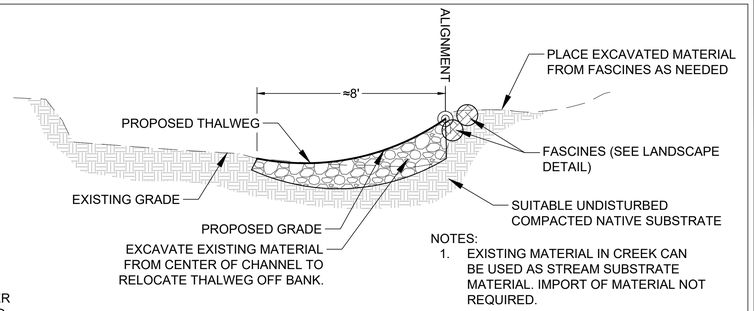
1 D1 BANK STABILIZATION #1 (ROARING FORK RIVER)
SCALE 1" = 3'



2 D1 BANK STABILIZATION #2 (ROARING FORK RIVER)
SCALE 1" = 3'

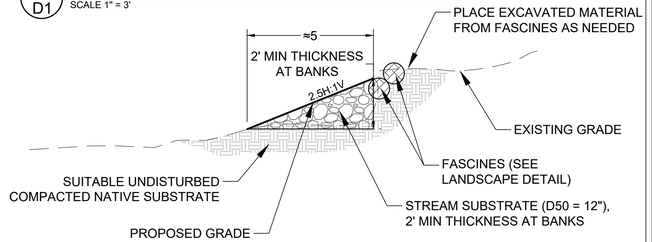
BANK STABILIZATION NOTES:

1. NOTES APPLICABLE TO ALL DETAIL SHEETS AND PROJECT ASPECTS.
2. CONTRACTOR TO PLACE BANK STABILIZATION FEATURES IN PRESENCE OF ENGINEER. EXPECT THE ENGINEER TO DIRECT ADJUSTMENTS OF INDIVIDUAL BOULDERS AND EXCHANGES OF BOULDERS TO MINIMIZE VOIDS AND ADJUST TO EXISTING SURFACE TOPOGRAPHY.
3. THE OVERALL INTENT OF THE WORK IS TO STABILIZE THE BANK AS NATURALLY AS POSSIBLE. CARE SHALL BE GIVEN TO ACHIEVE AN AESTHETIC THAT MIMICS THE EXISTING LANDFORMS.
4. PLACEMENT OF STREAM SUBSTRATE AND BOULDERS SHOULD BE IN COORDINATION WITH LANDSCAPE PLANS INCLUDING THE USE OF ANY EROSION CONTROL BLANKETS.
5. INTERSTITIAL SPACE BETWEEN BOULDERS SHALL BE FILLED WITH STREAM SUBSTRATE. AREAS ABOVE THE WATER LINE SHALL ALSO BE MIXED WITH NATIVE UPLAND SOIL FOR REVEGETATION .
6. DIMENSIONS SHOWN ON THIS PLAN ARE FOR GENERAL GUIDANCE. ADJUSTMENTS DURING CONSTRUCTION WILL BE REQUIRED TO ENSURE THE PROPER INSTALLATION OF FEATURES.
7. STACKED BOULDERS SHALL BE PLACED WITH THE FLATTEST SURFACE ON TOP.
8. ALL FOOTER (BOTTOM) BOULDERS SHALL BE BURIED AT LEAST HALF WAY.
9. FOR BOULDERS BEING USED AS BANK STABILIZATION THEY SHALL BE BARELY VISIBLE ONCE FEATURE IS COMPLETE BY COVERING WITH STREAM SUBSTRATE. BOULDERS FOR BOULDER STEPS WILL BE EXPOSED.
10. KOIRMAT 700 (OR APPROVED EQUAL) EROSION CONTROL BLANKET SHALL BE WRAPPED AROUND FRONT FACE OF BOULDER TO BE ANCHORED BETWEEN STREAM SUBSTRATE AND BOULDER. KOIRMAT 700 SHALL BE EXTENDED A MINIMUM OF 5' INTO THE BANK. SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION. BANK STABILIZATION EROSION CONTROL BLANKET TO BE KOIRMAT 700 OR EQUIVALENT. INSTALL EROSION CONTROL BLANKET PER MANUFACTURERS SPECIFICATIONS. EROSION CONTROL BLANKET TO BE UNDERLAID WITH STRAW. KOIRMAT 700 TO BE TRENCHED A MINIMUM OF 2 FEET INTO PROPOSED STREAM SUBSTRATE ON FRONT FACE OF BOULDER.
11. AREA NOT BEING COVERED WITH KOIRMAT 700 SHALL BE COVERED WITH S400B FOR ALL DISTURBED AREAS.
12. ALL STREAM SUBSTRATE SHALL BE BURIED A MINIMUM OF 2' INTO EXISTING GRADE.
13. NO SLOPE SHALL BE STEEPER THAN 2.5H:1V.
14. SEE BOULDER AND STREAM SUBSTRATE GRADATION TABLE FOR RANGE OF SIZES APPLICABLE.
15. PROPOSED STREAM SUBSTRATE CAN BE SUPPLEMENTED WITH EXISTING ONSITE MATERIAL APPROVED BY ENGINEER.
16. THE INTENT OF THE 2' THICK MATTRESS OF STREAM SUBSTRATE IS TO PROVIDE A GENTLE SLOPE BACK TOWARDS THE RIVER. IF EXISTING MATERIAL IS FOUND COMPETENT AND APPROVED BY ENGINEER IT MAY BE USED TO SUPPLEMENT IN PLACE.
17. STREAM SUBSTRATE CAN BE USED AS BEDDING AND BACKFILL TO HELP SET AND ADJUST BOULDERS.
18. COLOR AND SHAPE OF IMPORTED BOULDERS AND STREAM SUBSTRATE SHALL MATCH EXISTING BED AND BANK MATERIAL. SAMPLE OF STREAM SUBSTRATE TO BE APPROVED BY ENGINEER BEFORE BRINGING TO SITE.
19. ENGINEERED DETAILS SHOWN FOR INTENT OF BANK STABILIZATION. CONSTRUCTION OF STABILIZATION MEASURES TO MIMIC NATURAL BANK CONDITIONS AND AESTHETICS. SEE EXAMPLE PHOTOGRAPH ON THIS SHEET.
20. BACK FILL ALL VOIDS WITH STREAM SUBSTRATE.
21. UNLESS OTHERWISE SPECIFIED, THE BOULDERS ASSOCIATED WITH BANK STABILIZATION SHALL BE BURIED BENEATH A SECTION OF STREAM SUBSTRATE WITH MINIMUM THICKNESS OF 6". INTENT IS TO NOT SEE BOULDERS.
22. INTEGRATE STAKE PLANTING DURING ROCK PLACEMENT TO ENSURE THAT THE LOWER 12-INCHES OF EACH STAKE IS IN CONTACT WITH MEAN ANNUAL MINIMUM GROUNDWATER LEVEL.WOODY PLANT MATERIAL THAT IS TO BE INSTALLED WITHIN DESIGNATED BANK STABILIZATION AREAS, WILL BE INSTALLED AT TWO WILLOWS PER LINEAR FOOT AT THE SAME TIME AS BOULDER PLACEMENT. SEE LANDSCAPE PLANS FOR MORE INFORMATION.

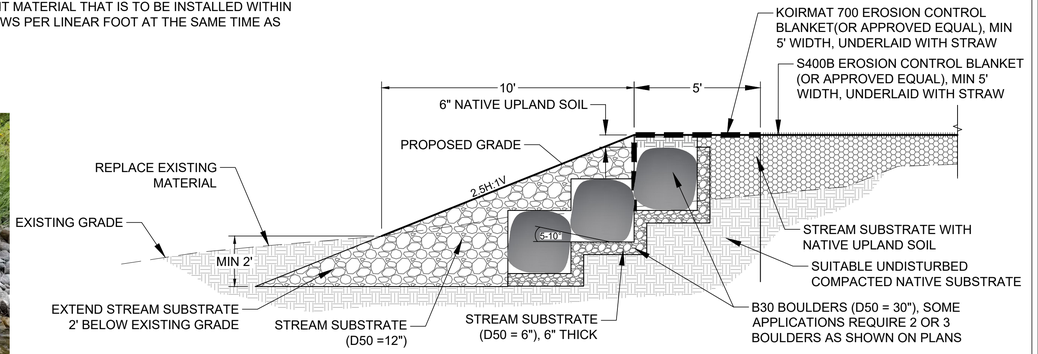


NOTES:
1. EXISTING MATERIAL IN CREEK CAN BE USED AS STREAM SUBSTRATE MATERIAL. IMPORT OF MATERIAL NOT REQUIRED.

4 D1 BANK STABILIZATION #4 (THREE MILE CREEK)
SCALE 1" = 3'

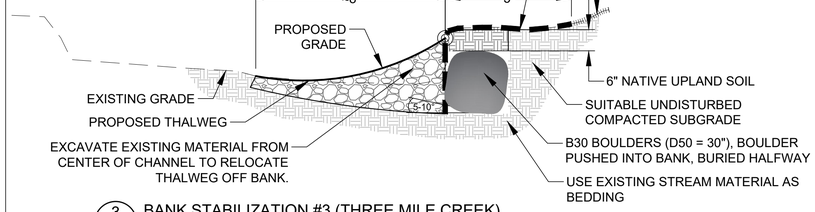


5 D1 BANK STABILIZATION #5 (ROARING FORK RIVER)
SCALE 1" = 3'



6 D1 BANK STABILIZATION #6 (ROARING FORK RIVER)
SCALE 1" = 3'

NOTES:
1. EXISTING MATERIAL IN CREEK CAN BE USED AS STREAM SUBSTRATE MATERIAL. IMPORT OF MATERIAL NOT REQUIRED.



3 D1 BANK STABILIZATION #3 (THREE MILE CREEK)
SCALE 1" = 3'

EXAMPLE OF NATURAL BANK STABILIZATION WITH REVEGETATION



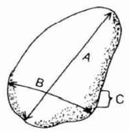
EXAMPLE OF BOULDERS TO USE



STREAM SUBSTRATE GRADATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSIONS (INCHES)
TYPE VL (D50 = 6")	70-100	12
	50-70	9
	35-50	6
	2-10	2
TYPE M (D50 = 12")	70-100	21
	50-70	18
	35-50	12
	2-10	4

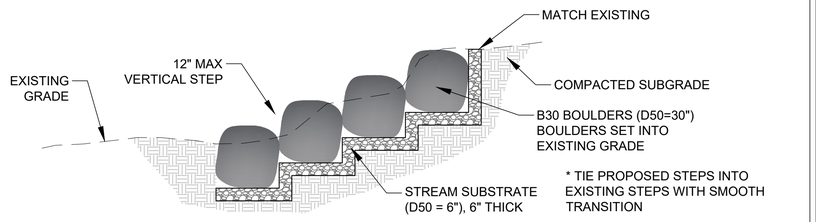
NOTES
1. STREAM SUBSTRATE WITH FINES SHALL BE PROCURED AS PIT RUN WITH APPROXIMATELY 30% FINES
2. ALL BOULDERS AND STREAM SUBSTRATE TO MIMIC EXISTING CONDITIONS. ENGINEER TO APPROVE MATERIAL BEFORE BROUGHT ON SITE.

BOULDER CLASSIFICATION	NOMINAL SIZE (INCHES)	RANGE IN SMALLEST DIMENSION OF INDIVIDUAL ROCK BOULDERS (INCHES)	MAXIMUM RATIO OF LARGEST TO SMALLEST ROCK DIMENSION OF INDIVIDUAL BOULDERS
B30	30	26 - 34	1:50
B36	36	32 - 40	1:50



(A) Long axis
(B) Intermediate axis
(C) Short axis

The intermediate axis is the pebble's diameter.
D50 = B AXIS



7 D1 BOULDER STEPS
SCALE 1" = 3'

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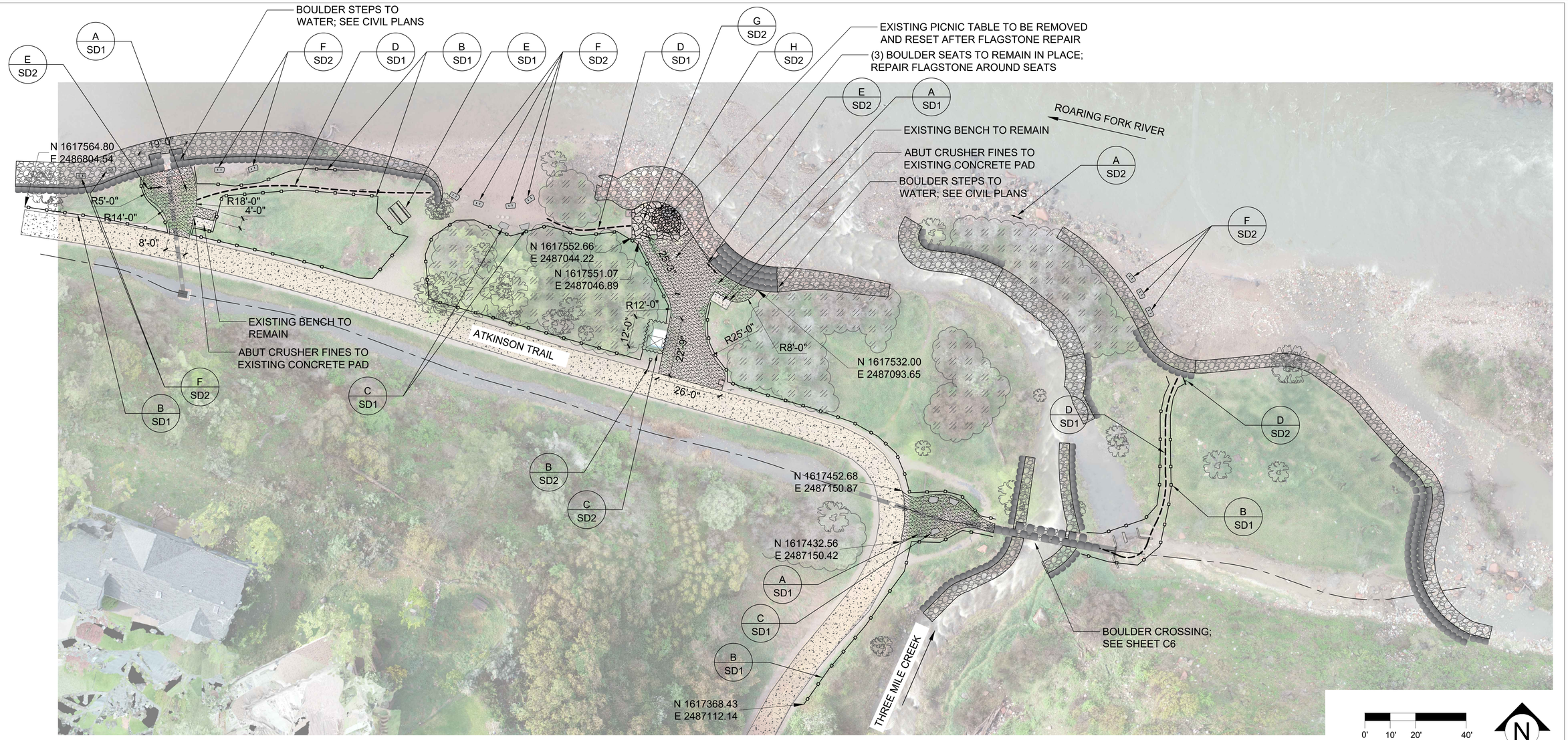
		DATE
DESIGN	SDS	10/01/21
DETAIL	SDS	10/01/21
CHECK	DTL	10/01/21
SCALE		SHOWN

THREE MILE CREEK CONFLUENCE

DETAILS

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. D1

Plot Date/Time: 10/04/2021, 08:24:26 AM, G:\WWE\191-025\000\CAD\01_DWGS\SHEET SET\CIVIL_DWG-D1 DETAILS



0' 10' 20' 40'

SCALE: 1" = 20'-0"

N

LEGEND

- CRUSHER FINES; DETAIL A SHEET SD1
- FLAGSTONE; DETAIL G SHEET SDS
- FLAGSTONE RESET/REPAIR; DETAIL H SHEET SD2
- FOOT TRAIL; DETAIL D SHEET SD1
- SPLIT RAIL FENCE; DETAIL B SHEET SD1
- RESTROOM ENCLOSURE; DETAIL C SHEET SD2
- BOULDER SEAT; DETAIL C SHEET SD1
- BOULDER BOAT TIE OFF; DETAIL F SHEET SD2
- PICNIC TABLE; DETAIL E SHEET SD1

SITE LAYOUT NOTES

1. ALL LAYOUT FEATURES, INCLUDING SIGNS, PAVING/GATHERING AREAS, AND FENCING SHALL BE STAKED FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. IF DIFFERENCES ARE OBSERVED BETWEEN THESE PLANS AND EXISTING CONDITIONS, LANDSCAPE ARCHITECT MUST BE NOTIFIED PRIOR TO PROCEEDED WITH INSTALLATION OF ANY AFFECTED ITEMS/FEATURES.
3. ALL NORTHING/EASTING COORDINATES ARE BASED UPON 2020 SITE CONDITIONS; SITE FEATURES MUST BE STAKED FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
4. BOULDER BOAT TIE OFF LOCATIONS MUST BE STAKED FOR APPROVAL BY LANDSCAPE ARCHITECT AND CITY REPRESENTATIVE PRIOR TO INSTALLATION.

CALL COLORADO
811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

chinook LANDSCAPE ARCHITECTURE

RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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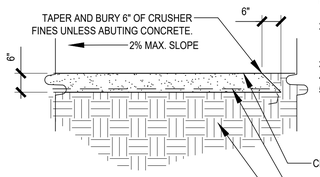
		DATE
DESIGN	JDA	10/1/2021
DETAIL	JDA	10/1/2021
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SCALE		SHOWN

THREE MILE CONFLUENCE

SITE LAYOUT PLANS

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. S1

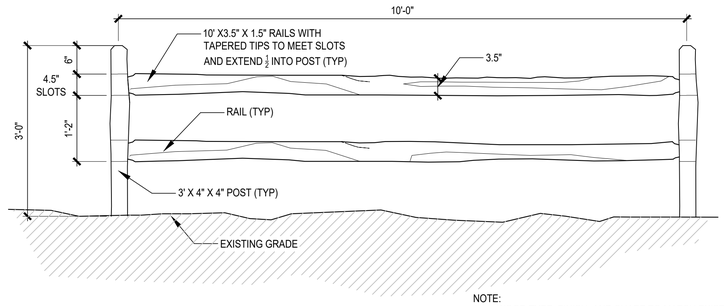
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NOTE:
1. EXCAVATE 6" DEPTH FOR ALL CRUSHER FINES AREAS PRIOR TO PLACING CRUSHER FINES.
2. CRUSHER FINES TO BE PLACED AND COMPACTED IN 3" LIFTS WETTING AND COMPACTING WITH EACH LIFT UNTIL FINISH GRADE IS MET.
3. CRUSHER FINES TO BE INSTALLED OVER MIRIFI FABRIC.
4. CRUSHER FINES TO BE TAN IN COLOR.
5. SEE SITE LAYOUT PLAN FOR EXTENT/LAYOUT OF CRUSHER FINES AREAS.

A SD1 **CRUSHER FINES**

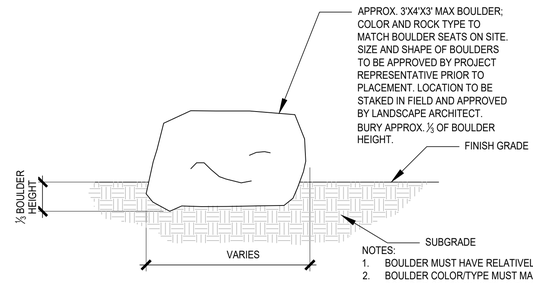
SCALE: 1/2"=1'-0"



NOTE:
1. WOOD TYPE, FINISH, AND SHAPE TO MATCH EXISTING FENCE ON SITE. SAMPLES MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO ORDERING AND INSTALLATION.
2. ALL WOOD FOR SPLIT RAIL FENCE TO BE PRESSURE TREATED.

B SD1 **SPLIT RAIL FENCE**

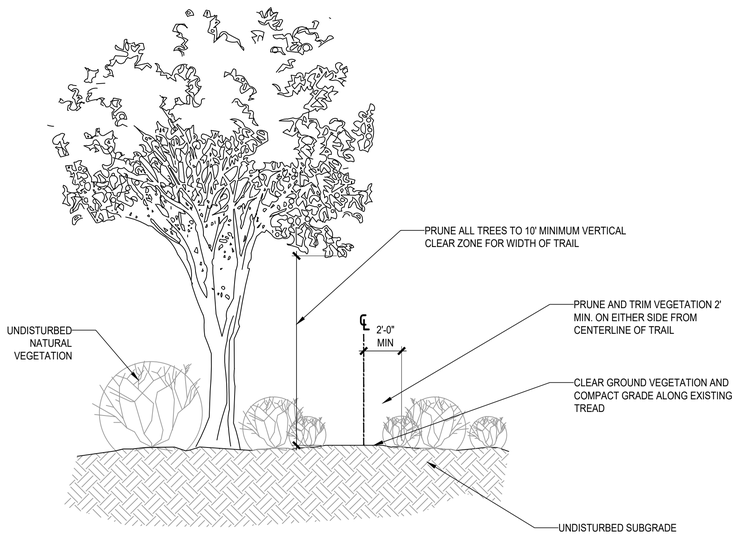
SCALE: 3/4"=1'-0"



NOTES:
1. BOULDER MUST HAVE RELATIVELY FLAT TOP.
2. BOULDER COLOR/TYPE MUST MATCH EXISTING BOULDER SEATS ON SITE. ALTHOUGH EXISTING BOULDER SEATS ARE MULTIPLE SLABS/SEAT, PROPOSED BOULDER SEATS SHALL BE ONE COMPLETE BOULDER PER SEAT.

C SD1 **BOULDER SEAT**

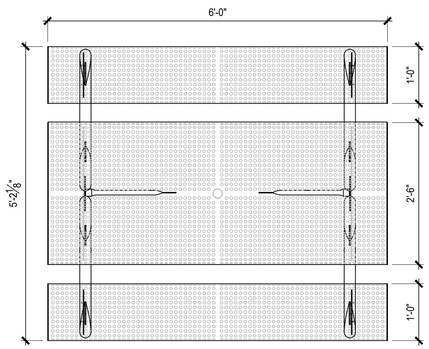
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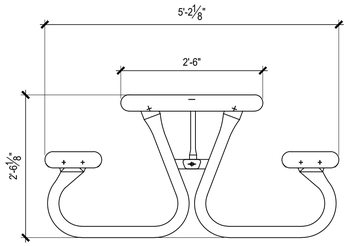


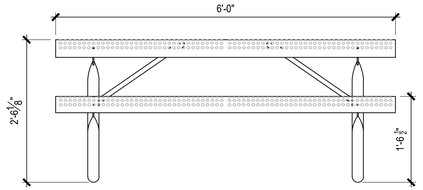
NOTES:
1. NO GRADING ACTIVITIES SHALL OCCUR ON FOOT TRAILS OTHER THAN MINOR APPROVED GRADING TO IMPROVE DRAINAGE OR TREAD SURFACE OR GRADING SHOWN ON CIVIL PLANS.
2. IF PROPOSED ALIGNMENT OF A FOOT TRAIL WILL RESULT IN THE COMPLETE REMOVAL OF ANY TREES, CONTACT THE LANDSCAPE ARCHITECT PRIOR TO PROCEEDING WITH PRUNING AND TRIMMING OR REMOVAL.
3. PRUNE AND TRIM VEGETATION 2' MIN. ON EITHER SIDE FROM CENTERLINE OF TRAIL.

D SD1 **FOOT TRAIL REPAIR**

SCALE: 1/4"=1'-0"







NOTE:
1. WABASH HERITAGE PRESTIGE 6' PICNIC TABLE; BLACK COLOR; PERFORATED PATTERN OR APPROVED EQUAL.
2. CONTRACTOR MUST SUBMIT TABLE MANUFACTURER, MODEL, MOUNTING STYLE, AND COLORS TO OWNER FOR APPROVAL PRIOR TO ORDERING.
3. TABLE MUST BE SURFACE MOUNT INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

E SD1 **PICNIC TABLE**

SCALE: 3/4"=1'-0"

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chinook LANDSCAPE ARCHITECTURE

RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
1				

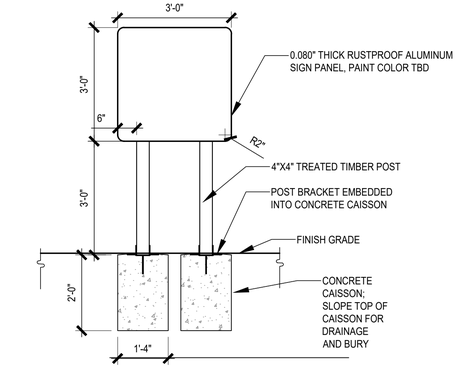
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DESIGN	JDA	10/1/2021
DETAIL	JDA	10/1/2021
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THREE MILE CONFLUENCE

SITE LAYOUT DETAILS

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. SD1

Plot Date/Time: 10/03/2021, 09:22:34 PM; E:\DROPBOX\THREE MILE CREEK\90% DESIGN PLANS\CHINOOK CAD\4.1_SHEETS\CHINOOK SITE DETAILS.DWG-LD1-LANDSCAPE DETAILS

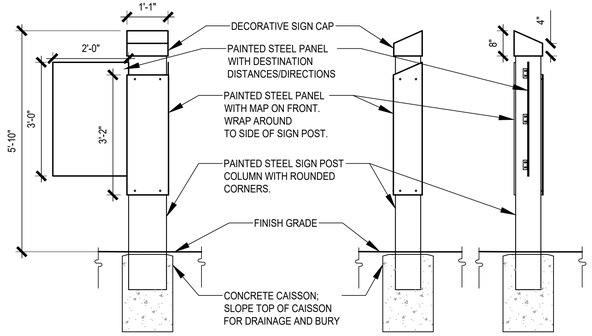


NOTES:
1. SIGN PANEL DESIGN BY OTHERS.

A SD2 BOATING SIGN

SCALE: 1/2"=1'-0"

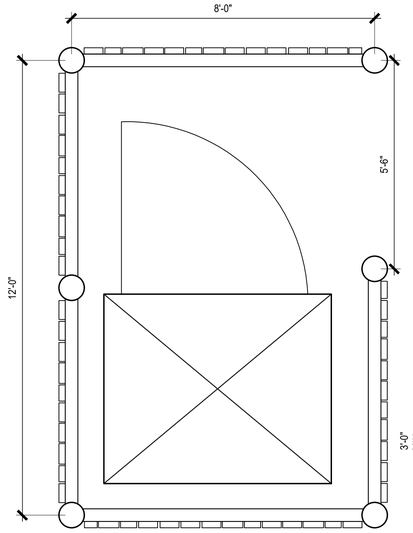




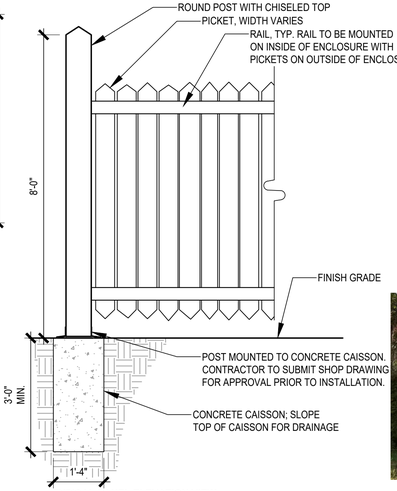
NOTES:
1. PICTURE AND DETAIL DEMONSTRATE ONE POSSIBLE SIGNAGE DESIGN; FINAL DESIGN OF SIGN SYSTEM TBD.
2. FINAL DESIGN OF SIGN SYSTEM AND SIGN CONTENTS MUST BE APPROVED BY OWNER PRIOR TO ORDERING/FABRICATION.
3. SHOP DRAWINGS FOR SIGN STRUCTURE AND INSTALLATION MUST BE SUBMITTED AND APPROVED BY PROJECT ENGINEER OR LANDSCAPE ARCHITECT.
4. POSSIBLE DESTINATIONS/SIGN CONTENTS INCLUDE: THREE MILE CREEK CONFLUENCE, RESTROOM, DOWNTOWN GLENWOOD SPRINGS, THREE MILE CREEK PARKING/TRAILHEAD, BEACH ACCESS, FISHING ACCESS, ATKINSON TRAIL MAP.

B SD2 WAYFINDING SIGNAGE

SCALE: 1/2"=1'-0"



PLAN VIEW



TYPICAL PANEL ELEVATION VIEW

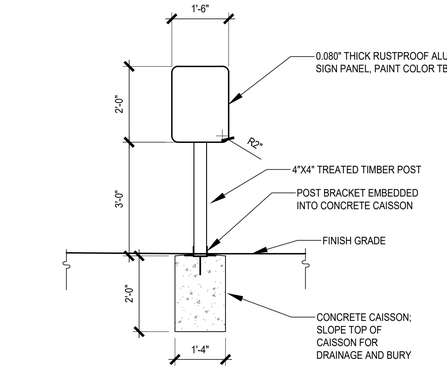


EXAMPLE PICTURE

NOTES:
1. MATERIALS, DIMENSIONS, AND DESIGN TO MATCH EXISTING CITY OF GLENWOOD SPRINGS RESTROOM ENCLOSURES.
2. FINAL DESIGN MUST BE APPROVED BY OWNER.
3. FINAL DESIGN MUST ALLOW FOR PORT-A-POTTY TO BE REMOVED AND REPLACED WITHOUT DISASSEMBLING ENCLOSURE.

C SD2 RESTROOM ENCLOSURE

SCALE: NTS



NOTES:
1. SIGN PANEL DESIGN BY OTHERS.

D SD2 SPAWNING INFO SIGN

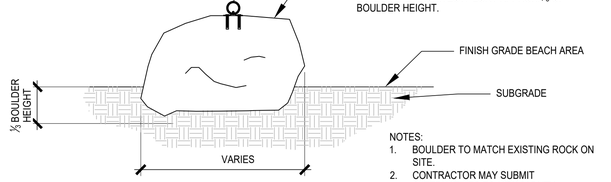
SCALE: 1/2"=1'-0"



NOTES:
1. PICTURE DEMONSTRATES ONE POSSIBLE SIGNAGE DESIGN; FINAL DESIGN OF SIGN SYSTEM TBD BY OTHERS
2. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH CHOSEN SIGN FABRICATOR OR SUBMITTING QUALIFICATIONS FOR APPROVED EQUAL.
3. LUMP SUM AMOUNT FOR EDUCATIONAL SIGNAGE HAS BEEN INCLUDING FOR BIDDING PURPOSES..
4. POSSIBLE EDUCATIONAL SUBJECTS INCLUDE: RIPARIAN HABITAT, RIPARIAN VEGETATION AND ECOSYSTEMS, WATER QUALITY, FISH SPAWNING CYCLES, AGRICULTURAL HISTORY, WATER RIGHTS HISTORY.

E SD2 EDUCATIONAL INTERPRETIVE SIGN

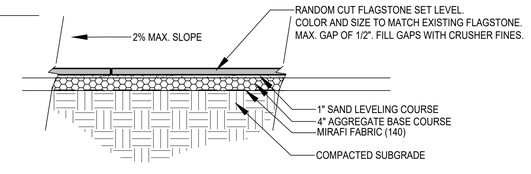
SCALE: NTS



NOTES:
1. BOULDER TO MATCH EXISTING ROCK ON SITE.
2. CONTRACTOR MAY SUBMIT ALTERNATIVES TO HEAVY DUTY U-BOLTS; APPROVAL MUST BE GIVEN PRIOR TO ORDERING AND FABRICATION.

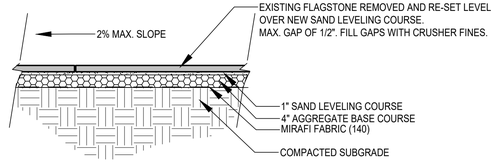
F SD2 BOULDER BOAT TIE-OFF

SCALE:1/2"=1'-0"



G SD2 FLAGSTONE

SCALE: 1/2"=1'-0"



NOTES:
1. CONTRACTOR SHALL REMOVE AND STORE EXISTING FLAGSTONE WITHOUT DAMAGING IT.
2. FINISHED FLAGSTONE GRADE SHALL MATCH PRE-DEMO EXISTING FLAGSTONE GRADE.
3. NEW FLAGSTONE AREA AND FLAGSTONE REPAIR AREA SHALL MATCH FINISH GRADE, FINISH QUALITY, AND MATERIAL TYPES/COLORS.
4. ANY EXISTING FLAGSTONE BROKEN DURING THE REPAIR PROCESS SHALL BE REPLACED WITH NEW FLAGSTONE.

H SD2 FLAGSTONE REPAIR

SCALE: 1/2"=1'-0"

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chinook LANDSCAPE ARCHITECTURE | RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS

		DATE
DESIGN	JDA	10/1/2021
DETAIL	JDA	10/1/2021
CHECK		
SCALE		

THREE MILE CONFLUENCE

SITE LAYOUT DETAILS

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. SD2

Plot Date/Time: 10/04/2021, 12:52:24 AM; E:\DROPBOX\THREE MILE CREEK\90% DESIGN PLANS\CHINOOK CAD\4.1_SHEETS\CHINOOK SITE DETAILS.DWG-LD1-LANDSCAPE DETAILS (2)

GENERAL PLANTING NOTES

OVERALL:

1. THE HYDROLOGIC ZONES WILL BE FLAGGED AND IDENTIFIED BY PROJECT TEAM (INCLUDING RESTORATION ECOLOGIST AND LANDSCAPE ARCHITECT), PRIOR TO PLANTING. HYDROLOGIC ZONES ARE BASED ON RELATIVE DEPTH OF GROUNDWATER.
2. NO SUBSTITUTIONS OF PLANT MATERIAL WILL BE ALLOWED. IF PLANTS ARE SHOWN TO BE UNAVAILABLE, THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT PRIOR TO BID DATE IN WRITING.
3. ALL CONTAINERIZED HERBACEOUS PLANT MATERIALS (GRASSES AND GRASS-LIKES) AND WOODY PLANT MATERIAL WILL BE PLANTED AS SHOWN ON PLANS.

BANK STABILIZATION AREAS:

4. WOODY PLANT MATERIAL INSTALLED WITHIN DESIGNATED BANK STABILIZATION AREAS, WILL BE INSTALLED AT TWO (2) WILLOWS PER LINEAR FOOT AT THE SAME TIME AS BOULDER PLACEMENT.
5. LIVE FASCINES SHOULD BE CONSTRUCTED USING 40 LIVE WILLOW CUTTINGS BUNDLED ON EITHER END WITH BIODEGRADABLE TWINE. EACH BUNDLE SHALL BE APPROXIMATELY 5-FEET IN LENGTH. THE BUNDLES SHALL BE ARRANGED IN ALTERNATING LAYERS SO BOTH ENDS OF THE FASCINES ARE RELATIVELY EVEN AT EACH END. LIVE FASCINES SHALL BE INSTALLED PER DETAIL B ON PAGE LD3.
6. WILLOW CUTTINGS (TRENCHED), WILL BE INSTALLED AT FOUR (4) WILLOW CUTTINGS PER LINEAR FOOT LATERAL TRENCHES WILL BE DUG DOWN TO THE LOW SEASON WATER TABLE AS SHOWN ON PLANS. WILLOW CUTTINGS WILL BE INSTALLED WITHIN THE TRENCH TO THE MEAN ANNUAL MINIMUM WATER TABLE THEN BACKFILLED WITH NATIVE SOIL AND ROCK MATERIAL.
7. WHEN INSTALLING CUTTINGS WITHIN THE BANK STABILIZATION AREAS, IF THE POINT WHERE THE STEM MEETS GROUND AFTER INSTALLATION IS BELOW THE BANKFULL WATER SURFACE ELEVATION (BELOW ZONE 2), THEN THE CONTRACTOR IS RECOMMENDED TO USE *SALIX EXIGUA* (SANDBAR WILLOW); HOWEVER, IF POINT WHERE THE STEM MEETS GROUND AFTER INSTALLATION IS ABOVE BANKFULL (ZONES 2 AND 3), THE CONTRACTOR IS RECOMMENDED TO USE OTHER *SALIX* SPECIES PREFERENTIALLY INSTEAD OF *S. EXIGUA*.
8. THE EXACT LOCATION OF LIVE PLANT MATERIAL WILL BE BASED ON FINAL GRADING, AS DETERMINED BY THE PROJECT LANDSCAPE ARCHITECT AND RESTORATION ECOLOGIST WHO WILL BE ONSITE TO ASSIST WITH PROJECT IMPLEMENTATION.

PLANT MATERIAL INSTALLATION:

9. IF THE CONTRACTOR IS HARVESTING WILLOW CUTTINGS, THE CONTRACTOR SHALL HARVEST MATERIAL FROM PRE-IDENTIFIED SITE-SPECIFIC COLLECTION LOCATIONS COLLECTED ON-SITE OR FROM ELSEWHERE IN GARFIELD COUNTY FOR INSTALLATION. IF PURCHASING CUTTING MATERIAL, CUTTINGS SHALL BE PROFESSIONALLY HARVESTED FROM LOCAL SOURCES AND THROUGH REPUTABLE VENDORS.
10. CUTTINGS SHALL BE HARVESTED NO MORE THAN TWO WEEKS PRIOR TO PLANTING. MATERIAL SHALL BE HARVESTED BETWEEN FALL DORMANCY AND SPRING BUD BREAK (BEFORE LEAVES EMERGE OR AFTER THEY ARE DROPPED) FROM LIVE PLANTS. CUTTINGS SHALL BE 0.5 TO 1.0 INCH IN DIAMETER AND 4 TO 5 FEET IN LENGTH.
11. ALL CUTTINGS SHALL BE INSTALLED TO AN ADEQUATE LENGTH TO REACH SIX INCHES INTO THE THE MEAN ANNUAL MINIMUM WATER TABLE, WITH STEMS TRIMMED SUCH THAT NO FEWER THAN THREE TO FOUR LIVE BUDS REMAINING ABOVE THE GROUND SURFACE.
12. THE STEM WILL BE STRIPPED OF ALL BRANCHES BEFORE CUTTING AND THEN TRIMMED TO THE DESIRED LENGTH AFTER INSTALLATION. THE LOWER (ROOTING) END OF THE STEM WILL BE CUT AT A 45 DEGREE ANGLE AND THE UPPER END WILL BE CUT AT A 90 DEGREE ANGLE. THE CUTTINGS WILL THEN BE PLACED INTO WATER WITHIN TWO MINUTES OF CUTTING AND SOAKED -- -COMPLETELY SUBMERGED --- FOR FIVE TO SEVEN DAYS PRIOR TO PLANTING, BUT NOT MORE THAN 14 DAYS, PRIOR TO PLANTING.
13. A QUALIFIED LANDSCAPE ARCHITECT AND RESTORATION ECOLOGIST WILL DIRECT AND SUPERVISE ALL PLANTINGS.
14. FOR CONTAINERIZED STOCK, ALL PLANTS SHALL BE PRE-INSPECTED BY THE PLANTING CONTRACTOR TO HELP ENSURE QUALITY, PROPER HARDENING (2-WEEK MINIMUM), AND SPECIES CORRECTNESS. ANY DEAD, DYING, STRESSED, OR BADLY "ROOT-BOUND" PLANTS WILL BE REJECTED. PLANTING HOLES SHALL BE HAND DUG OR DRILLED WITH AN AUGER WHERE NECESSARY TO ALLOW DEEP ROOT PENETRATION AND TO MINIMIZE "J-ROOTING." HOLES WILL BE DUG TWICE THE WIDTH AND EQUAL TO THE DEPTH OF THE ROOT BALL OF THE PLANT. HOLES WILL BE WATERED BEFORE PLANTING, THEN FILLED, TAMPING DOWN THE SOIL TO REMOVE AIR POCKETS, AND WATERED AGAIN IMMEDIATELY.
15. ALL DEEP PLANTED COTTONWOODS SHALL BE D60 CONTAINER STOCK INSTALLED USING THE DEEP PLANTING METHOD. D60 COTTONWOOD SHALL BE INSTALLED TO ENSURE ROOTBALL CONTACT WITH THE THE MEAN ANNUAL MINIMUM WATER TABLE AND WITH APPROX. 6-INCHES OF THE ABOVE GROUND STEM IS EXPOSED.
16. 2-INCHES OF FINELY SHREDDED CEDAR MULCH SHALL BE APPLIED OVER THE ROOT BALL OF ALL CONTAINERIZED PLANTS IMMEDIATELY AFTER INSTALLATION.
17. **B**ASED ON MARKET AVAILABILITY, THE RESTORATION ECOLOGIST CAN ALTER PLANT CONTAINER SIZE AND PLACEMENT BASED ON WHAT THE MARKET CAN BARE AND MARKET CONDITION.
18. BASED ON FINAL CONDITIONS AND AT THE DISCRETION OF THE RESTORATION ECOLOGIST OR LANDSCAPE ARCHITECT, PLANTS MATERIALS CAN MOVED BETWEEN THE SWALE AND ZONE 2 AND 3 REVEGETATION AREAS.

GRADING AND SEEDING

19. FOR ALL ZONES, THE FINISH GRADES WILL BE LEFT NATURAL AND ROUGH WITH NO SMOOTH SURFACES, RIGHT ANGLES, OR STRAIGHT EDGES.
20. ALL WORK AREAS (OTHER THAN THE IMMEDIATE CHANNEL BANKS) WILL BE LOOSENED TO A DEPTH OF 6 INCHES BEFORE PLANTING AND SEEDING.

20.1. THE FORMULA FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS).

21. ALL SEED RECOMMENDATIONS ARE BASED ON THE 140 PLS PER SQUARE FOOT, AS DETERMINED ON A PERCENTAGE BASIS BY SPECIES. ALL NATURAL FLOODPLAIN AREAS (INCLUDING THOSE NOT DISTURBED BY RESTORATION ACTIVITIES) AND AREAS DISTURBED BY RESTORATION ACTIVITIES INCLUDING CONSTRUCTION WORK AREAS WILL BE BROADCAST SEEDED WITH THE APPROPRIATE SEED MIX SPECIFIED FOR EACH ZONE, AND SHALL REPRESENT THE SPECIES AND QUANTITIES PRESENTED WITHIN THE SEEDING TABLES. SEEDING WILL ONLY BE PERFORMED BETWEEN SEPTEMBER 1ST AND WHEN THE GROUND FREEZES AND WHEN THE GROUND THAWS AND JUNE 1ST, UNLESS APPROVED BY RESTORATION ECOLOGIST.
22. RESTORATION ECOLOGIST AND LANDSCAPE ARCHITECT SHALL DETERMINE THE LOCATIONS OF FOUR SOIL TESTS TO OCCUR BEFORE ANY SOIL AMENDMENT IS APPLIED OR SEED SPREAD.
23. ONE CUBIC YARD OF WEED FREE ORGANIC COMPOST, OR APPROVED SUBSTITUTION SHALL BE INCORPORATED TO 6" DEPTH AS NEEDED FOLLOWING REVIEW OF THE SOIL TESTS. RESTORATION ECOLOGIST AND LANDSCAPE ARCHITECT MUST APPROVE APPLICATION OF COMPOST PRIOR TO ITS INSTALLATION.
24. NATIVE UPLAND AND WETLAND SOIL WILL NOT BE IMPORTED DUE TO THE POTENTIAL FOR SPREAD OF NOXIOUS WEEDS.
25. THE SEED SHALL BE APPLIED THROUGH BROADCAST SEEDING, HAND-RAKED TO ⅛-TO ¼-INCH DEPTH TO MINIMIZE SEED LOSS, THEN SURFACE-PRESSED THROUGH A WATER-FILLED PRESS-WHEEL TO FACILITATE GOOD SEED-TO-SOIL CONTACT. ALL SEED SHALL BE LABELED AS "CERTIFIED" AND SHALL NOT INCLUDE THE PRESENCE OF NOXIOUS OR INVASIVE SPECIES PROHIBITED UNDER THE COLORADO SEED ACT (AS INDICATED ON THE TAG BY THE COLORADO SEED GROWERS ASSOCIATION APPROVED LABELING). ALL SEED WILL BE INSPECTED BY THE RESTORATION ECOLOGIST AND/OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION AND ALL TAGS MUST BE MAINTAINED FOR DOCUMENTATION BY THE OWNER, OR THEIR DESIGNEE. PRIOR TO DELIVERY, SEED SHALL BE PROCESSED BY THE SEED PROVIDER ON A "GRAVITY-TABLE" TO REMOVE NON-TARGET SEED TYPES, SUCH AS YELLOW SWEETCLOVER, ALFALFA, WOOD SORREL, AND OTHER POTENTIALLY INVASIVE SPECIES.
26. ONCE THE SEED HAS BEEN PROPERLY APPLIED TO THE SITE, THE CONTRACTOR SHALL APPLY BIODEGRADABLE EROSION CONTROL BLANKET WITHIN 24 HOURS OF SEED APPLICATION AS NECESSARY. KOIRMAT 400 SHALL BE INSTALLED IN AREAS PLANTED WITH WETLAND PLUGS. NEDIA S400B STRAW BLANKET SHALL BE USED ON ALL OTHER SEEDED AREAS THROUGHOUT THE REMAINDER OF THE SITE.

IRRIGATION:

27. ALL #15 CONTAINER TREES SHALL BE WATERED BY THE CONTRACTOR USING GATOR BAGS. ALL OTHER LARGE CONTAINERIZED WOODY PLANT MATERIALS (D60 CONTAINERS), SHALL BE WATERED BY THE CONTRACTOR BY HAND, WATERING TRUCK, WATER TANK, HOSE, OR PUMP, AS NEEDED BY AMBIENT TEMPERATURE AND SOIL MOISTURE. WATERING SHALL FOLLOW THE GENERAL PARAMETERS BELOW. WITHIN YEAR ONE, THE PLANT MATERIALS SHALL BE WATERED AT THE TIME OF PLANTING WITH A MINIMUM OF 5-GALLONS OF WATER PER PLANT, THEN THREE TIMES A WEEK FOR THE FIRST THREE WEEKS. AFTER THE FIRST THREE WEEKS, THE PLANTS SHALL BE WATERED ONCE A WEEK UNTIL SEPTEMBER 1ST. AFTER SEPTEMBER 1ST, THE PLANTS SHALL BE WATERED ONCE EVERY TWO WEEKS UNTIL THE FIRST FROST. WITHIN THE SECOND YEAR, THE PLANTS SHALL BE WATERED ONCE A WEEK FROM APRIL TO SEPTEMBER. AFTER SEPTEMBER 1ST, THE PLANTS SHALL BE WATERED ONCE EVERY TWO WEEKS UNTIL THE FIRST FROST. THE CONTRACTOR SHALL MONITOR THE PLANTS, SOIL MOISTURE, AMBIENT TEMPERATURES, AND PRECIPITATION OF THE PLANT MATERIALS TO ENSURE THAT THE PLANTS ARE WATERED APPROPRIATELY.

    AT EACH WATERING, WOODY PLANTS SHALL RECEIVE THE FOLLOWING MINIMUM AMOUNTS OF WATER BASED ON CONTAINER SIZE OR AN AMOUNT SUFFICIENT TO SATURATE THE SOIL TO A DEPTH OF 12 INCHES:

    a. D60 SIZED CONTAINERS SHALL RECEIVE 2.5 GALLONS;

    b. #15 CONTAINER TREE SHALL RECEIVE 20 GALLONS.

22. CONTRACTOR SHALL INSTALL PROTECTION FENCE AROUND ALL #15 CONTAINER TREES TO PROTECT THE MATERIAL FROM WILDLIFE PREDATION. PROACTIVELY OR UPON SIGNS OF DAMAGE, FENCING SHALL ALSO BE APPLIED TOD60 WOODY SHRUBS. FENCING SHALL BE AT LEAST A 48-INCH HIGH 2-INCH X 4-INCH WIRE MESH. CAGES SHALL BE 18 INCHES IN DIAMETER AND FULLY ENCIRCLE THE PLANT. THE CAGE SHALL BE STAKED TO THE GROUND WITH EITHER TWO 6-FOOT INDUSTRIAL GRADE GREEN T-POSTS WIRED TO THE WIRE MESH OR THREE 6-FOOT REBAR RODS WOVEN THROUGH THE WIRE MESH. RECOMMEND ENGAGE A FENCING CONTRACTOR TO PROVIDE RECOMMENDATIONS FOR THE MOST EFFICIENT AND EFFECTIVE WILDLIFE EXCLUSION METHODS FOR EACH PROJECT SITE.
23. ALL TREES ARE TO BE PROTECTED DURING CONSTRUCTION UNLESS IDENTIFIED ON THE PLANS FOR REMOVAL ADD FLAGGED/PAINTED FOR REMOVAL BY OWNER/RESTORATION ECOLOGIST.
24. REMOVAL OF TREES FOR THE PROJECT WILL NEED TO OCCUR OUTSIDE OF NESTING SEASON FOR MIGRATORY BIRDS (BETWEEN SEPTEMBER 1ST AND MARCH 31ST). IF THIS IS NOT POSSIBLE, THEN AN ACTIVE NEST SURVEY MAY BE REQUIRED.
25. NO EQUIPMENT WILL BE ALLOWED IN THE RESTORATION AREA AFTER SEEDING OR PLANTING.
26. IN THE EVENT THAT CONSTRUCTION ACTIVITIES IMPACT OR DAMAGE TREES NOT INTENDED TO BE REMOVED, THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR THE MITIGATION REQUIREMENTS AND MAY PAY DAMAGES UP TO THREE TIMES MARKET VALUE OF THE TREE AS DETERMINED BY THE REPLACEMENT COST OF THE TREE.
27. IN AN ATTEMPT TO AVOID THE CONTINUED SPREADING OF NOXIOUS WEEDS, ALL DISCRETE POPULATIONS OF COLORADO LIST A OR B NOXIOUS WEEDS FOUND IN OR WITHIN 100 FEET OF THE RESTORATION AREA WILL BE SPRAYED WITH THE APPROPRIATE HERBICIDE(S) BY A LICENSED APPLICATOR PRIOR TO CONSTRUCTION IN COORDINATION WITH THE APPROPRIATE WEED REGULATIONS AND LOCAL WEED COORDINATOR.
28. MUCH OF THE ECOTYPIC (I.E. ADAPTED TO LOCAL SITE CONDITIONS) PLANT MATERIAL CAN BE PURCHASED AT LOCAL NATIVE PLANT NURSERIES. IF SPECIFIED ECOTYPIC PLANT MATERIALS ARE UNABLE TO BE PURCHASED AT LOCAL NURSERIES, THEN APPROPRIATE COLORADO NURSERIES AND SEED PROVIDERS SHALL BE RECOMMENDED BY RESTORATION ECOLOGIST AND APPROVED BY LANDSCAPE ARCHITECT.
29. THE USE OF CHEMICALS, SUCH AS SOIL STABILIZERS, DUST PALLIATIVES, HERBICIDES, GROWTH INHIBITORS, DEICING SALTS, ETC., SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED APPLICATION RATES, FREQUENCY, AND INSTRUCTIONS. THESE CHEMICALS SHALL NOT BE USED, STORED, OR STOCKPILED WITHIN 50 HORIZONTAL FEET OF THE CREEK OR OTHER AQUATIC HABITATS.
30. CONSTRUCTION EQUIPMENT, FUELS, AND OTHER PETROLEUM PRODUCTS SHALL NOT BE STORED OR STOCKPILES WITH 50 FEET OF THE CREEK OR OTHER AQUATIC HABITATS. FUELING SHALL ONLY OCCUR WITHIN APPROVED DESIGNATED AREAS.

INVASIVE PLANT AND WEED MANAGEMENT:

31. WEED CONTROL IS FACILITATED BY THE GENERAL CONTRACTOR IN ACCORDANCE WITH THE APPROPRIATE WEED REGULATIONS AND LOCAL WEED COORDINATOR. If HERBICIDE IS REQUIRED, SHALL BE APPLIED USING WELL-MAINTAINED SPRAYING EQUIPMENT BY INDIVIDUALS WORKING FOR CONTRACTOR WHO ARE APPROPRIATELY LICENSED BY THE APPROPRIATE STATE AND/OR FEDERAL AGENCY HAVING JURISDICTION OVER SUCH APPLICATIONS. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO STOP WORK IMMEDIATELY AND TO NOTIFY ENGINEER OR RESTORATION ECOLOGIST IF ANY WEATHER OR OTHER PHYSICAL CONDITION EXISTS WHICH WOULD MAKE THE APPLICATION OF HERBICIDES INAPPROPRIATE OR THE OCCURRENCE OF SIGNIFICANT MISHAP INCLUDING SPILLS, MISAPPLICATION, OR SPRAY-DRIFT.
32. HERBICIDE SHALL BE DELIVERED IN ORIGINAL, UNOPENED CONTAINERS, UNLESS PROVISIONS ARE MADE AND APPROVED BY ENGINEER OR RESTORATION ECOLOGIST FOR BULK DELIVERIES TO THE SITE OF THE WORK. ALL HERBICIDES WILL BE STORED IN A MANNER THAT SATISFIES LOCAL, STATE AND FEDERAL GUIDELINES FOR HERBICIDE STORAGE. HERBICIDES SHALL NOT BE APPLIED DURING PERIODS WHEN WIND OR OTHER PHYSICAL CONDITIONS CAUSE THE HERBICIDES OR CHEMICALS TO BE TRANSPORTED A DISTANCE OF MORE THAN FIVE (5) FEET FROM THE IMMEDIATE AREA WHERE THEY ARE BEING PLACED.
33. ALL DISCRETE POPULATIONS OF COLORADO LIST A OR B NOXIOUS WEEDS FOUND IN OR WITHIN 100 FEET OF THE RESTORATION AREA WILL BE SPRAYED WITH THE APPROPRIATE HERBICIDE(S) BY A LICENSED APPLICATOR PRIOR TO CONSTRUCTION IN COORDINATION WITH THE APPROPRIATE WEED REGULATIONS AND LOCAL WEED COORDINATOR. SEE RECOMMENDED HERBICIDES FOR EACH SPECIES LISTED BELOW AND IN TABLES 1 AND 2 OR USE BEST JUDGEMENT BY THE LICENSED APPLICATOR OR ECOLOGIST ON SITE. ALL LABEL INSTRUCTIONS WILL BE FOLLOWED BY THE HERBICIDE APPLICATOR.
34. WEED AND DEBRIS REMOVAL: ALL GROUND AREAS TO BE PLANTED SHALL BE CLEANED OF ALL WEEDS AND DEBRIS PRIOR TO ANY SOIL PREPARATION OR GRADING WORK. ANY GROWING NOXIOUS WEEDS ON THE SITE SHALL BE PRETREATED WITH APPROVED HERBICIDE PRIOR TO GRADING. ANNUAL OR BIENNIAL WEEDS OVER TWO (2) FEET TALL SHALL BE MOWED, RAKED, AND REMOVED PRIOR TO GRADING. WEEDS AND DEBRIS SHALL BE DISPOSED OF OFF THE SITE.
35. NATIVE UPLAND SOIL SHALL BE OBTAINED WITHIN GARFIELD COUNTY IN ORDER TO HELP CONTAIN INVASIVE SPECIES SPREAD.
36. PREVENTION SHALL ALWAYS BE PRACTICED AND IS EFFECTIVE ON ALL SPECIES OF WEEDS. IT IS ACCOMPLISHED THROUGH GOOD LAND STEWARDSHIP, PLANTING WEED-FREE SEED, AVOIDING PLANTING OR SPREADING INVASIVE WEED SPECIES VIA MACHINERY OR CLOTHING, USING WEED-FREE SEED MULCH AND EROSION CONTROL, MINIMIZING SOIL DISTURBANCE, USING CLEAN EQUIPMENT AND TAKING LEGAL MEASURES SUCH AS QUARANTINES AND WEED LAWS.
37. AN INTEGRATED APPROACH TO NOXIOUS WEED MANAGEMENT IS IMPORTANT BECAUSE NO SINGLE TECHNIQUE WILL BE EFFECTIVE. AN INTEGRATED APPROACH TO NOXIOUS WEED MANAGAMENT WILL INCLUDE:

    a. CULTURAL MANAGEMENT INCLUDES METHODS OR MANAGEMENT PRACTICES WHICH FAVOR THE GROWTH OF DESIRABLE PLANTS NATIVE PLANTS OVER NOXIOUS WEEDS, INCLUDING MAINTAINING OPTIMUM FERTILITY AND PLANT MOISTURE STATUS IN AN AREA, PLANTING AT OPTIMUM DENSITY AND SPATIAL ARRANGEMENT IN AN AREA, AND PLANTING SPECIES MOST SUITED TO A PARTICULAR AREA. TECHNIQUES INCLUDE DENSE SEEDING, FERTILIZATION, MULCHING, CAREFUL IRRIGATION PRACTICES, SENSIBLE GRAZING REGIMES AND IMPROVED LAND MANAGEMENT PRACTICES.

    b. MECHANICAL MANAGEMENT METHODS OR PRACTICES THAT PHYSICALLY DISRUPT PLANT GROWTH AND INCLUDE TILLING, MOWING, BURNING, FLOODING, MULCHING, HAND-PULLING, SHOVELING, HOEING AND CHOPPING. MECHANICAL METHODS ARE MOST EFFECTIVE FOR ANNUAL AND BIENNIAL WEEDS AND LESS EFFECTIVE FOR PERENNIALS. EQUIPMENT SHALL BE CLEANED THOROUGHLY BEFORE MOVING TO UNINFESTED AREAS TO PREVENT THE SPREAD OF WEEDS. CULTURAL PRACTICES WILL BE UNDERTAKEN IN A MANNER THAT IS IN ALIGNMENT WITH COUNTY REGULATIONS AND RECOMMENDATIONS.

    c. BIOLOGICAL MANAGEMENT INVOLVES THE USE OF ORGANISMS SUCH AS INSECTS AND ANIMALS TO DISRUPT THE GROWTH OF NOXIOUS WEEDS. IT RARELY PROVIDES 100% CONTROL AND MUST BE INCORPORATED WITH OTHER METHODS FOR SUCCESSFUL MANAGEMENT. INSECT SPECIES DEVELOPED TO MITIGATE SPECIFIC NOXIOUS PLANTS ARE AVAILABLE TO THE PUBLIC FREE OF CHARGE FROM THE COLORADO DEPARTMENT OF AGRICULTURE CONSERVATION SERVICES DIVISION, BIOLOGICAL CONTROL PROGRAM, 750 37.8 RD., PALISADE, CO 81526; 866- 324-2963 OR 970-464-7916.

    d. CHEMICAL CONTROL: HERBICIDE APPLICATION. IT IS EXTREMELY IMPORTANT TO TREAT SMALL INFESTATIONS OF CERTAIN WEEDS (LIST A AND B SPECIES TO BE ERADICATED) AS SOON AS POSSIBLE. HERBICIDES ARE MOST EFFECTIVE WHEN SPRAYED AT SPECIFIC STAGES DURING THE LIFE CYCLE OF THE WEED. TO ENSURE THAT SMALL INFESTATIONS OF NOXIOUS WEEDS ARE CONTROLLED OR ERADICATED EFFECTIVELY, IT IS EXTREMELY IMPORTANT TO TAKE IMMEDIATE ACTION ON CERTAIN WEED PATCHES.

8. GARFIELD COUNTY VEGETATION MANAGEMENT IS COMMITTED TO USING BEST MANAGEMENT PRACTICES WHEN APPLYING HERBICIDES TO CONTROL NOXIOUS WEEDS. THESE PRACTICES INCLUDE FOLLOWING LABEL DIRECTIONS AND SELECTIVE SPOT SPRAYING TO ENSURE DIRECT TREATMENT OF NOXIOUS WEEDS AND PROTECTION OF NATIVE VEGETATION AND WATER RESOURCES. ONLY RIPARIAN SAFE AQUATIC-LABELED HERBICIDES CAN BE USED WITHIN THE RIPARIAN ZONE DURING TREATMENT. ALWAYS READ AND FOLLOW HERBICIDE LABEL AND SAFETY INSTRUCTIONS. THE HERBICIDE LABEL IS THE LAW.
9. CHANGES IN HERBICIDE REGISTRATIONS OCCUR CONSTANTLY. THE HERBICIDE LABEL IS THE LEGAL DOCUMENT ON HERBICIDE USE. READ AND FOLLOW ALL DIRECTIONS CAREFULLY. THE USE OF AN HERBICIDE IN A MANNER NOT CONSISTENT WITH THE LABEL CAN LEAD TO INJURY OF CROPS, HUMANS, ANIMALS AND THE ENVIRONMENT.

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811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

chinook LANDSCAPE ARCHITECTURE

RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
1				

		DATE
DESIGN	BAP	9/30/2021
DETAIL	BAP	9/30/2021
CHECK		
SCALE		

THREE MILE CONFLUENCE

LANDSCAPE GENERAL NOTES

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. L1

SITE SPECIFIC NOXIOUS WEED CONTROL

THE FOLLOWING TABLE INCLUDES THE STATE LISTED NOXIOUS WEEDS CURRENTLY FOUND AT THE PROJECT SITE THAT NEED TO BE REMOVED:

Bromus tectorum	cheatgrass	Colorado State List C Noxious
Cynoglossum officinale	houndstongue	Colorado State List B Noxious
Elaeagnus angustifolia	Russian olive	Colorado State List B Noxious
Poa bulbosa	bulbous bluegrass	Colorado State List C Noxious
Tanacetum vulgare	common tansy	Colorado State List B Noxious
Ulmus pumila	Siberian elm	Colorado State Watch List Species

CHEATGRASS CONTROL (LIST C):

1. MECHANICAL CONTROL:
   a. DO NOT MOW OR CHOP CHEATGRASS AREAS; THEY LEAVE ROOTS BEHIND, STIMULATE FLOWER PRODUCTION, DISPERSE SEEDS, AND EXPAND THE SIZE OF THE INFESTED AREA.
   b. COLLECT, BAG, AND DISPOSE OF OR DESTROY FLOWERS; SEEDS CAN MATURE AND GERMINATE IF LEFT.
   c. TILLING MUST BE DEEPER THAN 6 INCHES TO WORK.
2. CHEMICAL CONTROL:
   a. IF DEEMED NECESSARY, APPLY A *PSEUDOMONAS FLUORESCENS* D7 HERBICIDE TREATMENT AS IT IS KNOW TO INHIBIT CHEATGRASS AND IS CURRENTLY APPROVED BY EPA AND COLORADO.
   b. HERBICIDE RECOMMENDATIONS TO CONTROL CHEATGRASS IN PASTURES AND RANGELAND ARE FOUND AT: HTTPS://GOO.GL/TVWNV9.
   c. THE BEST TIME TO TREAT IS IN THE FALL BUT CAN BE TREATED IN OTHER SEASONS IN ADDITION.
   d. FOLLOW THE LABEL FOR EXACT HERBICIDE APPLICATION RATES. CONSULT LOCAL TURF AND ORNAMENTAL EXPERTS FOR RESIDENTIAL SETTINGS. ALWAYS READ, UNDERSTAND, AND FOLLOW THE LABEL DIRECTIONS.





HOUNDSTONGUE CONTROL (LIST B):

1. MECHANICAL CONTROL:
   a. CUT OR PULL PLANTS AND REMOVE ENTIRE ROOT CROWN WHEN PLANTS ARE IN THE ROSETTE STAGE.
   b. TO REDUCE SEED PRODUCTION, MOW OR CUT FLOWERING STEMS BEFORE SEED NUTLETS DEVELOP, THIS CAN SIGNIFICANTLY REDUCE SEED PRODUCTION
2. CHEMICAL CONTROL:
   a. USE RECOMMENDED HERBICIDES INCLUDE METSULFURON (ESCORT XP) + 2,4-D; CHLORSULFURON* (TELAR) + 2, 4-D; METSULFURON + CHLORSULFURON (CIMARRON X-TRA).
   b. APPLY IN SPRING ROSETTE TO EARLY FLOWER GROWTH STAGES. IF PERSIST TREAT AGAIN SUMMER AND/OR FALL. ALWAYS APPLY HERBICIDES FOLLOWING GUIDANCE ON THE HERBICIDE LABEL.




REFERENCES:
USDA FOREST SERVICE. 2017. SOUTHWEST REGION, FIELD GUIDE FOR MANAGING SIBERIAN ELM IN THE SOUTHWEST. AVAILABLE AT https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd563046.pdf (ACCESSED JUNE 2020).

USDA, NRCS. 2020. THE PLANTS DATABASE (HTTP://PLANTS.USDA.GOV, 29 JUNE 2020). NATIONAL PLANT DATA TEAM, GREENSBORO, NC 27401-4901 USA.

PHOTOS: UNLESS OTHERWISE NOTED, PHOTOS ARE FROM THE COLORADO DEPARTMENT OF AGRICULTURE - CONSERVATION SERVICES AND COLORADO STATE UNIVERSITY

RUSSIAN OLIVE CONTROL (LIST B):

1. CULTURAL CONTROL: PREVENT ESTABLISHMENT OF NEW TREES BY REMOVING SEEDLINGS AND SAPLINGS BEFORE THEY MATURE.
2. MECHANICAL CONTROL: SAPLINGS CAN BE PULLED WITH A WEED-WRENCH OR CUT WITH BRUSH-CUTTERS. TREES CAN BE GIRDLED OR CUT WITH CHAINSAWS. HOWEVER, STUMP EXCAVATION WITHOUT REMOVING ALL PARTS OF THE ROOTS CAN RESULT IN ROOT SPROUTING. TREATING CUT-STUMPS WITH AN HERBICIDE CAN ELIMINATE SPROUTING.
3. CHEMICAL CONTROL:
   a. RECOMMENDED HERBICIDES FOR CUT-STUMP TREATMENT IN LATE SUMMER TO FALL INCLUDE TRICLOPYR (GARLON 4, REMEDY); GLYPHOSATE (RODEO - APPROVED AQUATIC LABEL). PLEASE NOTE THAT GLYPHOSATE IS NON-SELECTIVE AND WILL KILL ANY VEGETATION CONTACTED. ALWAYS APPLY HERBICIDES FOLLOWING GUIDANCE ON THE HERBICIDE LABEL.




BULBOUS BLUEGRASS CONTROL (LIST C):

1. MECHANICAL CONTROL:
   a. PERFORM SPRING TILLAGE AS IT IS VERY EFFECTIVE IN CONTROLLING BULBOUS BLUEGRASS. FALL TILLAGE IS LESS EFFECTIVE.
   b. HAYING AND MOWING ARE NOT EFFECTIVE BECAUSE THE SEED HEADS ARE FREQUENTLY SHORTER THAN THE CUTTING HEIGHT.
2. CHEMICAL CONTROL:
   a. IF DEEMED NECESSARY, THERE IS A WIDE RANGE OF CHEMICALS AVAILABLE TO CONTROL BULBOUS BLUEGRASS. THESE INCLUDE HERBICIDES THAT CONTAIN THE ACTIVE INGREDIENT GLYPHOSATE (E.G., ROUNDUP), RIMSULFURON (E.G., MATRIX), SULFOMETURON METHYL (E.G., LANDMARK XP), OR SULFOSULFURON (E.G., OUTRIDER). CONTACT YOUR LOCAL AGRICULTURAL EXTENSION AGENT OR COUNTY WEED SPECIALIST TO LEARN WHAT PRODUCTS WORK BEST IN YOUR AREA AND HOW TO USE THEM PROPERLY.





TABLE 1. TREATMENT METHODS AND TIMING OF TREATMENT FOR CO FRONT RANGE WEEDS. AN * INDICATES TO TREAT AGAIN IF THE SPECIES IS GROWING DURING THE INDICATED SEASON.

SCIENTIFIC NAME	COMMON NAME	SPRING TREATMENT	SUMMER TREATMENT	FALL TREATMENT
BROMUS TECTORUM	CHEATGRASS	N/A	N/A	HERBICIDES
CYNOGLOSSUM OFFICINALE	HOUNDSTONGUE	CUT, PULL, HERBICIDE	HERBICIDE*	HERBICIDE*
ELAEAGNUS ANGUSTIFOLIA	RUSSIAN OLIVE	CUT AND HERBICIDE	CUT AND HERBICIDE	CUT AND HERBICIDE
POA BULBOSA	BULBOUS BLUEGRASS	TILL, HERBICIDE	N/A	HERBICIDE
TANACETUM VULGARE	COMMON TANSY	HERBICIDE	HERBICIDE	N/A
ULMUS PUMILA	SIBERIAN ELM	CUT/GIRDLE/PULL AND HERBICIDE	CUT AND HERBICIDE	HERBICIDE*

COMMON TANSY CONTROL (LIST B):

1. MECHANICAL CONTROL:
   a. REMOVE ALL ROOT BIOMASS OR SEVER ROOTS BELOW THE SOIL SURFACE EARLY IN THE SEASON TO REDUCE ENERGY STORAGE AND BEFORE SEED PRODUCTION.
   b. DO NOT MOW, CHOP, HAND-PULL, OR DEADHEAD PLANTS. THIS LEAVES ROOTS BEHIND AND STIMULATES FLOWER PRODUCTION, REQUIRING CONSECUTIVE YEARS OF SEASON-LONG TREATMENTS. MOWING DISPERSES THE SEEDS AND EXPANDS THE INFESTED AREA.
   c. COLLECT, BAG, AND DISPOSE OF OR DESTROY ALL FLOWERS; SEEDS COULD MATURE AND GERMINATE IF LEFT ON SITE ON THE GROUND.
2. CHEMICAL CONTROL:
   a. RECOMMENDED HERBICIDES FOR TREATMENT WHEN IN THE FLOWER BUD TO FLOWERING GROWTH STAGES (LATE SPRING TO MID-SUMMER) INCLUDE AMINOCYCLOPYRACHLOR + CHLORSULFURON (PERSPECTIVE); AMINOPYRADLID + METSULFURON (OPENSIGHT); OR METSULFURON (ESCORT XP). ALWAYS APPLY HERBICIDES FOLLOWING GUIDANCE ON THE HERBICIDE LABEL.
   b. ADDITIONAL HERBICIDE RECOMMENDATIONS TO CONTROL COMMON TANSY IN PASTURES AND RANGELAND ARE FOUND AT: HTTPS://GOO.GL/TVWNV9. FOLLOW THE LABEL FOR EXACT RATES.





SIBERIAN ELM CONTROL (COLORADO WATCH LIST):

1. CULTURAL CONTROL:
   a. PREVENT ESTABLISHMENT OF NEW TREES BY REMOVING SEEDLINGS AND SAPLINGS BEFORE THEY MATURE.
2. MECHANICAL CONTROL:
   a. GIRDLE STEM TO KILL TREES, HAND PULL SEEDLINGS, AND REMOVE SMALL TREES WITH A WEED WRENCH.
3. CHEMICAL CONTROL:
   a. IF DEEMED NECESSARY, THERE ARE SEVERAL REGISTERED PRODUCTS THAT CAN BE APPLIED IN A VARIETY OF WAYS INCLUDING (1) FOLIAGE APPLICATION, (2) SOIL APPLICATION, (3) TOPICAL APPLICATION TO CUT-STEMS AND STUMPS, AND (4) BASAL SPRAYING. HERBICIDE SPRAYING IS RARELY SUCCESSFUL AS A ONE-TIME TREATMENT SO IT SHALL BE ANTICIPATED THAT TREATED AREAS WILL NEED TO BE MONITORED FOR SEVERAL YEARS AND RE-SPROUTS AND NEW SEEDLINGS WILL REQUIRE FURTHER TREATMENT. THE RECOMMENDED HERBICIDES ARE: TRICLOPYR, GLYPHOSPATE, IMAZAPYR, AMINOCYCLOPYRACHLOR + IMAZAPYR + METSULFURON METHYL. ALWAYS READ AND FOLLOW HERBICIDE LABEL AND SAFETY INSTRUCTIONS.

TABLE 2: PROVEN HERBICIDES TO USE IN RIPARIAN AREAS, RIPARIAN SAFE, AND OUTSIDE RIPARIAN ZONE, BY AT LEAST 100 FT FROM WATER LINE. ALL HERBICIDE USED IN RIPARIAN AREA SHOULD HAVE AN APPROVED RIPARIAN SAFE LABEL.

SCIENTIFIC NAME	COMMON NAME	RIPARIAN SAFE HERBICIDES	OUTSIDE (100FT) RIPARIAN ZONE HERBICIDES
BROMUS TECTORUM	CHEATGRASS	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL)	PSEUDOMONAS FLUORESCENS D7
CYNOGLOSSUM OFFICINALE	HOUNDSTONGUE	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL), 2, 4-D	METSULFURON (ESCORT XP) + 2,4-D; CHLORSULFURON (TELAR) +; METSULFURON + CHLORSULFURON (CIMARRON X-TRA)
ELAEAGNUS ANGUSTIFOLIA	RUSSIAN OLIVE	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL), IMAZAPYR	TRICLOPYR (GARLON 4, REMEDY)
POA BULBOSA	BULBOUS BLUEGRASS	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL)	GLYPHOSATE (ROUNDUP), RIMSULFURON (MATRIX), SULFOMETURON METHYL (LANDMARK XP), OR SULFOSULFURON (OUTRIDER)
TANACETUM VULGARE	COMMON TANSY	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL)	AMINOCYCLOPYRACHLOR + CHLORSULFURON (PERSPECTIVE); AMINOPYRADLID + METSULFURON (OPENSIGHT); OR METSULFURON (ESCORT XP)
ULMUS PUMILA	SIBERIAN ELM	GLYPHOSATE (RODEO – APPROVED AQUATIC LABEL), IMAZAPYR	TRICLOPYR, GLYPHOSPATE, IMAZAPYR, AMINOCYCLOPYRACHLOR + IMAZAPYR + METSULFURON METHYL

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chinook LANDSCAPE ARCHITECTURE | RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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THREE MILE CONFLUENCE

NOXIOUS WEED CONTROL

JOB NO. 191–025.000
REVISION NO. ----
SHEET NO. L2

PLANTING SCHEDULE

SEED MIXES

Zone 3: Native Upland Seed Mix (approximately 0.25 AC)						
Scientific Name	**Common Name**	**Recommended Variety**	**Percent mix**	**Broadcast Seeds/sq ft**	**Seed Weight per PLS/lb**	**PLS LB Seed/ac**
Achnatherum hymenoides	Indian ricegrass	Rimrock	5	7	181,741	1.68
Asclepias hallii	Hall's milkweed		2.5	3.5	57,000	2.67
Bouteloua gracilis	blue grama		7.5	10.5	724,000	0.63
Bromus marginatus	mountain brome	Garnet	18	25.2	104,843	10.47
Cleome serrulata	Rocky Mountain beeplant		2.5	3.5	87,250	1.75
Elymus lanceolatus ssp. lanceolatus	thickspike wheatgrass	Critana	12	16.8	155,350	4.71
Elymus trachcaulus ssp. trachycaulus	slender wheatgrass	San Luis; Pryor	15	21	147,500	6.20
Festuca Idahoensis	Idaho fescue	Joseph	7	9.8	472,500	0.90
Heliomeris multiflora	showy Goldeneye		2.5	3.5	566,875	0.27
Pascopyron smithii	western wheatgrass	Arriba; Rosana	18	25.2	133,000	8.25
Poa palustris	fowl wheatgrass	vns	5	7	2,078,000	0.15
Pseudoroegneria spicata	bluebunch wheatgrass	Secar	5	7	140,000	2.18
Total			**100**	**140**		**39.86**

Zone 1 & 2: Native Wetland & Riparian Seed Mix (approximately 0.29 AC)						
Scientific Name	**Common Name**	**Recommended Variety**	**Percent mix**	**Broadcast Seeds/sq ft**	**Seed Weight per PLS/lb**	**PLS LB Seed/ac**
Calamagrostis canadensis	bluejoint reedgrass	vns	10	14	4,114,583	0.15
Deschampsia cespitosa	tufted hairgrass	vns	12	16.8	1,276,000	0.57
Elymus lanceolatus ssp. psammophilus	streambank wheatgrass	Streamcrest	15	21	161,500	5.66
Elymus trachcaulus ssp. trachycaulus	slender wheatgrass	San Luis; Pryor	7	9.8	147,500	2.89
Gallardia aristata	blanket flower	vns	2.5	3.5	132,000	1.16
Glyceria striata	fowl mannagrass	vns	10	14	170,000	3.59
Agastache urticifolia	netleaf giant hyssop	vns	2.5	3.5	485,268	0.31
Juncus arcticus ssp. littoralis	mountain rush	vns	5	7	6,950,000	0.04
Juncus ensifolius	threestem rush	vns	4	5.6	13,457,000	0.02
Juncus torreyi	Torrey rush	vns	5	7	12,150,000	0.03
Nassella viridula	green needlegrass	Lodorm	7	9.8	152,117	2.81
Penstemon strictus	Rocky Mountain penstemon	Bandera	2.5	3.5	692,000	0.22
Poa palustris	fowl wheatgrass	vns	12	16.8	2,078,000	0.35
Solidago canadensis	Canada goldenrod	vns	2.5	3.5	700,000	0.22
Triglochin maritima	arrowgrass	vns	3	4.2	469,000	0.39
Total			**100**	**140**		**18.41**

Native Swale Seed Mix (approximately 0.11 AC)						
Scientific Name	**Common Name**	**Recommended Variety**	**Percent mix**	**Broadcast Seeds/sq ft**	**Seed Weight per PLS/lb**	**PLS LB Seed/ac**
Agastache urticifolia	netleaf giant hyssop	vns	2.5	3.5	485,268	0.31
Beckmannia syzigachne	American slough grass	vns	5	7	240,000	1.27
Deschampsia cespitosa	tufted hairgrass	vns	16	22.4	1,276,000	0.76
Elymus lanceolatus ssp. psammophilus	streambank wheatgrass	Streamcrest	16	22.4	161,500	6.04
Elymus trachcaulus ssp. trachycaulus	slender wheatgrass	San Luis; Pryor	7	9.8	147,500	2.89
Gallardia aristata	blanket flower	vns	2.5	3.5	132,000	1.16
Juncus arcticus ssp. littoralis	mountain rush	vns	5	7	6,950,000	0.04
Juncus ensifolius	threestem rush	vns	5	7	13,457,000	0.02
Nassella viridula	green needlegrass	Lodorm	7	9.8	152,117	2.81
Penstemon strictus	Rocky Mountain penstemon	Bandera	2.5	3.5	692,000	0.22
Poa palustris	fowl wheatgrass	vns	17	23.8	2,078,000	0.50
Solidago canadensis	Canada goldenrod	vns	2.5	3.5	700,000	0.22
Triglochin maritima	arrowgrass	vns	12	16.8	469,000	1.56
Total			**100**	**140**		**17.81**

Willow Planting (approximately 1,780 total plants)						
Scientific Name	**Common Name**	**Size**	**Recommended Spacing**	**Number**	**Unit**	**Total Plant Number**
Salix exigua	Coyote Willow	4-5 ft cutting	Trenched (60% of total)	4	Per linear foot	1068
Salix ligulifolia	Strapleaf Willow	4-5 ft cutting	Trenched (40% of total)	4	Per linear foot	712

Bioengineering							
Type	**Scientific Name**	**Common Name**	**Size**	**Unit**	**Number**	**Willows Per Unit**	**Total Willows**
Willow Cutting in Bank Stabilization	Salix exigua (60%); Salix ligulifolia (40%)	Coyote Willow and Strapleaf Willow	4-5 ft cutting	Per linear foot	375	2	750 Willows
Fascines	Salix exigua (60%); Salix ligulifolia (40%)	Coyote Willow and Strapleaf Willow	4-5 ft cutting	Per 5' Fascine	30	40	1200 Willows

PLANTING SCHEDULE

Zones 2 & 3: Native Riparian and Upland Plantings (approximately 0.47 AC)				
Scientific Name	**Common Name**	**Recommended Container Size**	**Recommended Spacing**	**Plant Number**
Trees				
Picea pungens	Colorado Blue spruce	#15 Cont.*	8-ft center	6
Pinus ponderosa	Ponderosa pine	#15 Cont.*	8-ft center	6
Populus angustifolia	Narrowleaf Cottonwood	#15 Cont.*	8-ft center	11
Populus fremontii	Fremont Cottonwood	D60 Deep	8-ft center	15
Small Trees & Shrubs				
Acer glabrum	Rocky Mountain Maple	D60	6-ft center	3
Alnus incana ssp. tenuifolia	Thinleaf Alder	D60	6-ft center	3
Betula occidentalis	Water Birch	D60	6-ft center	7
Cornus sericea	Redosier Dogwood	D60	6-ft center	10
Crataegus rivularis	River Hawthorne	D60	6-ft center	4
Dasiphora fruticosa	Shrubby Cinquefoil	D60	6-ft center	3
Prunus virginia ssp. melanocarpa	Black Chokecherry	D60	6-ft center	2
Peraphyllum ramosissimum	Wild Crab Apple	D60	6-ft center	5
Philadelphus microphyllus	Littleleaf Mock Orange	D60	6-ft center	3
Rhus trilobata	Threeleaf Sumac	D60	6-ft center	2
Ribes aureum	Golden Currant	D60	6-ft center	20
Rosa woodsii	Woods' Rose	D60	6-ft center	26
Shepherdia argentea	Silver Buffaloberry	D60	6-ft center	9
Total Zones 2 & 3 Plants				**135**

Zone 1: Native Wetland Mix (approximately 0.07 AC)				
Scientific Name	**Common Name**	**Recommended Container Size**	**Recommended Spacing**	**Plant Number**
Wetland Graminoids (plugs)				
Carex nebrascensis	Nebraska Sedge	10 ci (cubic inch)	2-ft center	110
Eleocharis palustris	Creeping Spikerush	10 ci (cubic inch)	2-ft center	110
Glyceria striata	Fowl Mannagrass	10 ci (cubic inch)	2-ft center	224
Juncus arcticus ssp. littoralis	Mountain Rush (Baltic Rush)	10 ci (cubic inch)	2-ft center	170
Juncus ensifolius	Three-stamened Rush	10 ci (cubic inch)	2-ft center	110
Juncus toreyii	Torey's Rush	10 ci (cubic inch)	2-ft center	102
Scirpus microcarpus	Smallflowered Bulrush	10 ci (cubic inch)	2-ft center	170
Triglochin maritima	Arrowgrass	10 ci (cubic inch)	2-ft center	102
Total Wetland Plants				**842**

Swale Plant Mix (approximately 0.11 AC)				
Scientific Name	**Common Name**	**Recommended Container Size**	**Recommended Spacing**	**Plant Number**
Shrubs				
Ribes aureum	Golden Currant	D60	6-ft center	21
Rosa woodsii	Woods' Rose	D60	6-ft center	21
Salix exigua	Narrowleaf Willow	D60	4-ft center	126
Shepherdia argentea	Silver Buffaloberry	D60	6-ft center	26
Wetland Graminoids				
Beckmannia syzigachne	American Slough Grass	plug	3-ft center	28
Juncus arcticus ssp. littoralis	Mountain Rush (Baltic rush)	plug	3-ft center	28
Triglochin maritima	Arrowgrass	plug	3-ft center	28
Total Swale Mix				**278**

Mulch (21 CY)						
Type	**Plantings**	**Size**	**Much Ring Diameter**	**Plants**	**Unit**	**Quantitiy**
Finely Shredded Cedar Mulch	Trees	#15 Cont.	Approx. 5-ft	38	CY	5
Finely Shredded Cedar Mulch	Small Trees and Shrubs	D60	Approx. 3-ft	375	CY	16

* ALL #15 CONTAINER DECIDUOUS TREES MUST HAVE A MINIMUM DBH CALIPER OF 2" AND ALL #15 EVERGREENS MUST BE MINIMUM 6' TALL.
IF CONTAINER TREES DO NOT MEET THIS CRITERIA, B&B TREES MUST BE USED INSTEAD WITH APPROVAL OF LANDSCAPE ARCHITECT.

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811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

chinook LANDSCAPE ARCHITECTURE

RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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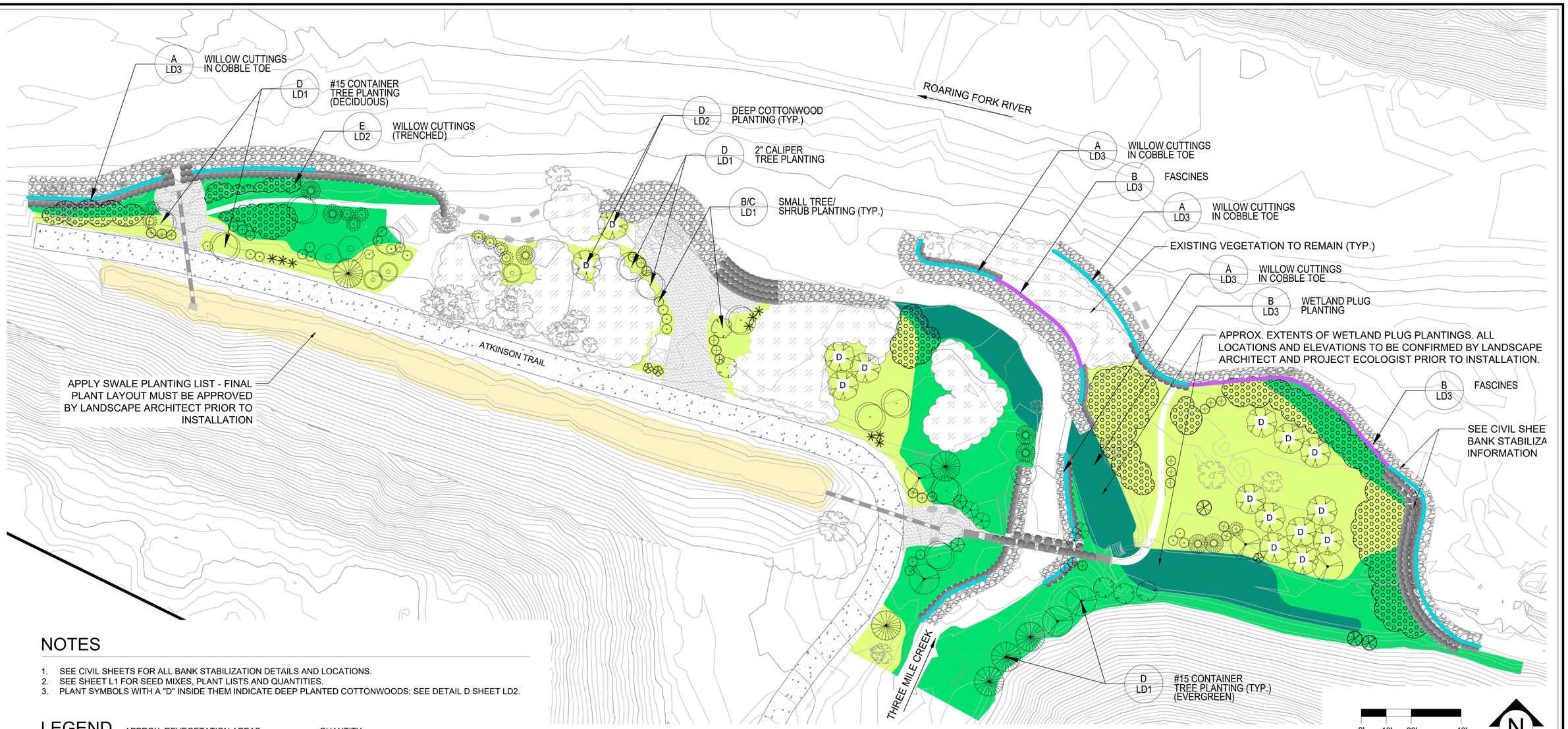
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DESIGN	BAP	9/30/2021
DETAIL	BAP	9/30/2021
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THREE MILE CONFLUENCE

PLANTING SCHEDULES

JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. L3

Plot Date/Time: 09/30/2021, 03:27:48 PM; C:\USERS\BRANDLDROPBOX\THREE MILE CREEK\100% DESIGN PLANS\CHINOOK\PLANS\CHINOOK LANDSCAPE PLANS.DWG-L3-LANDSCAPE SCHEDULE



NOTES

1. SEE CIVIL SHEETS FOR ALL BANK STABILIZATION DETAILS AND LOCATIONS.
2. SEE SHEET L1 FOR SEED MIXES, PLANT LISTS AND QUANTITIES.
3. PLANT SYMBOLS WITH A "D" INSIDE THEM INDICATE DEEP PLANTED COTTONWOODS; SEE DETAIL D SHEET LD2.

LEGEND

APPROX. REVEGETATION AREAS	QUANTITY
ZONE 1 NATIVE WETLAND PLANTINGS	0.07 AC
ZONE 2 NATIVE RIPARIAN PLANTINGS	0.22 AC
ZONE 3 NATIVE UPLAND PLANTINGS	0.25 AC
SWALE PLANT MIX	0.11 AC
WILLOW STAKES (TRENCHED)	1,780 EA
WILLOW CUTTINGS IN BANK STABILIZATION	375 LF
WILLOW FASCINES	143 LF

TREES

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
Populus fremontii	Fremont Cottonwood	D60 Deep	15
Populus angustifolia	Narrow Leaf Cottonwood	#15 *	11
Picea pungens	Colorado Blue Spruce	#15 *	6
Pinus ponderosa	Ponderosa Pine	#15 *	6

SMALL TREES & SHRUBS

Acer glabrum	Rocky Mountain Maple	D60	3
Alnus incana ssp. tenuifolia	Thinleaf Alder	D60	3
Betula occidentalis	Western River Birch	D60	7
Peraphyllum ramosissimum	Wild Crab Apple	D60	5

SHRUBS

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
Cornus sericea	Redosier Dogwood	D60	10
Crataegus rivularis	River Hawthorne	D60	4
Dasiphora fruticosa	Shrubby Cinquefoil	D60	3
Philadelphus microphyllus	Littleleaf Mock Orange	D60	3
Prunus virginia ssp. melanocarpa	Black Chokecherry	D60	2
Rhus trilobata	Threeleaf Sumac	D60	2
Ribes aureum	Golden Currant	D60	20
Rosa woodsii	Woods' Rose	D60	26
Shepherdia argentea	Silver Buffaloberry	D60	9

* ALL #15 CONTAINER DECIDUOUS TREES MUST HAVE A MINIMUM DBH CALIPER OF 2" AND ALL #15 EVERGREENS MUST BE MINIMUM 6' TALL. IF CONTAINER TREES DO NOT MEET THIS CRITERIA, B&B TREES MUST BE USED INSTEAD WITH APPROVAL OF LANDSCAPE ARCHITECT.

CALL COLORADO
811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

chinook LANDSCAPE ARCHITECTURE | RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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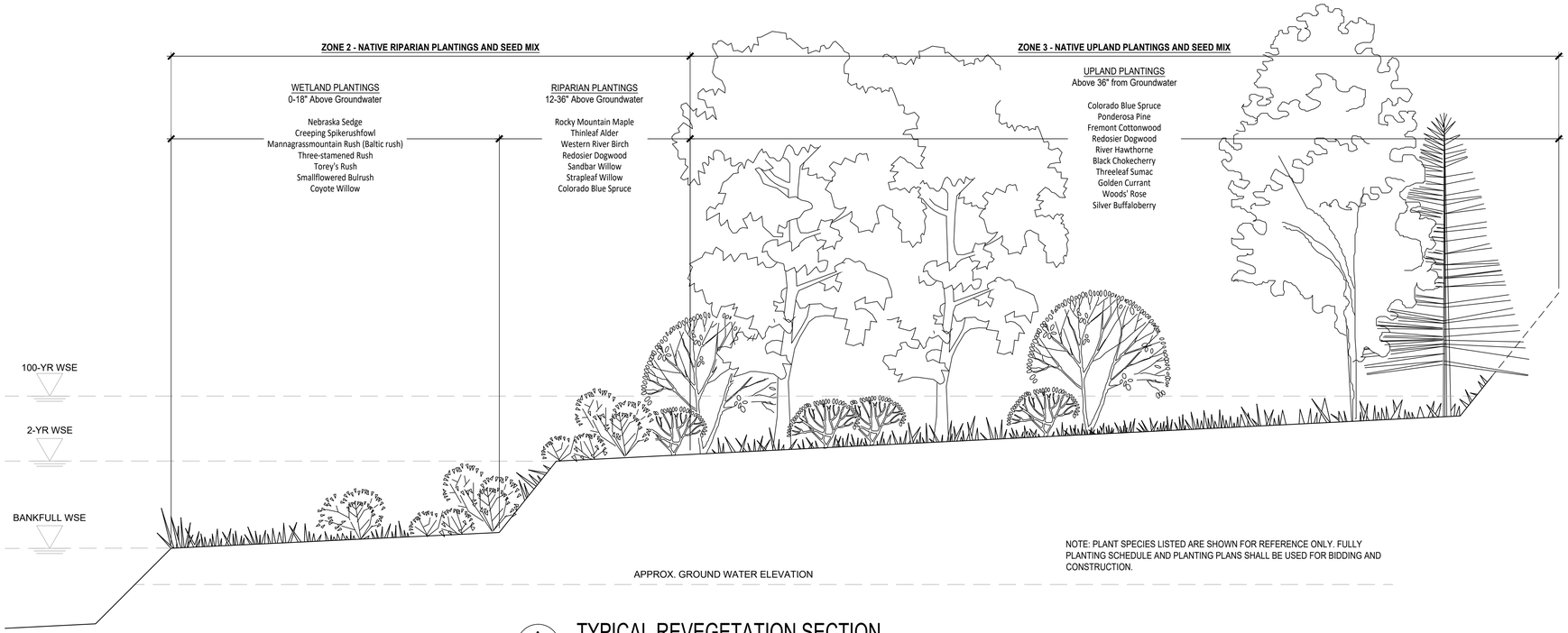
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DESIGN	BAP	9/30/2021
DETAIL	BAP	9/30/2021
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SCALE		AS SHOWN

THREE MILE CONFLUENCE

LANDSCAPE PLAN

JOB NO. 191-025.000
REVISION NO. ---
SHEET NO. L4

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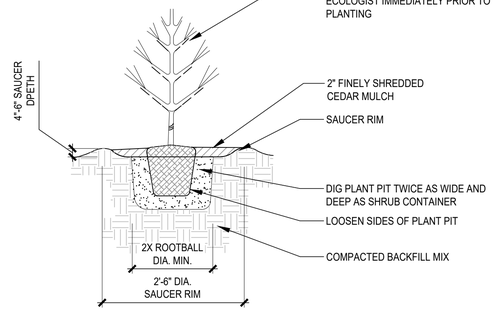


NOTE: PLANT SPECIES LISTED ARE SHOWN FOR REFERENCE ONLY. FULLY PLANTING SCHEDULE AND PLANTING PLANS SHALL BE USED FOR BIDDING AND CONSTRUCTION.

A LD1 **TYPICAL REVEGETATION SECTION**

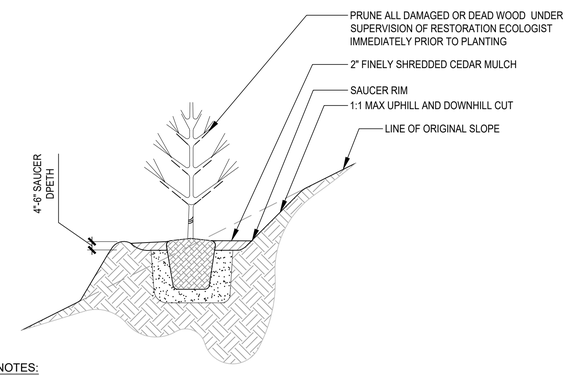
SCALE: 1"= 1'-0"

NOTES:
1. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALLS.



B LD1 **SMALL TREE/SHRUB PLANTING**

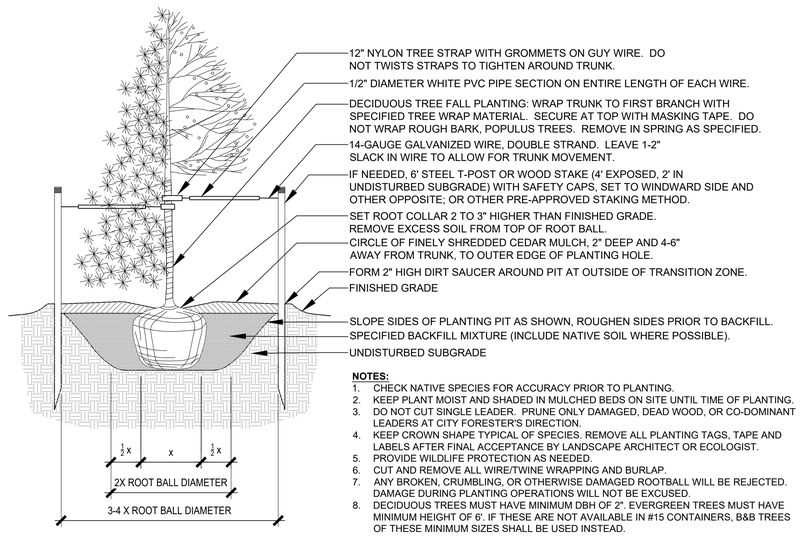
SCALE: N.T.S.



NOTES:
1. WATER PREPARED PLANTING HOLES PER THE PLANTING NOTES.
2. PLANT CONTAINERS PER PLANTING NOTES.
3. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALLS.

C LD1 **SMALL TREE/SHRUB PLANTING ON SLOPE**

SCALE: N.T.S.



NOTES:
1. CHECK NATIVE SPECIES FOR ACCURACY PRIOR TO PLANTING.
2. KEEP PLANT MOIST AND SHADED IN MULCHED BEDS ON SITE UNTIL TIME OF PLANTING.
3. DO NOT CUT SINGLE LEADER. PRUNE ONLY DAMAGED, DEAD WOOD, OR CO-DOMINANT LEADERS AT CITY FORESTER'S DIRECTION.
4. KEEP CROWN SHAPE TYPICAL OF SPECIES. REMOVE ALL PLANTING TAGS, TAPE AND LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT OR ECOLOGIST.
5. PROVIDE WILDLIFE PROTECTION AS NEEDED.
6. CUT AND REMOVE ALL WIRE/TWINE WRAPPING AND BURLAP.
7. ANY BROKEN, CRUMBLING, OR OTHERWISE DAMAGED ROOTBALL WILL BE REJECTED. DAMAGE DURING PLANTING OPERATIONS WILL NOT BE EXCUSED.
8. DECIDUOUS TREES MUST HAVE MINIMUM DBH OF 2", EVERGREEN TREES MUST HAVE MINIMUM HEIGHT OF 6'. IF THESE ARE NOT AVAILABLE IN #15 CONTAINERS, B&B TREES OF THESE MINIMUM SIZES SHALL BE USED INSTEAD.

D LD1 **#15 CONTAINTER TREE PLANTING**

SCALE: 1/2"=1'-0" DT-filename.dwg



NOTES:
1. PLACE AROUND TRUNK OF ALL #15 CONTAINER TREES, WITH THE ZIPPERS ON UPHILL SIDE OF TREE.
2. WRAP BOTH SIDES AROUND TRUNK UNTIL ZIPPERS MEET AND ZIP TOGETHER FROM BOTTOM TO TOP.
3. LIFT TAG TO EXPOSE FILL OPENING AT TOP OF BAG.
4. INSERT HOSE INTO FILL OPENING AND BEGIN FILLING WITH WATER.
5. FILL BAG TO 1/4 CAPACITY, GENTLY LIFT UP ON STRAPS AT TOP OF BAG TO EXPAND BOTTOM.
6. FILL TO DESIRED LEVEL AND LET EMPTY.
7. CONTINUOUSLY WATERS FOR APPROXIMATELY 5 TO 9 HOURS

E LD1 **TREE GATOR DETAIL**

SCALE: N.T.S.

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811
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chinook LANDSCAPE ARCHITECTURE | RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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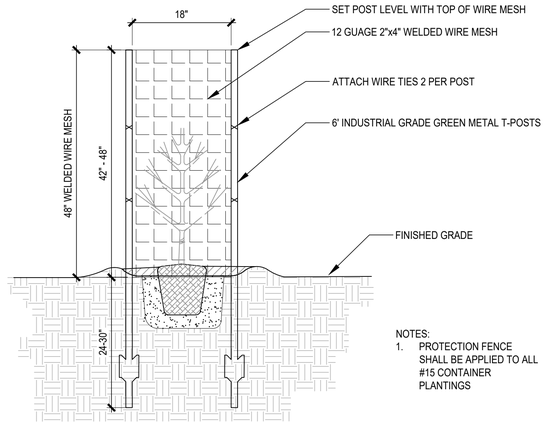
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DETAIL	BAP	9/30/2021
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THREE MILE CONFLUENCE

LANDSCAPE DETAILS

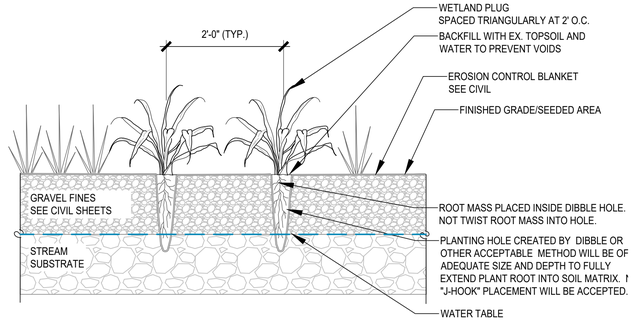
JOB NO. 191-025.000
REVISION NO. ----
SHEET NO. LD1

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NOTES:
1. PROTECTION FENCE SHALL BE APPLIED TO ALL #15 CONTAINER PLANTINGS

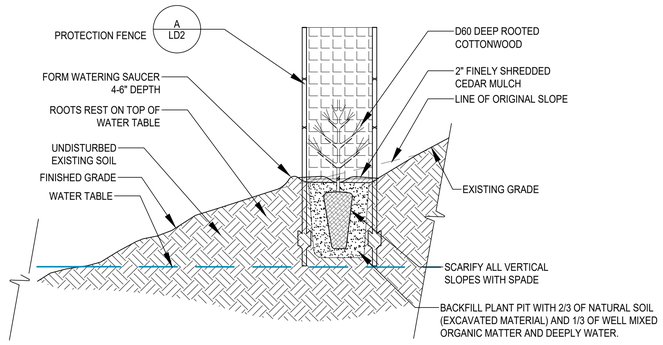
A LD2 PROTECTION FENCE
SCALE: N.T.S.



B LD2 WETLAND PLUG PLANTING
SCALE: NTS

DT-filename.dwg

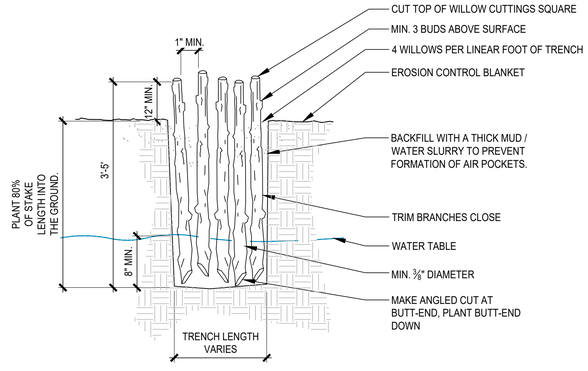
NOTES
1. RESTORATION ECOLOGIST TO CHECK NURSERY STOCK FOR SPECIES CORRECTNESS PRIOR TO PLANTING.
2. PLANTING LOCATIONS SHOULD BE STAKED BY LANDSCAPE CONTRACTOR AND CHECKED BY ECOLOGIST AND LANDSCAPE ARCHITECT PRIOR TO PLANTING.
3. EXCAVATE HOLES TO WATER TABLE AND ALLOW TIME FOR WATER LEVEL TO STABILIZE BEFORE PLANTING TREES. PROJECTS WITH LONG TERM USE OF DEWATERING TRENCHES (OVER 2 WEEKS) MAY TAKE SEVERAL WEEKS FOR THE GROUND WATER TO STABILIZE ON THE SITE AFTER WATER IS RETURNED.
4. KEEP ALL PLANTS MOIST AND SHADE IN MULCHED BEDS ON SITE UNTIL TIME OF PLANTING.
5. PLANT TREE SO THAT NO MORE THAN 1/3 OF TRUNK IS BELOW GROUND AND TRIM LOWER BRANCHES AS NEEDED.
6. DO NOT CUT OR DAMAGE LEADER.
7. PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING.
8. KEEP CROWN SHAPE TYPICAL OF SPECIES.
9. DEEPLY WATER TREE ONCE INSTALLED AND CONSIDER INSTALLING WATER TUBE IF SOIL IS SANDY.
10. REMOVE ALL PLANTING TAGS, TAPE AND LABELS AFTER FINAL ACCEPTANCE BY RESTORATION ECOLOGIST.



C LD2 DEEP COTTONWOOD PLANTING
SCALE: N.T.S

DT-filename.dwg

NOTES:
1. HARVEST AND PLANT CUTTINGS DURING THE DORMANT SEASON.
2. USE HEALTHY, STRAIGHT AND LIVE WOOD AT LEAST ONE YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE CUTTINGS OR SPLIT ENDS DURING INSTALLATION.
4. SOAK CUTTINGS FOR 5-7 DAYS PRIOR TO INSTALLATION.
6. TRENCH 10' A PART PERPENDICULAR TO RIVER FLOW IN ALL AREAS IDENTIFIED ON PLANS
7. BACKFILL WITH ONSITE SOIL, WATER AND TAMP THE SOIL AROUND THE CUTTINGS AFTER INSTALLATION.



D LD2 WILLOW CUTTINGS (TRENCHED)
SCALE: 3/4"=1'-0"



WILLOW CUTTINGS (TRENCHED) EXAMPLE

CALL COLORADO
811
OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

chinook LANDSCAPE ARCHITECTURE
RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
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		DATE
DESIGN	BAP	9/30/2021
DETAIL	BAP	9/30/2021
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SCALE		

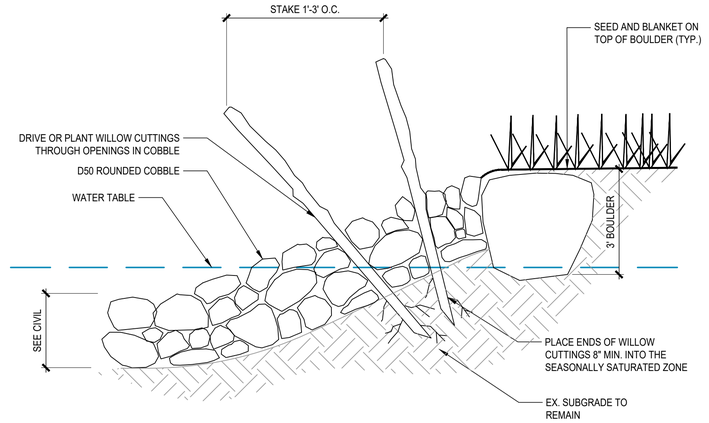
THREE MILE CONFLUENCE

LANDSCAPE DETAILS

JOB NO. 191–025.000
REVISION NO. ----
SHEET NO. LD2

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NOTES:
1. INTEGRATE CUTTINGS PLANTING TECHNIQUES DURING ROCK PLACEMENT TO ENSURE CONTACT WITH NATIVE GROUND.
2. PLACE SOIL FILL AROUND CUTTINGS AND 'WATER IN'
3. 2 CUTTINGS PER LINEAR FOOT OF BANK STABILIZATION - SEE CIVIL FOR DETAILS

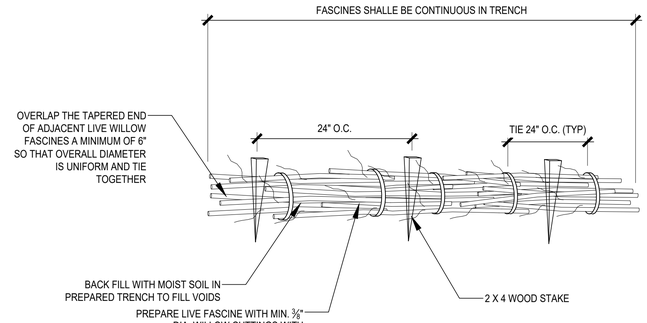


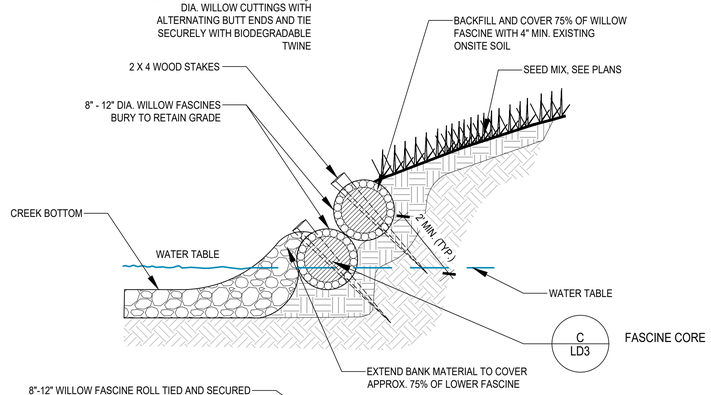
A LD3 **WILLOW CUTTINGS IN BANK STABILIZATION**

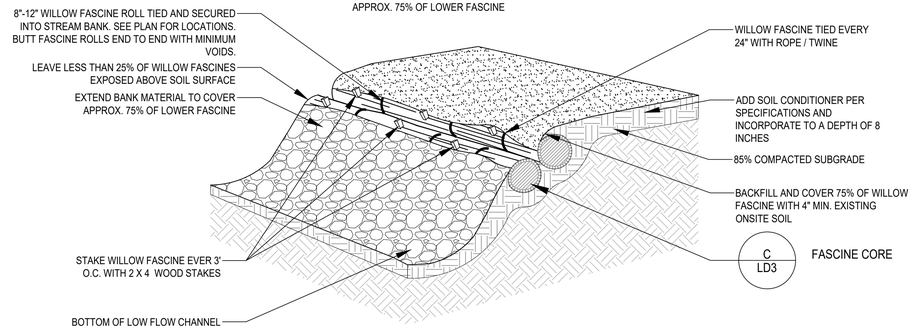
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WILLOW CUTTINGS IN BANK STABILIZATION



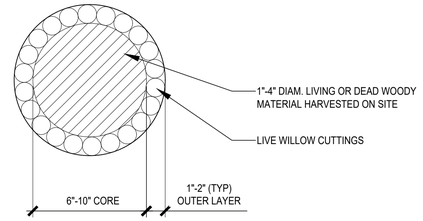




NOTES:
1. FASCINES SHALL ONLY BE INSTALLED IN CONJUNCTION WITH BANK STABILIZATION #4 &5 (THREE MILE CREEK). SEE CIVIL SHEETS.
2. MAKE CLEAN CUTS AND DO NOT DAMAGE CUTTINGS OR SPLIT ENDS
3. DURING INSTALLATION USE A PILOT BAR IN FIRM SOILS.
4. TAMP THE SOIL AROUND THE STAKE / OR BACK FILL WITH MUD SLURRY.
5. COLLECT WILLOWS FROM ONSITE TO CONSTRUCT WILLOW FASCINES.
6. 30 LIVE WILLOW CUTTINGS PER 5' FASCINE.

B LD3 **FASCINES**

SCALE: N.T.S.



C LD3 **FASCINE CORE**

SCALE: N.T.S.

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OR CALL UTILITY NOTIFICATION CENTER OF COLORADO
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chinook LANDSCAPE ARCHITECTURE | RAMBOLL

NO.	BY	DATE	DESCRIPTION	COMMENTS
1				

		DATE
DESIGN	BAP	9/30/2021
DETAIL	BAP	9/30/2021
CHECK		
SCALE		

THREE MILE CONFLUENCE

LANDSCAPE DETAILS

JOB NO. 191–025.000
REVISION NO. ----
SHEET NO. LD3

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ITEM #	ITEM DESCRIPTION
1	MOBILIZATION
2	DEWATERING
3	SURVEYING
4	TRAFFIC AND PEDESTRIAN CONTROL
5	EROSION AND SEDIMENT CONTROL
6	ABANDON 18" CMP CULVERT
7	REMOVE 3 CONCRETE SUPPORTS
8	REMOVE CONCRETE/METAL DEBRIS
9	REMOVE 36" RCP CULVERT AND CONCRETE ENCASEMENT
10	REMOVE SPLIT RAIL FENCING
11	REMOVE TREE
12	REMOVE DIVERSION STRUCTURE
13	REMOVE 18" CMP
14	STREAM SUBSTRATE (D50 = 12") WITH NATIVE UPLAND SOIL
15	STREAM SUBSTRATE (D50 = 6") (BEDDING AND CHINKING)
16	STREAM SUBSTRATE (D50 = 12")
17	B30 BOULDER (D50 = 30")
18	B36 BOULDER (D50 = 36")
19	NATIVE UPLAND SOIL
20	KOIRMAT 700 EROSION CONTROL BLANKET
21	S400B EROSION CONTROL BLANKET
22	STRAW
23	THREE MILE EARTHWORK
24	18" HDPE FLARED END SECTION
25	18" HDPE PIPE
26	CDOT TYPE C INLET
27	UNDERDRAIN
28	ZONE 3: UPLAND SEEDING
29	ZONE 1 & 2: WETLAND AND RIPARIAN SEED
30	SWALE SEED
31	COMPOST
32	WETLAND PLUGS
33	SMALL TREES AND SHRUBS
34	TREES
35	WILLOW CUTTING
36	WILLOW FASCINES
37	PROTECTION FENCING
38	MULCH
39	INVASIVE SPECIES MANAGEMENT
40	IRRIGATION
41	SPLIT RAIL FENCE
42	FLAGSTONE REPAIR
43	NEW FLAGSTONE PAVING
44	RESTROOM ENCLOSURE
45	FOOT TRAIL

46	BOULDER SEAT
47	BOULDER BOAT TIE-OFF
48	PICNIC TABLE
49	EDUCATION INTERPRETIVE SIGN
50	BOATING SIGN
51	SPAWNING INFO SIGN
52	WAYFINDING SIGNAGE
53	CRUSHER FINES
CONSTRUCTION SUBTOTAL	
CONTINGENCY (20%)	
CONSTRUCTION TOTAL	
ENGINEERING SERVICES DURING CONSTRUCTION	
ECOLOGICAL SERVICES DURING CONSTRUCTION	
SITE PLANNING SERVICES DURING CONSTRUCTION	
SERVICES DURING CONSTRUCTION TOTAL	
TOTAL	

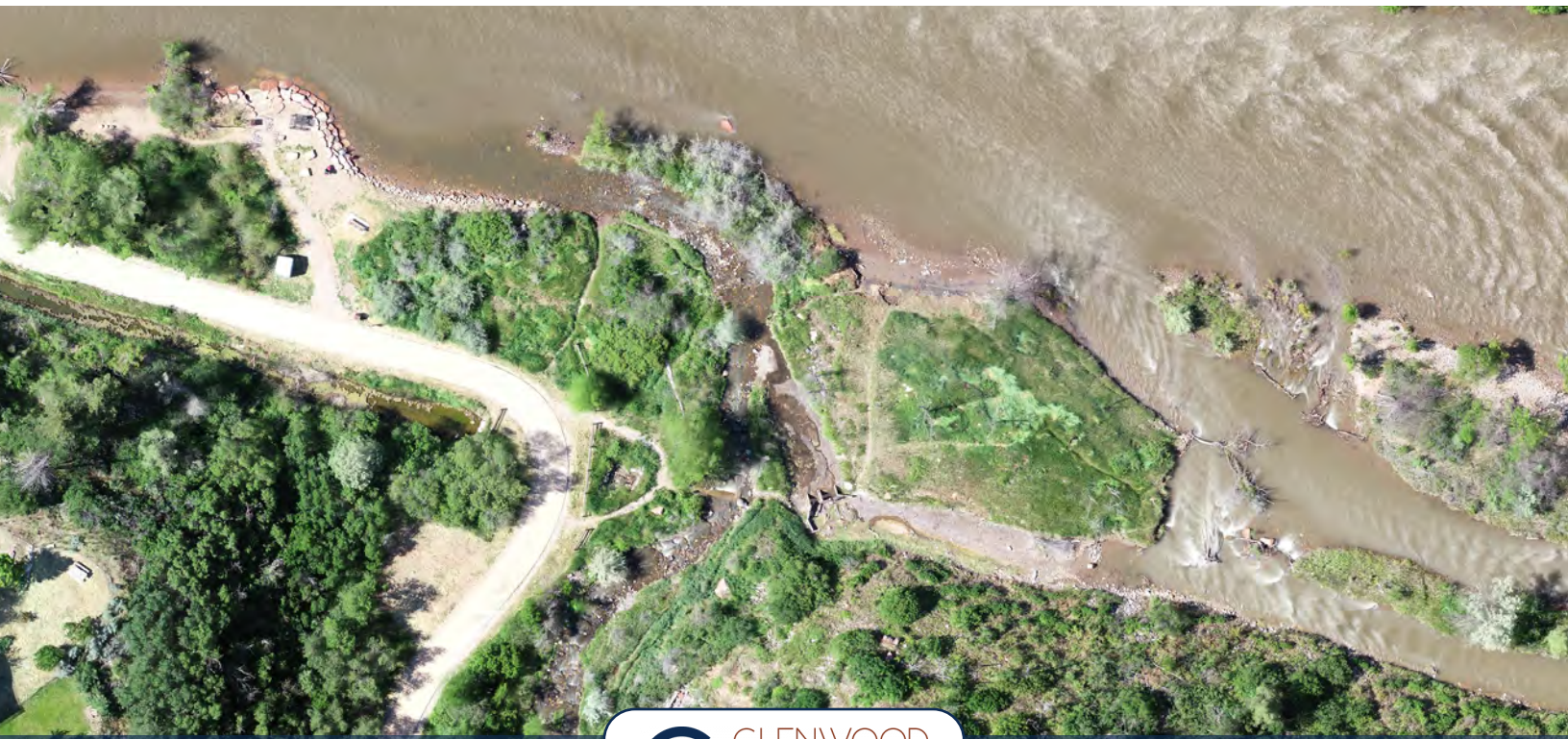
QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	LS	10%	$ 48,656.49
1	LS	2.5%	$ 12,164.12
1	LS	$ 10,000.00	$ 10,000.00
1	LS	$ 5,000.00	$ 5,000.00
1	LS	$ 5,000.00	$ 5,000.00
48	LF	$ 50.00	$ 2,394.00
1	LS	$ 1,000.00	$ 1,000.00
1	LS	$ 1,000.00	$ 1,000.00
1	LS	$ 4,000.00	$ 4,000.00
1	LS	$ 1,000.00	$ 1,000.00
4	EA	$ 1,000.00	$ 4,000.00
1	LS	$ 5,000.00	$ 5,000.00
5	LF	$ 50.00	$ 250.00
335	CY	$ 90.00	$ 30,150.00
78	CY	$ 75.00	$ 5,845.67
243	CY	$ 90.00	$ 21,839.40
203	CY	$ 250.00	$ 50,781.25
19	CY	$ 300.00	$ 5,700.00
272	CY	$ 10.00	$ 2,717.63
449	SY	$ 25.00	$ 11,220.56
2,825	SY	$ 15.00	$ 42,378.33
2,825	SY	$ 1.00	$ 2,825.22
46	CY	$ 50.00	$ 2,306.06
1	EA	$ 250.00	$ 250.00
41	LF	$ 100.00	$ 4,100.00
1	EA	$ 5,000.00	$ 5,000.00
260	LF	$ 20.00	$ 5,200.00
10,896	SF	$ 0.10	$ 1,089.60
12,435	SF	$ 0.12	$ 1,492.20
4,560	SF	$ 0.25	$ 1,140.00
20	CY	$ 60.00	$ 1,200.00
842	EA	$ 5.00	$ 4,210.00
390	EA	$ 17.00	$ 6,630.00
23	EA	$ 500.00	$ 11,500.00
3,730	EA	$ 7.00	$ 26,110.00
150	LF	$ 20.00	$ 3,000.00
23	EA	$ 45.00	$ 1,035.00
5	CY	$ 75.00	$ 375.00
1	AC	$ 6,000.00	$ 6,000.00
1	LS	$ 25,000.00	$ 25,000.00
1,100	LF	$ 34.00	$ 37,400.00
100	SF	$ 10.00	$ 1,000.00
200	SF	$ 15.00	$ 3,000.00
35	LF	$ 150.00	$ 5,250.00
250	LF	$ 5.00	$ 1,250.00

5	EA	$ 400.00	$ 2,000.00
11	EA	$ 8,800.00	$ 96,800.00
1	EA	$ 1,500.00	$ 1,500.00
2	EA	$ 5,000.00	$ 10,000.00
1	EA	$ 750.00	$ 750.00
1	EA	$ 500.00	$ 500.00
1	LS	$ 5,000.00	$ 5,000.00
35	CY	$ 125.00	$ 4,375.00
			$ 486,564.91
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			$ 644,698.51
			$ 25,000.00
			$ 25,000.00
			$ 25,000.00
			$ 75,000.00
			$ 719,698.51









GLENWOOD SPRINGS COLORADO

Three Mile Creek Confluence Planning Project

Conceptual Design Report

GLENWOOD SPRINGS COLORADO

For the City of Glenwood Springs, this project was led by Trent Hyatt, Senior Planner, and City staff provided valauble input throughout the project.

Project Grant funding provided by:

PITKIN COUNTY HEALTHY RIVERS
protect. defend. enhance.

Consultant Team:

WWE
WRIGHT WATER ENGINEERS, INC.

Scott Schreiber, PE, CFM - Project Manager
Drake Ludwig, PE - Water Resources/Restoration Engineer

chinook LANDSCAPE ARCHITECTURE
Jon Altschuld, RLA, ASLA - Landscape Architect

RAMBOLL
Randy Mandel - Vegetation Restoration Specialist
Sara Copp Franz - Vegetation Restoration Specialist
Jessica Foley - Vegetation Restoration Specialist

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Site Improvement Recommendations 18
Three Mile Creek Confluence Planning Recommendations Map 19
Vegetation Management and Recommendations 20
Final Design And Construction Cost Estimates 22

Appendices (under separate cover)

Colorado Parks and Wildlife Habitat Memo
Public Meeting #1 Materials
Public Input Survey #1 Full Results
Public Meeting #2 Materials
Public Meeting #2 Responses
Public Input Survey #2 Full Results

Introduction

The Three Mile Creek Confluence Planning Project is centered around providing a more sustainable and resilient space for the community at the Three Mile Creek and Roaring Fork River confluence. The area is currently used by a wide variety of community members, ranging from commercial boating operators, to private boaters, to anglers, to residents in the adjacent neighborhoods, to users of the Atkinson Trail. Not surprisingly, the uses at the confluence also vary and include fishing, picnicking, dog walking, playing with children, and enjoying nature. This project was initiated partly in response to the increasing use and a growing popularity of the area. There is interest from both the City and the community in protecting this area while retaining sustainable and responsible access and use. Early in the planning process, the consultant team and the City developed the following Project Goals Statement in order to capture the goals and vision of the project:

Develop a holistic and resilient plan that addresses current and future impacts from the use of the Three Mile Creek confluence area while providing ecologically diverse and naturally sustainable habitats, improved water quality, trail connectivity, recreational access, and education regarding our most valuable natural resource, water.

As the project area is a community resource, community members were invited to give input and direction to the project team. This document summarizes the community outreach efforts, the results of those efforts, and the final recommendations for the project site. In addition to community outreach, the project team worked with Colorado Parks and Wildlife (CPW) to gather their input and determine the most appropriate courses of action for this sensitive and environmentally important area. This coordination had a special focus on the fish spawning and habitat values of the Three Mile Creek Confluence area. A memo from CPW is included as an appendix to this document.







Public Outreach Efforts

In an effort to collect valuable public input at the beginning of the planning process, the project team (consisting of the consultants and City staff) developed a two-prong approach to initial outreach. First, a public input survey was created and published online. The survey was advertised through the City's website, post card mailers, and in an article by the Post Independent. In addition to the online survey, the project team hosted an on-site public meeting on Saturday, July 20. At the public meeting, participants could provide feedback through the online survey, picture 'dot' boards, by drawing on maps of the site, and by discussing ideas and concerns with members of the project team. The public meeting was advertised in the same ways as the input survey.

Public Meeting #1

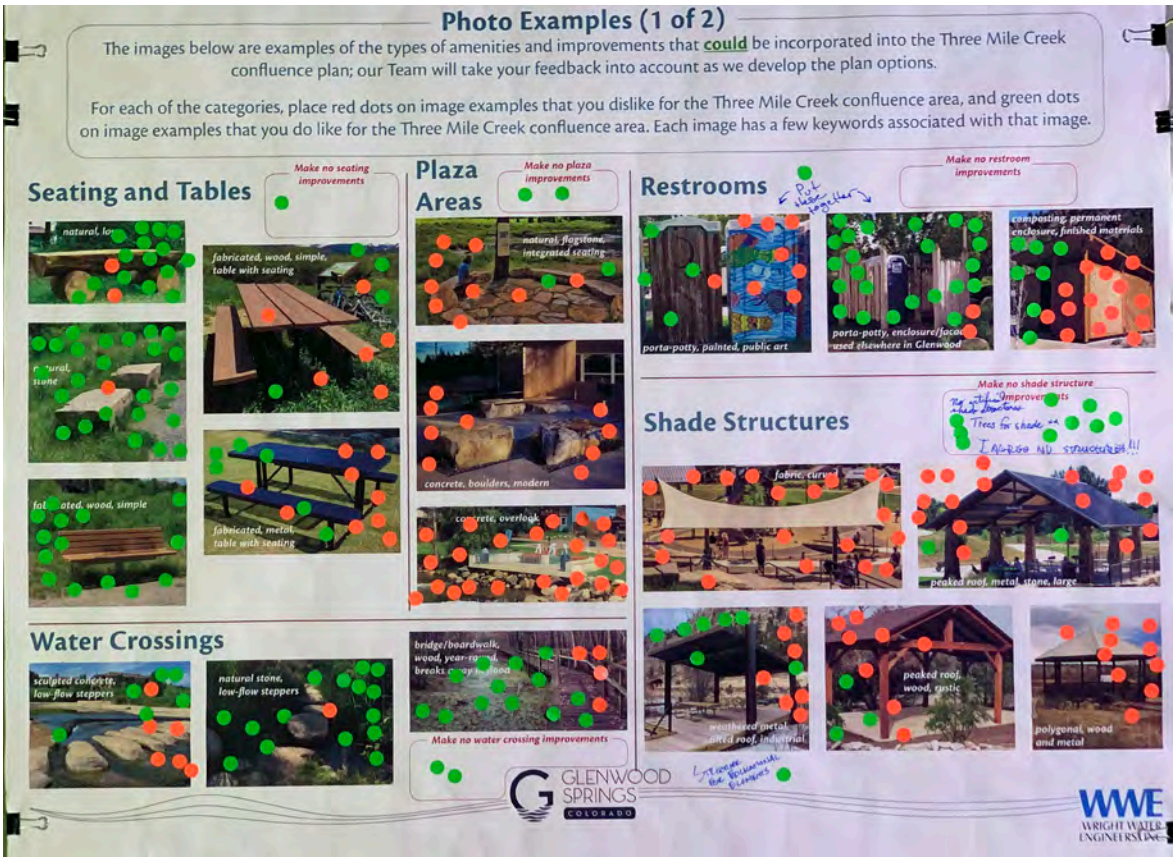
At the public meeting, **more than 60 community members participated** and provided valuable input. Participants included residents of the surrounding neighborhoods, City residents, people using the Atkinson Trail, and boaters pulling off from the Roaring Fork for a break. In this way, the project team was able to collect input from a wide group of people who use the project site. The project team also talked with participants about the environmental importance of the project area. Overall, input was positive and people were excited about improvements to the area. Below are some of the recurring themes the project team heard:

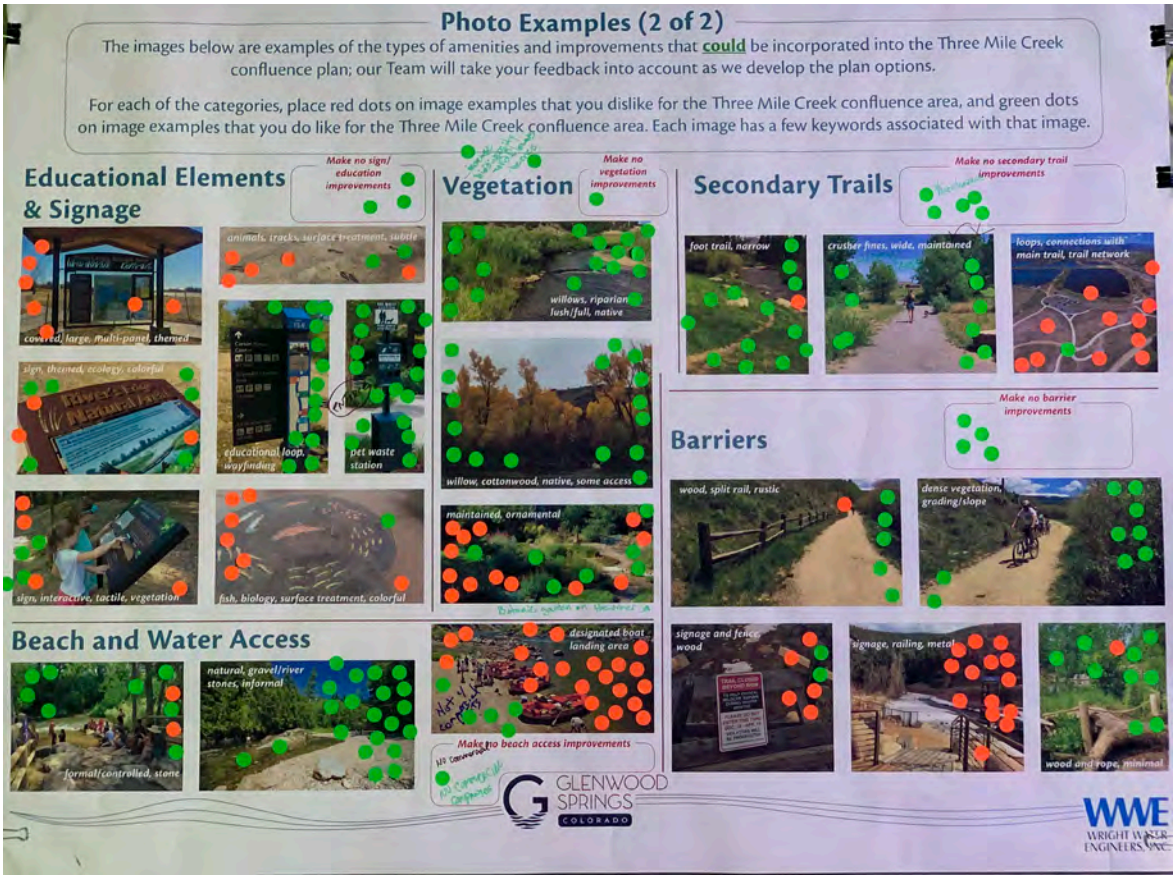
- Keep Three Mile Creek Confluence Area natural
- Forming a plan that anticipates higher future use while protecting the environment is important
- Don't over-develop the area
- The Three Mile Creek Confluence Area is special because it is a bit quieter and more removed from the main City
- More shade, especially with trees, would be a positive improvement



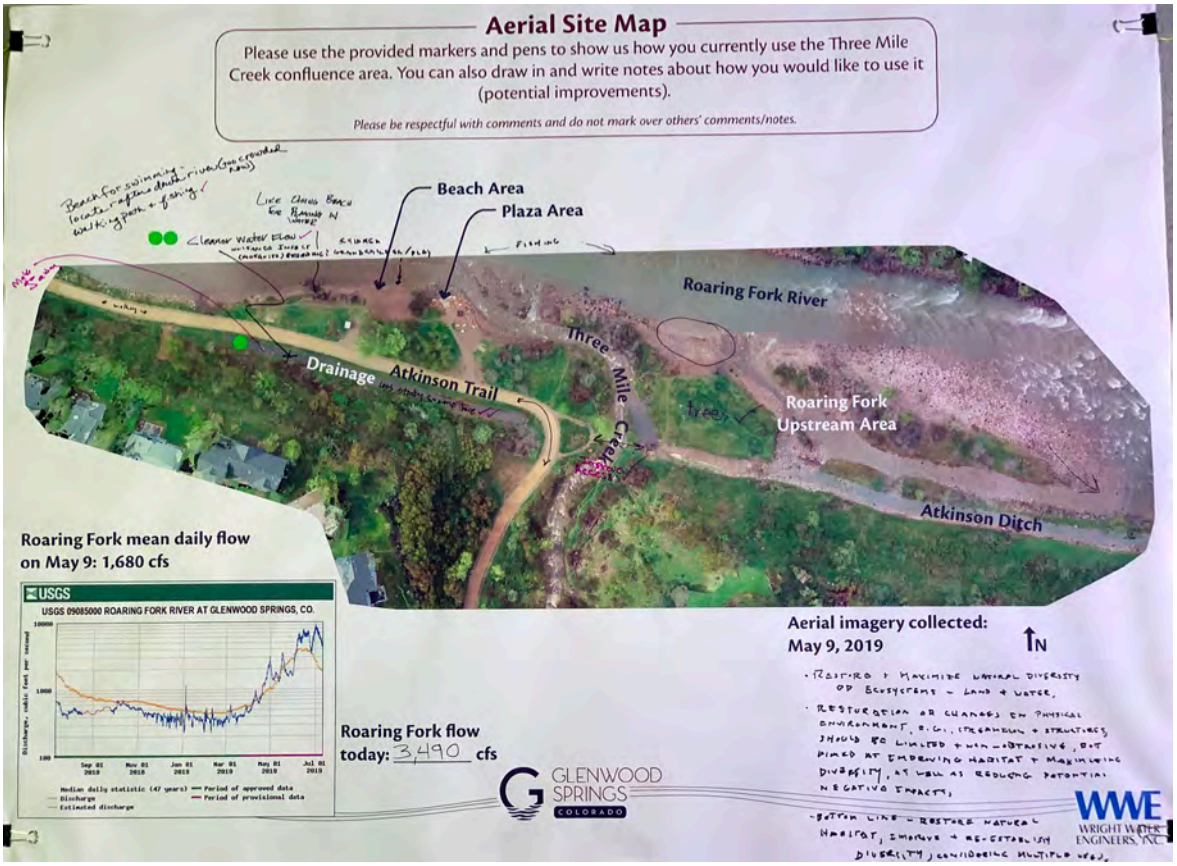


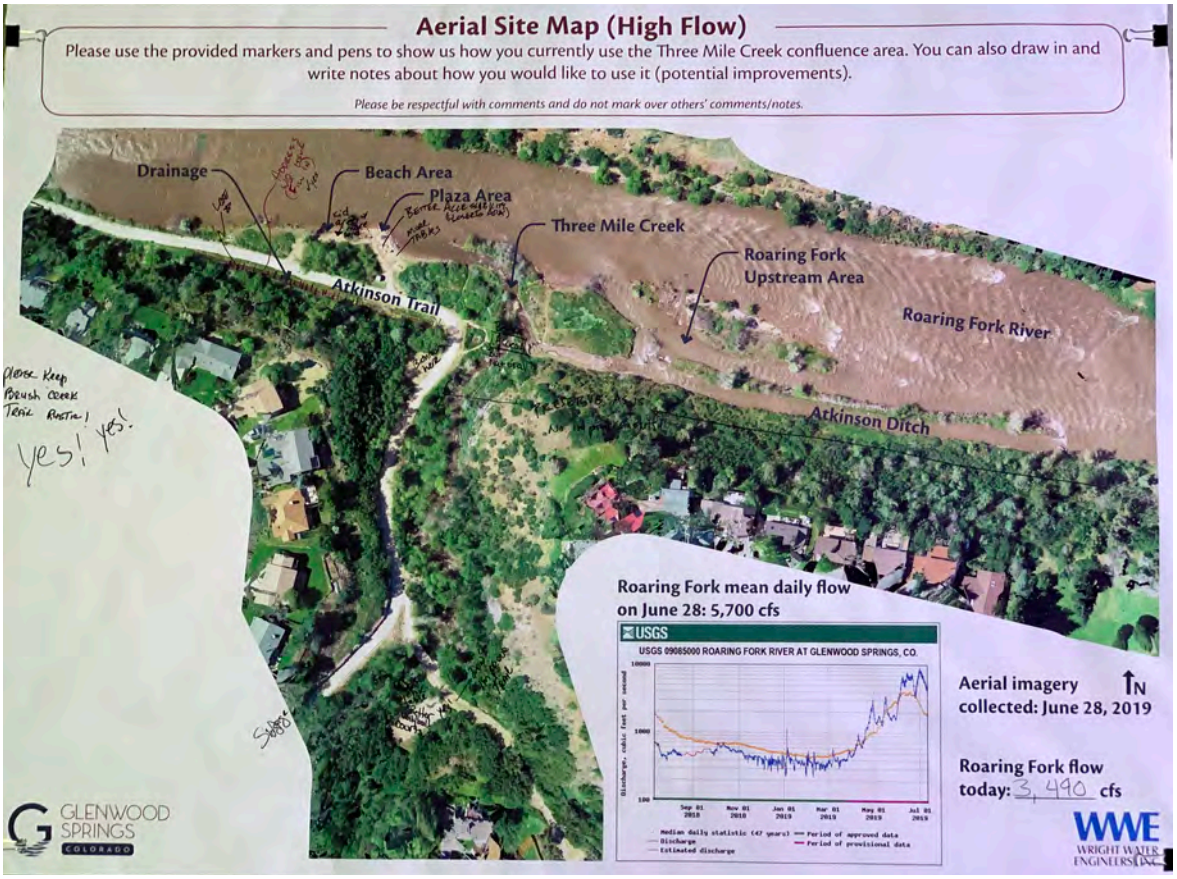
Picture 'dot' boards were used to gauge the public's interest in different types of improvements. Costs were specifically not included in order to not sway opinions. Participants placed **green** dots on features they liked for the project, and **red** dots of features they did not like for the project.





Boards with high resolution aerial images of the project site offered participants the opportunity to make notes of how they currently use the site, how they would like to use the site, and how they access the site. Each board showed a different time of year, and different flow conditions for Three Mile Creek and the Roaring Fork River.

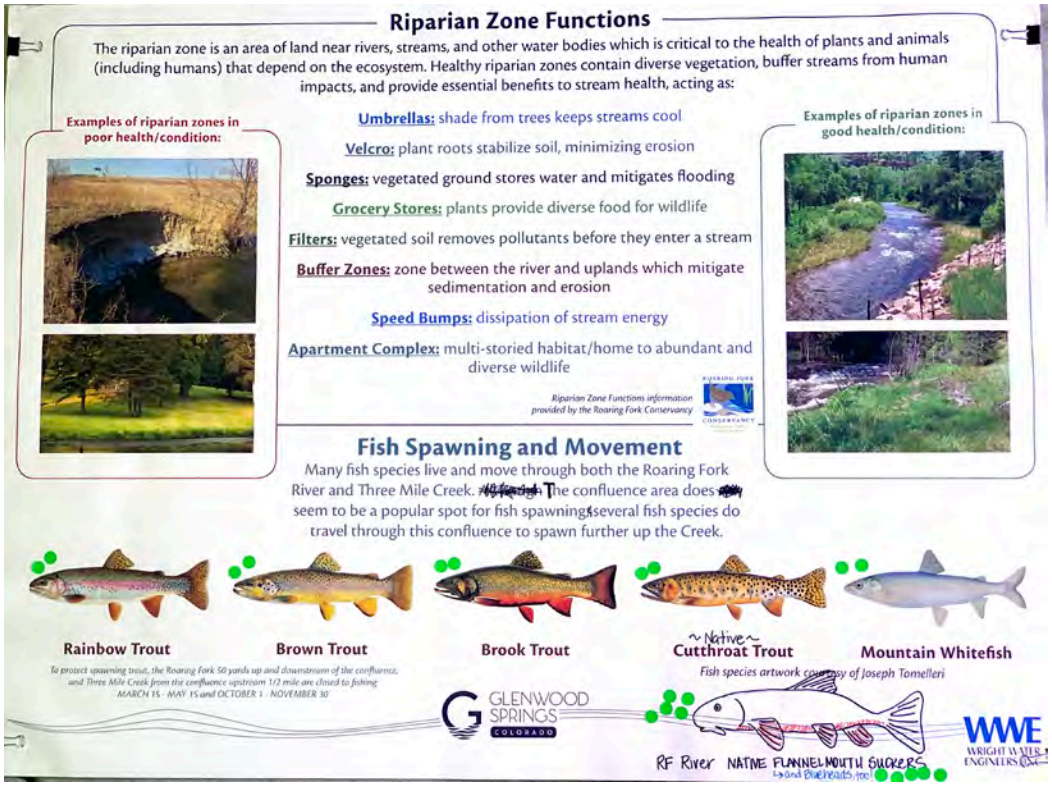




Participants had competing opinions on whether a trail connection to continue the Atkinson Trail East/South along the Roaring Fork River would be desirable. Some participants very much liked the idea, while others were very opposed to it.



The public meeting was also an opportunity to discuss the environmental importance of riparian areas and the Three Mile Creek Confluence Area with participants.







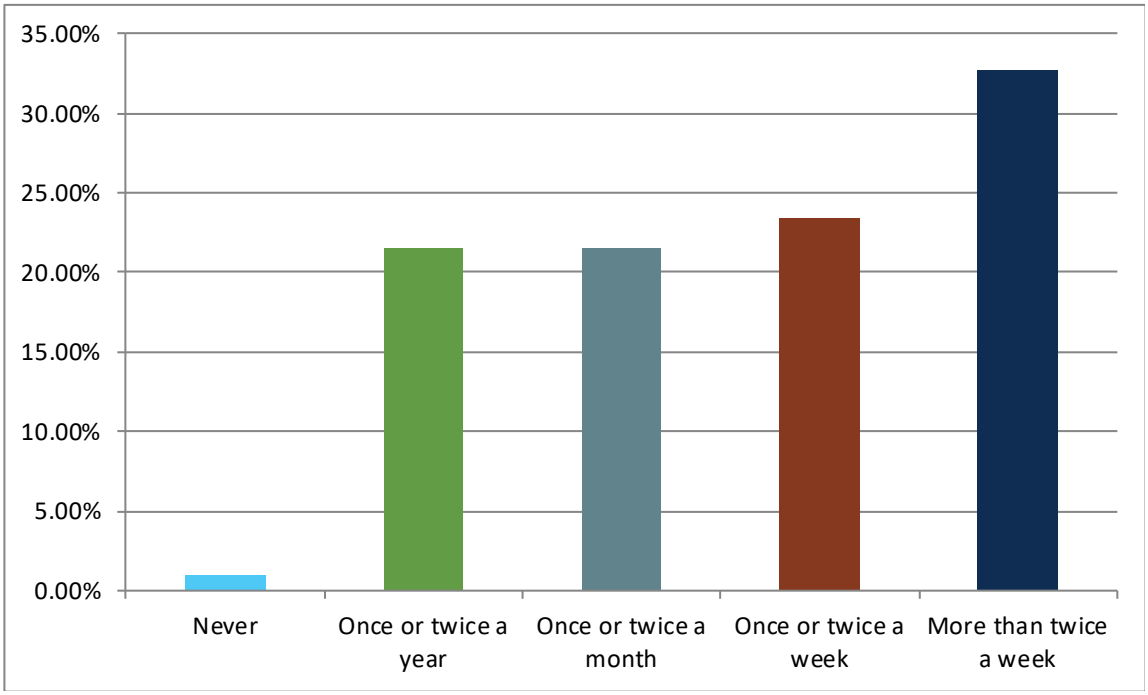



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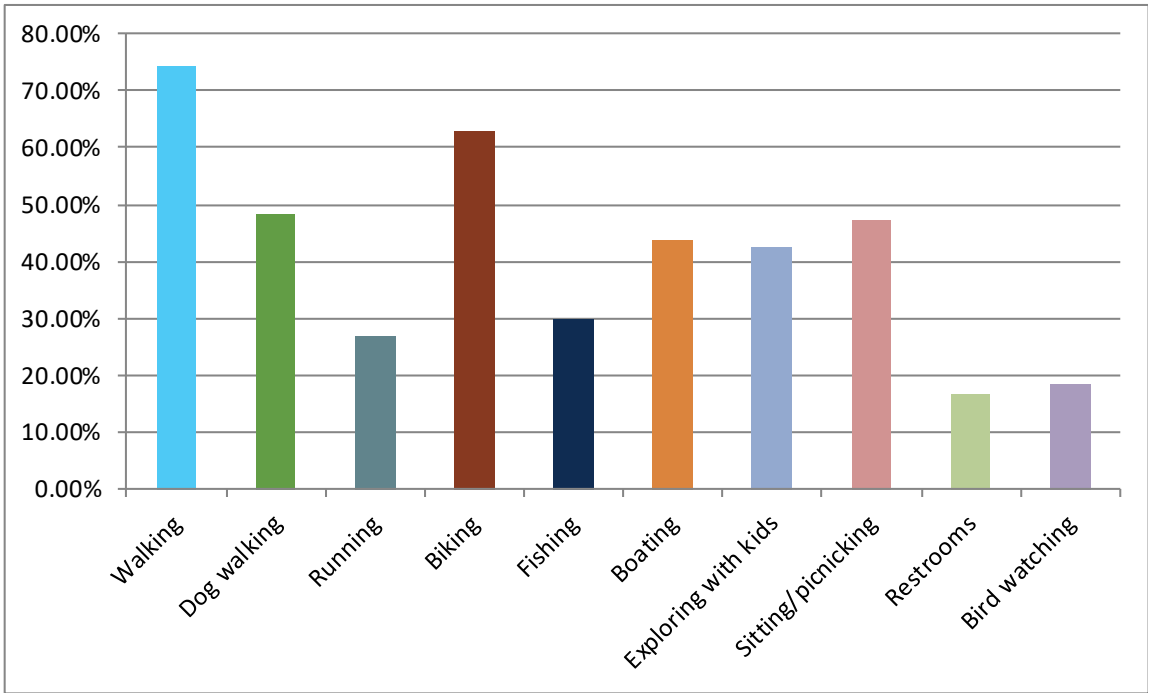
Public Input Survey #1

The online public input survey asked participants 21 questions about how they use the project site, what improvements they would like to see, what they want to remain as is, and what concerns they have about the project site. Participants spent approximately 10 minutes on the survey, and **108 people completed the survey**. It was opened before the public meeting and was left open for several weeks after the public meeting in order to allow as many people as possible to participate. Below are answers to some of the questions.

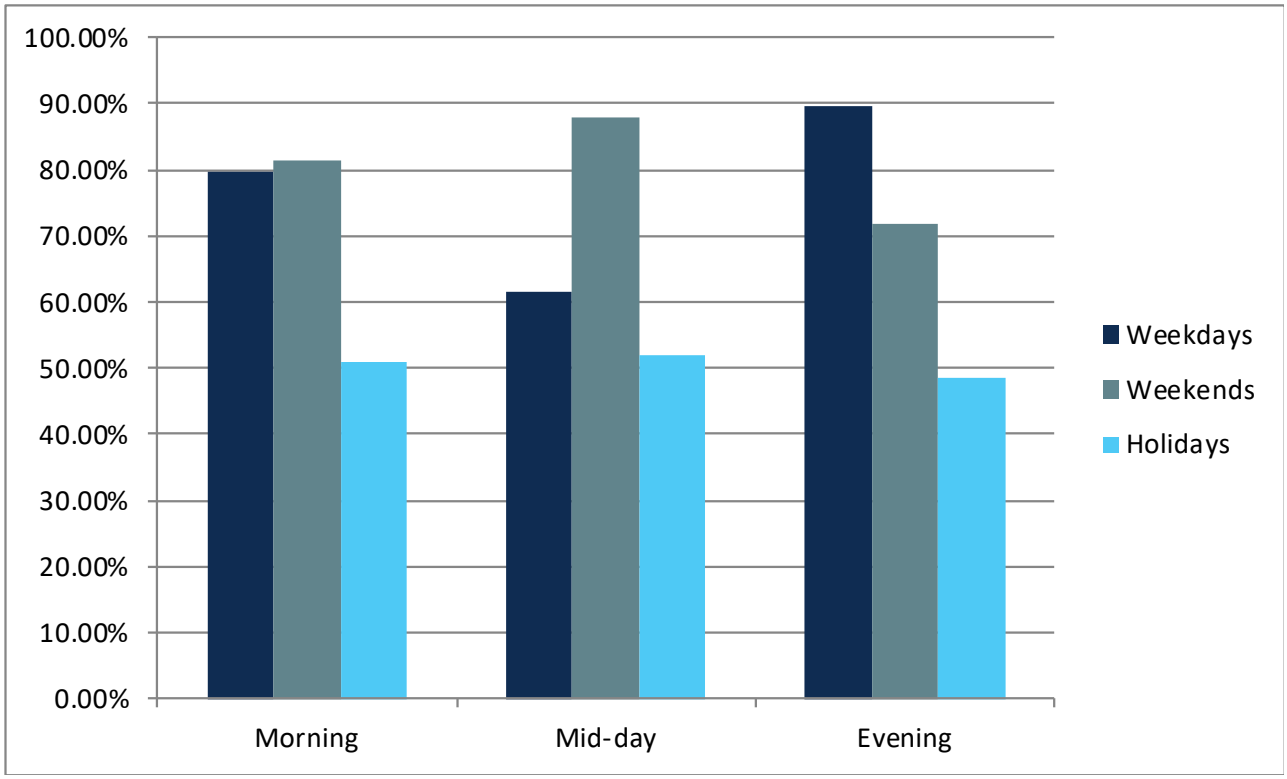
Q1: How often to you use the Three Mile Creek Confluence Area?



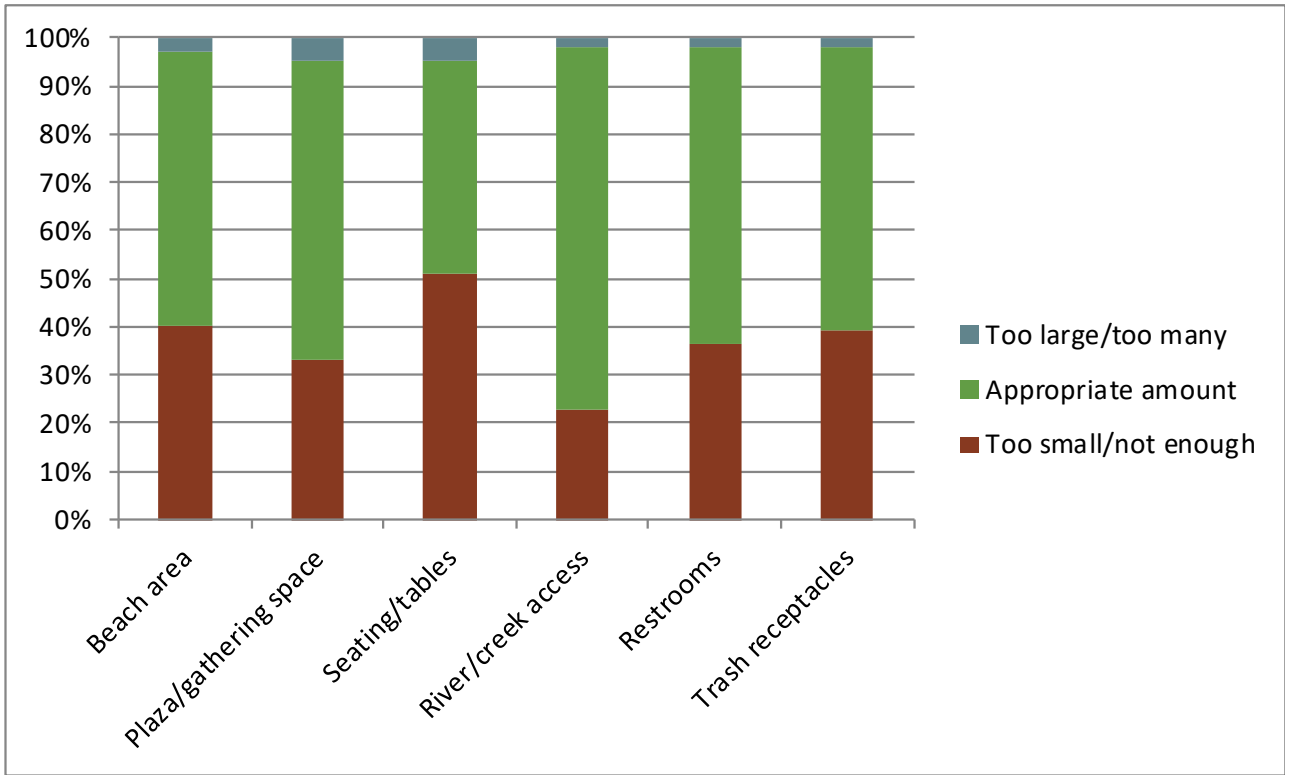
Q3: Which activities do you use the Three Mile Creek Confluence Area for?



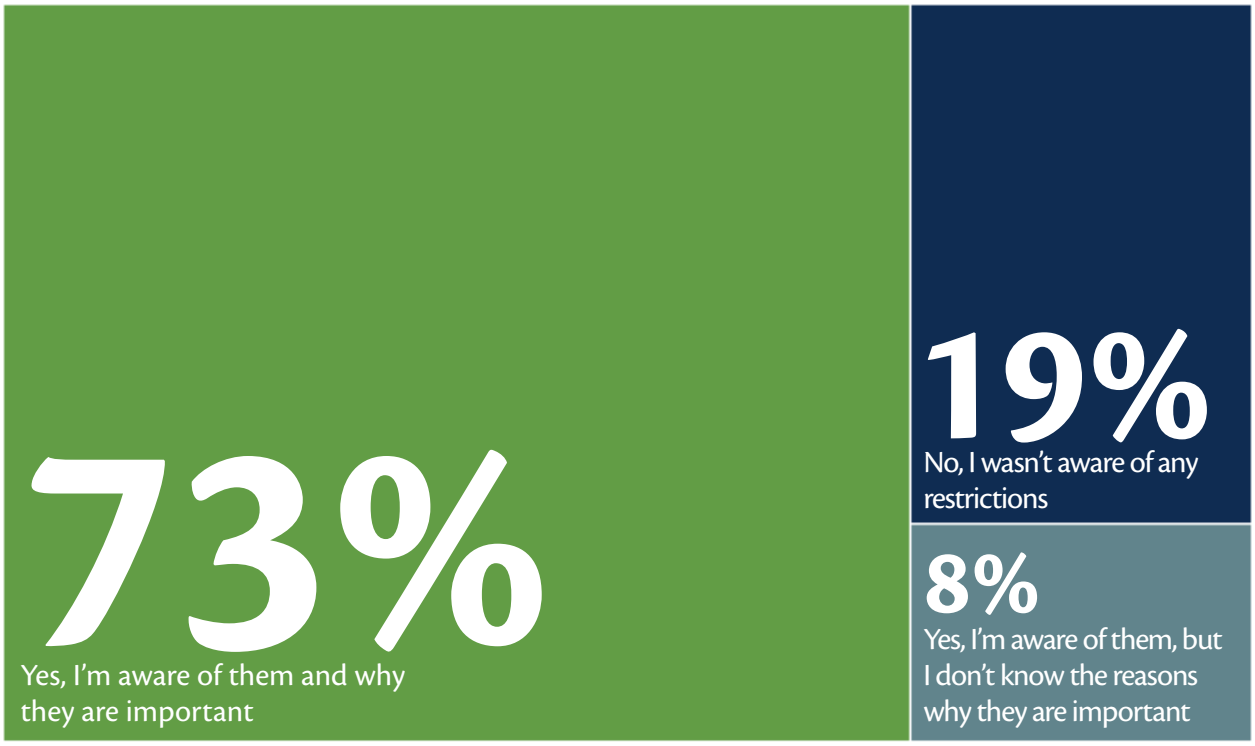
Q5: What time of day do you typically use the Three Mile Creek Confluence Area?



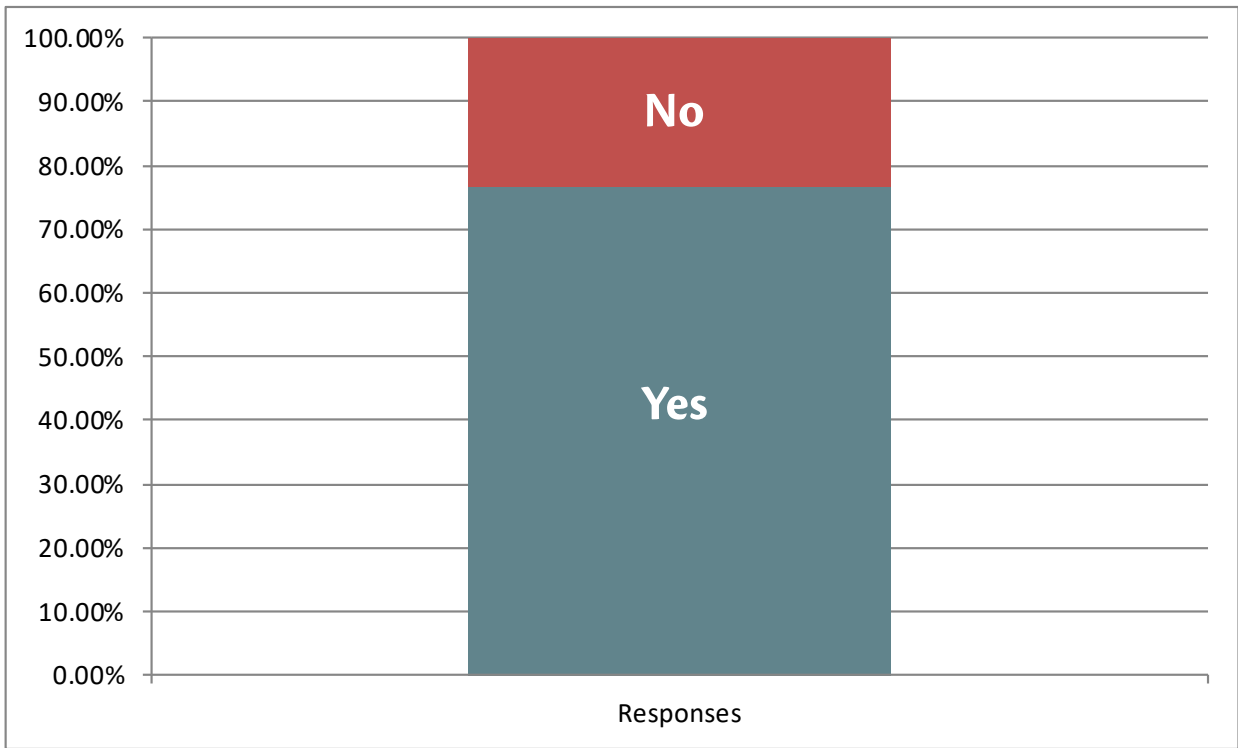
Q7: How would you rate the allocated space for the following amenities?



Q13: Are you aware of the seasonal restrictions on fishing at and near the confluence, and reasons why they are important?

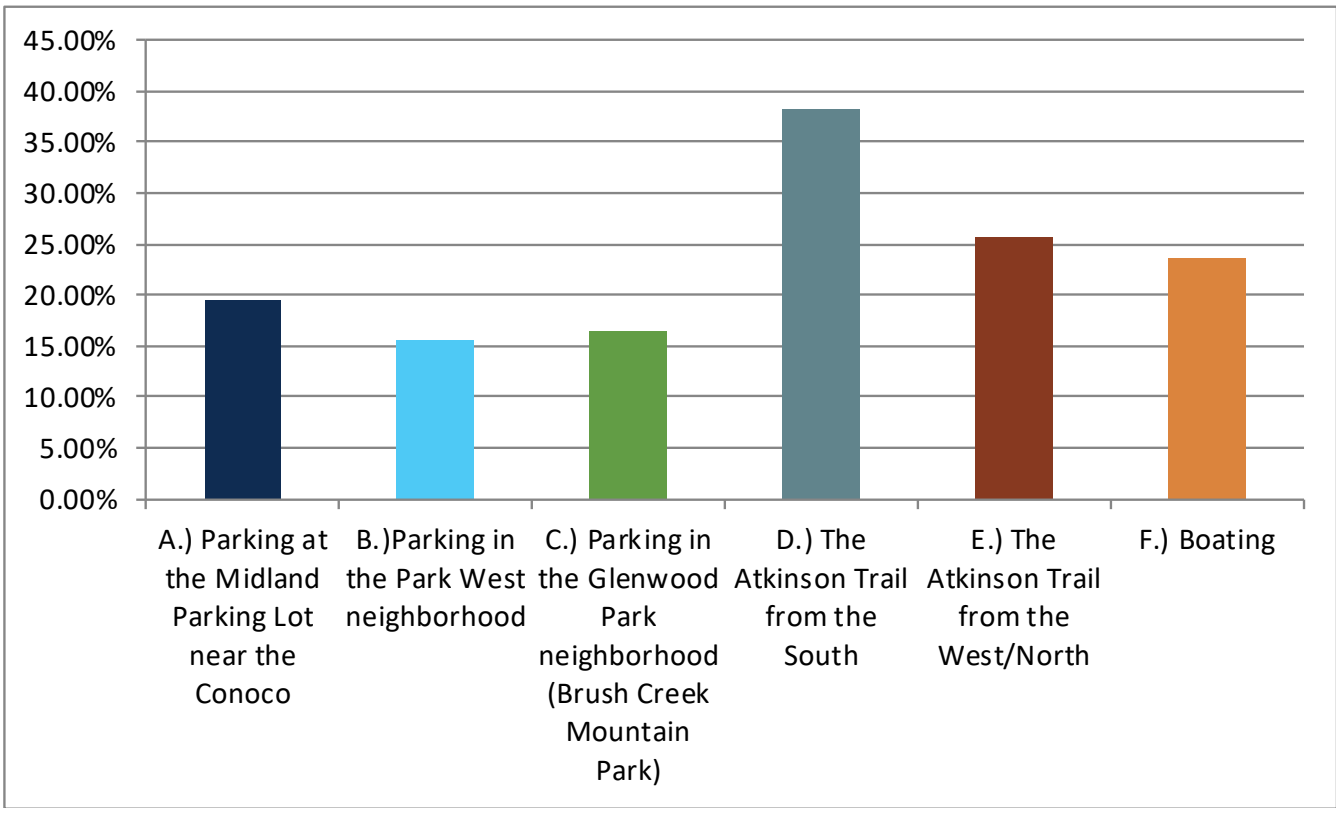


Q14: The seasonal fishing restrictions are put in place by Colorado Parks and Wildlife (CPW) to protect sensitive spawning habitat for many native fish species. Trout and other fish use these areas during spawning, as well as to move upstream for spawning. CPW is only allowed to regulate fishing activities. However, any wading through these areas during spawning season (from March 15-May 15 and October 1-November 30) is disruptive to fish spawning. Knowing this, would you be in favor of restricting all activities in the stream channel during these periods? These activities would include wading, walking, dog walking, etc. within the water. (select one)

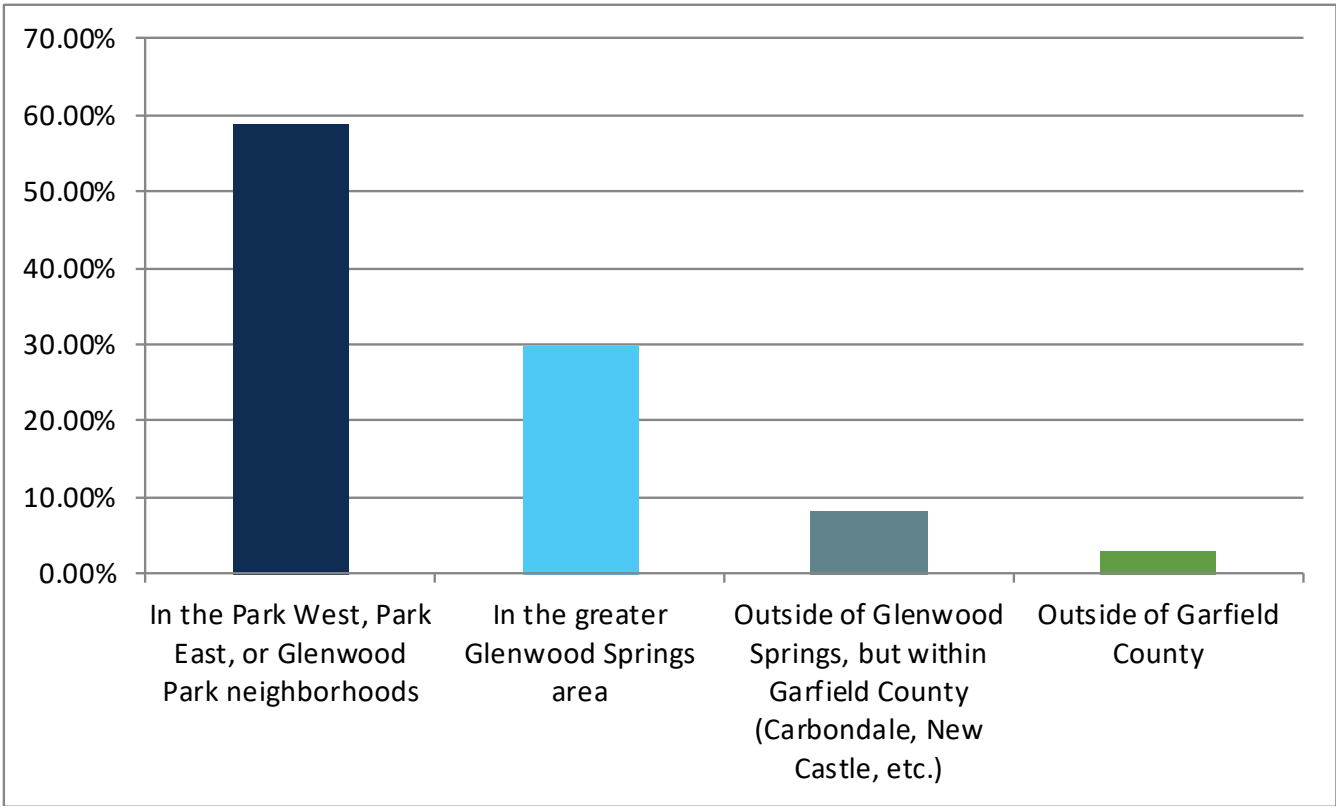


Q15: How do you typically access the Three Mile Creek Confluence Area?





Q17: Where do you live?



Q18: Please rate the priority of the following concerns based on current conditions at the Three Mile Creek Confluence Area (5 being the highest priority):

Water Quality received the most '5' votes (highest priority)

Impacts on ecological health, Impacts to sensitive fish spawning environments, and river bank erosion were close behind Water Quality

Invasive Plants received a high number of '5, 4, and 3' votes

Q19: Please rate the importance of adding the following improvements to the Three Mile Creek Confluence Area (5 being the most important):

Protection of sensitive fish spawning environment was voted the most important

Improvement to the health of existing vegetation and Natural vegetated bank stabilization were second most important

More parking received the most '1' votes (least imporant)

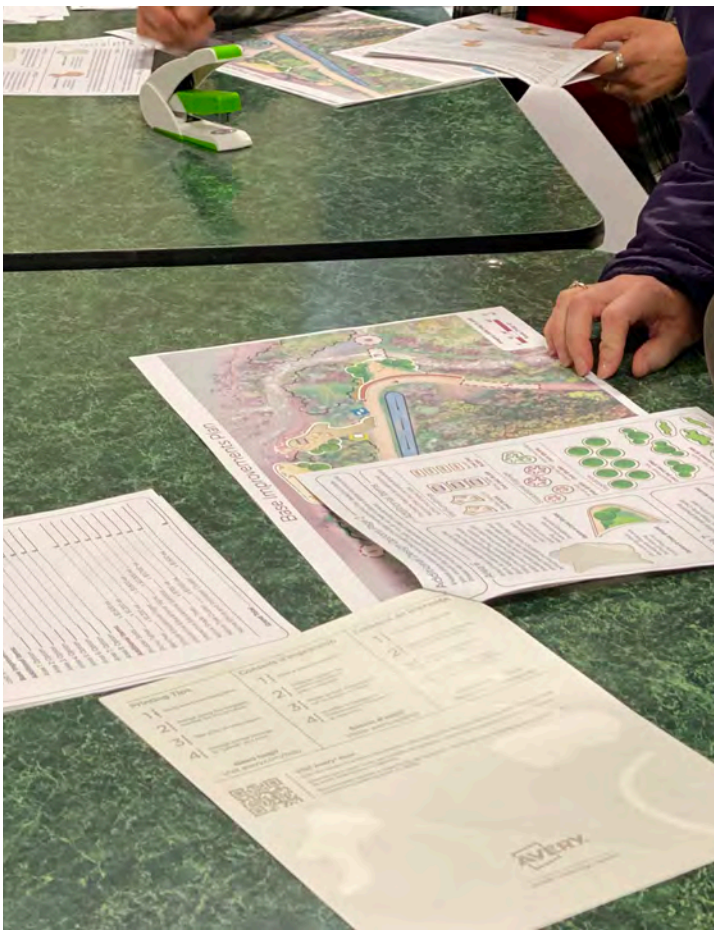
Q20: Please tell the Master Plan Team anything additional you would like them to consider during the planning process

The below word cloud is a combination of the open ended answers received for this question. The bigger a word is, the more often it appeared in responses. This helps the project team to recognize what issues the community is most concerned about.

The responses have been slightly modified; for example, words that did not contribute to the answer (the, area, I, etc.) were removed. Similar words were also combined (for example, all instances of 'beach area' were changed to 'beach,' all variations of 'improve' such as 'improves,' 'improvements,' etc. were changed to 'improve.'








Plan



Public Meeting #2 and Input Survey #2

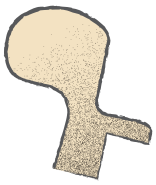
As the project progressed, the project team prepared design alternatives based upon the feedback gathered from the first public meeting and online survey. The project team then hosted the second and final public outreach meeting in December 2019. This meeting allowed participants to learn how their input from the previous community outreach was used to develop design alternatives and provided participants an opportunity to choose their preferred alternative. At the meeting, a set of Base Improvements was presented, and attendees participated in a 'create your own design' exercise where they chose from a set of design alternative options for particular areas within the site. The Base Improvements, as well as each design alternative option, had accompanying preliminary cost estimates for final design and construction. Although these costs are subject to change as the design progresses, it allowed participants to see the monetary impact of choosing design alternative options.

Community members could also provide this same input through an online survey (Survey #2). Below and on the following pages are the overall results of this public outreach effort. The statistics for both the in-person meeting and the online survey have been combined to provide a summary of the results. Where appropriate, additional notes and comments have been added.

✻ Denotes the recommended option

Area 1

Area 1 is at the west end of the project site, this area is where the outfall from the ditch currently is. Base Improvements will include rebuilding this outfall to function and drain properly. Additional Design options range from adding a crusher fines surface, to building a small flagstone plaza and boulder steps to the Roaring Fork River.



- Add crusher fines surface over outfall & to existing bench
- ADA fishing platform

Option A Cost: $2,000



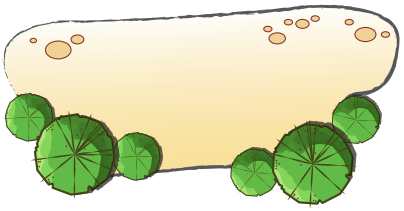
- Add small flagstone plaza
- Add boulder steps
- ADA fishing platform

Option B Cost: $32,000

✻ **Option A**	**51%**
Option B	**27%**
No additional improvements	**22%**

Area 2

Area 2 is the beach area. This Additional Design option expands the beach area slightly, adds boat tie offs, and adds shade trees.



- Expand beach access
- Add boat tie offs
- Add shade trees

Option A Cost: $15,000

✻ **Option A**	**64%**
No additional improvements	**36%**

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Area 3

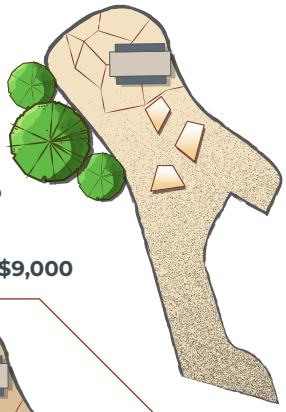
Area 3 is the main plaza and the connection to the Atkinson Trail. The first option mostly improves the area by adding/refreshing crusher fines & adding shade trees, while the second option adds flagstone to the Trail as well.

*	**Option A**	**51%**
	Option B	**24%**
	No additional improvements	**25%**

Note on Area 3: Although Option B received the least amount of votes, there was significant interest in adding an educational sign to this area. The project team recommends Option A, with the addition of an educational sign.

- Fill flagstone joints with crusher fines
- Add shade trees
- Flagstone, table and boulder seats to remain

Option A Cost: $9,000





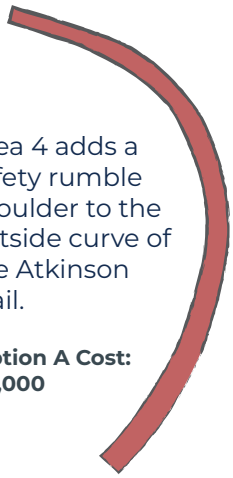
- Add flagstone to Atkinson Trail
- Add spawning educational sign
- Add additional table and seating
- Add shade trees

Option B Cost: $37,000

Area 4

Area 4 adds a safety rumble shoulder to the outside curve of the Atkinson Trail.

Option A Cost: $5,000

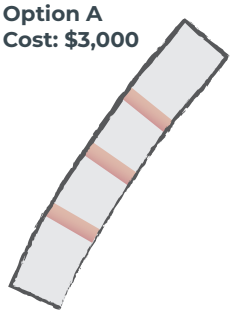


	Option A	**29%**
*	**No additional improvements**	**71%**

Area 5

Area 5 adds a slowing rumble strips on the downhill section of the Atkinson Trail.

Option A Cost: $3,000



	Option A	**23%**
*	**No additional improvements**	**77%**

Note on Areas 4 and 5: At the public meeting, there were several questions about the details of what these improvements would look like. Through these discussions, it was discovered that the online survey caused confusion for some about how much of a visual impact these improvements would cause. Several participants at the public meeting stated they would be in favor of these improvements after discussing the details. However, the overall results from the survey and public meeting still showed the majority of respondents preferred no additional improvements for both Area 4 and Area 5.

Area 6

Area 6 has a depression leading to the ditch, as well as a crusher fines trail. Both Additional Design options include filling the depression. The first option adds a new small crusher fines area with boulder seats, while the second area simply revegetates the filled in area and refreshes the existing crusher fines trail.

Option A	**36%**
Option B	**42%**
No additional improvements	**22%**

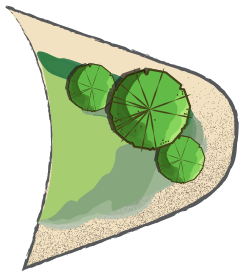


- Fill in existing ditch
- Add small gathering space with boulder seating
- Add shade trees
- Revegetate perimeter

Option A Cost: $11,000

- Fill in existing ditch
- Revegetate filled area
- Refresh existing crusher fines trail

Option B Cost: $7,000



Note on Area 6: In the online survey, Option B was the favored choice with 48% of the votes. At the in person public meeting. Option A was the favored choice with 57% of the vote. Although Option B was the overall favored choice, it was by a fairly small margin. Therefore, the project team recommends that either Option A or B would meet community desires and site needs.

Area 7

The area 7 option adds stepping boulders to cross Three Mile Creek during low flow times of the year.



Option A Cost: $4,000

Option A	**56%**
No additional improvements	**44%**

Note on Area 7: Based on discussions with Colorado Parks and Wildlife and hydraulic modeling to be completed, the utilization of boulders as stepping stones may be modified to a small bridge.

Area 8

Either remove the headgate (A), or transform it into an educational exhibit (B).



Option A Cost: $19,000



Option B Cost: $10,000

Option A	**36%**
Option B	**22%**
No additional improvements	**42%**

Note on Area 8: Given the small margin between Option A and no additional improvements, the project team recommends leaving the headgate, but utilizing it with improvements as a bridge to the island/upstream area.

Additional Items

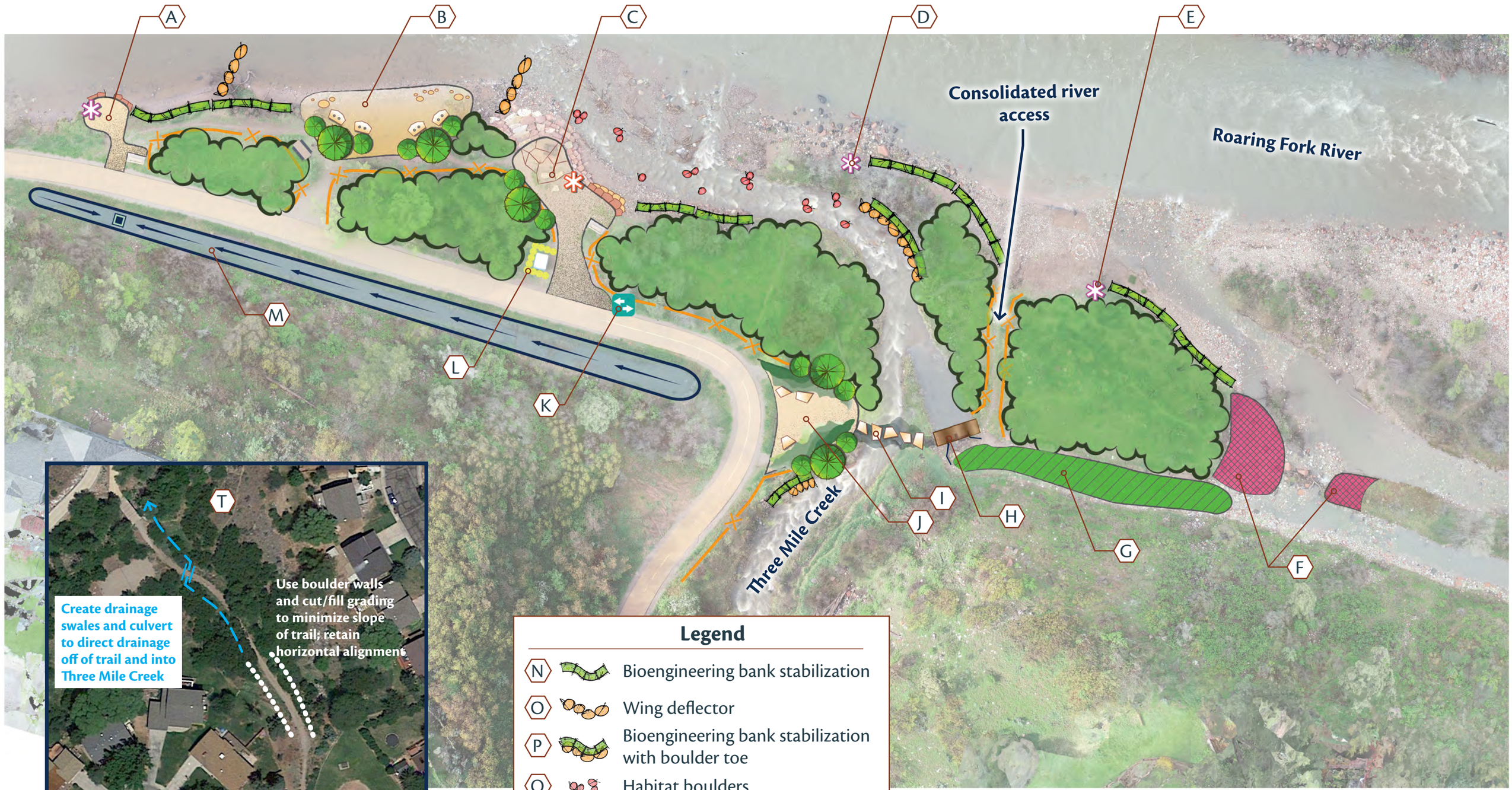
In addition to the focus areas for alternatives, participants were able to add additional items. The most requested items were additional native shade trees, native shade tree clusters, and native shrub/pollinator clusters. Many respondents also wanted an additional picnic table and/or seating (numbers were very close picking between boulder seating and benches). Although less votes were given for educational signage/exhibits, 35% of respondents desired a simple educational sign, 14% an interactive sign, and 8% an interactive exhibit. These numbers can be a bit misleading because it split the larger group of people who desired some type of educational sign/ exhibit into smaller groups. Overall, more than 50% of respondents desired some sort of educational sign or exhibit at the site.

Site Improvement Recommendations

The following 11x17 plan sheet (the Three Mile Creek Confluence Planning Recommendations Map) shows the project team's recommended improvements. These include the 'base improvements,' as well as the selected additional design options that the public gave input on. Below is a summary of these recommended improvements (letters refer to labeled features on the 11x17 plan):

- **A.** Outfall and secondary plaza area - Stabilize the river bank with boulders. On top of the re-constructed outfall and boulder stabilization, create a small crusher fines plaza that connects with the foot path to the beach area. Add fish spawning educational sign.
- **B.** Beach area - Expand the beach area, add boulder tie-offs for boats, and add larger native shade trees and a picnic table towards the back (inland) side of the beach.
- **C.** Main plaza area - fill the flagstone joins with crusher fines and extend the usable area by adding crusher fines to the restroom and the Atkinson Trail. At the east end of the main plaza, continue the boulder steps using larger boulders until approximately in line with the existing bench. Add an illustrative, educational sign on fish habitat and spawning at the main plaza. Existing table and boulder seats to remain.
- **D.** Add a boating access sign (directed to boat traffic).
- **E.** Fishing information and restrictions sign detailing extents and importance of spawning areas at and around the confluence.
- **F.** Re-grade and re-vegetate the ditch avulsion area on the east edge of the site to create a functioning overflow channel that returns to the Roaring Fork River.
- **G.** Re-vegetate re-graded Atkinson ditch area.
- **H.** Add a structure to the existing headgate to allow safe crossing of the area directly below the headgate.
- **I.** Add a crossing to Three Mile Creek. Depending on construction budget and final design, this could be either an in-stream low water crossing that is designed to also be a grade control structure, or a small bridge.
- **J.** Fill the existing 'hole' between Three Mile Creek and the Atkinson Trail. Re-vegetate the edges of this area and create a crusher fines trail with boulder seats.
- **K.** Add wayfinding signage along the Atkinson Trail. Potential labels include: Three Mile Creek Confluence, Restroom, Downtown Glenwood Springs, Three Mile Creek Parking, Beach/Boat Access, Fishing Access.
- **L.** Add a wooden enclosure around the existing restroom, to match existing restroom enclosures in the surrounding neighborhoods.
- **M.** Re-grade and fill existing ditch so that it functions as a bioswale without standing water. Fix drainage outfall to better convey water to the Roaring Fork River, which likely means extending the outfall to properly function (see area A).
- **N.** Install bio-engineering measures to stabilize river banks as shown.
- **O.** Install at-grade wing deflectors to protect river banks and allow for better river access.
- **P.** Install bio-engineering measures with a boulder toe to stabilize river banks as shown.
- **Q.** Install habitat boulders in Three Mile Creek to increase aquatic habitat and diversity.
- **R.** Add split rail fencing to direct pedestrian traffic and protect native vegetation.
- **S.** Perform invasive weed management and native re-vegetation across the entire site.
- **T.** Design and install improvements to the Volleyball Court Trail to minimize the trail slope and increase safety. This will likely require boulder retaining walls, re-grading, and drainage swales to direct water away from the trail and into Three Mile Creek. A single culvert to convey water from the south side of the trail to the north side is also likely.

Three Mile Creek Confluence Planning Recommendations Map



Legend

- N — Bioengineering bank stabilization
- O — Wing deflector
- P — Bioengineering bank stabilization with boulder toe
- Q — Habitat boulders
- R — Split rail fence
- S — Invasive plant management and native re-vegetation

0 40 80 120 160 ft

Scale: 1"=40'-0"

Vegetation Management and Recommendations

Vegetation recommendations on-site consist of invasive plant management and native species re-vegetation. The following pages contain invasive plant species that were observed on site, as well as native plant species recommended for revegetation efforts.

Scientific Name	Common Name	Colorado Invasive Status
Bromus tectorum	Cheatgrass	List C Noxious
Cynoglossum officinale	Hounds Tongue	List B Noxious
Elaeagnus angustifolia	Russian Olive	List B Noxious
Poa bulbosa	Bulbous Bluegrass	List C Noxious
Tanacetum vulgare	Common Tansy	List B Noxious
Ulmus pumila	Siberian Elm	Species Watch List

Invasive Plants On-Site


Siberian Elm


Russian Olive


Bulbous Bluegrass


Common Tansy


Cheatgrass


Hounds Tongue

Examples of Recommended Plant Species


Rocky Mountain Maple


Netleaf Giant Hyssop


Redosier Dogwood


Water Sedge


Blanket Flower


Rocky Mountain Penstemon

Below is a list of recommended plant species for re-vegetation:

Wetland Graminoids

Scientific Name	Common Name	Container Size	Spacing
Carex aquatilis	Water Sedge	10 ci	2' center
Carex nebrascensis	Nebraska Sedge	10 ci	2' center
Carex utriculata	Beaked Sedge	10 ci	2' center
Eleocharis palustris	Creeping Spikerush	10 ci	2' center
Glyceria striata	Fowl Mannagrass	10 ci	2' center
Juncus arcticus ssp. littoralis	Mountain (Baltic) Rush	10 ci	2' center
Juncus ensifolius	Three-Stemmed Rush	10 ci	2' center
Juncus toreyii	Torey's Rush	10 ci	2' center
Scirpus microcarpus	Smallflowered Bulrush	10 ci	2' center

Pollinator Friendly Forbs

Scientific Name	Common Name	Container Size	Spacing
Agastache urticifolia	Netleaf Giant Hyssop	10 ci	2' center
Aquilegia coerulea	Colorado Blue Columbine	10 ci	2' center
Aquilegia crysantha	Yellow Columbine	10 ci	2' center
Campanula rotundifolia	American Harebell	10 ci	2' center
Cleome serrulata	Rocky Mountain Beeplant	10 ci	2' center
Erigeron engelmannii	Englemann's Fleabane	10 ci	2' center
Erigonum umbellatum	Sulfur-Flowered Buckwheat	10 ci	2' center
Frageria virginiana	Wild Strawberrry	10 ci	2' center
Gallardia aristata	Blanket Flower	10 ci	2' center
Geranium viscosissimum	Sticky Geranium	10 ci	2' center
Geum macrophyllum	Largeleaf Avens	10 ci	2' center
Heliomeris multiflora	Showy Goldeneye	10 ci	2' center
Hymenoxys hoopesii	Orange Sneezeweed	10 ci	2' center
Monarda fistulosa	Wild Bergamot	10 ci	2' center
Penstemon procerus	Small-Flowered Penstemon	10 ci	2' center
Penstemon strictus 'Bandera'	Rocky Mountain Penstemon	10 ci	2' center
Solidago canadensis	Canada Goldenrod	10 ci	2' center
Thermopsis montan	Goldenbanner	10 ci	2' center

Trees and Shrubs

Scientific Name	Common Name	Container Size	Spacing
Populus fremontii	Fremont Cottonwood	2 1/2" caliper	15' center
Acer glabrum	Rocky Mountain Maple	D60 or #5	6' center
Alnus incana spp. tenuifolia	Thinleaf Alder	D60 or #5	6' center
Betula occidentalis	Western River Birch	D60 or #5	6' center
Cornus sericea	Redosier Dogwod	D60 or #5	6' center
Prunus virginia ssp. melanocarpa	Black Chokecherry	D60 or #5	6' center
Rhus trilobata	Three-leaf Sumac	D60 or #5	6' center
Ribes aureum	Golden Currant	D60 or #5	6' center
Rosa woodsii	Woods' Rose	D60 or #5	6' center
Salix exigua	Coyote Willow	3-4' stake	3' center

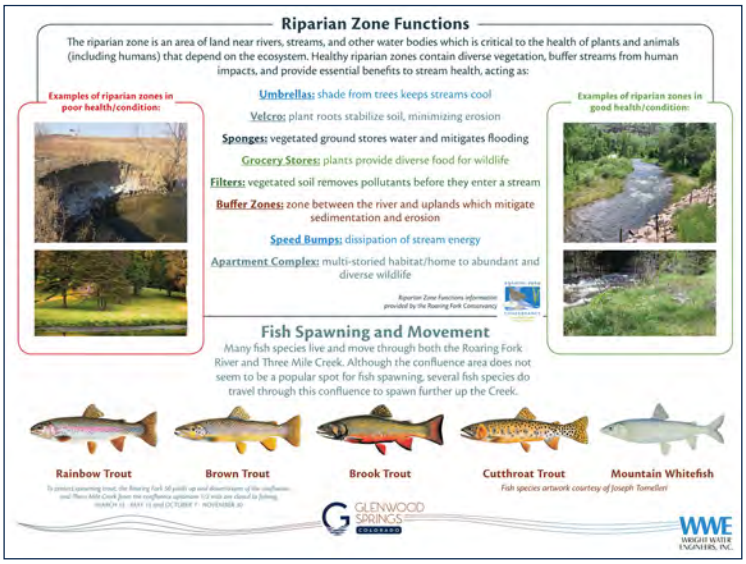
Final Design and Construction Cost Estimates

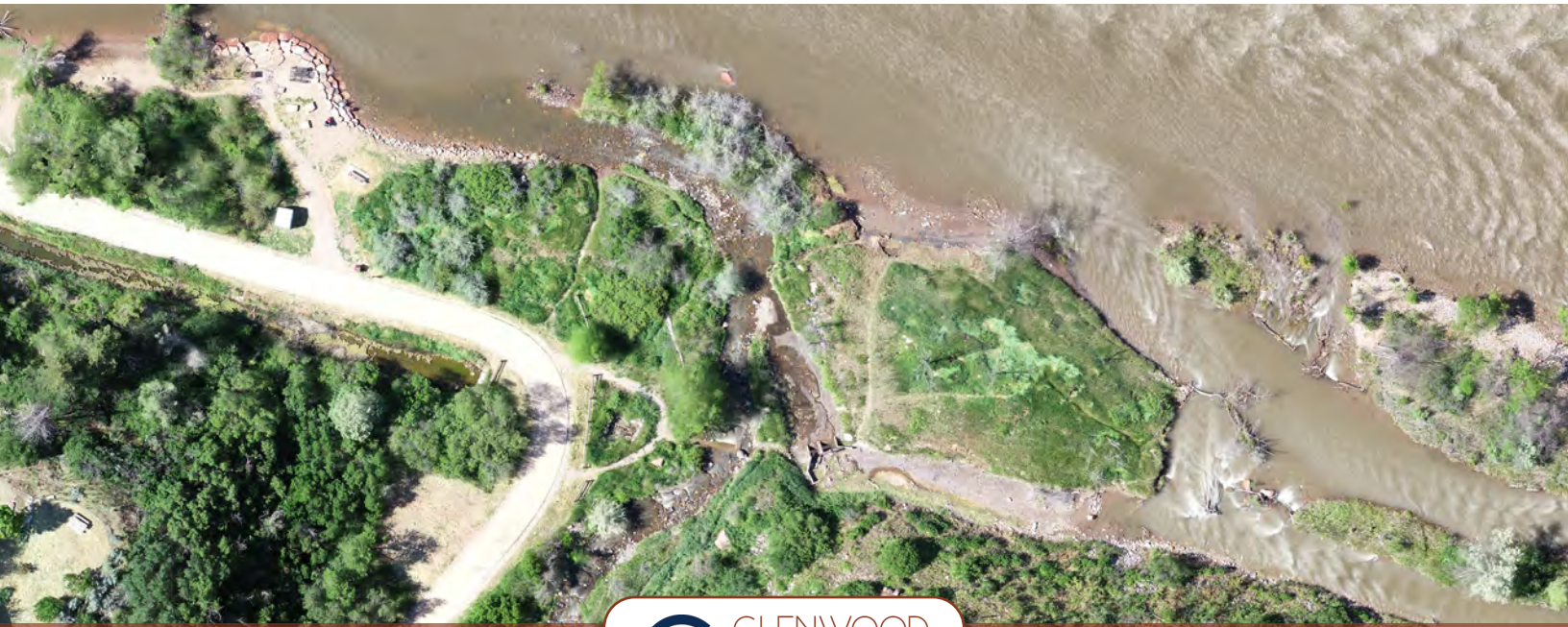
The following cost estimates were developed based on the conceptual plans. These costs were calculated based on the approach that all work would be designed, permitted, and constructed at the same time. If the projects are broken up, it can be assumed individual project prices would increase. Because the design is at an early stage and many things are likely to change before design is finalized, the costs do include a contingency percentage. The letters below align to the Recommendations List/Map.

Area A - Outfall Plaza	$1,400
Area B - Beach Area	$12,300
Area C - Main Plaza	$16,700
Area D - Boat Access Sign	$1,800
Area E - Fishing Sign	$1,800
Area F - Avulsion Area	$17,100
Area G - Atkinson Diversion Channel	$16,300
Area H - Headgate Bridge Structure	$5,000
Area I - Crossing Stepping Stones	$5,000
Area J - The 'Hole'	$11,500
Area K - Wayfinding Signage	$3,500
Area L - Restroom Enclosure	$5,300
Area M - Ditch Improvements	$57,500
Area N - Bioengineering Bank Stabilization	$56,400
Area O - Wing Deflectors	$10,000
Area P - Bioengineering Bank Stabilization with Boulder Toe	$24,200
Area Q - Habitat Boulders	$10,000
Area R - Split Rail Fence	$18,800
Area S - Invasive Plant Management and Revegetation	$55,600
Area T - Volleball Trail Improvements	$100,300
Front End Costs	$179,700
Construction surveying	
Mobilization	
Contingency	
Construction administration	
Total Construction Cost	**$610,200**
Final Design and Permitting	$172,200
Total Project Cost (Design and Construction)	**$782,400**









GLENWOOD SPRINGS COLORADO

Three Mile Creek Confluence Planning Project

Appendices

Appendices Table of Contents

Colorado Parks and Wildlife Habitat Memo
Public Meeting #1 Materials
Public Input Survey #1 Full Results
Public Meeting #2 Materials
Public Meeting #2 Responses
Public Input Survey #2 Full Results

Colorado Parks and Wildlife Habitat Memo

COLORADO
Parks and Wildlife
Department of Natural Resources
Glenwood Springs Area Wildlife Office
88 Wildlife Way
Glenwood Springs, CO 81601
P 970.947.2920 | F 970.947.2936

December 20, 2019

Scott Schreiber
Senior Water Resources Engineer
Wright Water Engineers
818 Colorado Avenue, Suite 307
Glenwood Springs, CO 81601

Memorandum – Fisheries in the Threemile Creek Area

Dear Mr. Schreiber,

Colorado Parks and Wildlife (CPW) is mandated to manage fisheries in Colorado's public waters. Our statutory mission is to perpetuate the wildlife resources of the State, to provide a quality State parks system, and to provide enjoyable and sustainable outdoor recreation opportunities that educate and inspire current and future generations to serve as strategic stewards of Colorado's natural resources. This mission is implemented through our 2015 Strategic Plan, and the goals it embraces which are designed to make CPW a national leader in wildlife management, conservation, and sustainable outdoor recreation for current and future generations. The Town of Glenwood's project at Threemile Creek's confluence area along the Roaring Fork River is an excellent opportunity to connect the public to our local river and fishery resources. It also has the potential to inspire stewardship through increased awareness of these resources and thoughtful development that accommodates the needs of the local fishery resource and use by people, as well.

Threemile Creek is a tributary to the Roaring Fork River. Both waters are considered coldwater fisheries that are managed for trout, a popular coldwater sportfish. In particular, the Roaring Fork River is a Gold Medal Water due to its abundance of Quality Trout of 60 trout/acre that well exceeds the 12 quality trout/acre Gold Medal standard. The river also hosts a high biomass of trout, 115 lbs/acre, which also surpasses the Gold Medal standard of 60 lbs/acre, as documented in CPW's 2019 fishery surveys. Other coldwater species present in the Roaring Fork River around Threemile Creek include mountain whitefish, native bluehead and flannelmouth suckers, non-native white and longnose suckers, native mottle sculpin and speckled dace. Threemile Creek hosts brown and rainbow trout, and mottle sculpin from its confluence up to Fourmile Park, the distribution of which may vary with water availability as Threemile Creek is heavily diverted below U.S. Forest Service land in the headwaters.

Threemile Creek is a well known spawning tributary for sportfish from the Roaring Fork River. Longstanding fishing closures protect fish during their spawning activities in the spring and fall within 50 feet upstream and downstream of the confluence on the Roaring Fork River and the first half mile up Threemile Creek. The closures protect the large trout and whitefish from the river that are especially vulnerable to anglers in their spawning congregations. Indeed, these closures are being extended in the spring to the end of May starting in 2020 due to the lingering abundance of spawners documented during that time.

Spring spawning rainbow trout and fall spawning brown trout will move into Threemile Creek to lay their eggs in redds that provide the protection of a small stream for their offspring when they hatch up to 3 months later and large predatory fish have returned to the river. Of course, water availability varies annually in the small creek due to snowpack and water diversions, and water may be particularly limited in some falls when diverters are still using water or baseflow conditions are not sustained following low snowpack or summer drought conditions. Adult fish passage is possible when streamflows are high enough to sustain channel depths of 6 inches or more. Fall

Dan Prenzlow, Director, Colorado Parks and Wildlife • Parks and Wildlife Commission: Taishya Adams • Robert W. Bray • Charles Garcia • Marie Haskett
Carrie Besnette Hauser • John Howard • Marvin McDaniel, Acting Vice-Chair • Luke B. Schafer • Eden Vardy • James Vigil, Secretary • Michelle Zimmerman, Acting Chair

spawning mountain whitefish will congregate in pools in the lower 1000 feet of Threemile Creek when water is available or the pool at the confluence in the Roaring Fork River to spawn. Mountain whitefish are broadcast spawners, so once their eggs are fertilized they settle into the substrate in or near the pools where they congregate. As well, native flannelmouth suckers are often observed around the confluence of Threemile Creek and are likely utilizing the gravel bars immediately upstream of the confluence to spawn in late spring and early summer. Once fish lay their eggs, they incubate in the gravels for 1 to 5 months depending on species, and then the fry emerge and grow until they are large enough to actively move in the flowing water column when they will disperse in search of desirable forage and habitat, which is optimal downstream in the Roaring Fork River.

During CPW's Spring 2019 spawning surveys, spawning rainbow trout and active redds were observed within a few feet of the confluence with the Roaring Fork River and upstream in Threemile Creek to the Midland Bridge. Indeed, large spawning trout from the Roaring Fork are often observed (and sometimes stranded when the ditches turn on) in Threemile Creek near The Hideout on the upstream side of Midland Avenue. Disruption of spawning activities and disturbance of redds due to trampling by the feet of water users is a big risk in the park area and increasing with rising use. Human and pet disturbance in the stream can lead to mortality of eggs and emerging fry, and disruption of spawners that can reduce spawning success due to stress or displacement. Ultimately this can impact the wild recruitment of whirling disease resistant rainbow trout that CPW is actively trying to recover in the Roaring Fork River. It could also impact the abundance of other desirable sportfish such as brown trout and mountain whitefish that utilize Threemile Creek and its confluence in the Roaring Fork River when flows are suitable.

Whirling disease (WD) is a major issue for trout in Colorado, including the Roaring Fork River. By the late 1990s natural recruitment of rainbow trout was virtually eliminated. CPW has developed strains of rainbow trout that have developed resistance to the disease and has implemented a stocking program to reestablish wild rainbow trout. We request that any projects in local waters avoid increasing fine sediment deposition (e.g., fine and course sand, beaches, etc.) to limit the habitat available to tubifex worms that are one of the two hosts, the other being a trout, the WD parasite needs to complete its lifecycle. We also encourage the reduction of any existing areas of fine sediment. Fine sediment can be discouraged by encouraging water to actively flow through a site, maintaining scour.

Due to the change in fishing regulations that extends the spring fishing closures, CPW will be producing new signage similar to the signs that are present. We are also happy to help develop signage to place in educational kiosks or at creek crossings that will discourage or restrict traffic through the stream.

Colorado Parks and Wildlife appreciates the opportunity to provide technical information for this project and we look forward to our continued involvement in the project to enhance the use around Threemile Creek as it develops. If there are any questions or needs for additional information, please contact Aquatic Biologist Kendall Bakich at 970.947.2924 or District Wildlife Manager Dan Cacho at 970.947.2934.

Sincerely,

Kendall Bakich

Kendall Bakich
Aquatic Biologist
Wildlife Area 8, Glenwood Springs

Cc: Matt Yamashita, Area Wildlife Manager
Dan Cacho, District Wildlife Manager
File

Public Meeting #1 Materials

We Want to Hear from You!

This is the **first** public workshop for the **Three Mile Creek Confluence Planning Project**. We are here to explain the project details and **understand what you want to see** in **your** public space!

Project Goals Statement

*"Develop a **holistic** and **resilient** plan that addresses current and future impacts from the use of the Three Mile Creek confluence area while providing ecologically diverse and naturally sustainable **habitats**, improved **water quality**, **trail connectivity**, **recreational access**, and **education** regarding our most valuable natural resource, **water**."*

What should you do here today?

Find out about the project:

» Sign in

» Review the boards and learn

» Ask us questions

Give us your input:

» Take the survey online or on paper

» Show us what you like and dislike on the photo example boards

www.surveymonkey.com/r/3Mile

Show us how you use the Three Mile Creek confluence area:

» Draw on the aerial map how you use the area

» Draw/write notes on what you would like here

And talk to our team members!

Consultant Team



Scott Schreiber, PE
Project Manager
Restoration Engineer



Drake Ludwig, EI
Restoration Engineer



Jon Altschuld, RLA
Landscape Architect



Randy Mandel
Revegetation specialist
Restoration Ecologist

Grant funding provided by:

Pitkin County Healthy Rivers

Glenwood Springs Colorado

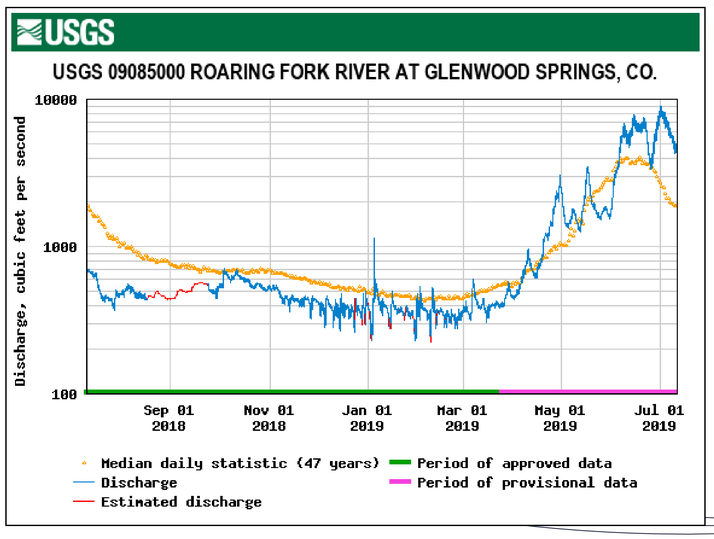
Aerial Site Map

Please use the provided markers and pens to show us how you currently use the Three Mile Creek confluence area. You can also draw in and write notes about how you would like to use it (potential improvements).

Please be respectful with comments and do not mark over others' comments/notes.



Roaring Fork mean daily flow on May 9: 1,680 cfs



Aerial imagery collected: May 9, 2019

N

Roaring Fork flow today: _____ cfs

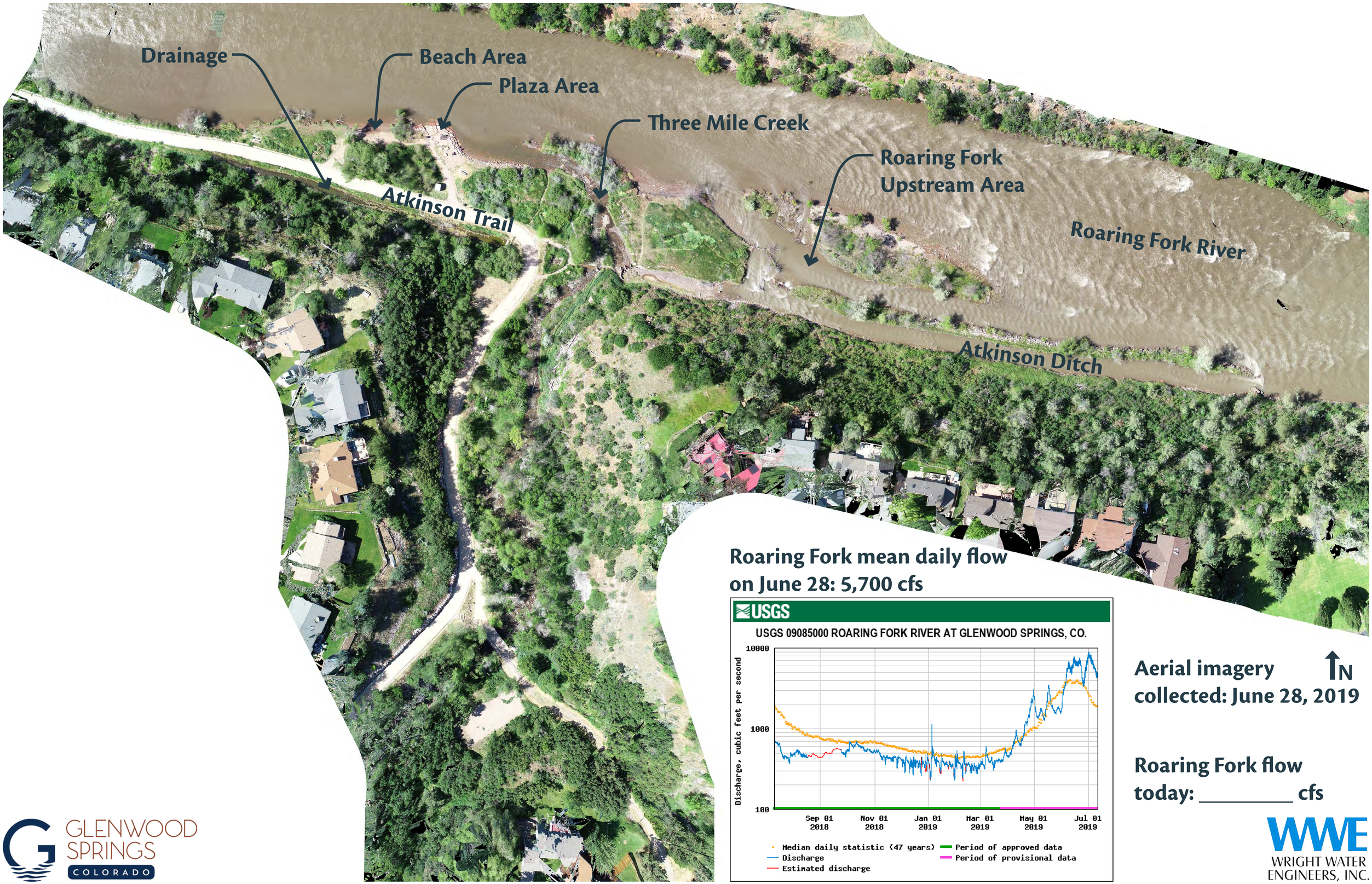
GLENWOOD SPRINGS COLORADO

WWE WRIGHT WATER ENGINEERS, INC.

Aerial Site Map (High Flow)

Please use the provided markers and pens to show us how you currently use the Three Mile Creek confluence area. You can also draw in and write notes about how you would like to use it (potential improvements).

Please be respectful with comments and do not mark over others' comments/notes.



Roaring Fork mean daily flow on June 28: 5,700 cfs

Aerial imagery collected: June 28, 2019

N

Roaring Fork flow today: _____ cfs

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WWE WRIGHT WATER ENGINEERS, INC.

Photo Examples (1 of 2)

The images below are examples of the types of amenities and improvements that **could** be incorporated into the Three Mile Creek confluence plan; our Team will take your feedback into account as we develop the plan options.

For each of the categories, place red dots on image examples that you dislike for the Three Mile Creek confluence area, and green dots on image examples that you do like for the Three Mile Creek confluence area. Each image has a few keywords associated with that image.

Seating and Tables

Make no seating improvements











Plaza Areas

Make no plaza improvements







Restrooms

Make no restroom improvements







Shade Structures

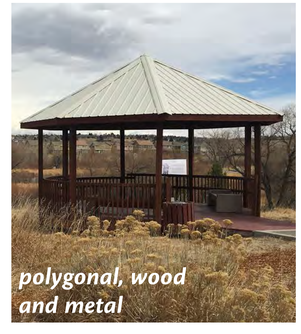
Make no shade structure improvements



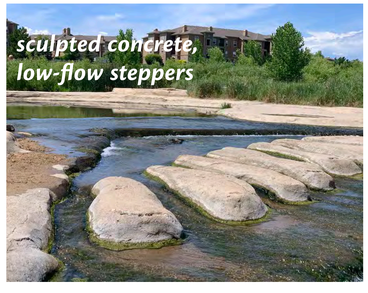




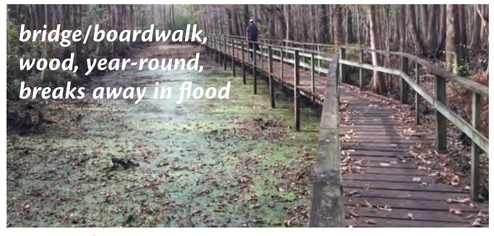




Water Crossings







Make no water crossing improvements

GLENWOOD SPRINGS COLORADO

WWE WRIGHT WATER ENGINEERS, INC.

Photo Examples (2 of 2)

The images below are examples of the types of amenities and improvements that **could** be incorporated into the Three Mile Creek confluence plan; our Team will take your feedback into account as we develop the plan options.

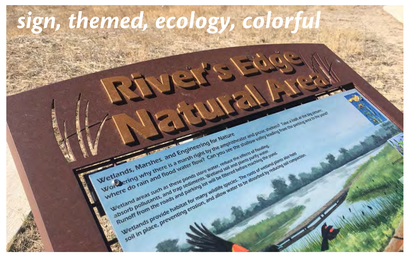
For each of the categories, place red dots on image examples that you dislike for the Three Mile Creek confluence area, and green dots on image examples that you do like for the Three Mile Creek confluence area. Each image has a few keywords associated with that image.

Educational Elements & Signage

Make no sign/ education improvements



covered, large, multi-panel, themed



sign, themed, ecology, colorful


animals, tracks, surface treatment, subtle



educational loop, wayfinding



pet waste station


sign, interactive, tactile, vegetation


fish, biology, surface treatment, colorful

Vegetation

Make no vegetation improvements

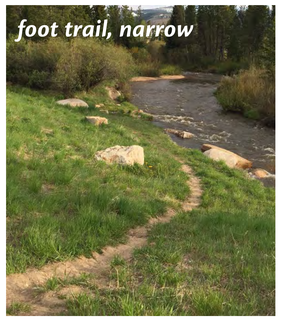

willows, riparian, lush/full, native


willow, cottonwood, native, some access


maintained, ornamental

Secondary Trails

Make no secondary trail improvements


foot trail, narrow


crusher fines, wide, maintained


loops, connections with main trail, trail network

Barriers

Make no barrier improvements


wood, split rail, rustic


dense vegetation, grading/slope



signage and fence, wood


signage, railing, metal


wood and rope, minimal

Beach and Water Access


formal/controlled, stone


natural, gravel/river stones, informal


designated boat landing area

Make no beach access improvements

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Existing Site Conditions

Below are several pictures of existing site conditions at the Three Mile Creek confluence area.

Invasive/Noxious Plant Species Examples


Siberian Elm


Russian Olive


Bulbous Bluegrass


Comman Tansy


Cheatgrass


Hounds Tongue

Native Plant Examples


Rocky Mountain Maple


Saskatoon Serviceberry


Buffaloberry


Whitestem Gooseberry

Drainage





Bank Conditions





Atkinson Trail



Brush Creek Park Trail



Parking/Trailhead



Restroom



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Riparian Zone Functions

The riparian zone is an area of land near rivers, streams, and other water bodies which is critical to the health of plants and animals (including humans) that depend on the ecosystem. Healthy riparian zones contain diverse vegetation, buffer streams from human impacts, and provide essential benefits to stream health, acting as:

Examples of riparian zones in poor health/condition:





Umbrellas: shade from trees keeps streams cool

Velcro: plant roots stabilize soil, minimizing erosion

Sponges: vegetated ground stores water and mitigates flooding

Grocery Stores: plants provide diverse food for wildlife

Filters: vegetated soil removes pollutants before they enter a stream

Buffer Zones: zone between the river and uplands which mitigate sedimentation and erosion

Speed Bumps: dissipation of stream energy

Apartment Complex: multi-storied habitat/home to abundant and diverse wildlife

Riparian Zone Functions information provided by the Roaring Fork Conservancy

ROARING FORK CONSERVANCY
Bringing People Together to Protect Our Rivers

Examples of riparian zones in good health/condition:





Fish Spawning and Movement

Many fish species live and move through both the Roaring Fork River and Three Mile Creek. Although the confluence area does not seem to be a popular spot for fish spawning, several fish species do travel through this confluence to spawn further up the Creek.



Rainbow Trout



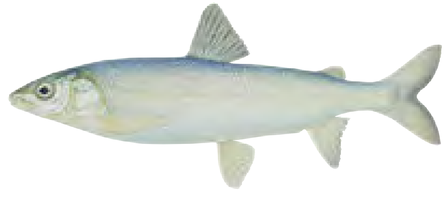
Brown Trout



Brook Trout



Cutthroat Trout



Mountain Whitefish

To protect spawning trout, the Roaring Fork 50 yards up and downstream of the confluence, and Three Mile Creek from the confluence upstream 1/2 mile are closed to fishing: MARCH 15 - MAY 15 and OCTOBER 1 - NOVEMBER 30

Fish species artwork courtesy of Joseph Tomelleri

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WWE WRIGHT WATER ENGINEERS, INC.

Site Access Map

Please use the provided markers and pens to show us how you currently **access** the Three Mile Creek confluence area. You can also draw in ideas you have for future access; 2 ***possible*** future connections have been drawn on the map.

Please be respectful with comments and do not mark over others' comments/notes.



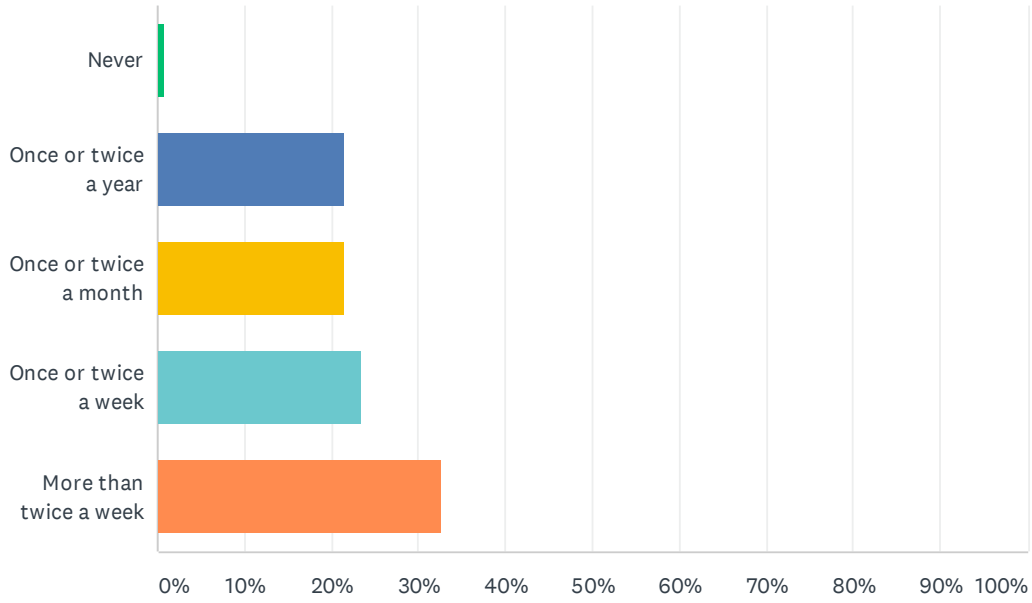
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Public Input Survey #1 Full Results

Q1 How often do you use the Three Mile Creek Confluence Area? (select one)

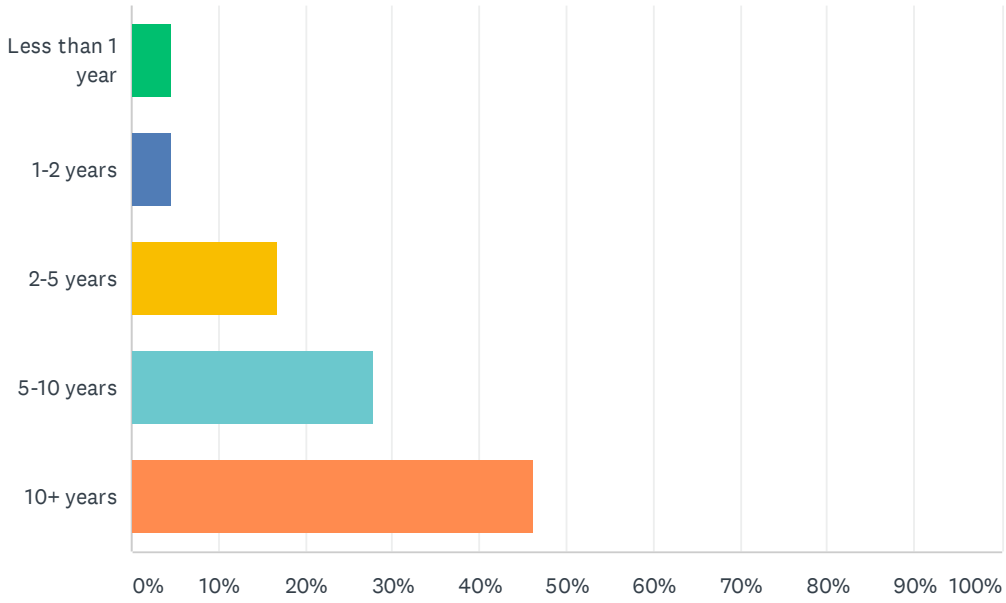
Answered: 107 Skipped: 4



ANSWER CHOICES	RESPONSES	
Never	0.93%	1
Once or twice a year	21.50%	23
Once or twice a month	21.50%	23
Once or twice a week	23.36%	25
More than twice a week	32.71%	35
TOTAL		107

Q2 How long have you been using the Three Mile Creek Confluence area? (select one)

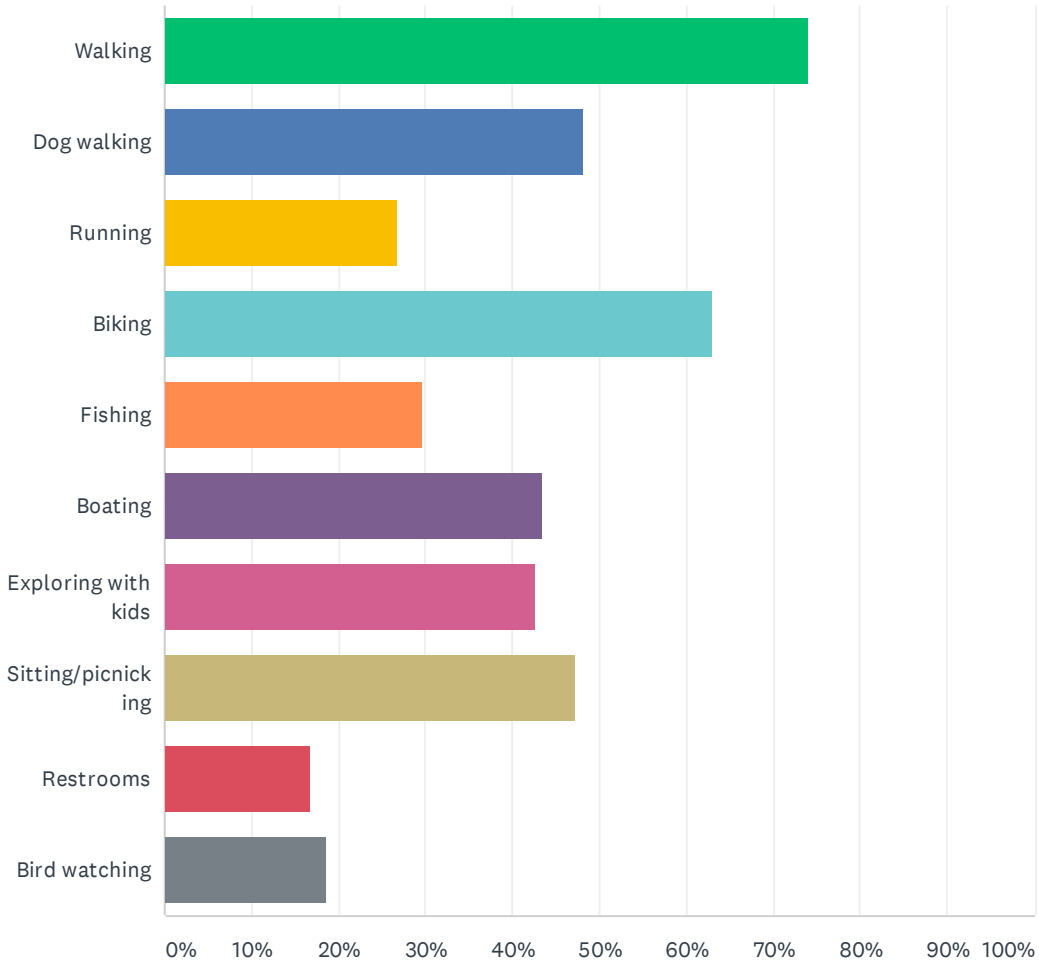
Answered: 108 Skipped: 3



ANSWER CHOICES	RESPONSES	
Less than 1 year	4.63%	5
1-2 years	4.63%	5
2-5 years	16.67%	18
5-10 years	27.78%	30
10+ years	46.30%	50
TOTAL		108

Q3 Which activities do you use the Three Mile Creek Confluence area for? (select all that apply)

Answered: 108 Skipped: 3

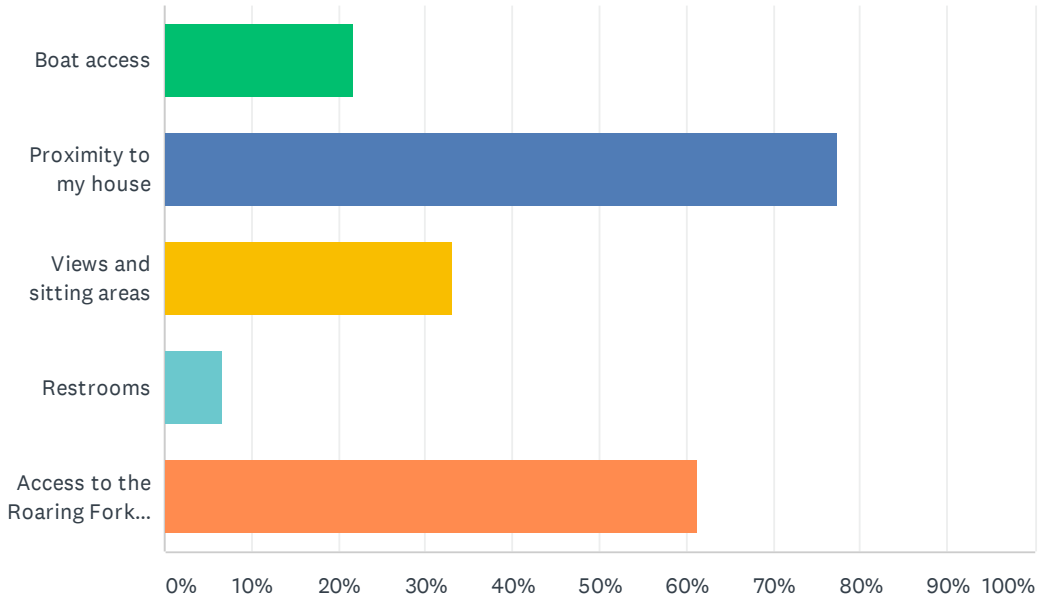


ANSWER CHOICES	RESPONSES	
Walking	74.07%	80
Dog walking	48.15%	52
Running	26.85%	29
Biking	62.96%	68
Fishing	29.63%	32
Boating	43.52%	47
Exploring with kids	42.59%	46
Sitting/picnicking	47.22%	51
Restrooms	16.67%	18
Bird watching	18.52%	20
Total Respondents: 108		

#	OTHER (PLEASE SPECIFY)	DATE
1	Raft by the area but do not stop.	8/21/2019 7:11 AM
2	wading in the river	8/20/2019 8:53 AM
3	swimming	8/16/2019 5:43 PM
4	Wading	8/2/2019 10:02 AM
5	Swimming	7/26/2019 6:43 PM
6	Commuting to work	7/21/2019 10:45 PM
7	Swimming dogs	7/21/2019 4:53 PM
8	commuting to work	7/21/2019 3:56 PM
9	X-c skiing	7/20/2019 10:33 AM
10	swimming	7/19/2019 8:16 AM
11	none	7/19/2019 4:53 AM
12	Bathing	7/19/2019 1:30 AM
13	observing the maintenance of the site	7/11/2019 8:29 AM
14	meeting friends, and outside social events	7/10/2019 3:56 PM
15	Swimming	7/5/2019 10:36 PM

Q4 Why do you choose the Three Mile Creek Confluence area over other parks or trails? (select all that apply)

Answered: 106 Skipped: 5

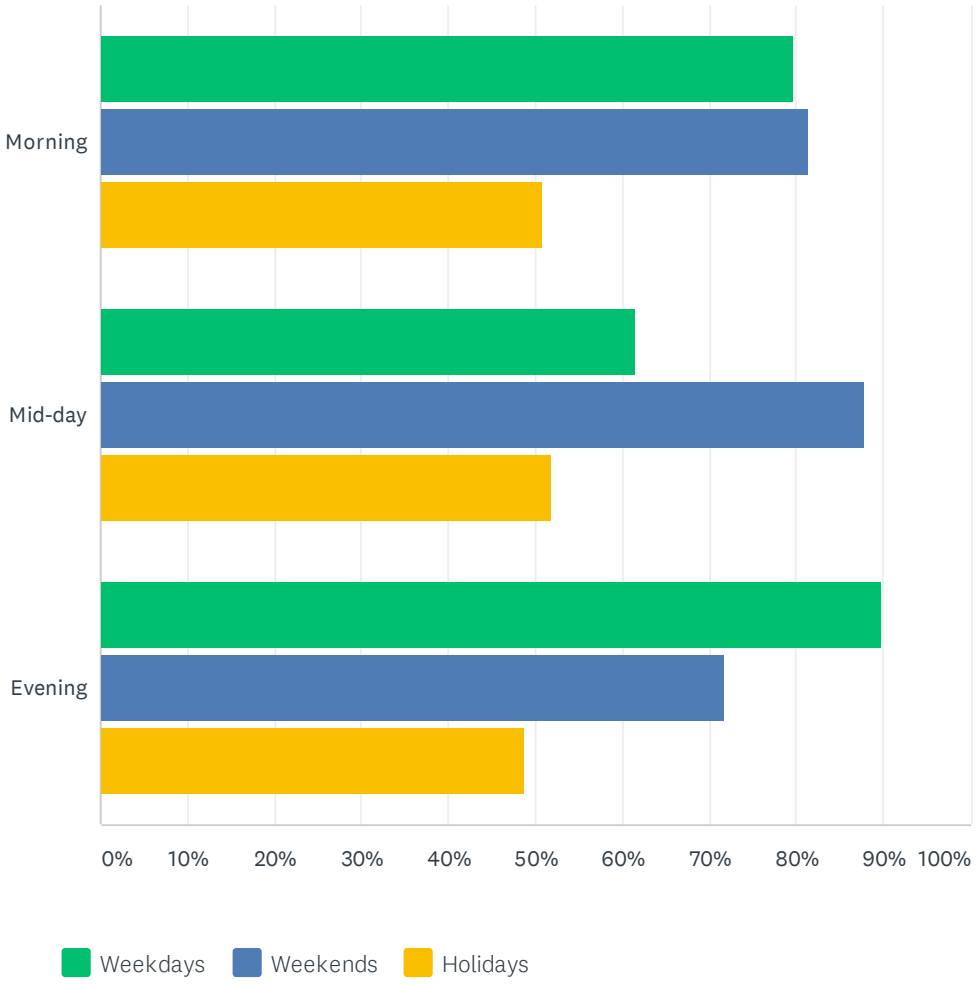


ANSWER CHOICES	RESPONSES	
Boat access	21.70%	23
Proximity to my house	77.36%	82
Views and sitting areas	33.02%	35
Restrooms	6.60%	7
Access to the Roaring Fork River and Three Mile Creek	61.32%	65
Total Respondents: 106		

#	OTHER (PLEASE SPECIFY)	DATE
1	It’s still nice.	8/21/2019 8:44 AM
2	I rarely do choose this area first.	8/21/2019 7:11 AM
3	Beaches	8/16/2019 5:43 PM
4	it is a nice resting place on Roaring Fork River float	7/22/2019 7:46 AM
5	Beach area for kids	7/19/2019 8:49 AM
6	It's location on the bike path	7/19/2019 7:40 AM
7	i dont	7/19/2019 4:53 AM
8	Do restrooms even exist there currently? Wasn't aware	7/17/2019 2:10 PM
9	a component of my employment	7/11/2019 8:29 AM
10	no car traffic/access. serenity of river viewscape, no traffic noise, sandy beach for sitting and playing with young kids, shaded sandy beach, great fishing	7/10/2019 3:56 PM
11	Great place to swim and play in the river	7/5/2019 10:36 PM
12	My dog loves to swim there	7/3/2019 9:36 PM

Q5 What time of day do you typically use the Three Mile Creek Confluence area? (select all that apply)

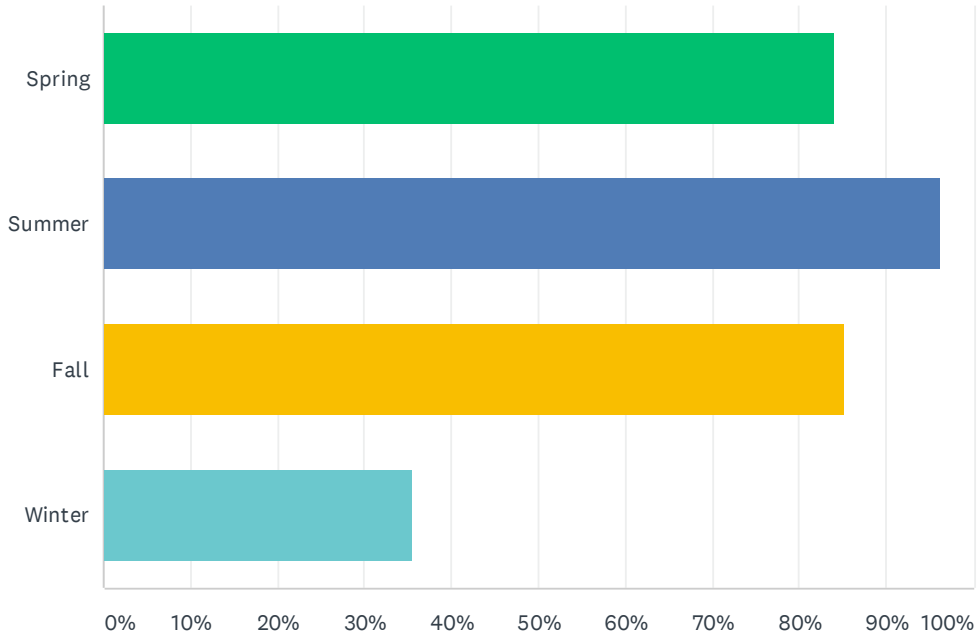
Answered: 106 Skipped: 5



	WEEKDAYS	WEEKENDS	HOLIDAYS	TOTAL RESPONDENTS
Morning	79.66% 47	81.36% 48	50.85% 30	59
Mid-day	61.45% 51	87.95% 73	51.81% 43	83
Evening	89.74% 70	71.79% 56	48.72% 38	78

Q6 During which seasons do you typically use the Three Mile Creek Confluence area? (select all that apply)

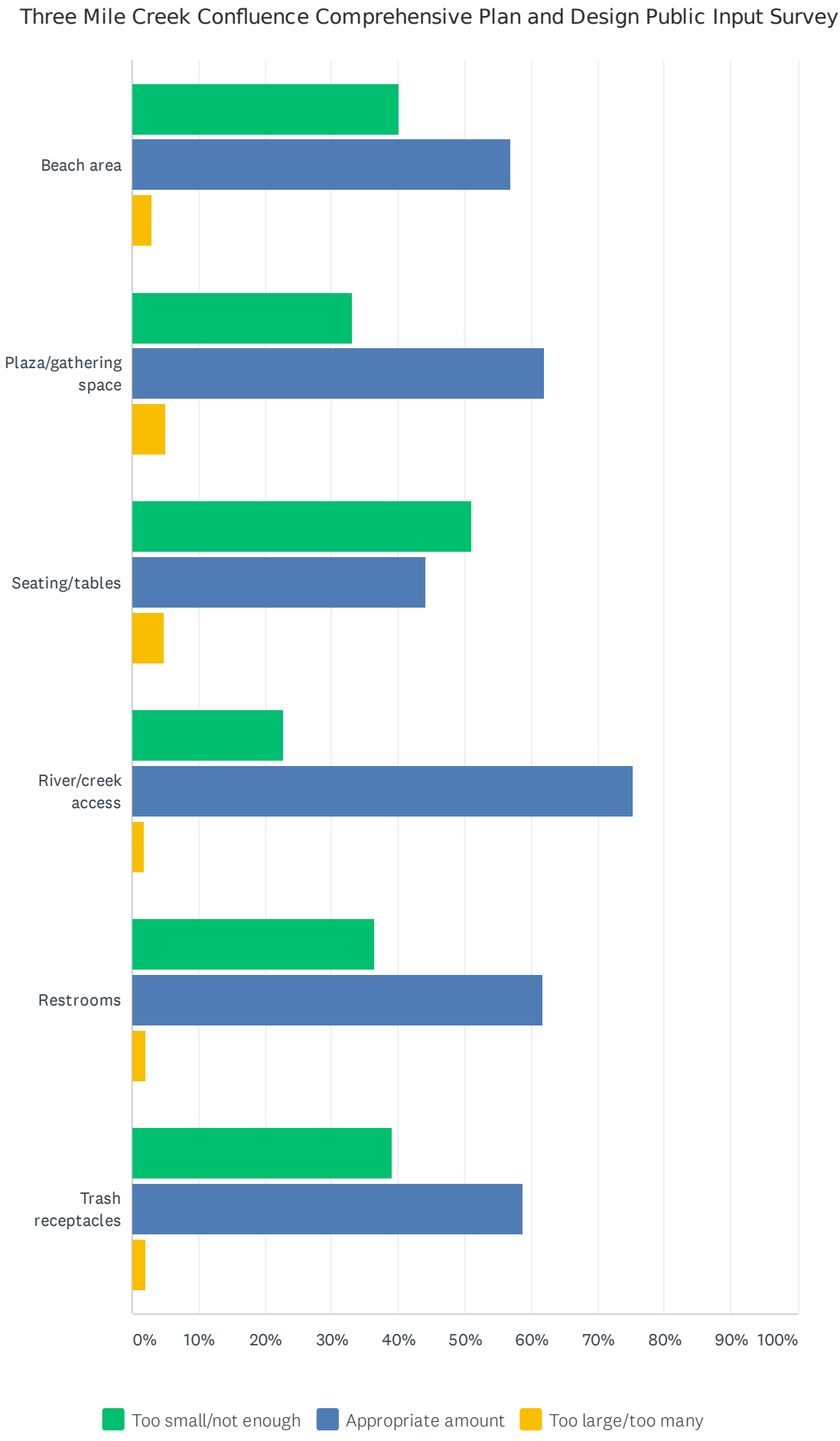
Answered: 107 Skipped: 4



ANSWER CHOICES	RESPONSES	
Spring	84.11%	90
Summer	96.26%	103
Fall	85.05%	91
Winter	35.51%	38
Total Respondents: 107		

Q7 How would you rate the allocated space for the following amenities? (select one per row)

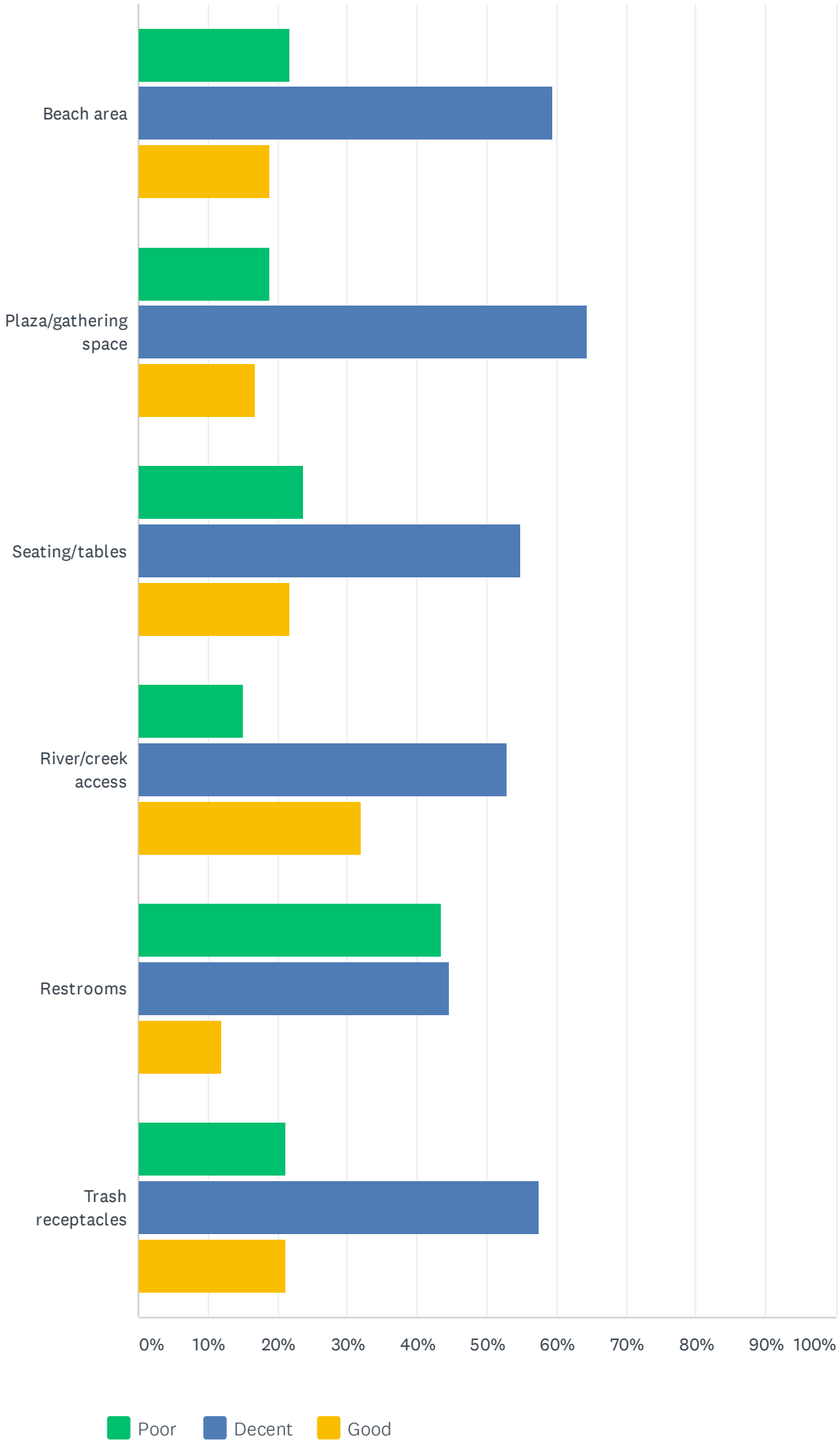
Answered: 105 Skipped: 6


Three Mile Creek Confluence Comprehensive Plan and Design Public Input Survey
Beach area
Plaza/gathering space
Seating/tables
River/creek access
Restrooms
Trash receptacles
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Too small/not enough
Appropriate amount
Too large/too many

	TOO SMALL/NOT ENOUGH	APPROPRIATE AMOUNT	TOO LARGE/TOO MANY	TOTAL
Beach area	40.20% 41	56.86% 58	2.94% 3	102
Plaza/gathering space	33.00% 33	62.00% 62	5.00% 5	100
Seating/tables	50.98% 52	44.12% 45	4.90% 5	102
River/creek access	22.77% 23	75.25% 76	1.98% 2	101
Restrooms	36.36% 36	61.62% 61	2.02% 2	99
Trash receptacles	39.18% 38	58.76% 57	2.06% 2	97

Q8 How would you rate the quality of the following amenities? (select one per row)

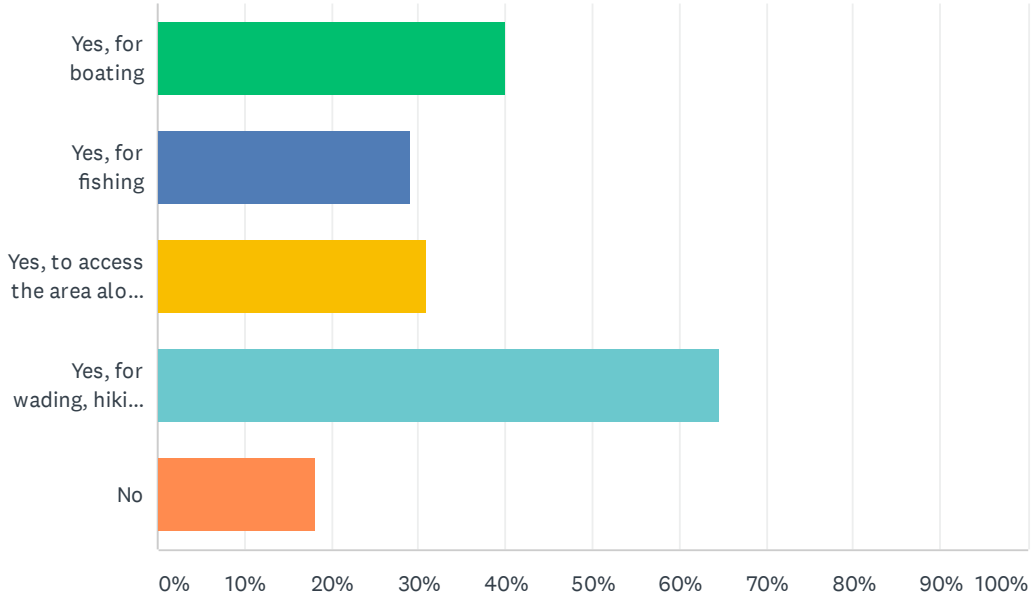
Answered: 107 Skipped: 4


Beach area
Plaza/gathering space
Seating/tables
River/creek access
Restrooms
Trash receptacles
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Poor
Decent
Good

	POOR	DECENT	GOOD	TOTAL
Beach area	21.70% 23	59.43% 63	18.87% 20	106
Plaza/gathering space	18.81% 19	64.36% 65	16.83% 17	101
Seating/tables	23.58% 25	54.72% 58	21.70% 23	106
River/creek access	15.09% 16	52.83% 56	32.08% 34	106
Restrooms	43.56% 44	44.55% 45	11.88% 12	101
Trash receptacles	21.21% 21	57.58% 57	21.21% 21	99

Q9 Do you go into the water (Roaring Fork River or Three Mile Creek) when you use the Three Mile Creek Confluence area? (select all that apply)

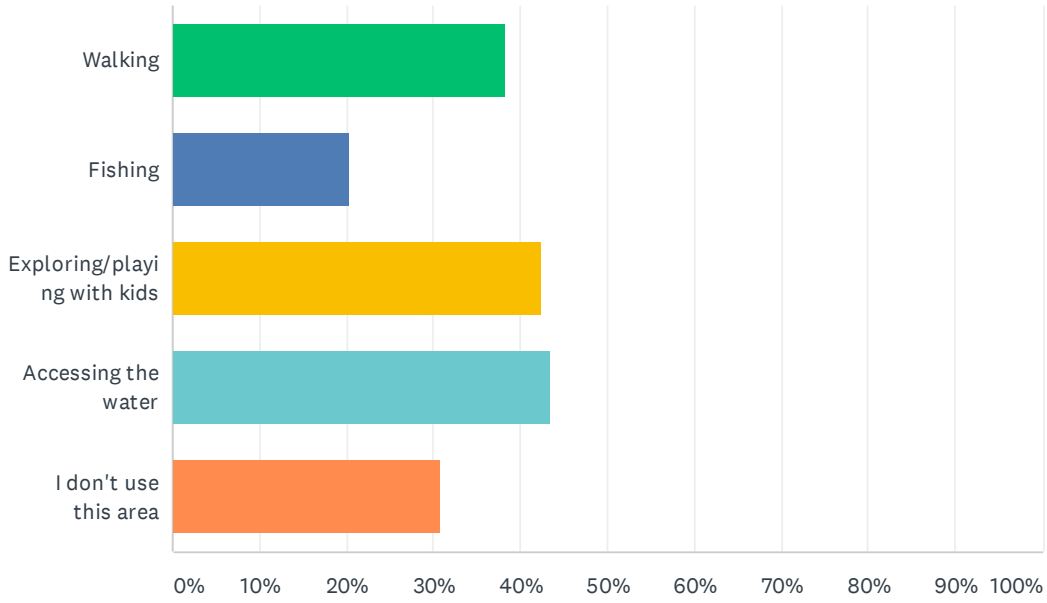
Answered: 110 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes, for boating	40.00%	44
Yes, for fishing	29.09%	32
Yes, to access the area along the Roaring Fork River, upstream of the confluence	30.91%	34
Yes, for wading, hiking, dog walking, etc. (including dogs entering the water)	64.55%	71
No	18.18%	20
Total Respondents: 110		

Q10 Which activities do you use the Roaring Fork Upstream Area for? (select all that apply)

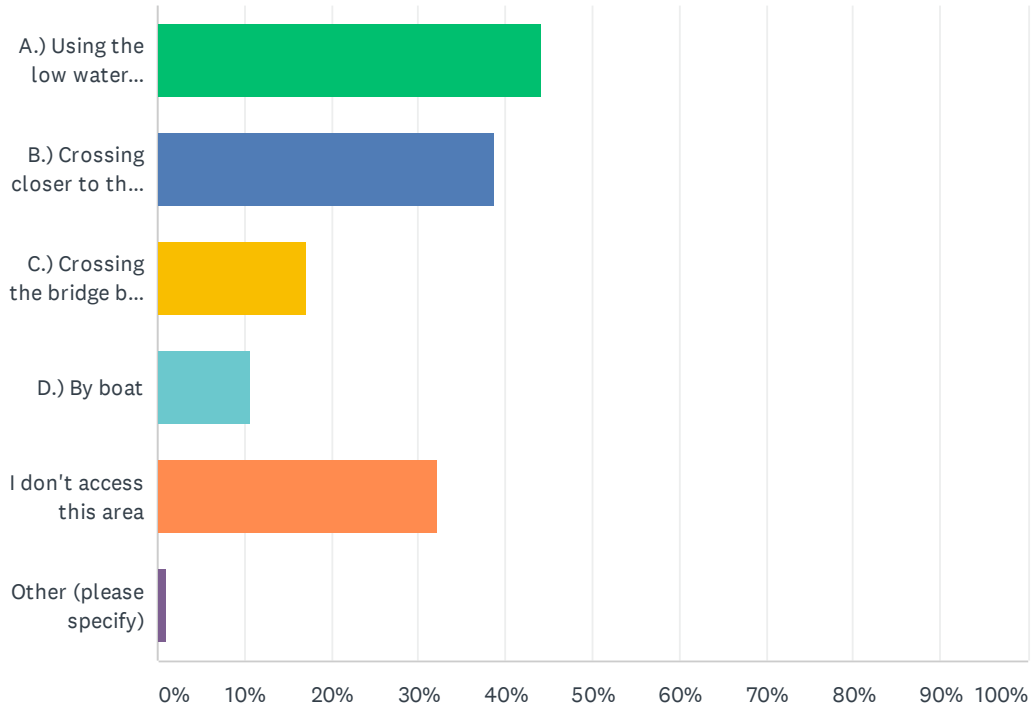
Answered: 94 Skipped: 17



ANSWER CHOICES	RESPONSES	
Walking	38.30%	36
Fishing	20.21%	19
Exploring/playing with kids	42.55%	40
Accessing the water	43.62%	41
I don't use this area	30.85%	29
Total Respondents: 94		

Q11 How do you typically access the Roaring Fork Upstream Area (how do you cross Three Mile Creek)? (select all that apply)

Answered: 93 Skipped: 18

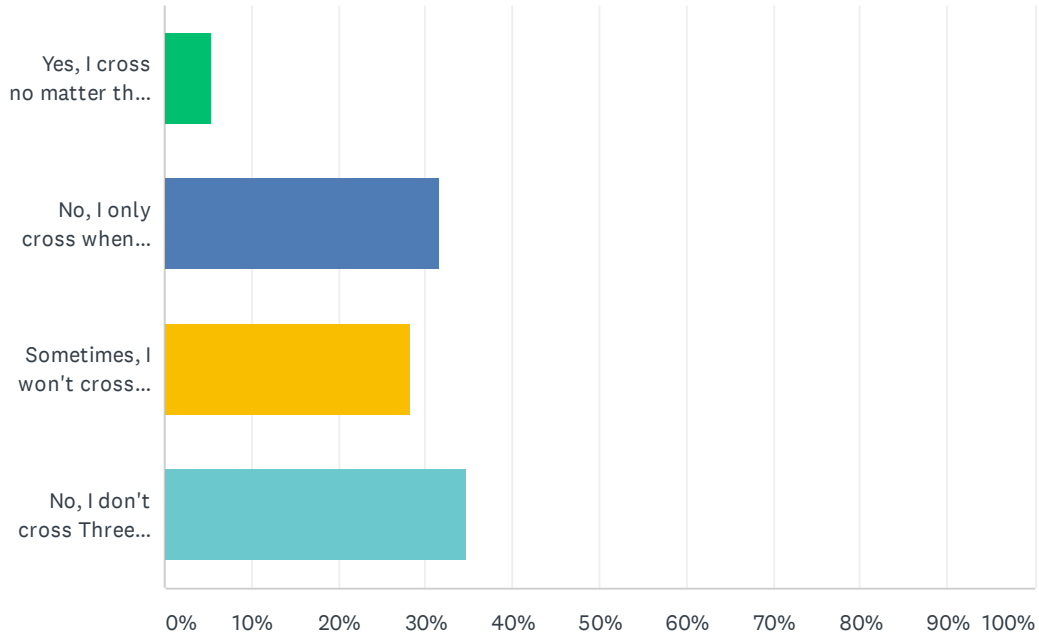


ANSWER CHOICES	RESPONSES	
A.) Using the low water crossing near the Atkinson Ditch and old head gate	44.09%	41
B.) Crossing closer to the confluence, near the plaza sitting area	38.71%	36
C.) Crossing the bridge by the volleyball courts and walking along the east side of Three Mile Creek	17.20%	16
D.) By boat	10.75%	10
I don't access this area	32.26%	30
Other (please specify)	1.08%	1
Total Respondents: 93		

#	OTHER (PLEASE SPECIFY)	DATE
1	From the mountain market	7/22/2019 12:36 PM

Q12 Do you cross Three Mile Creek to access this area during higher flows? (select one)

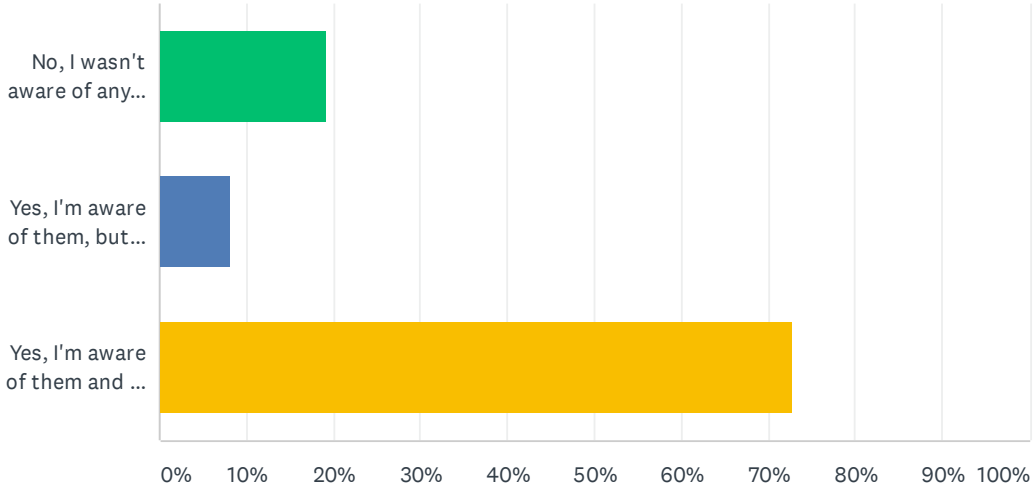
Answered: 92 Skipped: 19



ANSWER CHOICES	RESPONSES	
Yes, I cross no matter the flow	5.43%	5
No, I only cross when Three Mile Creek is flowing pretty low (a few inches deep)	31.52%	29
Sometimes, I won't cross during peak flows, but I do cross when it's higher than low flow	28.26%	26
No, I don't cross Three Mile Creek at all	34.78%	32
TOTAL		92

Q13 Are you aware of the seasonal restrictions on fishing at and near the confluence, and reasons why they are important? (select one)

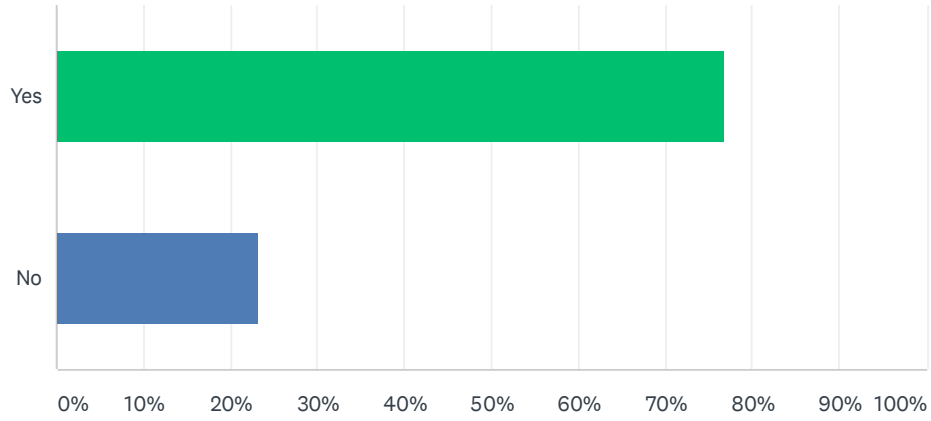
Answered: 99 Skipped: 12



ANSWER CHOICES	RESPONSES	
No, I wasn't aware of any restrictions	19.19%	19
Yes, I'm aware of them, but I don't know the reasons why they are important	8.08%	8
Yes, I'm aware of them and why they are important	72.73%	72
TOTAL		99

Q14 The seasonal fishing restrictions are put in place by Colorado Parks and Wildlife (CPW) to protect sensitive spawning habitat for many native fish species. Trout and other fish use these areas during spawning, as well as to move upstream for spawning. CPW is only allowed to regulate fishing activities. However, any wading through these areas during spawning season (from March 15-May 15 and October 1-November 30) is disruptive to fish spawning.Knowing this, would you be in favor of restricting all activities in the stream channel during these periods? These activities would include wading, walking, dog walking, etc. within the water. (select one)

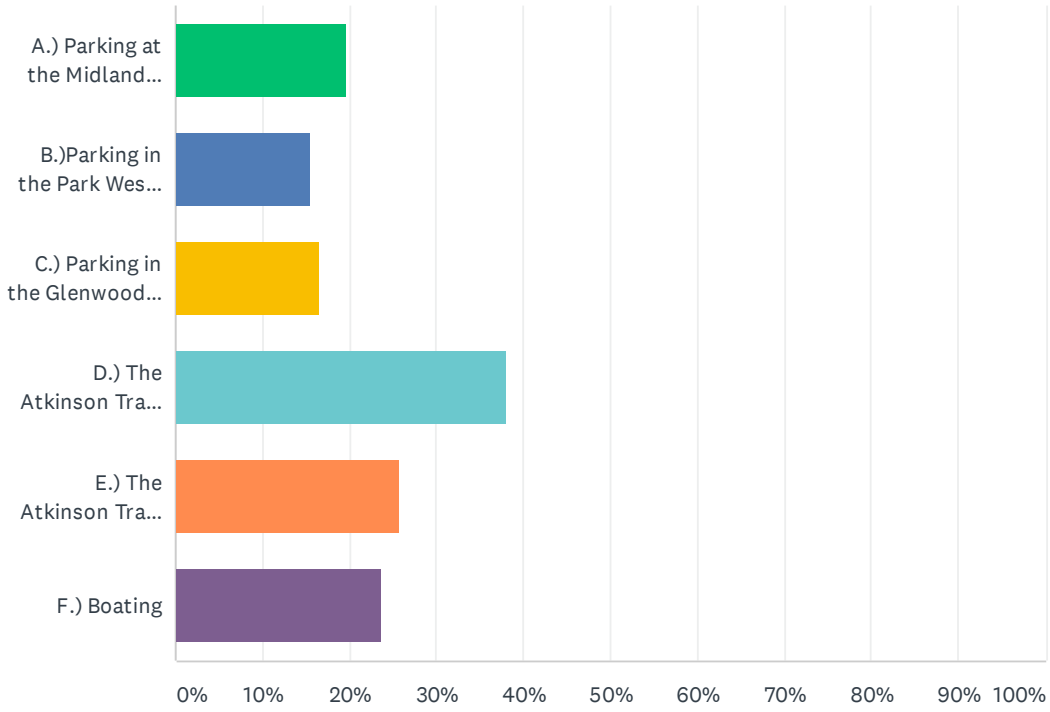
Answered: 99 Skipped: 12



ANSWER CHOICES	RESPONSES	
Yes	76.77%	76
No	23.23%	23
TOTAL		99

Q15 How do you typically access the Three Mile Creek Confluence? (select all that apply)

Answered: 97 Skipped: 14

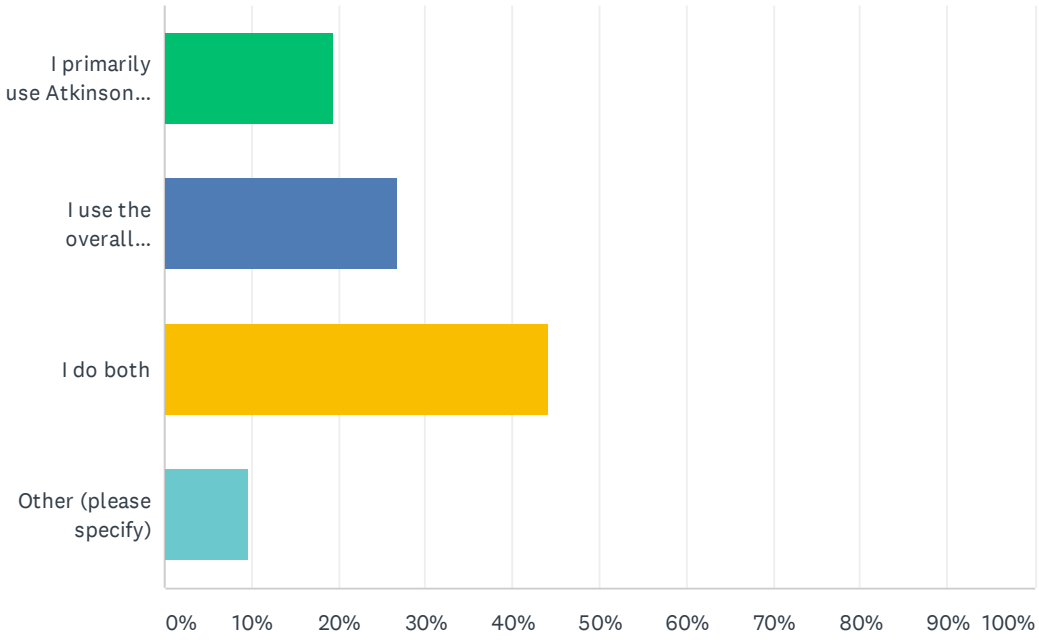


ANSWER CHOICES	RESPONSES	
A.) Parking at the Midland Parking Lot near the Conoco	19.59%	19
B.)Parking in the Park West neighborhood	15.46%	15
C.) Parking in the Glenwood Park neighborhood (Brush Creek Mountain Park)	16.49%	16
D.) The Atkinson Trail from the South	38.14%	37
E.) The Atkinson Trail from the West/North	25.77%	25
F.) Boating	23.71%	23
Total Respondents: 97		

#	OTHER (PLEASE SPECIFY)	DATE
1	walking from my home in park west	8/21/2019 11:35 AM
2	Bike or walk	8/21/2019 8:47 AM
3	We live in Glenwood Park and walk/bike down.	8/16/2019 9:36 AM
4	I walk from park west not park	8/16/2019 8:43 AM
5	Walk from Brush creek	8/15/2019 6:14 PM
6	Walking/biking from our house in Glenwood Park	8/8/2019 11:01 AM
7	Park West Residence	8/2/2019 10:08 AM
8	Walk from gGlenwood Park where we live, down dirt hill path	7/24/2019 8:28 AM
9	From Glenwood Park, walking	7/22/2019 12:40 PM
10	Walking	7/22/2019 8:54 AM
11	Tubing or boating - we stop at the beach for a rest and snack.	7/22/2019 7:59 AM
12	Walk from my house	7/21/2019 5:30 PM
13	Walking from Cardiff Glen	7/21/2019 5:13 PM
14	we walk from our house through park west	7/20/2019 4:10 PM
15	Walking or biking from home	7/20/2019 3:10 PM
16	I walk from Brush Creek Lane	7/20/2019 1:29 PM
17	My house is in Park West so I walk from there	7/20/2019 11:15 AM
18	Either from mountain market trail or trail in glenwood park	7/19/2019 8:57 AM
19	Walk from my home Glenwood Park	7/19/2019 2:28 AM
20	home in glenwood park	7/18/2019 1:00 PM
21	live nearby	7/12/2019 11:34 AM
22	Rocky trail by the volley ball courts	7/6/2019 7:47 PM
23	Walk from home to trailhead a	7/3/2019 5:30 PM

Q16 Primarily, do you use the Atkinson Trail as a way to access the Three Mile Creek Confluence, or do you use the Three Mile Creek Confluence as a break area along the Atkinson Trail? (select one)

Answered: 93 Skipped: 18

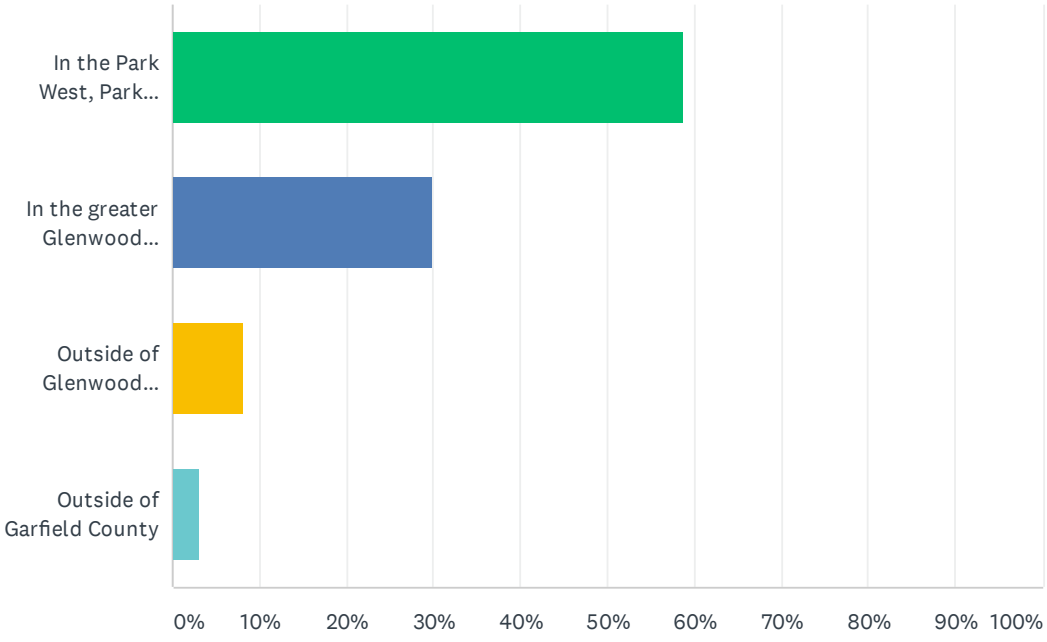


ANSWER CHOICES	RESPONSES	
I primarily use Atkinson Trail as a way to access the Three Mile Creek Confluence	19.35%	18
I use the overall Atkinson Trail as a longer trail, and the Three Mile Creek Confluence is primarily a break area I use along it	26.88%	25
I do both	44.09%	41
Other (please specify)	9.68%	9
TOTAL		93

#	OTHER (PLEASE SPECIFY)	DATE
1	Use as a way to access town,walking or biking	7/22/2019 12:40 PM
2	As a break along a river float.	7/22/2019 7:59 AM
3	I do not use the actual trail system only boat access.	7/19/2019 9:14 AM
4	Neither	7/19/2019 8:52 AM
5	K only use beach area, picnic tables and restrooms as a stop every time we raft.	7/19/2019 8:10 AM
6	I use this as a break area, both for walks along the longer Atkinson trail and as a break during boating on the Roaring Fork River	7/19/2019 6:37 AM
7	Hi	7/19/2019 2:28 AM
8	I use the Atkinson Trail as a route to the 27th St Bridge	7/9/2019 9:09 AM
9	Bike past 3 mile confluence	7/4/2019 12:02 PM

Q17 Where do you live? (select one)

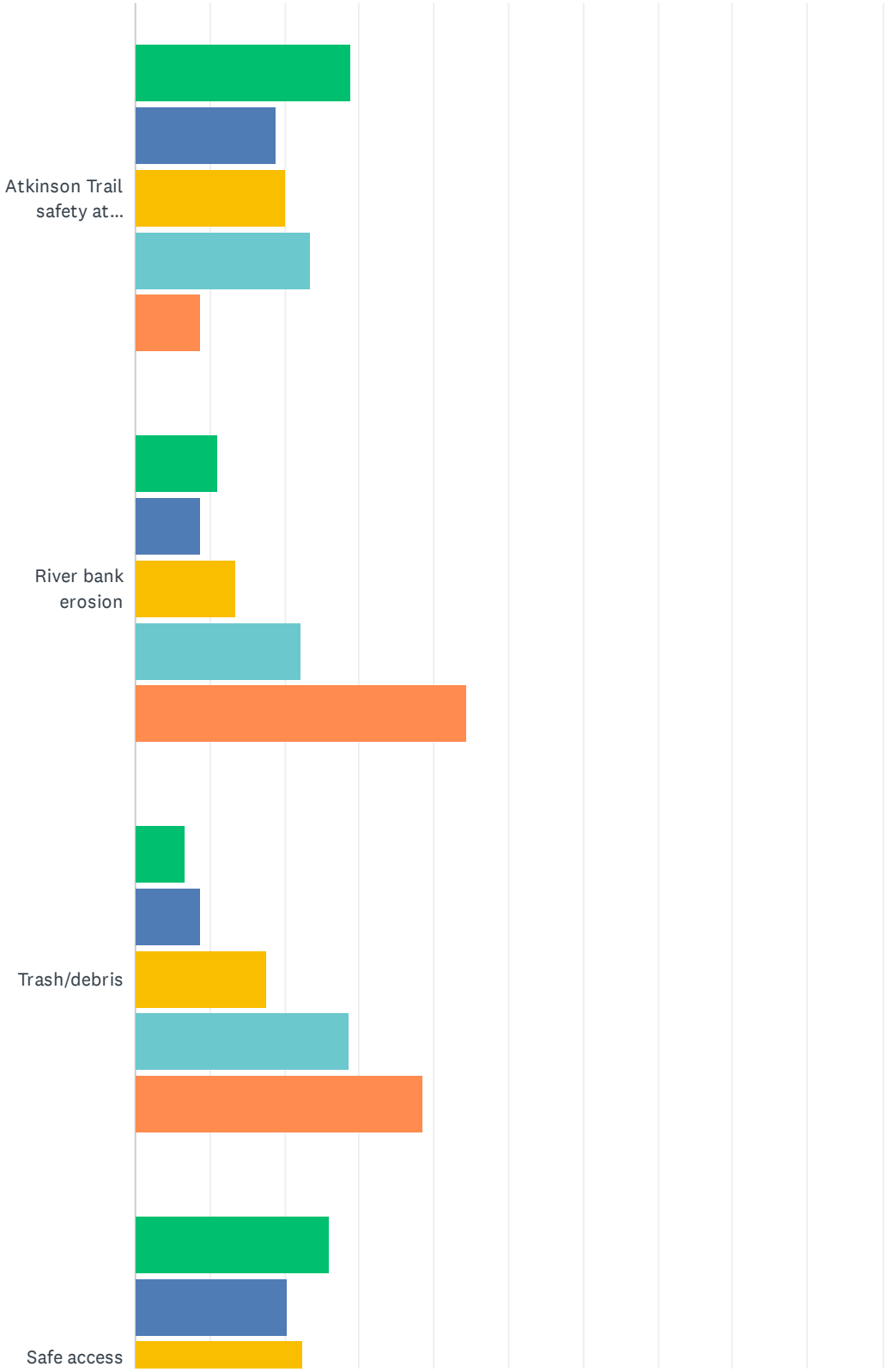
Answered: 97 Skipped: 14

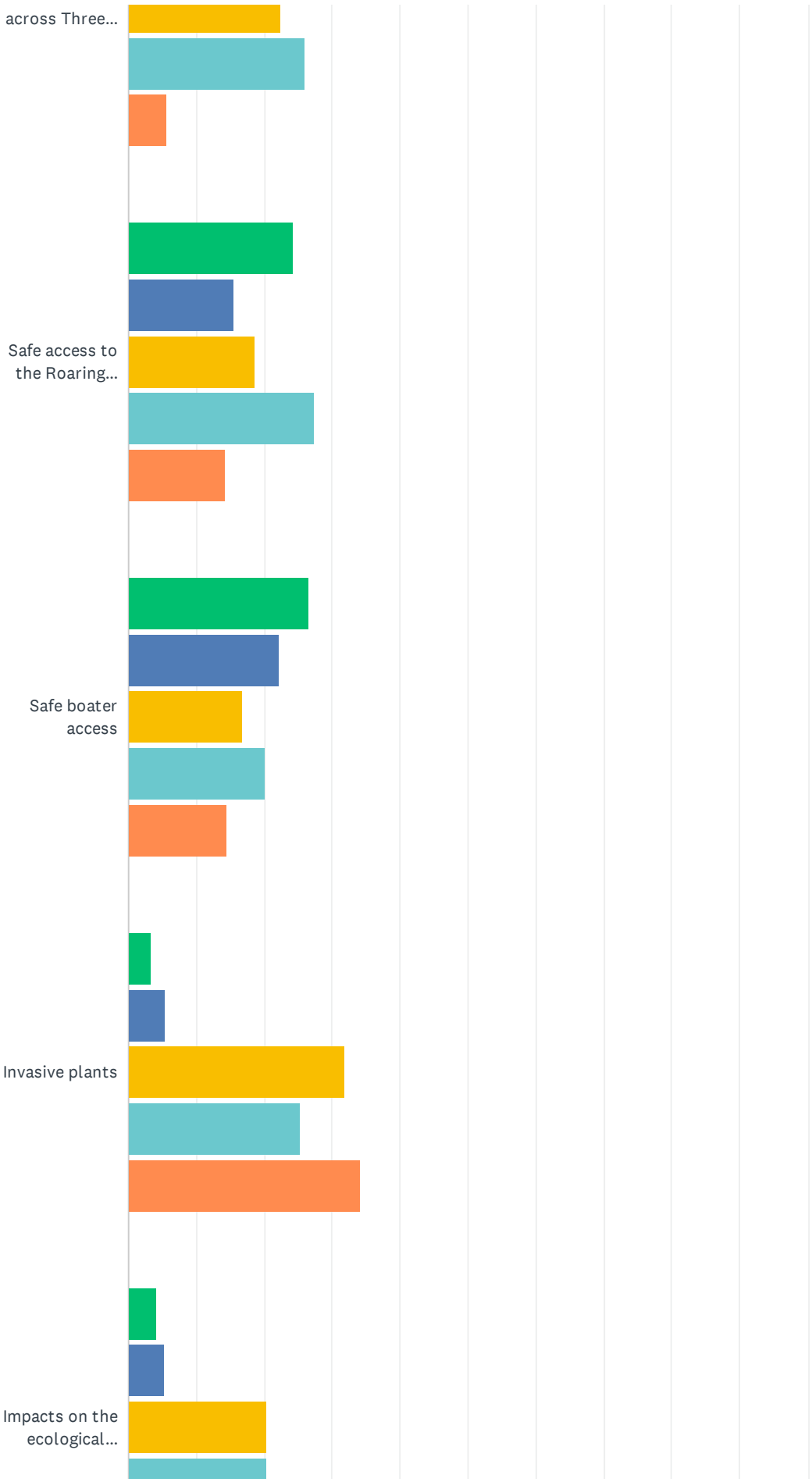


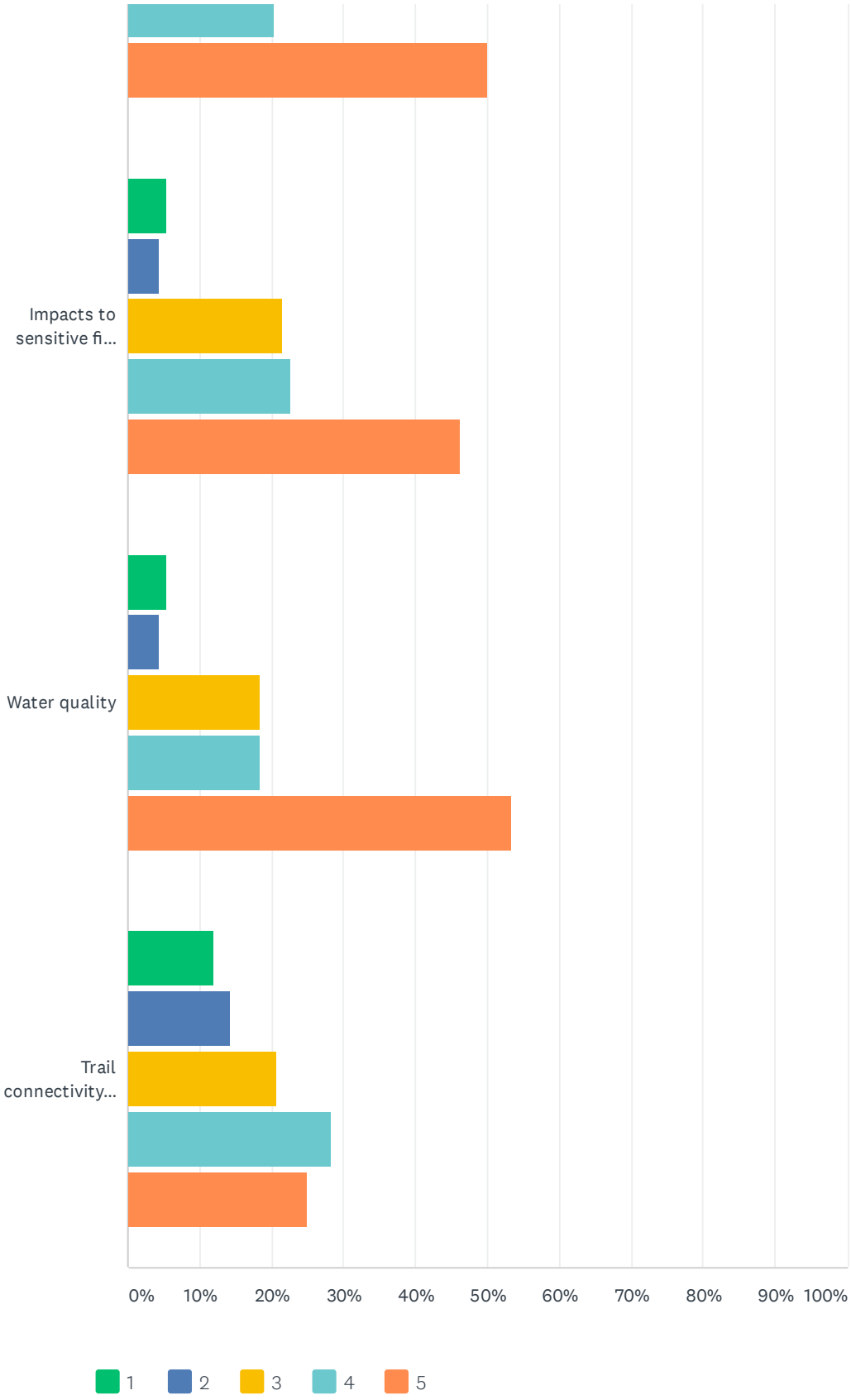
ANSWER CHOICES	RESPONSES	
In the Park West, Park East, or Glenwood Park neighborhoods	58.76%	57
In the greater Glenwood Springs area	29.90%	29
Outside of Glenwood Springs, but within Garfield County (Carbondale, New Castle, etc.)	8.25%	8
Outside of Garfield County	3.09%	3
TOTAL		97

Q18 Please rate the priority of the following concerns based on current conditions at the Three Mile Creek Confluence (5 being the highest priority). (select one per row)

Answered: 94 Skipped: 17




across Three...
Safe access to the Roaring...
Safe boater access
Invasive plants
Impacts on the ecological...

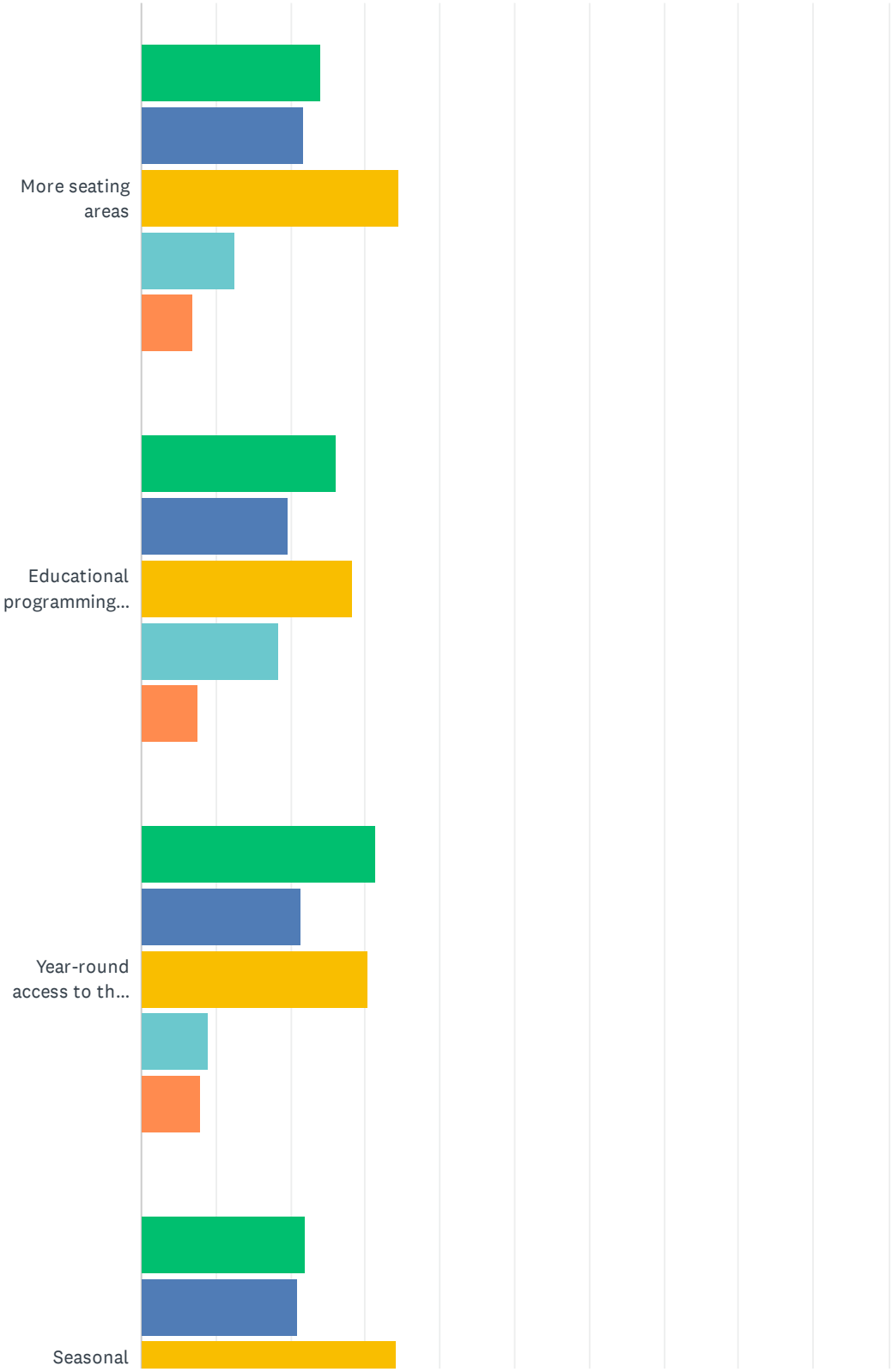

Impacts to sensitive fi...
Water quality
Trail connectivity...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
1
2
3
4
5

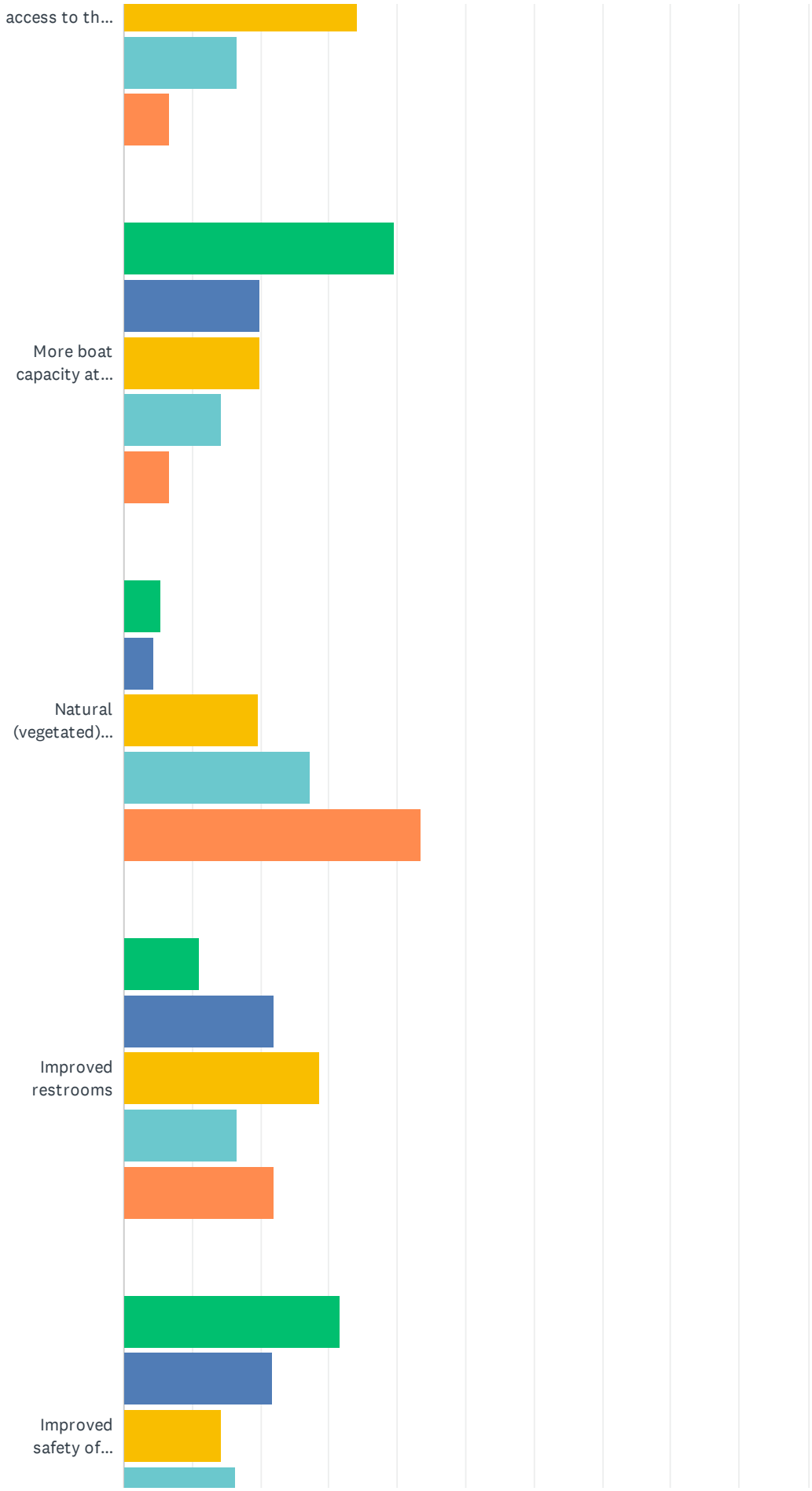
	1	2	3	4	5	TOTAL
Atkinson Trail safety at bottom curve	28.89% 26	18.89% 17	20.00% 18	23.33% 21	8.89% 8	90
River bank erosion	11.11% 10	8.89% 8	13.33% 12	22.22% 20	44.44% 40	90
Trash/debris	6.59% 6	8.79% 8	17.58% 16	28.57% 26	38.46% 35	91
Safe access across Three Mile Creek	25.84% 23	20.22% 18	22.47% 20	25.84% 23	5.62% 5	89
Safe access to the Roaring Fork	24.18% 22	15.38% 14	18.68% 17	27.47% 25	14.29% 13	91
Safe boater access	26.67% 24	22.22% 20	16.67% 15	20.00% 18	14.44% 13	90
Invasive plants	3.30% 3	5.49% 5	31.87% 29	25.27% 23	34.07% 31	91
Impacts on the ecological health of the confluence area	4.26% 4	5.32% 5	20.21% 19	20.21% 19	50.00% 47	94
Impacts to sensitive fish spawning environments	5.38% 5	4.30% 4	21.51% 20	22.58% 21	46.24% 43	93
Water quality	5.43% 5	4.35% 4	18.48% 17	18.48% 17	53.26% 49	92
Trail connectivity to neighborhoods and other trails	11.96% 11	14.13% 13	20.65% 19	28.26% 26	25.00% 23	92

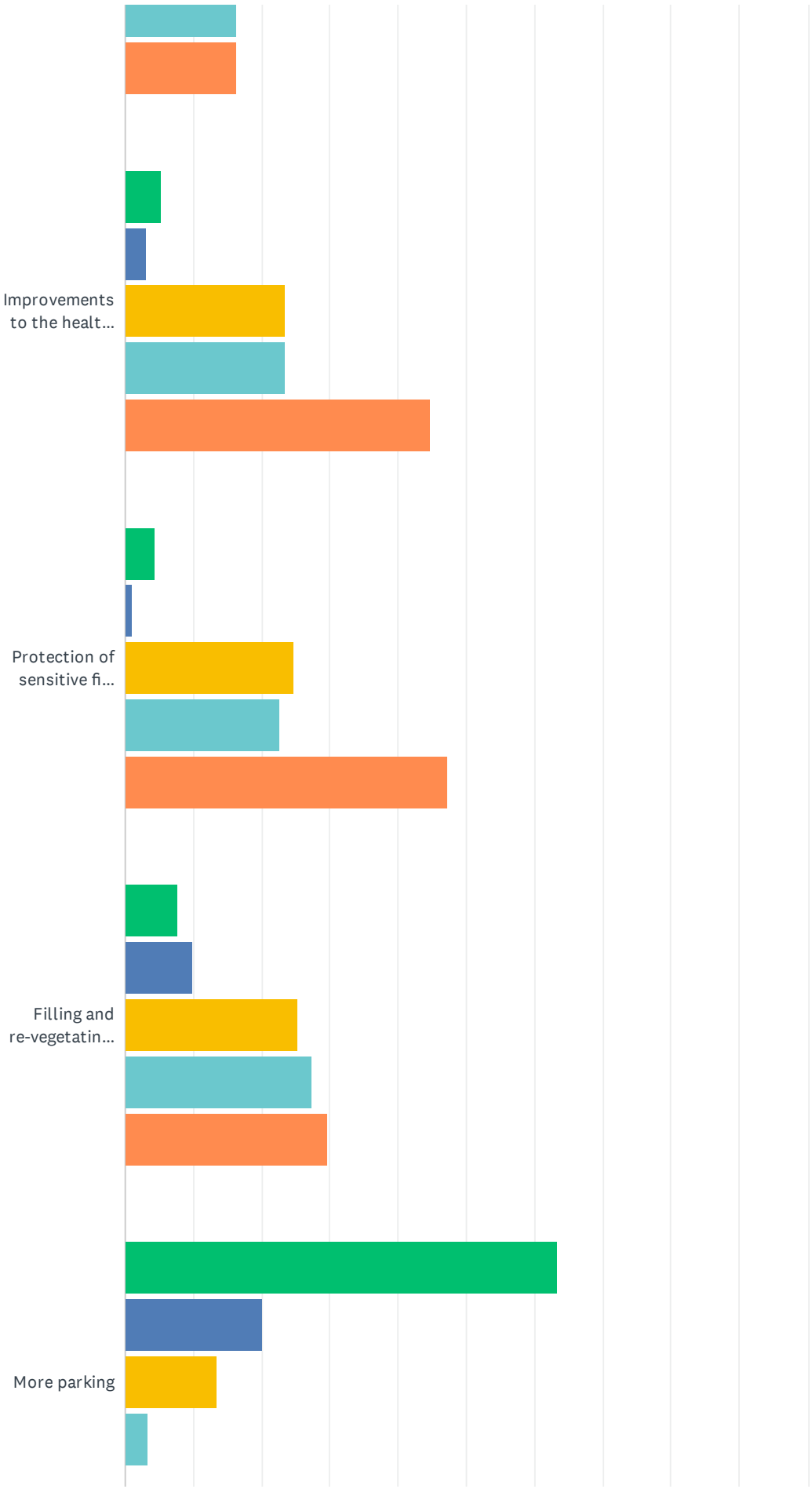
#	OTHER (PLEASE SPECIFY)	DATE
1	Don’t let parks and rec. get their hands on on this.	8/21/2019 8:55 AM
2	SHADE!!! There is no shade at 3 mile. Also- it is essentially used as a dog park so keeping one part okay for dogs and another part not okay for dogs so kids can play more easily. And general user friendly conditions	8/12/2019 1:33 PM
3	overall quality of recreation at the site.	7/22/2019 8:05 AM
4	Safety... homeless hang out down there	7/21/2019 6:31 PM
5	The drainage along the trail right around the confluence is always yucky	7/21/2019 8:36 AM
6	health impacts of standing water in canal	7/20/2019 4:17 PM
7	No snow plowing	7/20/2019 10:43 AM
8	Midpoint trash can needed on Atkinson	7/19/2019 8:46 PM
9	Development of Atkinson trail	7/19/2019 9:00 AM
10	Guide boats violate closures	7/19/2019 2:32 AM

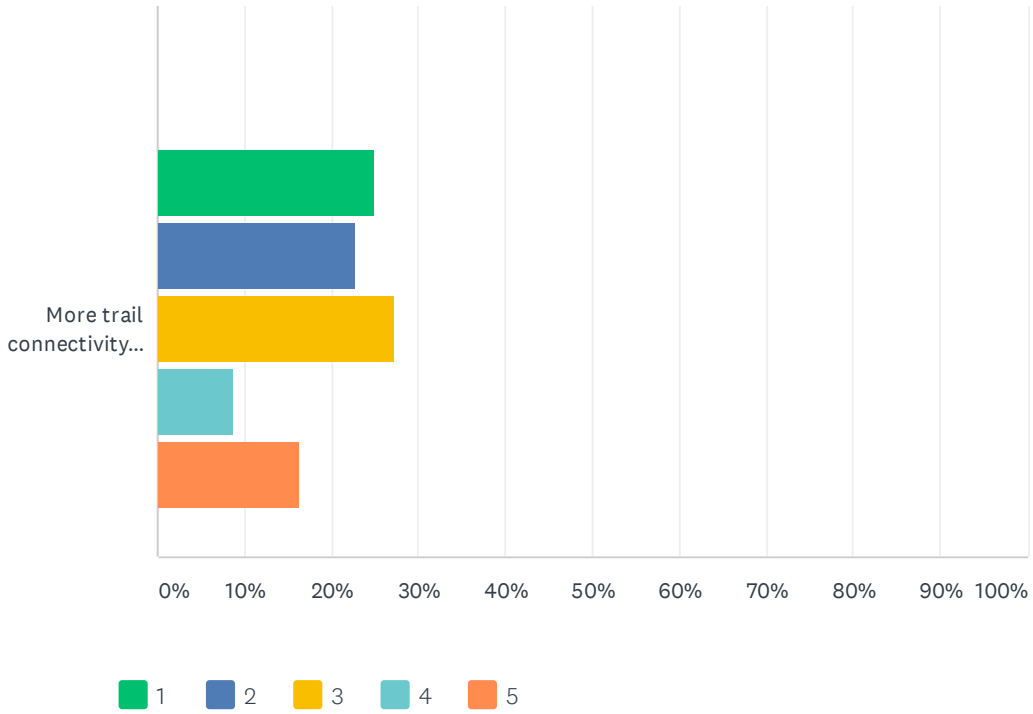
Q19 Please rate the importance of adding the following improvements to the Three Mile Creek Confluence area (5 being the most important). (select one per row)

Answered: 94 Skipped: 17




access to th...
More boat capacity at...
Natural (vegetated)...
Improved restrooms
Improved safety of...


Improvements to the healt...
Protection of sensitive fi...
Filling and re-vegetatin...
More parking



	1	2	3	4	5	TOTAL
More seating areas	24.14% 21	21.84% 19	34.48% 30	12.64% 11	6.90% 6	87
Educational programming (signage, exhibits, learning opportunities)	26.09% 24	19.57% 18	28.26% 26	18.48% 17	7.61% 7	92
Year-round access to the area upstream of the confluence	31.46% 28	21.35% 19	30.34% 27	8.99% 8	7.87% 7	89
Seasonal access to the area upstream of the confluence	21.98% 20	20.88% 19	34.07% 31	16.48% 15	6.59% 6	91
More boat capacity at beach area	39.56% 36	19.78% 18	19.78% 18	14.29% 13	6.59% 6	91
Natural (vegetated) bank stabilization	5.43% 5	4.35% 4	19.57% 18	27.17% 25	43.48% 40	92
Improved restrooms	10.99% 10	21.98% 20	28.57% 26	16.48% 15	21.98% 20	91
Improved safety of Atkinson Trail around curve	31.52% 29	21.74% 20	14.13% 13	16.30% 15	16.30% 15	92
Improvements to the health of the existing vegetation	5.32% 5	3.19% 3	23.40% 22	23.40% 22	44.68% 42	94
Protection of sensitive fish spawning environment	4.30% 4	1.08% 1	24.73% 23	22.58% 21	47.31% 44	93
Filling and re-vegetating the Atkinson Ditch	7.69% 7	9.89% 9	25.27% 23	27.47% 25	29.67% 27	91
More parking	63.33% 57	20.00% 18	13.33% 12	3.33% 3	0.00% 0	90
More trail connectivity to neighborhoods and other trails	25.00% 23	22.83% 21	27.17% 25	8.70% 8	16.30% 15	92

#	OTHER (PLEASE SPECIFY)	DATE
1	Trails in town are great. Disrupting wildlife with trails is damaging.	8/21/2019 8:55 AM
2	the boaters should be restricted to landing at the 2nd site	8/20/2019 9:06 AM
3	Again safety from crime	7/21/2019 6:31 PM
4	A way to connect to Cardiff bridge would be nice	7/20/2019 11:19 AM
5	Quit plowing the snow	7/20/2019 10:43 AM
6	How about more boat capacity in other areas than the beach. Atkinson Ditch should be addressed but i'm not sure filling it in is the only solution. Better connectivity throughout the whole area is needed not just to the upper portion (foot trails should be turned into actual paths). I'd also like to see more diverse vegetation be planted and then general protection of the existing and planted vegetation so it doesn't get over-run by visitors and dogs.	7/10/2019 4:14 PM

Q20 Please use this area to tell the Master Plan Team anything additional you would like them to consider during the planning process:

Answered: 43 Skipped: 68

#	RESPONSES	DATE
1	The City took out a large Russian Olive tree several years ago and as a result of this over half the beach eroded and the course of Three Mile Creek changed. I don't mind getting rid of invasive species; but have a plan in place to stabilize the stream banks before you do something like that in the future. It also looks to me like the rip rap that was recently put in is too small. I would spec in larger rocks for future work.	8/21/2019 10:52 AM
2	Stop planning everything for masses of people to be coming from Denver. It does not have to be perfectly staged on the river banks.	8/21/2019 8:55 AM
3	I think that the wildlife habitat should be priority over any public access.	8/21/2019 8:52 AM
4	low impact recreation with protection of fishing habitat.	8/21/2019 7:17 AM
5	It's a great area. Those in the hood liked it when it had more trees (they were cut down). It's ok that some of the nearby trails are gravel and not paved. They are fine to walk up or walk around if you can't walk up the steep incline and not worth spending money on. The ditch is often gross but we are used to it. We would not want to see this area developed into a more major overused location. The fact that it is quiet makes it special. We also love that there is a rocky natural drainage and gives kids a place to hunt for bugs and hop from rock to rock. A sandy beach and a spot for boaters already exists. Keeping the area natural and doing more to educate the public about spawning fish is important.	8/20/2019 2:54 PM
6	Separate raft and paddler access area from walking access picnic and beach wading area	8/20/2019 11:26 AM
7	It has gotten awfully busy with the number of rafters who stop there and they crowd out the picnickers, waders and fishermen/women. Even though they are mostly polite, it just makes for a noisy, crowded place. I think it would be better if they landed at the 2nd area downriver from the confluence. I would also like to see more sitting areas at the picnic area, some of which could be tree shaded. It would be nice if the outhouses were behind wooden or fake wooden screens.	8/20/2019 9:06 AM
8	I would like to see some of the dead trees removed before they fall on to the bike path and potentially hurt someone. Also, the ditch is in dire need of being drained or flushed. Composting toilet would probably smell better but is it too close to the river to have one? Possibly some attention to dog's not being so rowdy around children. Picnic table to trimming around the volleyball court. Natural setting is preferred for seating. I love the new rocks and the way the high water worked with the terraced rocks. Upstream is really lovely too. Keep it natural and wild with all choices!	8/19/2019 12:08 PM
9	Commercial rafts should help pay for the improvements. Three or more stop and swarm the beach and restroom driving out people who are using the beach. Commercial fishing boats seem unaware about the restrictions during spawning and fish right through on their boats. More police presence would be nice and tickets issued to irresponsible dog owners who dont clean up after their pets.	8/17/2019 8:55 AM
10	Great project, thanks for your work!	8/16/2019 5:48 PM
11	The area is beautiful as it is, a source of access to the river convenient for the 20% of the town that live south of the 27th Street Bridge.	8/16/2019 9:39 AM
12	the port a potty is an eyesore. please move to the Atkinson curve or improve	8/16/2019 8:48 AM
13	This area first needs to protect from erosion, etc and then make it user friendly including shade, better designed areas, etc.	8/12/2019 1:33 PM
14	We appreciate the opportunity to access our local streams and rivers at this location but prefer the less urbanized feel of the amenities. We would be in favor of keeping the area as and "city open space" rather than altering it more towards a city park.	8/8/2019 11:07 AM
15	Improve trail leading up to Glenwood Park - needs erosion control.	8/8/2019 7:28 AM
16	I love our beach... but I hate the stinky bathroom, even though I know it’s necessary. I’m also not happy about the the drinking that now occurs at the beach since it’s been open to more people.	8/4/2019 12:52 AM
17	Keep it as natural as possible. Separate area for rafters pulling in from picnic areas.	8/2/2019 10:29 AM
18	This is one of the only public access areas along the lower fork and will continue to get	8/1/2019 8:12 AM

	increased usage as the valley continues to grow. We can learn a lot from similar communities growth such as Buena Vista, Salida and Durango. Also recycling options need to be provided at this area and throughout Glenwood. Thanks for all your efforts to get this done right!	
19	This area needs to be protected. Preservation is the priority.	7/22/2019 8:59 AM
20	Keep the area natural, yet improve access for the neighborhood, boaters and tubers on the river - people like to float and play in the rapids, preserve this fun use for the locals. Improve picnic area, prevent erosion, and improve quality of riverbank. Steer users to access areas, while preventing deterioration of natural areas.	7/22/2019 8:05 AM
21	Use of the Atkinson trail to connect our neighborhood to the rest of the community is our top priority. Living in Glenwood park we would love to have the trail to the Brush Creek Mountain Park paved. Also the sand volleyball court near three mile is under used and not clearly identified as city property. The confluence is a great place for boaters to take a break but I do not view it as a proper embarkment/disembarkement area.	7/21/2019 10:58 PM
22	I wonder if there could be more access for boaters from the beach to the walking bridge to allow for fishing, rafters, and for dogs.	7/21/2019 4:01 PM
23	better access from the old cardiff brige to the atkinson trail,community cleanup along the trail	7/20/2019 4:17 PM
24	I would like to keep the Brush Creek Trail rustic, not paved. Please provide more dog waste stations and enforcement of laws.	7/20/2019 1:34 PM
25	Replacing the volleyball net and improve the court	7/20/2019 11:19 AM
26	Better signs to direct pedestrians and bicyclists away from midland road . Allow the snow to remain on the concrete path . Quit plowing the snow	7/20/2019 10:43 AM
27	Rafters can take over the Area	7/20/2019 10:09 AM
28	Please add a trash can midway between 27th street and the confluence.	7/19/2019 8:46 PM
29	Many people and dogs are too much impact in this small area unless they are just walking through and on leash. Commercial boats need a pull up or should not be allowed.	7/19/2019 4:40 PM
30	The park doesn't need to be extremely large. The area by the river should not be used to accommodate large numbers of people. However, the area has been wrecked by flooding and haphazard planning. Make the area nicer/more organized with easier access to the river for those who use it to regularly walk/bike/fish. This would be a vast improvement. Thanks for considering the update of this area. P.S. Odoyle rules.	7/19/2019 4:14 PM
31	Please keep the area as natural as possible. Restoring degraded banks and vegetation are important to fish, birds, mammals, etc. Keep people concentrated and not spread out along the bank.	7/19/2019 11:21 AM
32	More beach access for kids. Clean up after dogs!!!!!!	7/19/2019 9:00 AM
33	need to connect Atkinson to Rio Grande trail via upstream continuation of trail or bridge at 3 mile	7/19/2019 8:23 AM
34	Additional boat access downstream of the confluence with access to seating, picnic tables and bathrooms would be a vast improvement. This could limit the impacts to the vegetation as well as the sensitive spawning areas upstream of the confluence. Boating access could look like a beach protected from the main current flow, with solid boat tie offs and a dedicated path to the tables and bathroom. This is a very popular spot to stop on boats to warm up and dry off after the splashy rapids just upstream, especially for children. These same children need access to a bathroom as well as a place to play in shallow water, or a beach without disturbing the spawning beach upstream of the confluence. As a regular river and trail user, I really appreciate your interest in improving this area and look forward to being a part of the process with you. Thanks! JR	7/19/2019 8:22 AM
35	Guide boats are the biggest offenders of fishing through closed sections when posted	7/19/2019 2:32 AM
36	thanks!	7/18/2019 1:04 PM
37	I want to see improvements to this area but I don't want to see it so vastly improved that it encourages lots of meeting there that will further degrade the area "loving it to death" - it feels like a hidden gem still and I want this area to stay as natural as possible and not become "too"	7/11/2019 9:35 AM

	improved - like with paving, plazas, tons of seating, etc. I like that it is usually a quiet place to hang out. I'd hate to see it overtaken with boats which I don't think will happen as parking is pretty restricted.	
38	The recent shore line rock work looks and is doing well	7/11/2019 8:40 AM
39	The project team should talk in-depth with CPW about actual spawning specific to the Three Mile Creek, especially if considering shutting down all river access during those periods. In my discussions with CPW they stated they don't believe there is any native fish spawning in the fall as there isn't sufficient water in Three Mile Creek. Additionally CPW has stated that they don't want to promote spawning in sandy areas due to whirling disease so i'd question whether or not closing the beach would actually improve spawning conditions in the Fall. I haven't had discussion about the Spring peak flow periods but generally the water is so high that there isn't a lot of river/beach use during that time anyway. Bank stabilization should be looked at along the Roaring Fork River from high flows as well as from shoreline river use in the upper area and the main use areas. natural stabilization is obviously ideal but other means should be evaluated as well such as recessed grouted rock.	7/10/2019 4:14 PM
40	Fishing is excellent downstream of the confluence but the dead trees and poor access along the bank are impediments. Also the ditch and drainage into the river downstream of the confluence is gross.	7/6/2019 7:52 PM
41	I believe that the two most important improvements to the confluence area are 1) erosion stabilizstion and remediation, including removal of the exposed and tattered geo-textile mat which is currently in place, and 2) filling/remediating the old Atkinson ditch, which is currently a stagnant mosqito breeding ground. The addition of bear-proof garbage, recycling, and pet wast containers would also be an improvement. If additional or improved seating is installed, it would be beneficial to provide shade, in the form of mature trees or perhaps a small gazebo.	7/4/2019 9:03 PM
42	This project can only attract more use which will include more problems. The city should have higher priorities. The state of current infrastructure is deplorable so building more infrastructure that cannot be maintained is shear stupidity.	7/4/2019 12:09 PM
43	If any in chanel work accidentally created a river play hole I wouldnt complain	7/3/2019 5:33 PM

Public Meeting #2 Materials

Public Meeting #2

This is the **second and last** public workshop for the **Three Mile Creek Confluence Planning Project**. This is your chance to determine what features are incorporated into the final design for the project.

Project Goals Statement

*"Develop a **holistic** and **resilient** plan that addresses current and future impacts from the use of the Three Mile Creek confluence area while providing ecologically diverse and naturally sustainable **habitats**, improved **water quality**, **trail connectivity**, **recreational access**, and **education** regarding our most valuable natural resource, **water**."*

What should you do here today?

Create your Three Mile Confluence Design:

» Start with the 11x17" Base Improvements Plan

» Using the Choose Your Own Design packet,

  » Pick an optional improvement sticker for each Area and place it on the Base Improvements Plan

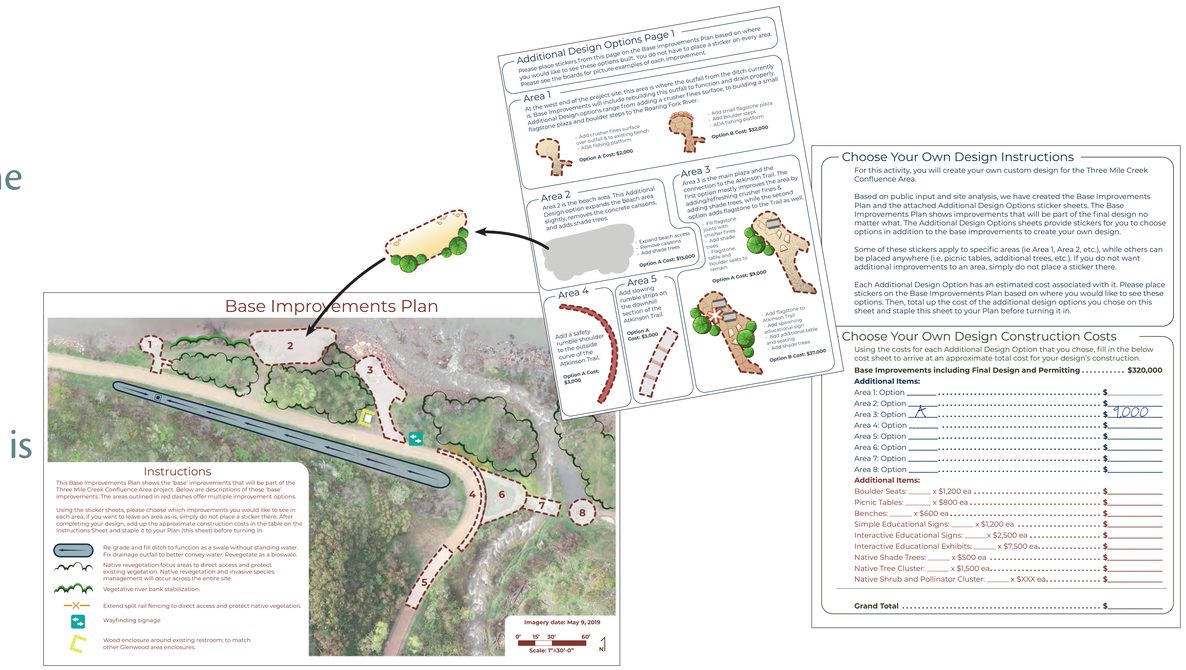
  » Place Additional Items stickers on the Plan as desired

  » Boards show examples of the improvement options

  » Areas can be left blank if you don't want improvements beyond what is on the Base Improvements Plan

» On the Choose Your Own Design Instructions sheet, add up the costs of your selected options

» Staple the Instructions Sheet to your Design and hand it in



Grant funding provided by:

PITKIN COUNTY HEALTHY RIVERS

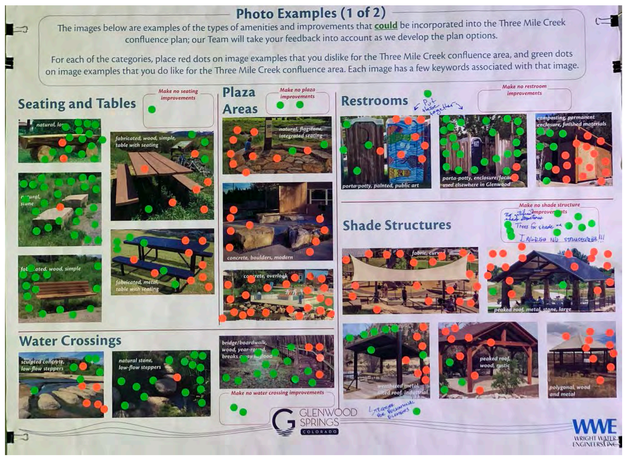
GLENWOOD SPRINGS COLORADO

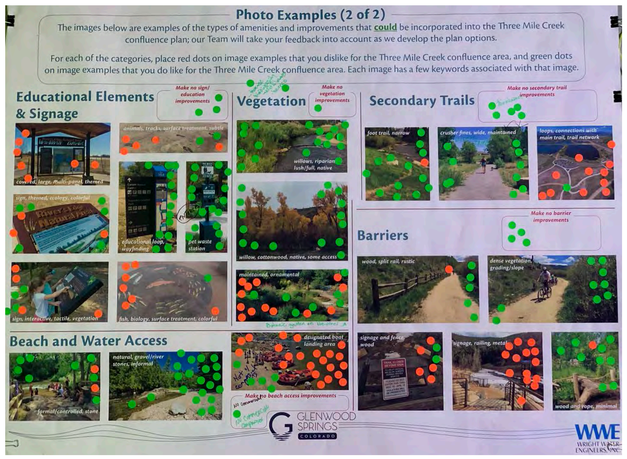
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What We Heard From You Last Time

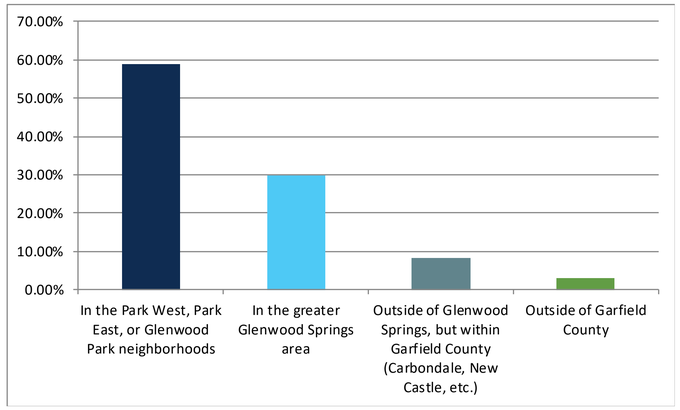
This board displays a sample of the input that the community gave our Team at the 1st Public Meeting and through the online survey.

Picture 'dot' boards were used to gauge the public's interest in different types of improvements. Costs were specifically not included in order to not sway opinions. Participants placed **green** dots on features they liked for the project, and **red** dots of features they did not like for the project.





Q17: Where do you live?



Q18: Please rate the priority of the following concerns based on current conditions at the Three Mile Creek Confluence Area:

Water Quality received the most '5' votes (highest priority)

Impacts on ecological health, Impacts to sensitive fish spawning environments, and river bank erosion were close behind Water Quality

Invasive Plants received a high number of '5, 4, and 3' votes

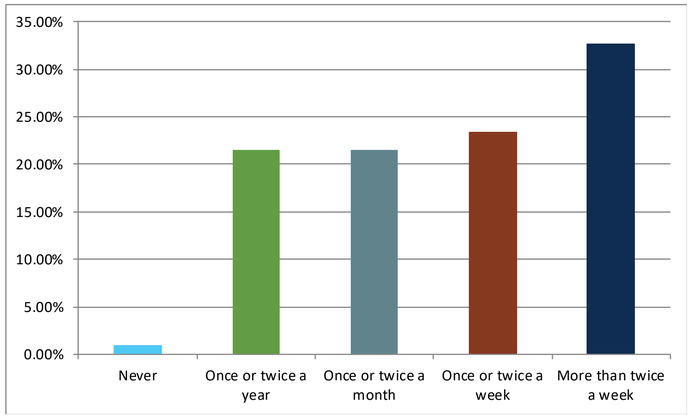
Q19: Please rate the importance of adding the following improvements to the Three Mile Creek Confluence Area:

Protection of sensitive fish spawning environment was voted the most important

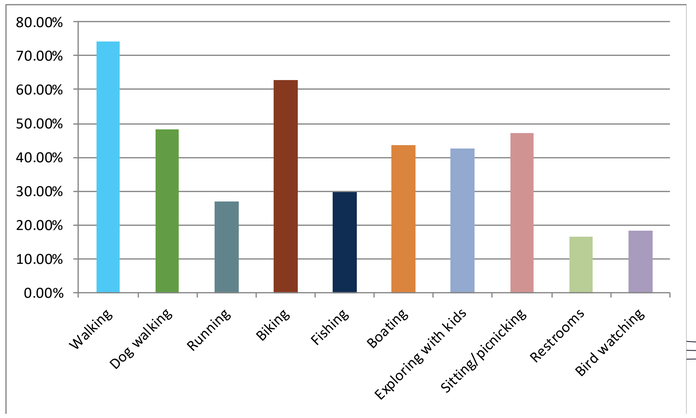
Improvement to the health of existing vegetation and Natural vegetated bank stabilization were second most important

More parking received the most '1' votes (least important)

Q1: How often to you use the Three Mile Creek Confluence Area?



Q3: Which activities do you use the Three Mile Creek Confluence Area for?



Q13: Are you aware of the seasonal restrictions on fishing at and near the confluence, and reasons why they are important?

73%
Yes, I'm aware of them and why they are important

19%
No, I wasn't aware of any restrictions

8%
Yes, I'm aware of them, but I don't know the reasons why they are important

Q14: Would you be in favor of restricting all activities in the stream channel during the restricted periods?

No

>75%
Yes

Q20: Please tell the Master Plan Team anything additional you would like them to consider during the planning process:

The below word cloud is a combination of the open ended answers received for this question. The bigger a word is, the more often it appeared in responses. This helps the project team to recognize what issues the community is most concerned about.

The responses have been slightly modified; for example, words that did not contribute to the answer (the, area, I, etc.) were removed. Similar words were also combined (for example, all instances of 'beach area' were changed to 'beach,' all variations of 'improve' such as 'improves,' 'improvements,' etc. were changed to 'improve.'



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Base Improvement Photo Examples

Below are example photographs corresponding to the proposed improvements on the Base Improvements Plan. These improvements will be included in the final design regardless of Additional Options chosen.

Bioswale



Split rail fencing



Wayfinding signage



Native revegetation



Restroom enclosure



Volleyball trail improvements

Steep access from Glenwood Park neighborhood



Vegetative river bank stabilization







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Additional Options Photo Examples

Below are example photographs corresponding to the proposed improvement options on the Additional Design Options sheets. These options are in addition to the Base Improvements.

Area 1 South Seating Area



Option A - Crusher fines



Option B - Flagtone and boulder steps

Area 2 Beach Area



Option A - Expand beach and add boat tie offs

Area 3 Main Plaza



Option A - Add crusher fines

Option B - Add flagstone and seating

Additional Options Photo Examples

Below are example photographs corresponding to the proposed improvement options on the Additional Design Options sheets. These options are in addition to the Base Improvements.

Area 4 Atkinson Trail Curve



Option A - Safety rumble shoulder

Area 5 Atkinson Trail Slope



Option A - Slowing rumble strips on slope before curve

Area 6 Trail Corner Area



Option A - Crusher fines and boulder seats

Area 7 Three Mile Creek Crossing



Option A - Stepping stones

Area 8 Headgate



Option A - Remove and revegetate
Option B - Educational exhibit



Option B - Revegetate

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Additional Options Photo Examples

Below are example photographs corresponding to the proposed improvement options on the Additional Design Options sheets. These options are in addition to the Base Improvements.

Additional Items

Boulder seats



Picnic table



Bench



Simple educational sign



Interactive educational sign



Interactive educational exhibit

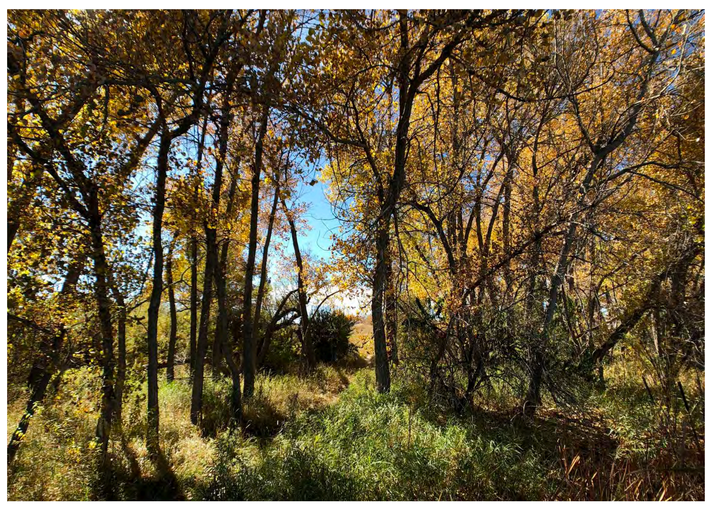




Native shade tree

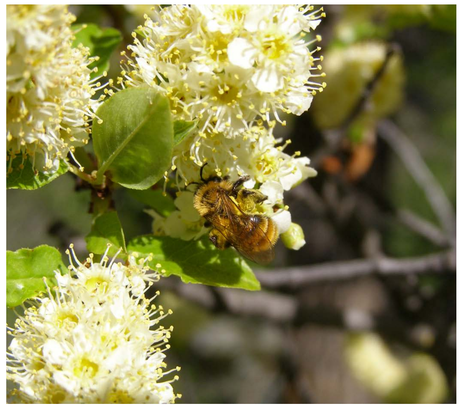


Native tree cluster

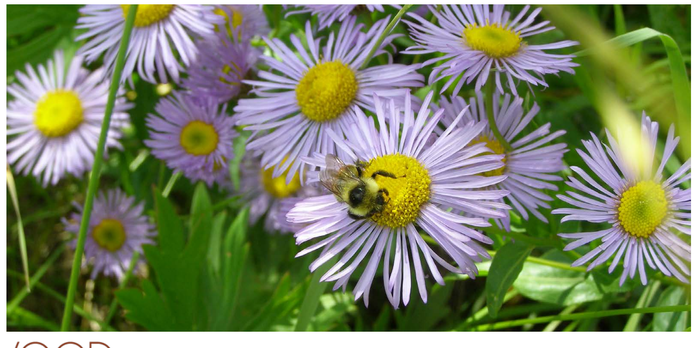


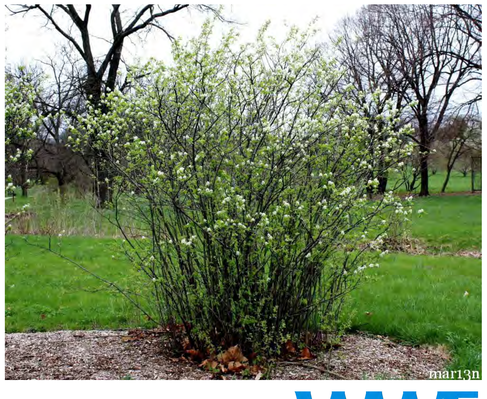
Native shrub and pollinator cluster









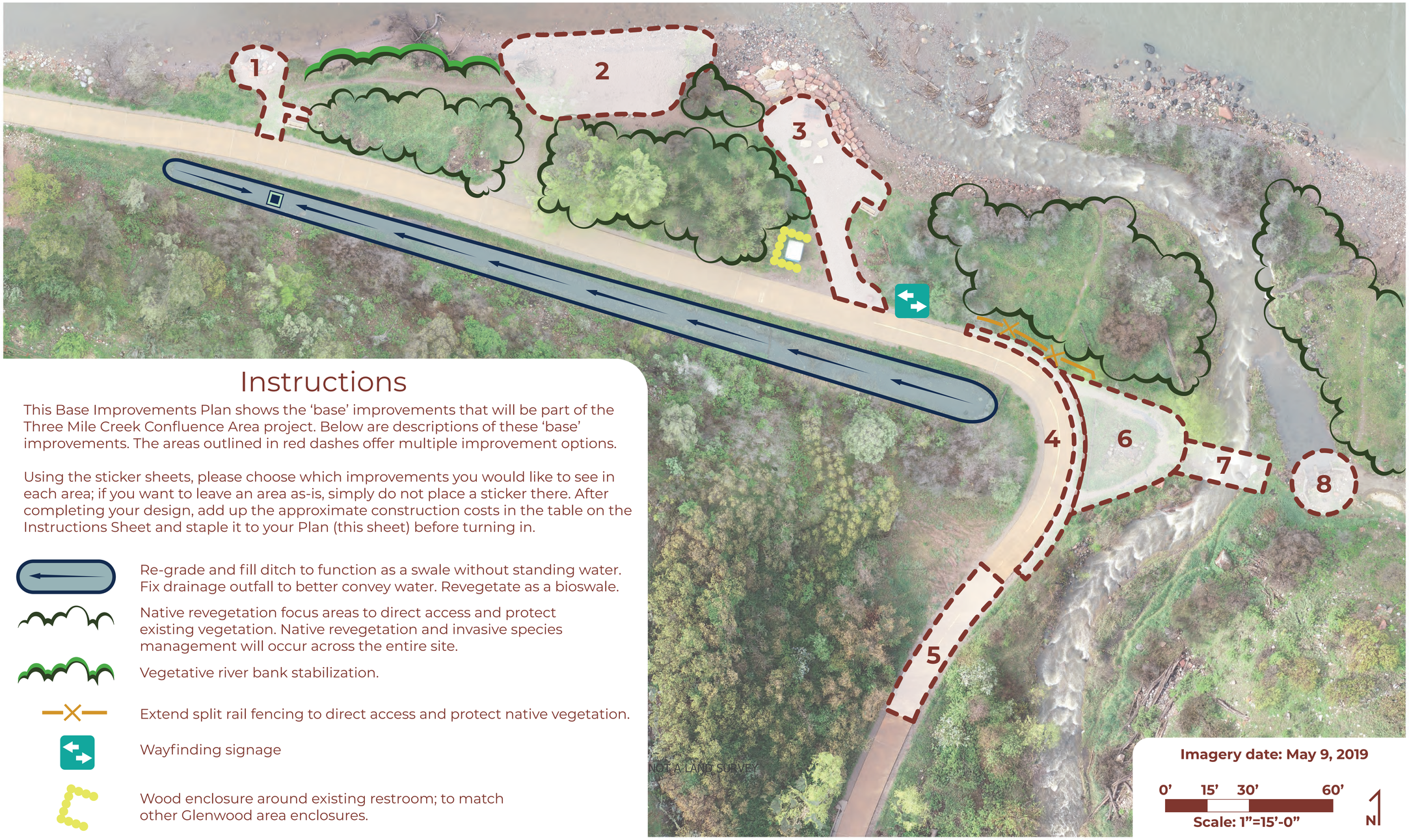


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Base Design Improvements Plan

Below is an enlarged version of the Base Improvements Plan Sheet. On the 11x17 sheet, place stickers to show which optional improvements you would like to see in addition to the base improvements.



Instructions

This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

- Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.
- Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.
- Vegetative river bank stabilization.
- Extend split rail fencing to direct access and protect native vegetation.
- Wayfinding signage
- Wood enclosure around existing restroom; to match other Glenwood area enclosures.

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Base Improvements Plan

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This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

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Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

NOT A LAND SURVEY

Imagery date: May 9, 2019

0’ 15’ 30’ 60’

Scale: 1”=30’-0”

N

Choose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

Based on public input and site analysis, we have created the Base Improvements Plan and the attached Additional Design Options sticker sheets. The Base Improvements Plan shows improvements that will be part of the final design no matter what. The Additional Design Options sheets provide stickers for you to choose options in addition to the base improvements to create your own design.

Some of these stickers apply to specific areas (ie Area 1, Area 2, etc.), while others can be placed anywhere (i.e. picnic tables, additional trees, etc.). If you do not want additional improvements to an area, simply do not place a sticker there.

Each Additional Design Option has an estimated cost associated with it. Please place stickers on the Base Improvements Plan based on where you would like to see these options. Then, total up the cost of the additional design options you chose on this sheet and staple this sheet to your Plan before turning it in.

Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $_____
Area 2: Option _____ ..... $_____
Area 3: Option _____ ..... $_____
Area 4: Option _____ ..... $_____
Area 5: Option _____ ..... $_____
Area 6: Option _____ ..... $_____
Area 7: Option _____ ..... $_____
Area 8: Option _____ ..... $_____

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $_____
Picnic Tables: _____ x $1,200 ea ..... $_____
Benches: _____ x $1,200 ea ..... $_____
Simple Educational Signs: _____ x $1,800 ea ..... $_____
Interactive Educational Signs: _____x $3,000 ea ..... $_____
Interactive Educational Exhibits: _____ x $9,000 ea ..... $_____
Native Shade Trees: _____ x $700 ea ..... $_____
Native Tree Cluster: _____ x $1,900 ea ..... $_____
Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $_____

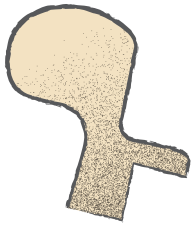
Grand Total ..... $_____

Additional Design Options Page 1

Please place stickers from this page on the Base Improvements Plan based on where you would like to see these options built. You do not have to place a sticker on every area. Please see the boards for picture examples of each improvement.

Area 1

At the west end of the project site, this area is where the outfall from the ditch currently is. Base Improvements will include rebuilding this outfall to function and drain properly. Additional Design options range from adding a crusher fines surface, to building a small flagstone plaza and boulder steps to the Roaring Fork River.



- Add crusher fines surface over outfall & to existing bench
- ADA fishing platform

Option A Cost: $2,000

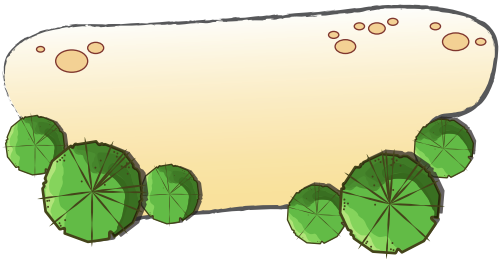


- Add small flagstone plaza
- Add boulder steps
- ADA fishing platform

Option B Cost: $32,000

Area 2

Area 2 is the beach area. This Additional Design option expands the beach area slightly, adds boat tie offs, and adds shade trees.



- Expand beach access
- Add boat tie offs
- Add shade trees

Option A Cost: $15,000

Area 3

Area 3 is the main plaza and the connection to the Atkinson Trail. The first option mostly improves the area by adding/refreshing crusher fines & adding shade trees, while the second option adds flagstone to the Trail as well.

- Fill flagstone joints with crusher fines
- Add shade trees
- Flagstone, table and boulder seats to remain

Option A Cost: $9,000





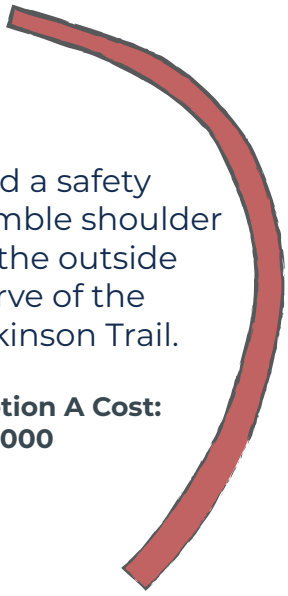
- Add flagstone to Atkinson Trail
- Add spawning educational sign
- Add additional table and seating
- Add shade trees

Option B Cost: $37,000

Area 4

Add a safety rumble shoulder to the outside curve of the Atkinson Trail.

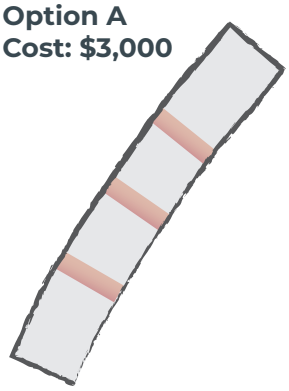
Option A Cost: $5,000



Area 5

Add slowing rumble strips on the downhill section of the Atkinson Trail.

Option A Cost: $3,000



Additional Design Options Page 2

Please place stickers from this page on the Base Improvements Plan based on where you would like to see these options built. You do not have to place a sticker on every area. Please see the boards for picture examples of each improvement.

Area 6

Area 6 has a depression leading to the ditch, as well as a crusher fines trail. Both Additional Design options include filling the depression. The first option adds a new small crusher fines area with boulder seats, while the second area simply revegetates the filled in area and refreshes the existing crusher fines trail.

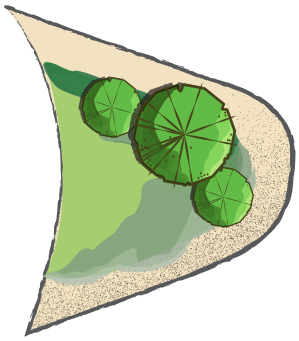


- Fill in existing ditch
- Add small gathering space with boulder seating
- Add shade trees
- Revegetate perimter

Option A Cost: $11,000

- Fill in existing ditch
- Revegetate filled area
- Refresh existing crusher fines trail

Option B Cost: $7,000



Area 7

The area 7 option adds stepping boulders to cross Three Mile Creek during low flow times of the year.



Option A Cost: $4,000

Area 8

Either remove the headgate, or transform it into an educational exhibit.



Option A Cost: $19,000

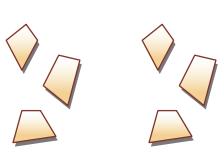


Option B Cost: $10,000

Additional Items

The below features are additional features that you can place anywhere within the project site.

Site Furnishings



Boulder Seats (3)
Cost: $1,500

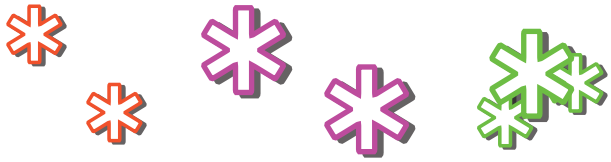


Picnic Table
Cost (ea): $1,200



Bench
Cost (ea): $1,200

Educational Signage

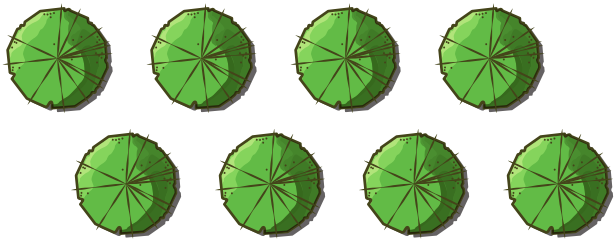


Simple Sign
Cost: $1,800

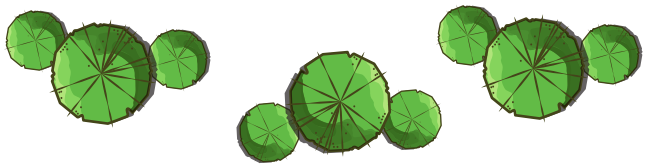
Interactive Sign
Cost: $3,000

Interactive Exhibit
Cost: $9,000

Vegetation



Native Shade Tree
Cost (ea tree): $700



Native Tree Cluster
Cost (ea cluster): $1,900



Native Shrub and Pollinator Cluster
Cost (ea cluster): $1,600

Public Meeting #2 Responses

Choose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

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Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2,000
Area 2: Option A ..... $ 15,000
Area 3: Option A ..... $ 9,000
Area 4: Option A ..... $ 5,000
Area 5: Option A ..... $ 3,000
Area 6: Option B ..... $ 7,000
Area 7: Option A ..... $ 4,000
Area 8: Option A ..... $ 19,000

Additional Items:

Boulder Seats: ____ x $1,500 ea ..... $ ____
Picnic Tables: 1 x $1,200 ea ..... $ ____
Benches: 1 x $1,200 ea ..... $ ____
Simple Educational Signs: 1 x $1,800 ea ..... $ ____
Interactive Educational Signs: 1 x $3,000 ea ..... $ ____
Interactive Educational Exhibits: ____ x $9,000 ea ..... $ ____
Native Shade Trees: 11 x $700 ea ..... $ ____
Native Tree Cluster: 11 x $1,900 ea ..... $ ____
Native Shrub and Pollinator Cluster: 11 x $1,600 ea ..... $ ____

Grand Total ..... $ ____

Base Improvements Plan

Instructions

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Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting **$320,000**

Additional Items:

Area 1: Option ____ boat tie up area + vegetation ..... $?

Area 2: Option ____ beach only people/dogs/fishing ..... $ 15 000.00

Area 3: Option A ..... $ 9000.00

Area 4: Option ____ ..... $ 0

Area 5: Option A ..... $ 3000.00

Area 6: Option A ..... $ 11 000.00

Area 7: Option A ..... $ 4000.00

Area 8: Option A ..... $ 19000.00

Additional Items: educational/interactive water rights, ranching 61 000.00

Boulder Seats: ____ x $1,500 ea ..... $ ____

Picnic Tables: ____ x $1,200 ea ..... $ ____

Benches: ____ x $1,200 ea ..... $ ____

Simple Educational Signs: ____ x $1,800 ea ..... $ ____

Interactive Educational Signs: ____ x $3,000 ea ..... $ ____

Interactive Educational Exhibits: ____ x $9,000 ea ..... $ ____

Native Shade Trees: ____ x $700 ea ..... $ ____

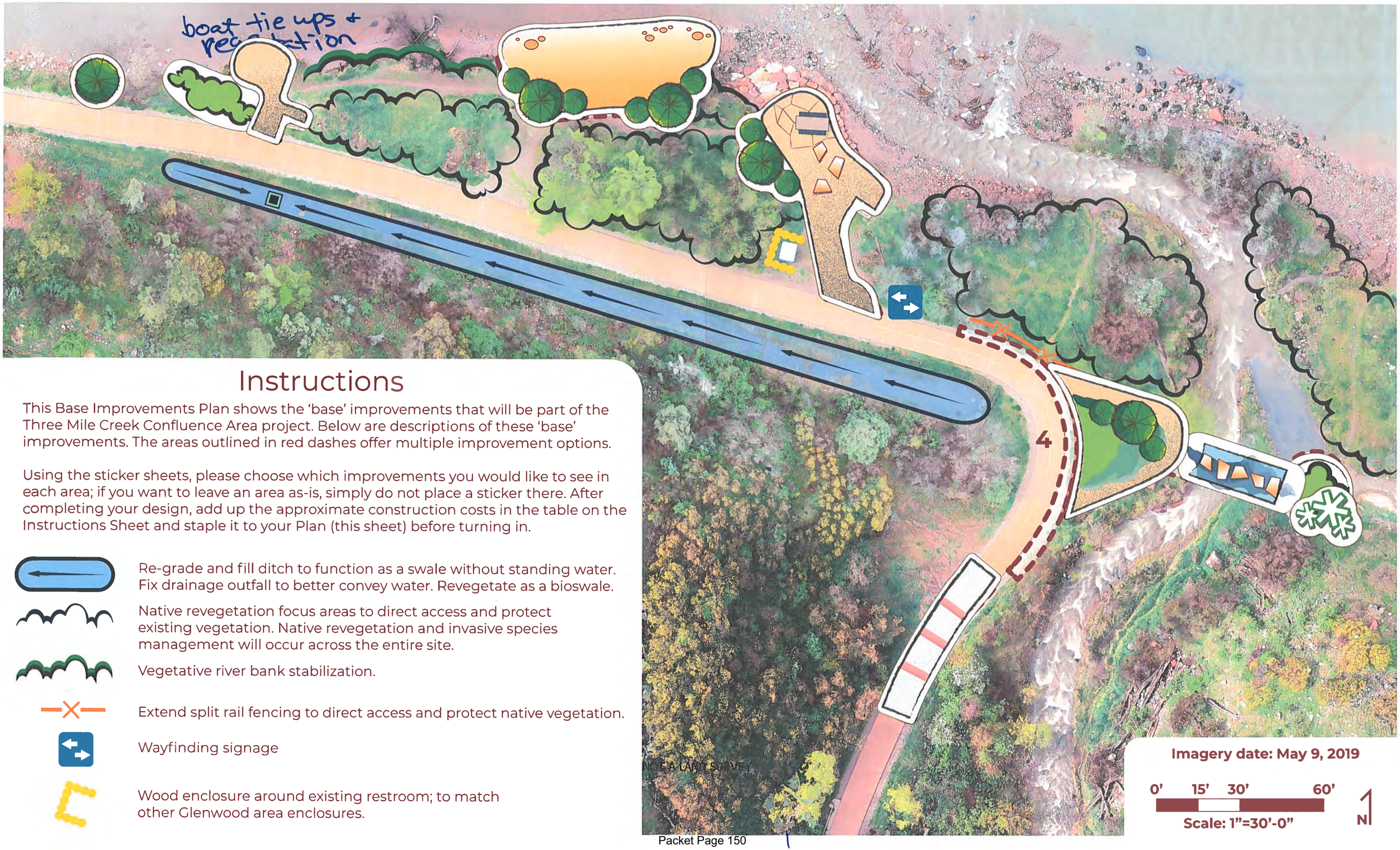
Native Tree Cluster: ____ x $1,900 ea. ..... $ ____

Native Shrub and Pollinator Cluster: 4 x $1,600 ea. ..... $ 6400.00

yes Consider another area near/under ped. bridge by H.S. to redirect some of the usage

Grand Total ..... $ 67,400.00

Base Improvements Plan



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Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2,000

Area 2: Option _____ ..... $ 15,000

Area 3: Option A ..... $ 9,000

Area 4: Option _____ ..... $ _____

Area 5: Option _____ ..... $ [illegible]3000

Area 6: Option B ..... $ [illegible]7000

Area 7: Option _____ ..... $ $4,000

Area 8: Option _____ ..... $ $18,000

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $ _____

Picnic Tables: 1 x $1,200 ea ..... $ 1,200

Benches: _____ x $1,200 ea ..... $ _____

Simple Educational Signs: 1 x $1,800 ea ..... $ 1,800

Interactive Educational Signs: _____ x $3,000 ea ..... $ _____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____

Native Shade Trees: _____ x $700 ea ..... $ _____

Native Tree Cluster: _____ x $1,900 ea ..... $ _____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $ _____

Grand Total ..... $ 62,000

Base Improvements Plan

Instructions

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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2,000

Area 2: Option _____ ..... $ 15,000

Area 3: Option _____ ..... $ 9,000

Area 4: Option _____ ..... $ 5,000

Area 5: Option _____ ..... $ — NO

Area 6: Option _____ ..... $ 11,000

Area 7: Option _____ ..... $ 4,000

Area 8: Option _____ ..... $ 16,000

Additional Items:

Boulder Seats: 1 x $1,500 ea ..... $ 1500

Picnic Tables: 1 x $1,200 ea ..... $ 1200

Benches: 1 x $1,200 ea ..... $ 1200

Simple Educational Signs: ~~5~~ x $1,800 ea ..... $ —

Interactive Educational Signs: 1 x $3,000 ea ..... $ 3000

Interactive Educational Exhibits: ~~6~~ x $9,000 ea ..... $ —

Native Shade Trees: ~~4~~ x $700 ea ..... $ 0

Native Tree Cluster: 2 x $1,900 ea ..... $ 3800

Native Shrub and Pollinator Cluster: 1 x $1,600 ea ..... $ 1600

Grand Total ..... $ _____

Base Improvements Plan

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Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

5

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $ 2000.00

Area 2: Option _____ ..... $ 15,000.00

Area 3: Option _____ ..... $ 9,000.00

Area 4: Option _____ ..... $ _____

Area 5: Option _____ ..... $ _____

Area 6: Option _____ ..... $ 7,000.00

Area 7: Option _____ ..... $ 4,000.00

Area 8: Option _____ ..... $ _____

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $ _____

Picnic Tables: _____ x $1,200 ea ..... $ _____

Benches: _____ x $1,200 ea ..... $ _____

Simple Educational Signs: _____ x $1,800 ea ..... $ 1800.00

Interactive Educational Signs: _____ x $3,000 ea ..... $ _____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____

Native Shade Trees: _____ x $700 ea ..... $ _____

Native Tree Cluster: _____ x $1,900 ea ..... $ _____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $ _____

Grand Total ..... $ 38,800

Base Improvements Plan

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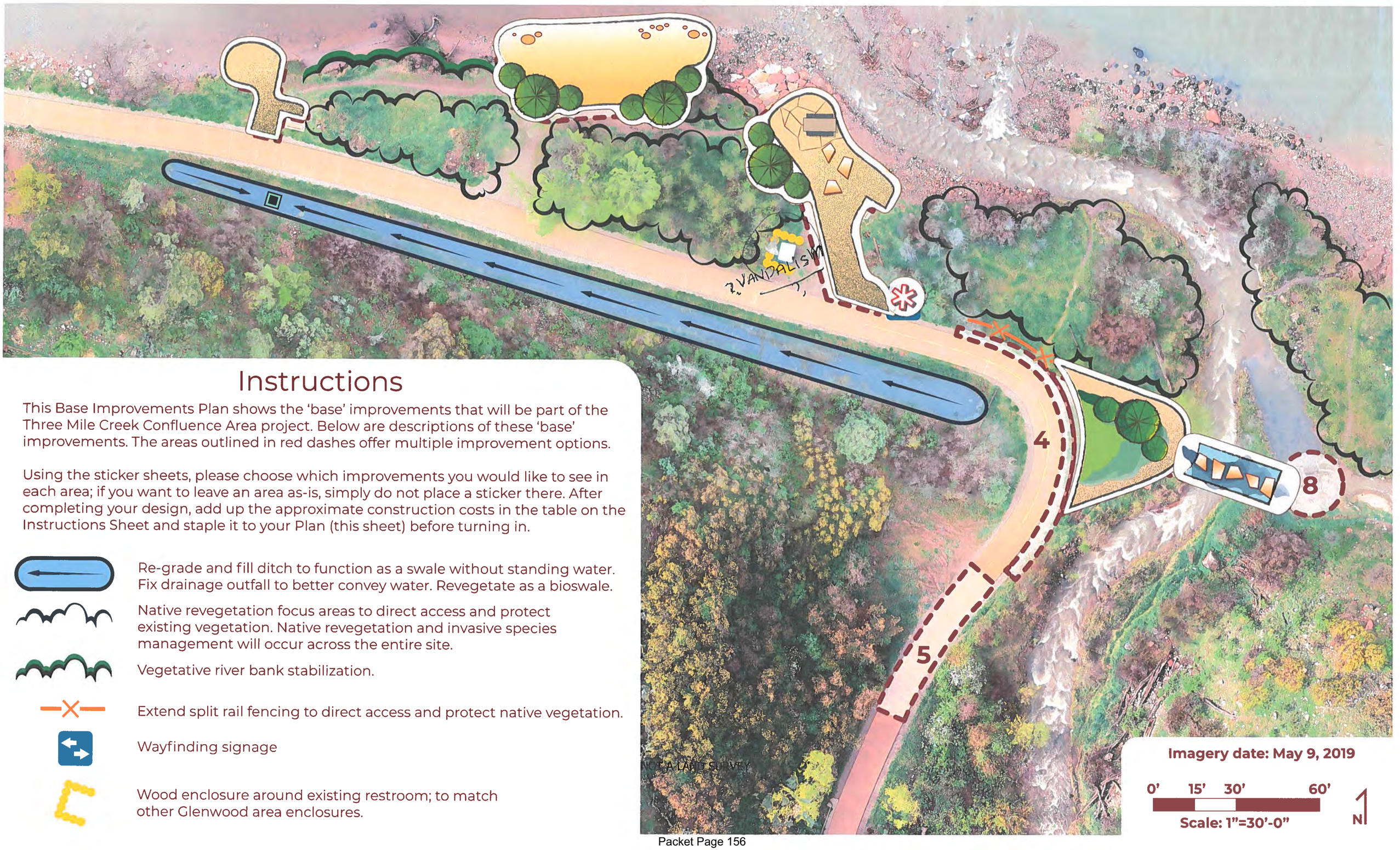
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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

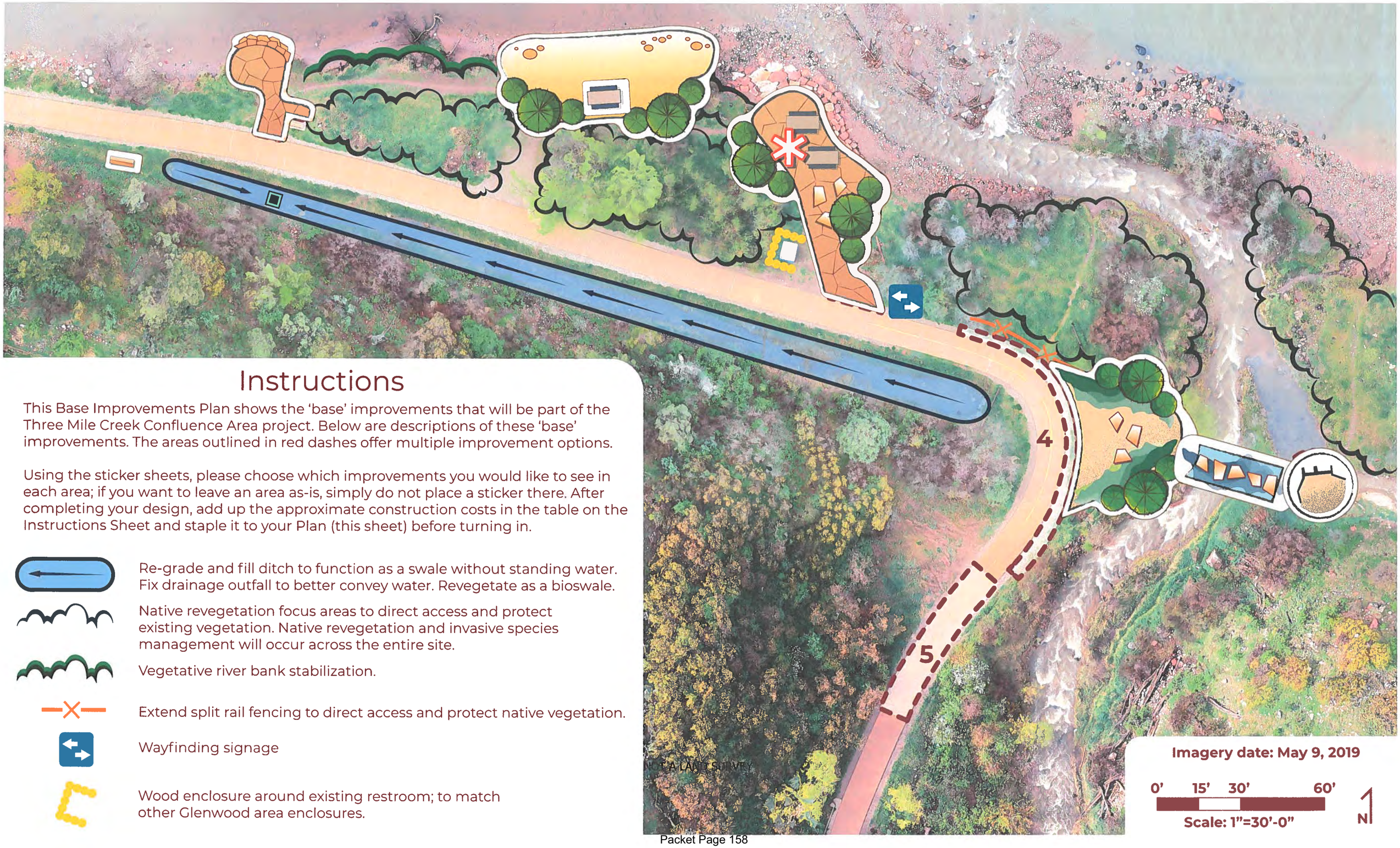
Area 1: Option _____ ..... $ 32,000
Area 2: Option _____ ..... $ 15,000
Area 3: Option _____ ..... $ 37,000
Area 4: Option _____ ..... $ 0
Area 5: Option _____ ..... $ 0
Area 6: Option _____ ..... $ 11,000
Area 7: Option _____ ..... $ 4,000
Area 8: Option _____ ..... $ 10,000

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $ _____
Picnic Tables: _____ x $1,200 ea ..... $ 12,000
Benches: _____ x $1,200 ea ..... $ 12,000
Simple Educational Signs: _____ x $1,800 ea ..... $ _____
Interactive Educational Signs: _____ x $3,000 ea ..... $ _____
Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____
Native Shade Trees: _____ x $700 ea ..... $ _____
Native Tree Cluster: _____ x $1,900 ea ..... $ _____
Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $ _____

Grand Total ..... $ 453,000

Base Improvements Plan



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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $_____

Area 2: Option _____ ..... $_____

Area 3: Option _____ ..... $_____

Area 4: Option _____ ..... $_____

Area 5: Option _____ ..... $_____

Area 6: Option _____ ..... $ r

Area 7: Option _____ ..... $ 4160

Area 8: Option _____ ..... $_____

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $_____

Picnic Tables: _____ x $1,200 ea ..... $_____

Benches: _____ x $1,200 ea ..... $_____

Simple Educational Signs: 1 x $1,800 ea ..... $ 1800

Interactive Educational Signs: _____ x $3,000 ea ..... $_____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $_____

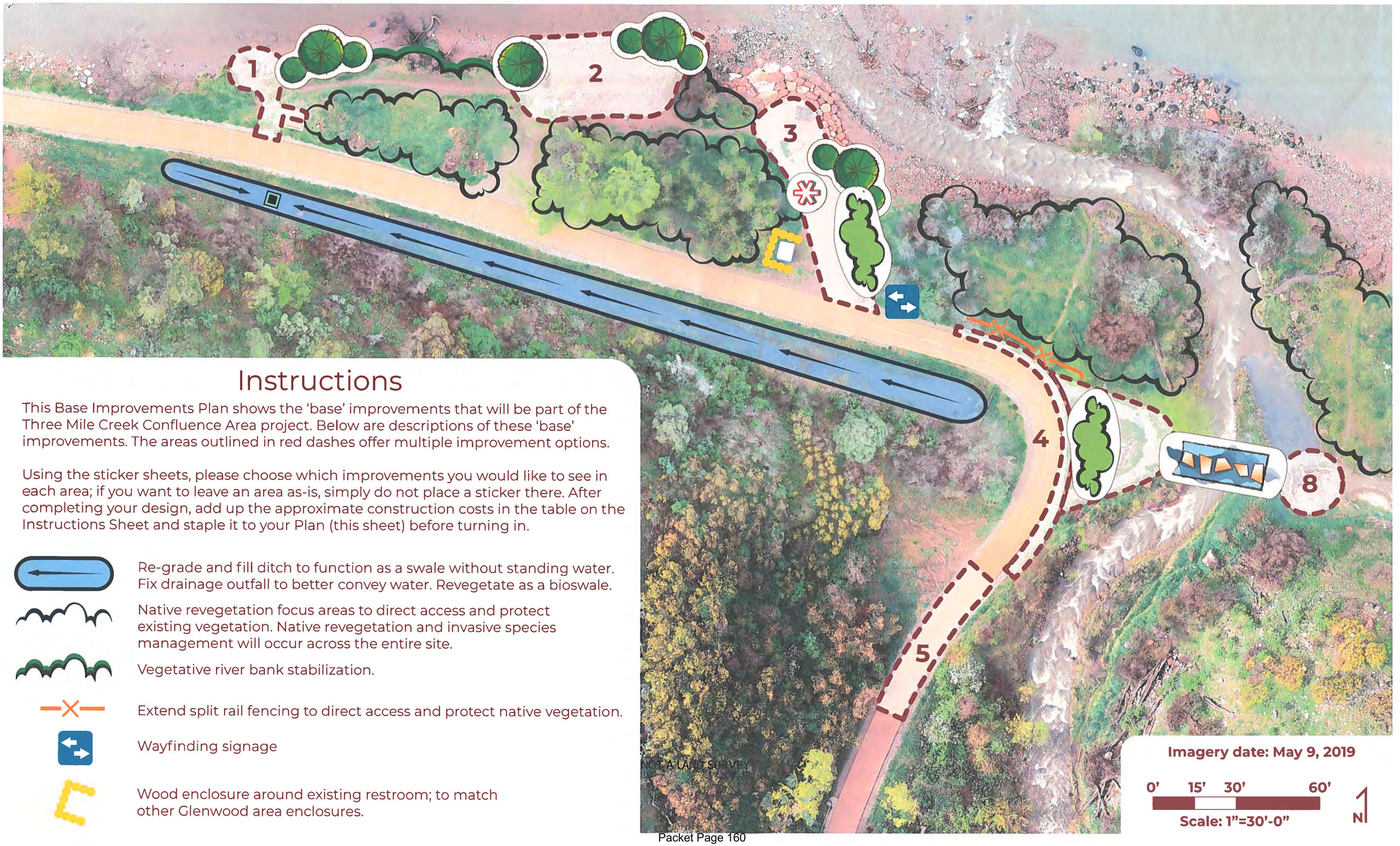
Native Shade Trees: 3 x $700 ea ..... $_____

Native Tree Cluster: 3 x $1,900 ea ..... $ 5700

Native Shrub and Pollinator Cluster: 1 x $1,600 ea ..... $ 1600

Grand Total ..... $ 12,100

Base Improvements Plan



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- Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.
- Vegetative river bank stabilization.
- Extend split rail fencing to direct access and protect native vegetation.
- Wayfinding signage
- Wood enclosure around existing restroom; to match other Glenwood area enclosures.

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $ 32,000
Area 2: Option _____ ..... $ 15,000
Area 3: Option _____ ..... $ 9,000
Area 4: Option _____ ..... $ 5,000
Area 5: Option _____ ..... $ 3,000
Area 6: Option _____ ..... $ 7,000
Area 7: Option _____ ..... $ 4,000
Area 8: Option _____ ..... $ _____

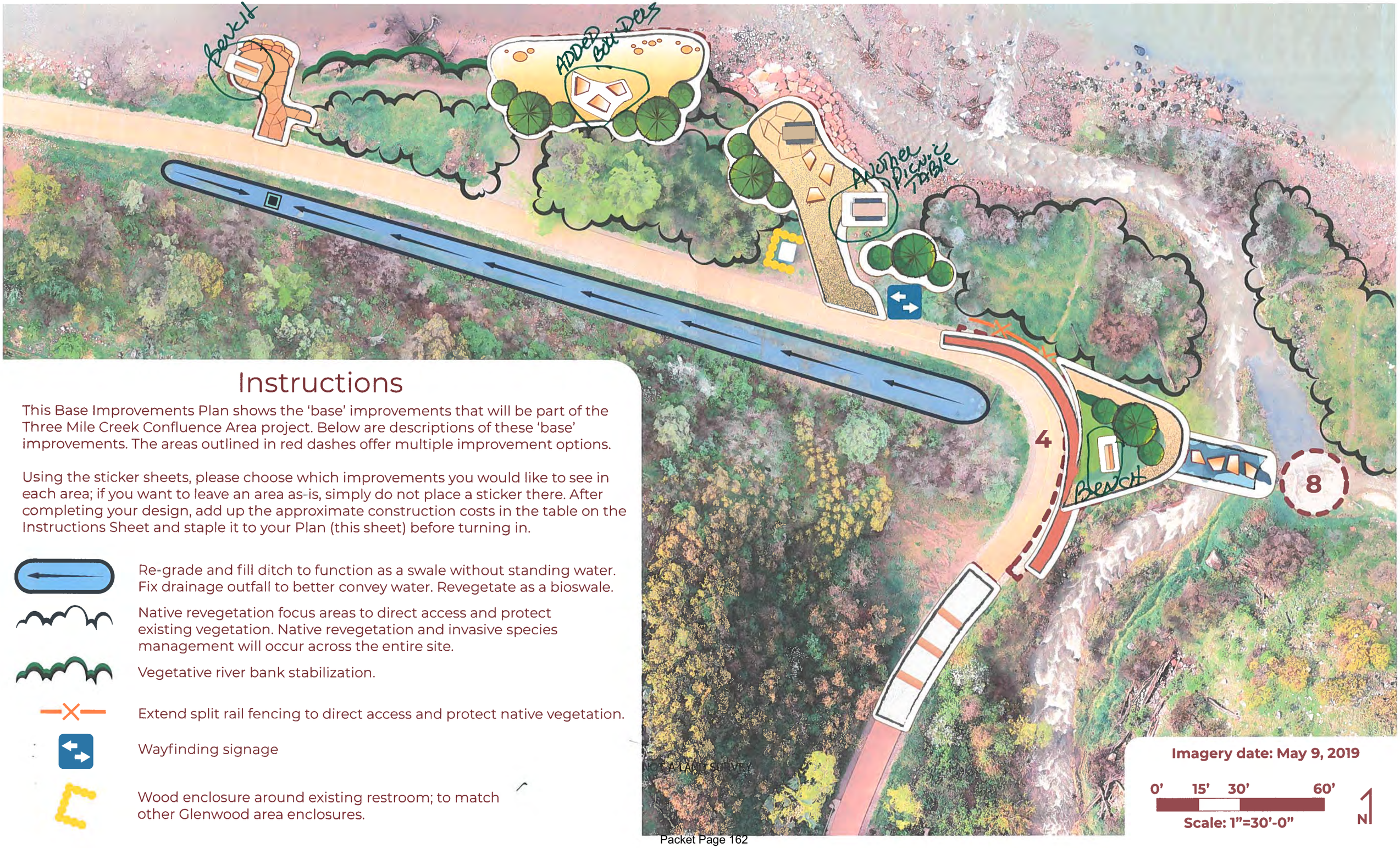
Additional Items:

Boulder Seats: 1 x $1,500 ea ..... $ 1,500
Picnic Tables: 1 x $1,200 ea ..... $ 1,200
Benches: 2 x $1,200 ea ..... $ 2,400
Simple Educational Signs: _____ x $1,800 ea ..... $ _____
Interactive Educational Signs: _____ x $3,000 ea ..... $ _____
Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____
Native Shade Trees: 1 x $700 ea ..... $ 700
Native Tree Cluster: _____ x $1,900 ea. ..... $ _____
Native Shrub and Pollinator Cluster: _____ x $1,600 ea. ..... $ _____

400,800

Grand Total ..... $ ~~80,800~~

Base Improvements Plan



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Base Improvements including Final Design and Permitting $320,000

Additional Items:

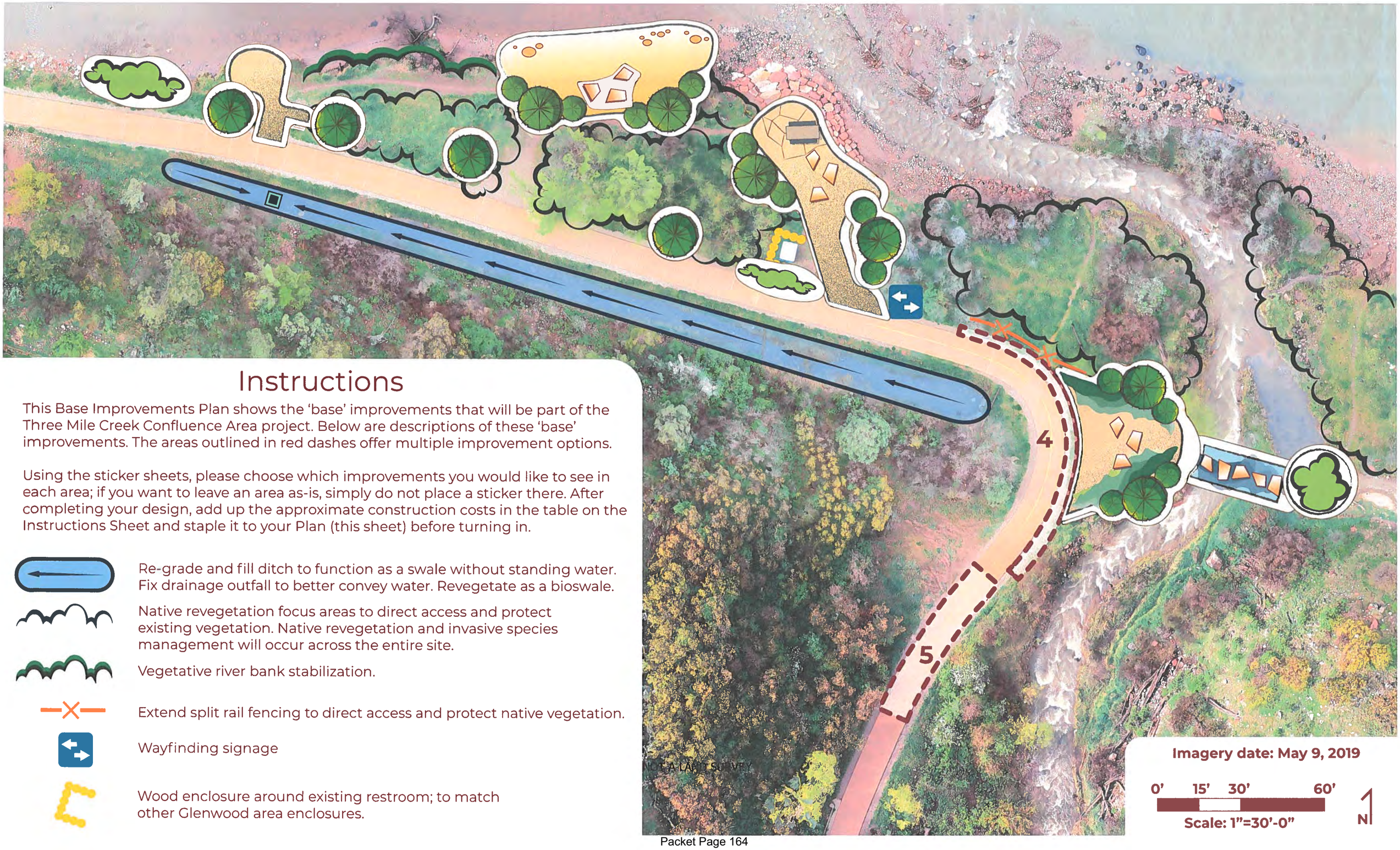
Area 1: Option A ..... $ 2,000.00
Area 2: Option A ..... $ 15,000.00
Area 3: Option A ..... $ 9,000.00
Area 4: Option _____ ..... $ _____
Area 5: Option _____ ..... $ _____
Area 6: Option A ..... $ 11,000.00
Area 7: Option A ..... $ 4,000.00
Area 8: Option A ..... $ 19,000.00

Additional Items:

Boulder Seats: 1 x $1,500 ea ..... $ 1,500.00
Picnic Tables: _____ x $1,200 ea ..... $ _____
Benches: _____ x $1,200 ea ..... $ _____
Simple Educational Signs: _____ x $1,800 ea ..... $ _____
Interactive Educational Signs: _____ x $3,000 ea ..... $ _____
Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____
Native Shade Trees: 4 x $700 ea ..... $ 2,800.00
Native Tree Cluster: 1 x $1,900 ea ..... $ 1,900.00
Native Shrub and Pollinator Cluster: 2 x $1,600 ea ..... $ 3,200.00

Grand Total ..... $ 389,400.00

Base Improvements Plan



Instructions

This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Choose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

Based on public input and site analysis, we have created the Base Improvements Plan and the attached Additional Design Options sticker sheets. The Base Improvements Plan shows improvements that will be part of the final design no matter what. The Additional Design Options sheets provide stickers for you to choose options in addition to the base improvements to create your own design.

Some of these stickers apply to specific areas (ie Area 1, Area 2, etc.), while others can be placed anywhere (i.e. picnic tables, additional trees, etc.). If you do not want additional improvements to an area, simply do not place a sticker there.

Each Additional Design Option has an estimated cost associated with it. Please place stickers on the Base Improvements Plan based on where you would like to see these options. Then, total up the cost of the additional design options you chose on this sheet and staple this sheet to your Plan before turning it in.

Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option B ..... $ 32,000
Area 2: Option A ..... $ 15,000
Area 3: Option B ..... $ 37,000
Area 4: Option A ..... $ 5,000
Area 5: Option — ..... $ —
Area 6: Option A ..... $ 11,000
Area 7: Option A ..... $ 4000
Area 8: Option A ..... $ 19,000

Additional Items:

Boulder Seats: 3 x $1,500 ea ..... $ 4,500
Picnic Tables: 1 x $1,200 ea ..... $ 1,200
Benches: 2 x $1,200 ea ..... $ 2,400
Simple Educational Signs: _____ x $1,800 ea ..... $ _____
Interactive Educational Signs: _____ x $3,000 ea ..... $ _____
Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____
Native Shade Trees: 7 x $700 ea ..... $ 4,900
Native Tree Cluster: 4 x $1,900 ea ..... $ 5,600
Native Shrub and Pollinator Cluster: 2 x $1,600 ea ..... $ 3,200

Grand Total ..... $ 144,800

Base Improvements Plan

Instructions

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Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

5

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

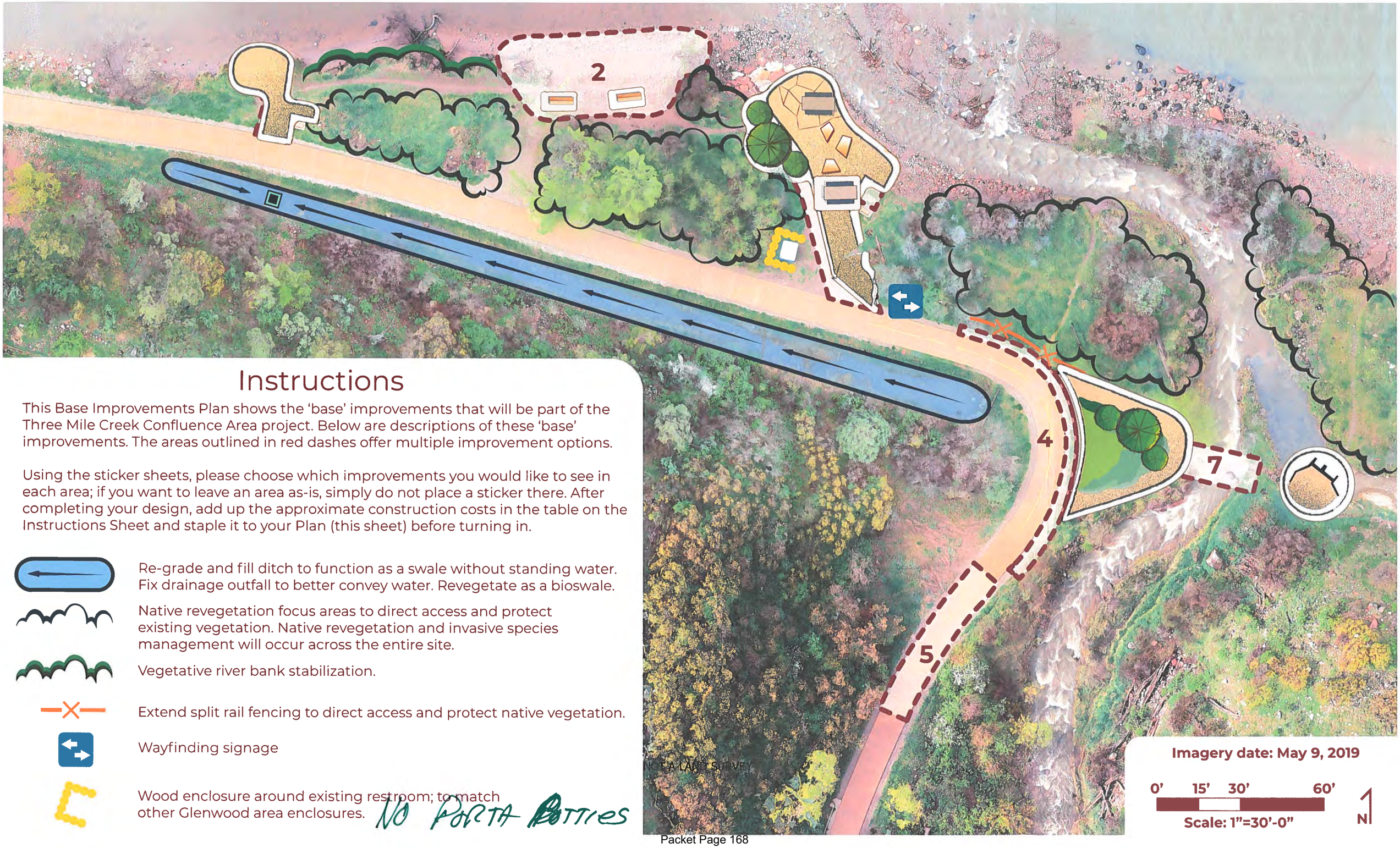
Area 1: Option 1 ..... $ 2,000
Area 2: Option ____ ..... $ —
Area 3: Option ____ ..... $ 9,000
Area 4: Option ____ ..... $ —
Area 5: Option ____ ..... $ 7,000
Area 6: Option 5 ..... $ —
Area 7: Option ____ ..... $ —
Area 8: Option B ..... $ 10,000

Additional Items:

Boulder Seats: ____ x $1,500 ea ..... $ ____
Picnic Tables: 1 x $1,200 ea ..... $ 1,200
Benches: 2 x $1,200 ea ..... $ 2,400
Simple Educational Signs: ____ x $1,800 ea ..... $ ____
Interactive Educational Signs: ____ x $3,000 ea ..... $ ____
Interactive Educational Exhibits: ____ x $9,000 ea ..... $ ____
Native Shade Trees: ____ x $700 ea ..... $ ____
Native Tree Cluster: ____ x $1,900 ea ..... $ ____
Native Shrub and Pollinator Cluster: ____ x $1,600 ea ..... $ 31,600

Grand Total ..... $ 351,600

Base Improvements Plan



Instructions

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Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures. NO PORTA POTTIES

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2,000
Area 2: Option A ..... $ 15,000
Area 3: Option A ..... $ 9,000
Area 4: Option X ..... $ X
Area 5: Option X ..... $ X
Area 6: Option A ..... $ 11,000
Area 7: Option X ..... $ 4,000
Area 8: Option A ..... $ 19,000

Additional Items:

Boulder Seats: 1 x $1,500 ea ..... $ 1,500
Picnic Tables: ____ x $1,200 ea ..... $ X
Benches: 2 x $1,200 ea ..... $ 2,400
Simple Educational Signs: ____ x $1,800 ea ..... $ X
Interactive Educational Signs: ____ x $3,000 ea ..... $ X
Interactive Educational Exhibits: ____ x $9,000 ea ..... $ X
Native Shade Trees: 8 x $700 ea ..... $ 5,600
Native Tree Cluster: ____ x $1,900 ea ..... $ X
Native Shrub and Pollinator Cluster: 3 x $1,600 ea ..... $ 4,800

Grand Total ..Additional Items → $74,300 ..... $ [illegible]

Base Improvements Plan

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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

5

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option ~~NA~~ no change ..... $ ~~NA~~

Area 2: Option A ..... $ 15,000

Area 3: Option A ..... $ 9,000

Area 4: Option — ..... $ —

Area 5: Option A ..... $ 3000

Area 6: Option A ..... $ 11,000

Area 7: Option — ..... $ —

Area 8: Option B ..... $ 10,000

Additional Items:

Boulder Seats: 1 x $1,500 ea ..... $ 1500

Picnic Tables: _____ x $1,200 ea ..... $ _____

Benches: _____ x $1,200 ea ..... $ _____

Simple Educational Signs: _____ x $1,800 ea ..... $ _____

Interactive Educational Signs: _____ x $3,000 ea ..... $ _____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____

Native Shade Trees: 2 x $700 ea ..... $ 1400

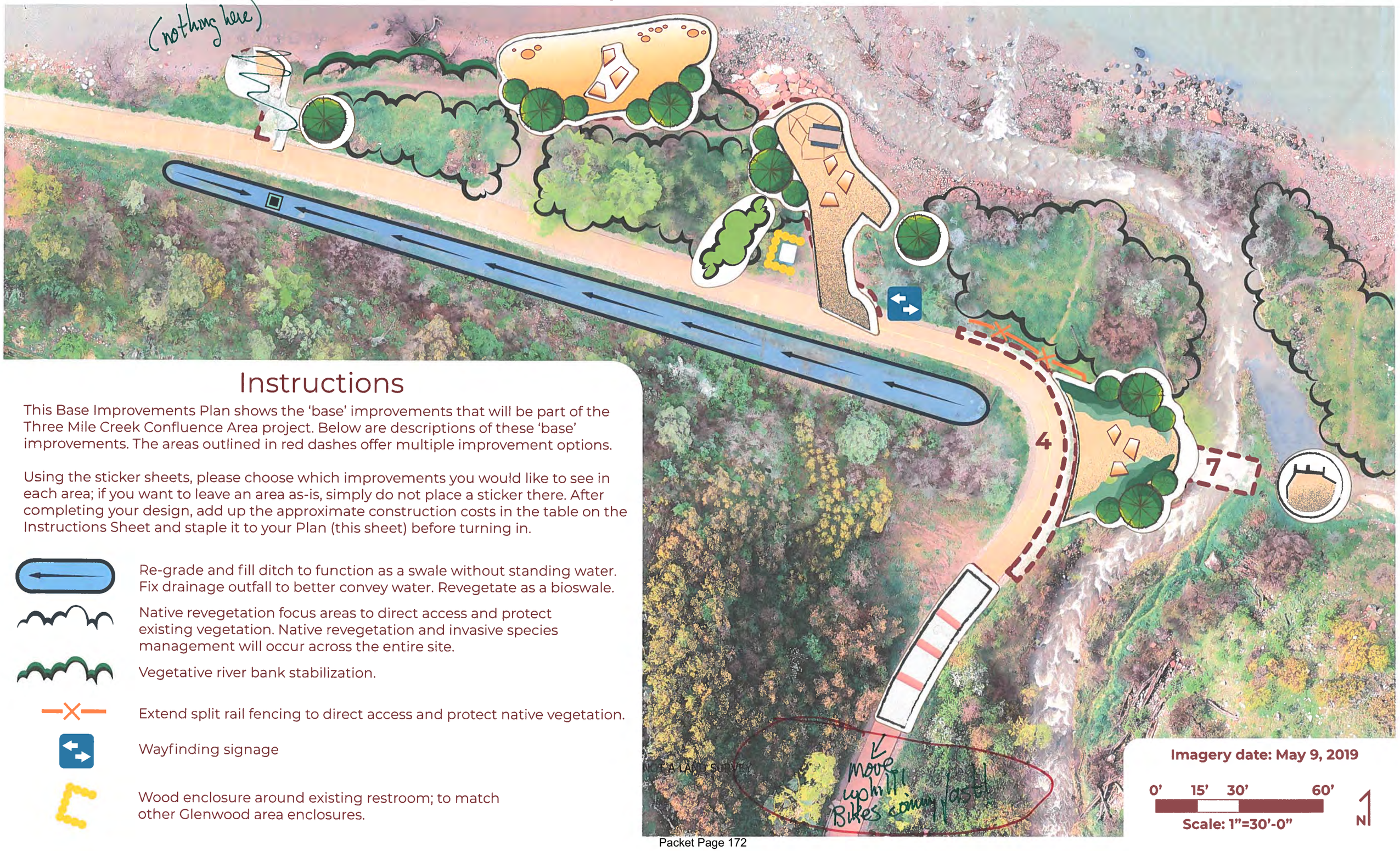
Native Tree Cluster: _____ x $1,900 ea ..... $ _____

Native Shrub and Pollinator Cluster: 1 x $1,600 ea ..... $ 1600

(12%) sub ~~42,500~~

Grand Total $362,500

Base Improvements Plan



Instructions

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- Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.
- Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.
- Vegetative river bank stabilization.
- Extend split rail fencing to direct access and protect native vegetation.
- Wayfinding signage
- Wood enclosure around existing restroom; to match other Glenwood area enclosures.

hoose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

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Each Additional Design Option has an estimated cost associated with it. Please place stickers on the Base Improvements Plan based on where you would like to see these options. Then, total up the cost of the additional design options you chose on this sheet and staple this sheet to your Plan before turning it in.

Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $_____

Area 2: Option _____ ..... $ 15,000

Area 3: Option _____ ..... $ 9,000

Area 4: Option _____ ..... $_____

Area 5: Option _____ ..... $_____

Area 6: Option _____ ..... $ 11,000

Area 7: Option _____ ..... $_____

Area 8: Option _____ ..... $_____

Additional Items:

Boulder Seats: 12 x $1,500 ea ..... $ 18,000

Picnic Tables: _____ x $1,200 ea ..... $_____

Benches: _____ x $1,200 ea ..... $_____

Simple Educational Signs: _____ x $1,800 ea ..... $_____

Interactive Educational Signs: _____ x $3,000 ea ..... $_____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $_____

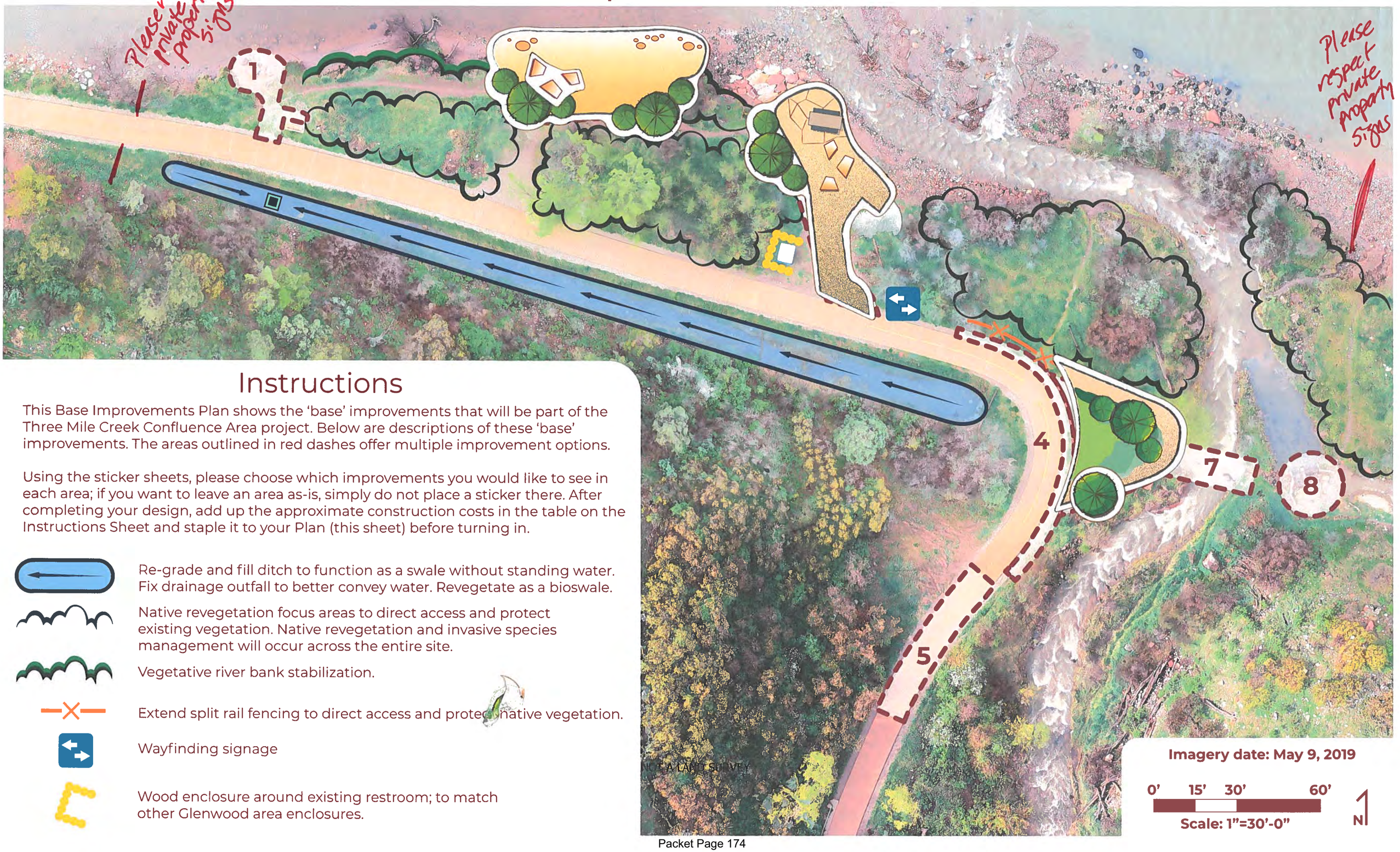
Native Shade Trees: 12 x $700 ea ..... $ 8,400

Native Tree Cluster: _____ x $1,900 ea ..... $_____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $_____

Grand Total ..... $ 37,200

Base Improvements Plan



Instructions

This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

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Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Choose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

Based on public input and site analysis, we have created the Base Improvements Plan and the attached Additional Design Options sticker sheets. The Base Improvements Plan shows improvements that will be part of the final design no matter what. The Additional Design Options sheets provide stickers for you to choose options in addition to the base improvements to create your own design.

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Each Additional Design Option has an estimated cost associated with it. Please place stickers on the Base Improvements Plan based on where you would like to see these options. Then, total up the cost of the additional design options you chose on this sheet and staple this sheet to your Plan before turning it in.

Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2,000.00

Area 2: Option A ..... $ 15,000.00

Area 3: Option B ..... $ 37,000.00

Area 4: Option ~~B~~ ..... $ ~~7,000.00~~

Area 5: Option _____ ..... $ _____

Area 6: Option B ..... $ 7,000.00

Area 7: Option _____ ..... $ _____

Area 8: Option B ..... $ 10,000.00

Additional Items:

Boulder Seats: 6 x $1,500 ea ..... $ 3,000

Picnic Tables: _____ x $1,200 ea ..... $ _____

Benches: _____ x $1,200 ea ..... $ _____

Simple Educational Signs: _____ x $1,800 ea ..... $ _____

Interactive Educational Signs: _____ x $3,000 ea ..... $ _____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____

Native Shade Trees: _____ x $700 ea ..... $ _____

Native Tree Cluster: _____ x $1,900 ea ..... $ _____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $ _____

Grand Total ..... $ 74,000.00

Base Improvements Plan

Instructions

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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

5

7

8

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $ 2

Area 2: Option _____ ..... $ 15

Area 3: Option _____ ..... $ 9

Area 4: Option _____ ..... $ _____

Area 5: Option _____ ..... $ _____

Area 6: Option _____ ..... $ 11

Area 7: Option _____ ..... $ _____

Area 8: Option _____ ..... $ _____

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $ _____

Picnic Tables: _____ x $1,200 ea ..... $ _____

Benches: _____ x $1,200 ea ..... $ _____

Simple Educational Signs: _____ x $1,800 ea ..... $ _____

Interactive Educational Signs: _____ x $3,000 ea ..... $ _____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $ _____

Native Shade Trees: _____ x $700 ea ..... $ _____

Native Tree Cluster: 2 x $1,900 ea ..... $ 3800

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $ _____

Grand Total ..... $ 40,800

Base Improvements Plan

Instructions

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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

4

7

8

Safety hazard for bikes

5

No.

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

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Choose Your Own Design Construction Costs

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option A ..... $ 2000 —

Area 2: Option A ..... $ 15000 —

Area 3: Option A ..... $ 9000 —

Area 4: Option A ..... $ 5000 —

Area 5: Option A ..... $ 3000 —

Area 6: Option B ..... $ 7000 —

Area 7: Option A ..... $ 4000 —

Area 8: Option B ..... $ 10,000 —

Additional Items: I don't know enough about what is needed but prefer not too much gentrification

Boulder Seats: _____ x $1,500 ea ..... $_____

Picnic Tables: _____ x $1,200 ea ..... $_____

Benches: _____ x $1,200 ea ..... $_____

Simple Educational Signs: _____ x $1,800 ea ..... $_____

Interactive Educational Signs: _____ x $3,000 ea ..... $_____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $_____

Native Shade Trees: _____ x $700 ea ..... $_____

Native Tree Cluster: _____ x $1,900 ea ..... $_____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $_____

Grand Total ..... $_____

Base Improvements Plan

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Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

1
2
3
4
5
6
7
8

Imagery date: May 9, 2019

0' 15' 30' 60'

Scale: 1"=30'-0"

N

Choose Your Own Design Instructions

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Base Improvements including Final Design and Permitting $320,000

Additional Items:

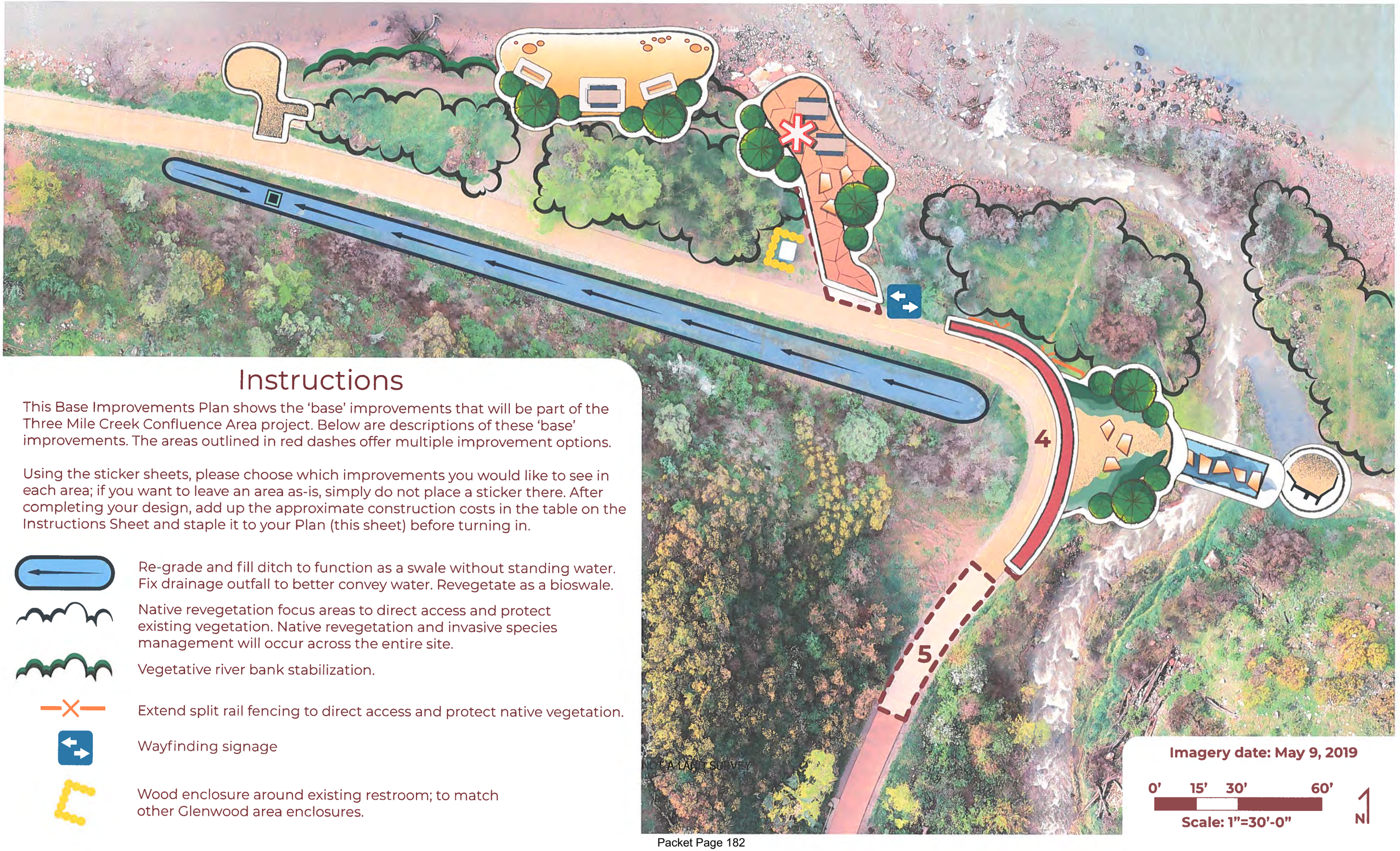
Area 1: Option A ..... $ 2,000
Area 2: Option ____ ..... $ 15,000
Area 3: Option B ..... $ 37,000
Area 4: Option ____ ..... $ 5,000
Area 5: Option ____ ..... $ —
Area 6: Option A ..... $ 11,000
Area 7: Option ____ ..... $ 4,000
Area 8: Option B ..... $ 10,000

Additional Items:

Boulder Seats: ____ x $1,500 ea ..... $ ____
Picnic Tables: 1 x $1,200 ea ..... $ 1,200
Benches: 2 x $1,200 ea ..... $ 2,400
Simple Educational Signs: ____ x $1,800 ea ..... $ ____
Interactive Educational Signs: ____ x $3,000 ea ..... $ ____
Interactive Educational Exhibits: ____ x $9,000 ea ..... $ ____
Native Shade Trees: ____ x $700 ea ..... $ ____
Native Tree Cluster: ____ x $1,900 ea ..... $ ____
Native Shrub and Pollinator Cluster: ____ x $1,600 ea ..... $ ____

Grand Total ..... $ 87,600

Base Improvements Plan



Instructions

This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Choose Your Own Design Instructions

For this activity, you will create your own custom design for the Three Mile Creek Confluence Area.

Based on public input and site analysis, we have created the Base Improvements Plan and the attached Additional Design Options sticker sheets. The Base Improvements Plan shows improvements that will be part of the final design no matter what. The Additional Design Options sheets provide stickers for you to choose options in addition to the base improvements to create your own design.

Some of these stickers apply to specific areas (ie Area 1, Area 2, etc.), while others can be placed anywhere (i.e. picnic tables, additional trees, etc.). If you do not want additional improvements to an area, simply do not place a sticker there.

Each Additional Design Option has an estimated cost associated with it. Please place stickers on the Base Improvements Plan based on where you would like to see these options. Then, total up the cost of the additional design options you chose on this sheet and staple this sheet to your Plan before turning it in.

Choose Your Own Design Construction Costs

Using the costs for each Additional Design Option that you chose, fill in the below cost sheet to arrive at an approximate total cost for your design's construction.

Base Improvements including Final Design and Permitting $320,000

Additional Items:

Area 1: Option _____ ..... $_____

Area 2: Option _____ ..... $_____

Area 3: Option _____ ..... $ 9,000

Area 4: Option _____ ..... $_____

Area 5: Option _____ ..... $_____

Area 6: Option _____ ..... $ 7,000

Area 7: Option _____ ..... $_____

Area 8: Option _____ ..... $_____

Additional Items:

Boulder Seats: _____ x $1,500 ea ..... $_____

Picnic Tables: _____ x $1,200 ea ..... $_____

Benches: _____ x $1,200 ea ..... $_____

Simple Educational Signs: _____ x $1,800 ea ..... $_____

Interactive Educational Signs: _____ x $3,000 ea ..... $_____

Interactive Educational Exhibits: _____ x $9,000 ea ..... $_____

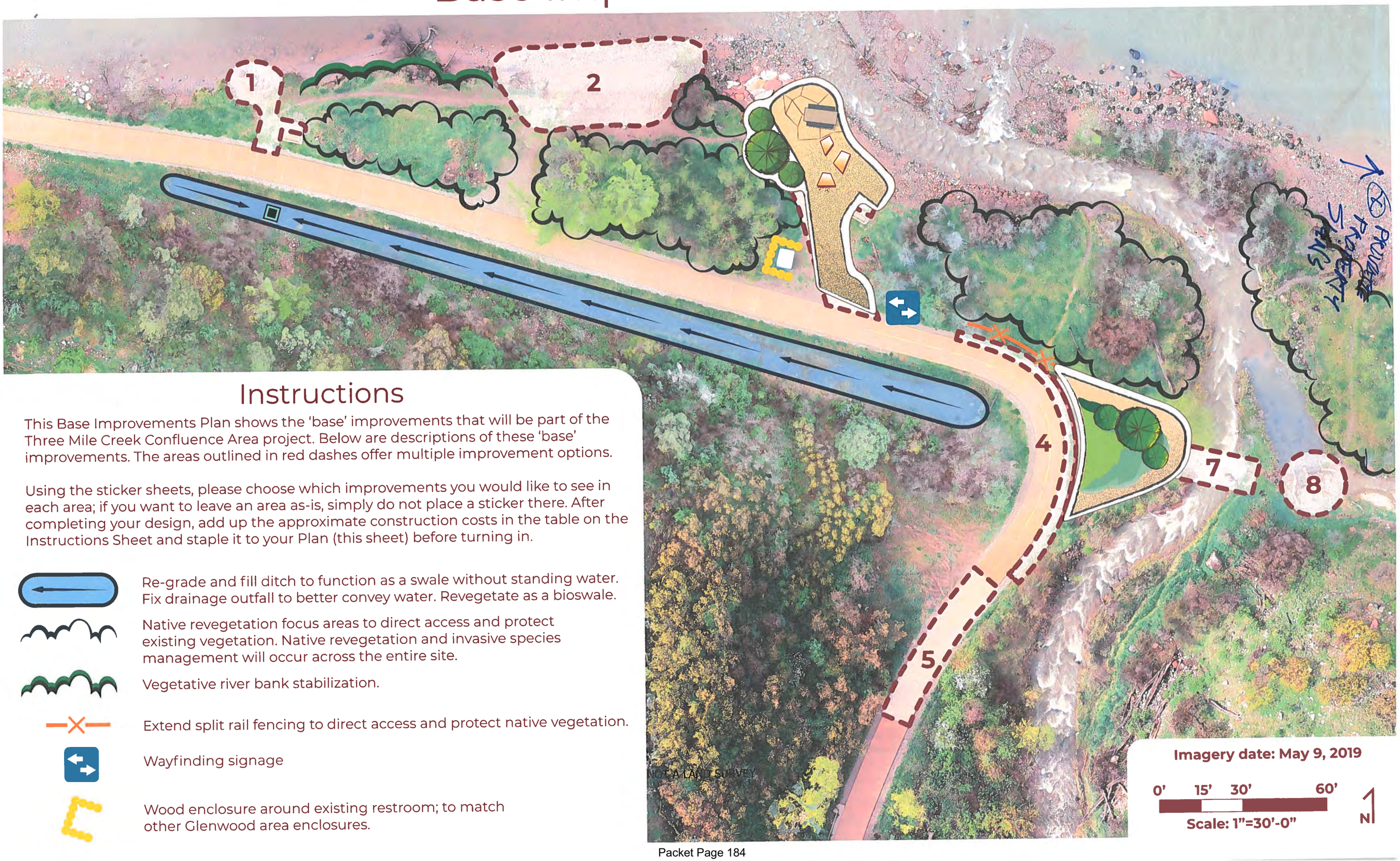
Native Shade Trees: _____ x $700 ea ..... $_____

Native Tree Cluster: _____ x $1,900 ea ..... $_____

Native Shrub and Pollinator Cluster: _____ x $1,600 ea ..... $_____

Grand Total ..... $ 16,000

Base Improvements Plan



Instructions

This Base Improvements Plan shows the 'base' improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these 'base' improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

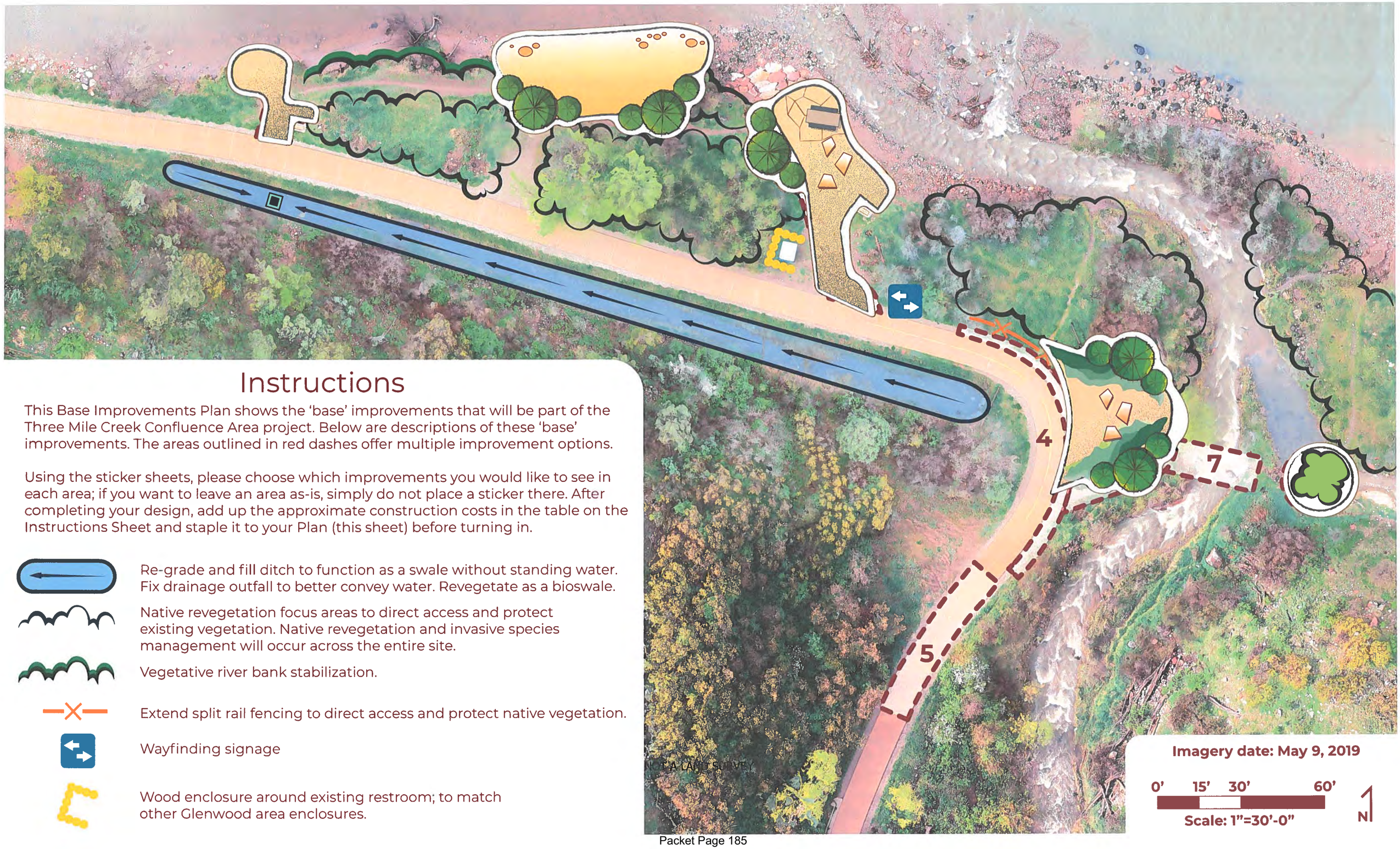
Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Base Improvements Plan



Instructions

This Base Improvements Plan shows the ‘base’ improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these ‘base’ improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Base Improvements Plan

Good base plan-
like shade trees.
Don't think anything else
really adds value to
the over experience

Jon Banks

Instructions

This Base Improvements Plan shows the 'base' improvements that will be part of the Three Mile Creek Confluence Area project. Below are descriptions of these 'base' improvements. The areas outlined in red dashes offer multiple improvement options.

Using the sticker sheets, please choose which improvements you would like to see in each area; if you want to leave an area as-is, simply do not place a sticker there. After completing your design, add up the approximate construction costs in the table on the Instructions Sheet and staple it to your Plan (this sheet) before turning in.

Re-grade and fill ditch to function as a swale without standing water. Fix drainage outfall to better convey water. Revegetate as a bioswale.

Native revegetation focus areas to direct access and protect existing vegetation. Native revegetation and invasive species management will occur across the entire site.

Vegetative river bank stabilization.

Extend split rail fencing to direct access and protect native vegetation.

Wayfinding signage

Wood enclosure around existing restroom; to match other Glenwood area enclosures.

Imagery date: May 9, 2019

0' 15' 30' 60'

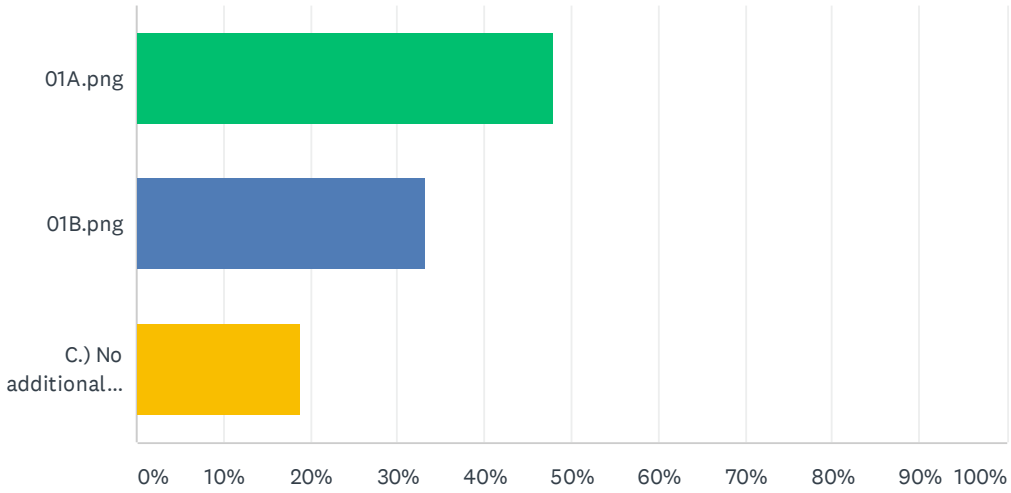
Scale: 1"=30'-0"

N

Public Input Survey #2 Full Results

Q1 Which option would you like to see for Area 1? (picture examples are shown below the question)

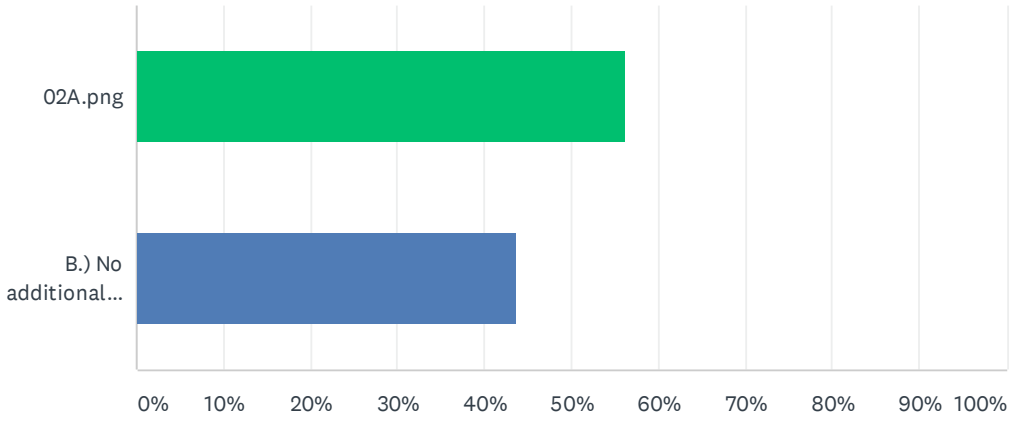
Answered: 48 Skipped: 2



ANSWER CHOICES	RESPONSES	
	47.92%	23
	33.33%	16
C.) No additional improvements	18.75%	9
TOTAL		48

Q2 Which option would you like to see for Area 2? (picture below the question shows approx. limits of Option A expansion)

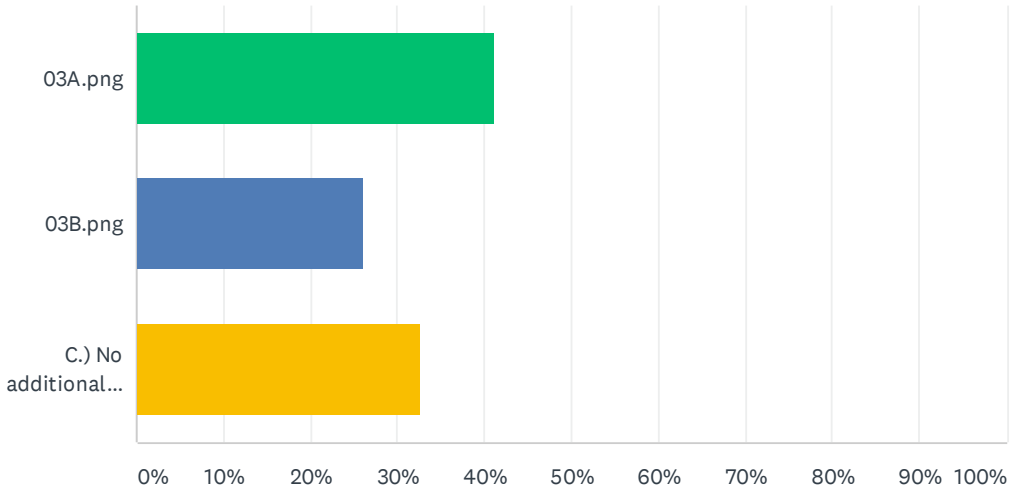
Answered: 48 Skipped: 2



ANSWER CHOICES	RESPONSES	
	56.25%	27
B.) No additional improvements	43.75%	21
TOTAL		48

Q3 Which option would you like to see for Area 3? (picture below the question shows approx. limits of Optional Improvements)

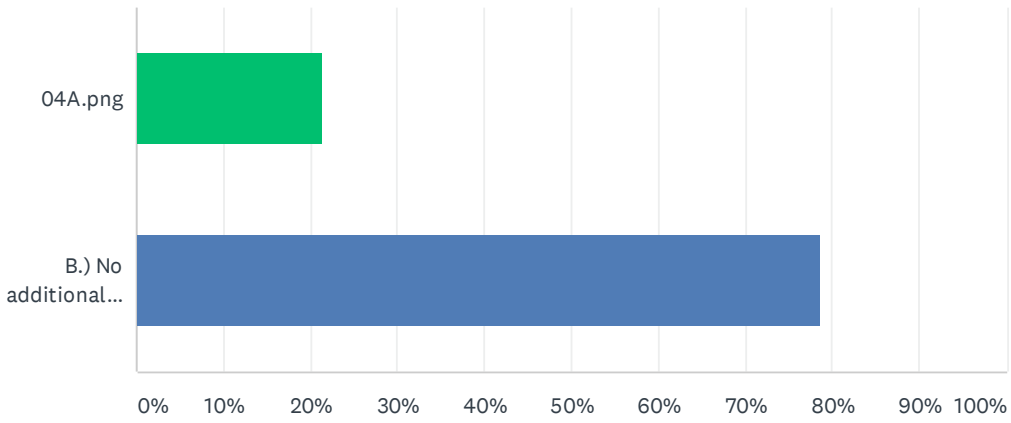
Answered: 46 Skipped: 4



ANSWER CHOICES	RESPONSES	
	41.30%	19
	26.09%	12
C.) No additional improvements	32.61%	15
TOTAL		46

Q4 Which option would you like to see for Area 4?

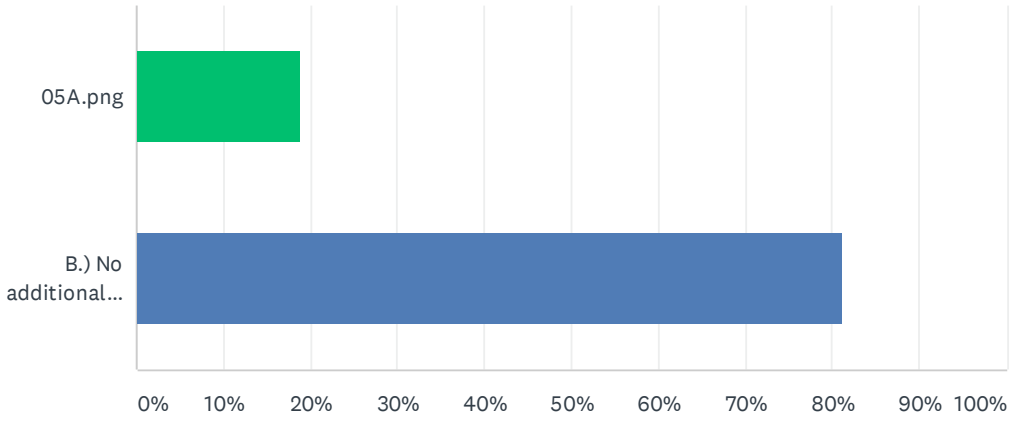
Answered: 47 Skipped: 3



ANSWER CHOICES	RESPONSES	
	21.28%	10
B.) No additional improvements	78.72%	37
TOTAL		47

Q5 Which option would you like to see for Area 5? (picture below the questions shows an example)

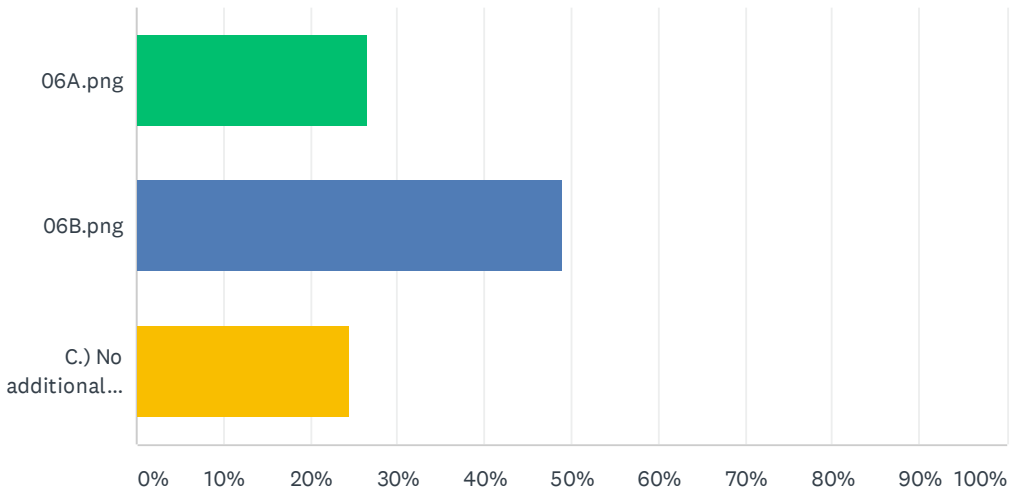
Answered: 48 Skipped: 2



ANSWER CHOICES	RESPONSES	
	18.75%	9
B.) No additional improvements	81.25%	39
TOTAL		48

Q6 Which option would you like to see for Area 6?

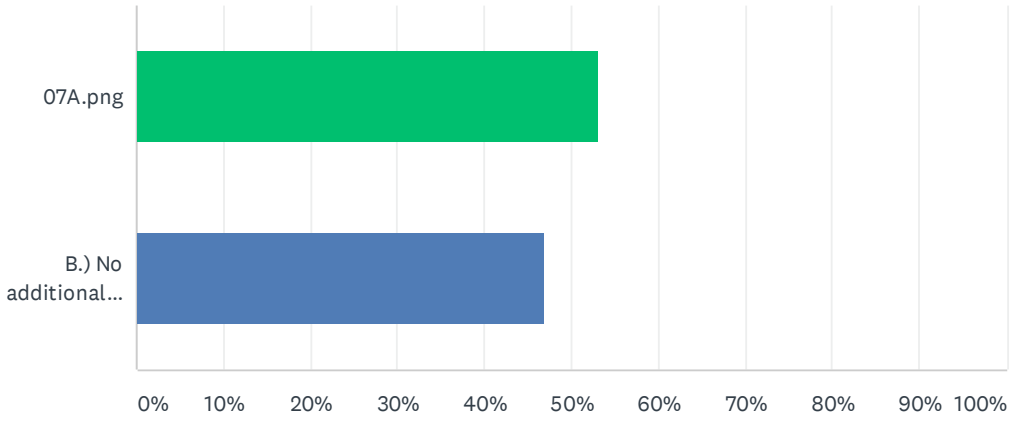
Answered: 45 Skipped: 5



ANSWER CHOICES	RESPONSES	
	26.67%	12
	48.89%	22
C.) No additional improvements	24.44%	11
TOTAL		45

Q7 Which option would you like to see for Area 7? (picture below question shows an example)

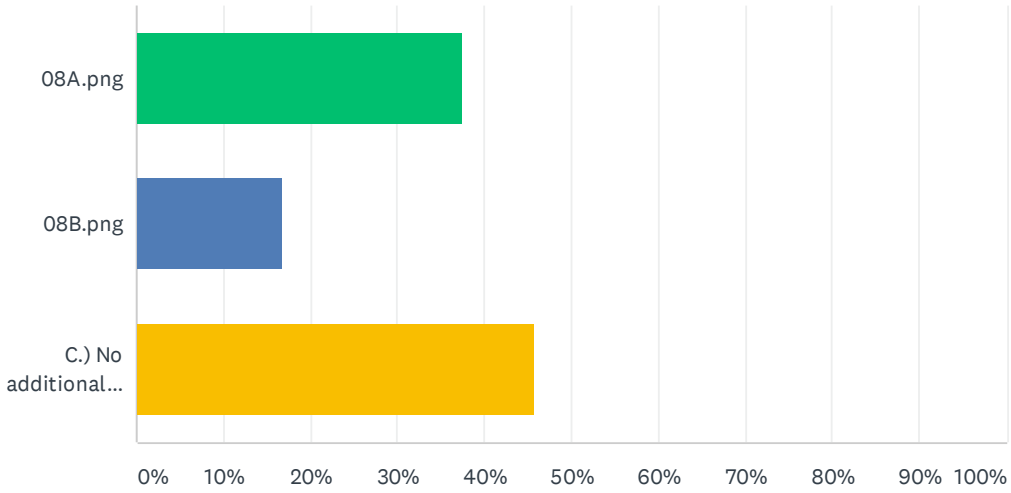
Answered: 49 Skipped: 1



ANSWER CHOICES	RESPONSES	
	53.06%	26
B.) No additional improvements	46.94%	23
TOTAL		49

Q8 Which option would you like to see for Area 8? (picture below the question shows the existing headgate)

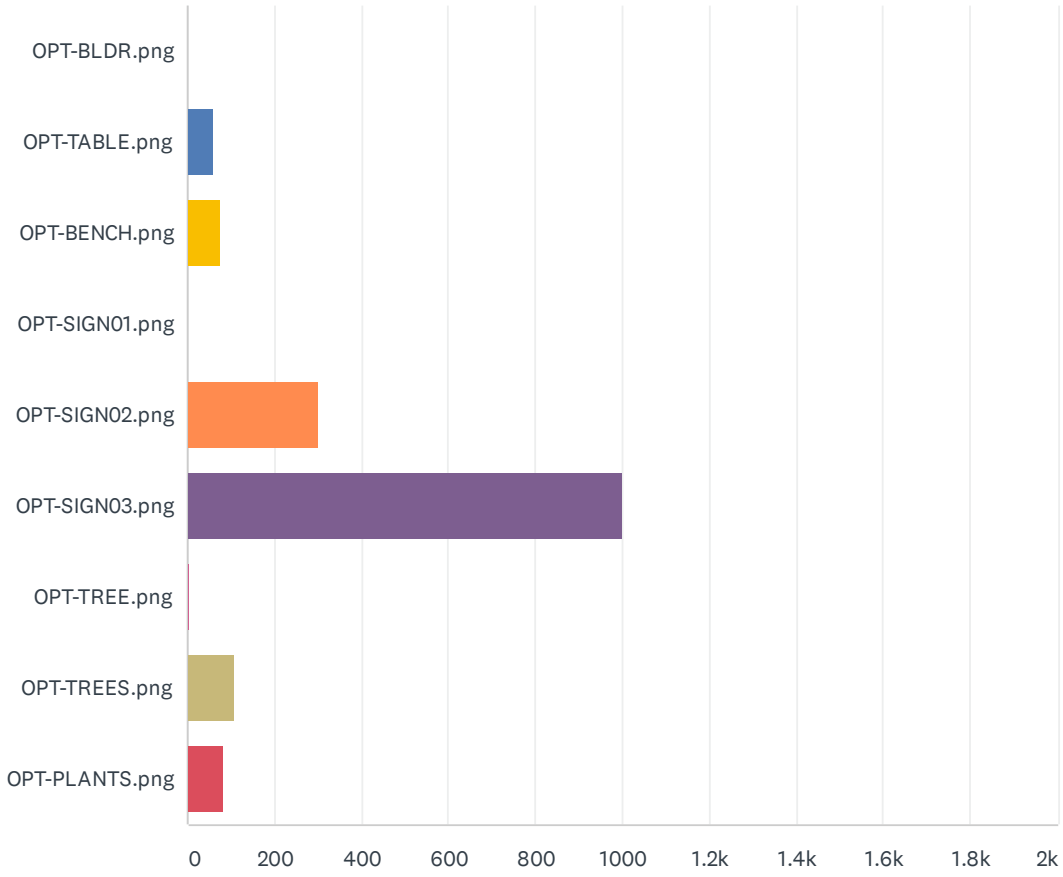
Answered: 48 Skipped: 2



ANSWER CHOICES	RESPONSES	
	37.50%	18
	16.67%	8
C.) No additional improvements	45.83%	22
TOTAL		48

Q9 Please choose the number of each additional item you would like to add to your design: (picture examples are shown below the question)

Answered: 28 Skipped: 22



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	1	21	16
	59	1,230	21
	76	1,219	16
	1	19	17
	301	3,005	10
	1,000	9,004	9
	4	62	17
	107	1,931	18
	82	1,642	20
Total Respondents: 28			

#	OPT-BLDR.PNG	DATE
1	1	12/8/2019 5:52 PM
2	2	12/6/2019 1:57 PM
3	1	12/4/2019 8:08 PM
4	1	12/2/2019 9:04 AM
5	1	11/21/2019 9:12 PM
6	2	11/21/2019 12:08 PM
7	3	11/20/2019 4:19 PM
8	0	11/20/2019 11:54 AM
9	0	11/20/2019 11:27 AM
10	0	11/20/2019 10:10 AM
11	1	11/19/2019 11:28 AM
12	3	11/13/2019 4:51 PM
13	2	11/13/2019 10:27 AM
14	1	11/13/2019 9:28 AM
15	2	11/13/2019 8:35 AM
16	1	11/12/2019 8:13 PM

Note: one respondent accidentally filled in the price instead of the quantity for several of the additional options. While combining online and in person results, these were changed to the correct quantity. For example, this respondent responded '1200' for table instead of '1'; this was fixed prior to final calculations.

#	OPT-TABLE.PNG	DATE
1	1	12/12/2019 12:23 PM
2	1	12/8/2019 5:52 PM
3	1	12/6/2019 1:57 PM
4	1200	12/6/2019 12:44 PM
5	1	12/4/2019 8:08 PM
6	0	12/2/2019 9:04 AM
7	1	11/21/2019 9:12 PM
8	0	11/21/2019 12:08 PM
9	5	11/20/2019 4:19 PM
10	2	11/20/2019 3:38 PM
11	2	11/20/2019 12:49 PM
12	2	11/20/2019 11:54 AM
13	0	11/20/2019 11:27 AM
14	3	11/20/2019 11:14 AM
15	1	11/20/2019 10:10 AM
16	1	11/19/2019 11:28 AM
17	3	11/13/2019 4:51 PM
18	1	11/13/2019 10:27 AM
19	1	11/13/2019 9:28 AM
20	2	11/13/2019 8:35 AM
21	2	11/12/2019 8:13 PM

#	OPT-BENCH.PNG	DATE
1	1	12/12/2019 12:23 PM
2	1	12/8/2019 5:52 PM
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5	1	12/4/2019 8:08 PM
6	0	12/2/2019 9:04 AM
7	1	11/21/2019 9:12 PM
8	0	11/21/2019 12:08 PM
9	1	11/21/2019 8:43 AM
10	5	11/20/2019 4:19 PM
11	2	11/20/2019 11:54 AM
12	0	11/20/2019 11:27 AM
13	0	11/20/2019 10:10 AM
14	2	11/13/2019 10:27 AM
15	1	11/13/2019 9:28 AM
16	2	11/13/2019 8:35 AM

#	OPT-SIGN01.PNG	DATE
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2	1	12/8/2019 5:52 PM
3	4	12/6/2019 1:57 PM
4	1	12/4/2019 8:08 PM
5	1	12/2/2019 4:52 PM
6	1	12/2/2019 4:45 PM
7	3	12/2/2019 10:13 AM
8	1	12/2/2019 9:04 AM
9	1	11/22/2019 1:45 PM
10	1	11/21/2019 12:08 PM
11	1	11/21/2019 8:43 AM
12	0	11/20/2019 4:19 PM
13	1	11/20/2019 11:54 AM
14	0	11/20/2019 11:27 AM
15	0	11/20/2019 10:10 AM
16	1	11/13/2019 4:51 PM
17	1	11/13/2019 9:28 AM

#	OPT-SIGN02.PNG	DATE
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6	0	11/20/2019 4:19 PM
7	0	11/20/2019 11:54 AM
8	0	11/20/2019 11:27 AM
9	0	11/20/2019 10:10 AM
10	1	11/13/2019 10:27 AM

#	OPT-SIGN03.PNG	DATE
1	9000	12/6/2019 12:44 PM
2	2	12/2/2019 10:13 AM
3	0	11/21/2019 12:08 PM
4	0	11/20/2019 4:19 PM
5	0	11/20/2019 11:54 AM
6	0	11/20/2019 11:27 AM
7	0	11/20/2019 10:10 AM
8	1	11/13/2019 4:51 PM
9	1	11/13/2019 10:27 AM

#	OPT-TREE.PNG	DATE
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2	4	12/4/2019 8:08 PM
3	5	12/4/2019 1:43 PM
4	5	12/2/2019 10:13 AM
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6	4	11/21/2019 9:12 PM
7	2	11/21/2019 12:08 PM
8	10	11/20/2019 4:19 PM
9	2	11/20/2019 11:54 AM
10	0	11/20/2019 11:27 AM
11	5	11/20/2019 11:14 AM
12	3	11/19/2019 11:28 AM
13	4	11/13/2019 4:51 PM
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15	1	11/13/2019 9:28 AM
16	5	11/12/2019 8:13 PM
17	4	11/12/2019 5:28 PM

#	OPT-TREES.PNG	DATE
1	1	12/8/2019 5:52 PM
2	1900	12/6/2019 12:44 PM
3	5	12/4/2019 1:43 PM
4	2	12/2/2019 10:13 AM
5	0	12/2/2019 9:04 AM
6	1	11/22/2019 1:45 PM
7	3	11/21/2019 9:12 PM
8	1	11/21/2019 12:08 PM
9	1	11/21/2019 8:43 AM
10	2	11/20/2019 4:19 PM
11	0	11/20/2019 11:54 AM
12	1	11/20/2019 11:27 AM
13	0	11/20/2019 10:10 AM
14	2	11/19/2019 11:28 AM
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16	2	11/13/2019 10:27 AM
17	1	11/13/2019 9:28 AM
18	5	11/12/2019 8:13 PM

#	OPT-PLANTS.PNG	DATE
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2	2	12/6/2019 1:57 PM
3	1600	12/6/2019 12:44 PM
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6	1	12/2/2019 9:04 AM
7	1	11/22/2019 1:45 PM
8	2	11/21/2019 9:12 PM
9	2	11/21/2019 12:08 PM
10	1	11/21/2019 8:43 AM
11	2	11/20/2019 4:19 PM
12	1	11/20/2019 11:54 AM
13	0	11/20/2019 11:27 AM
14	0	11/20/2019 10:10 AM
15	5	11/19/2019 11:28 AM
16	4	11/13/2019 4:51 PM
17	4	11/13/2019 10:27 AM
18	2	11/13/2019 9:28 AM
19	2	11/12/2019 8:13 PM
20	2	11/12/2019 5:28 PM

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Planning Item 09-20 - Annexation Agreement for 214 Center Drive (PIN: 2185-061-00-042).

Action Requested: This item is related to the the second reading of the annexation and rezoning ordinances (8 and 9 respectively) approved by City Council on October 21, 2021 which are also located on the consent agenda. Please see the attached revised and updated annexation agreement, annexation and rezoning ordinances outlining the changes made at said meeting. The attached annexation map does not include the County roads as the request and City decision to include them came after the annexation noticing had been done. As a result, the City will process a separate annexation map to annex the roads. Additionally, staff has attached an updated list of conditions of approval.

Department: Economic and Community Development

Presented By: Trent Hyatt, Senior Planner

Background Info:

Issues:

Staff Recommendation: Staff recommends **approval** of the revised annexation agreement in compliance with decisions made on October 21, 2021.

Revised List of Conditions of Approval

Planning Item 09-20
November 4, 2021

(Added language is depicted in red underlined, deleted language is shown in ~~red strikethrough~~)

Annexation

1. ~~Prior to second reading of the annexation ordinance, t~~The applicant shall provide a separate ~~revise the~~ annexation map which ~~to~~ includes adjacent Storm King (from Center Drive north to Donegan Road), and Donegan Road~~s~~ (from Storm King Road to Soccer Field Road) rights-of-way roadway sections related to the project.
2. The applicant shall comply with/address all City staff comments related to the proposal prior to submittal of any future development permit application.
3. Future development shall comply with the various requirements outlined in the PUD, where applicable, related items such as uses, building heights, densities, minimum open space, parking, and/or landscaping.
4. The exact locations of site features may change upon site/architectural or master plan review. The *Glenwood Springs Municipal Code* is otherwise applicable to any standards not addressed therein.
5. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.
6. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.
7. The applicant shall enter into an annexation agreement with the City. Said agreement shall provide for the following items related to the to the annexed property:
   a. A payment in the amount of $100,000 to aid in the planning for and implementation of necessary emergency evacuation measures.
   b. The dedication to the City of not less than one acre of land, unless less land area is determined necessary by City, for the future construction of a new fire station for the Glenwood Springs Fire Department.
   c. The applicant shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at ~~130~~120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied.
   d. Any future development proposal shall include direct access to Highway 6 through the parcel to the south.
   e. All related offsite transportation, bicycle, and pedestrian related improvements to the Storm King, and Donegan Roads rights-of-way.
8. The subject property shall be developed pursuant to a Master Plan per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, unless otherwise permitted by the annexation agreement.
9. The approval allows for a total count of up to 300 units on the subject property.

10. The applicant shall dedicate not less than two acres of public open space (inclusive of the land dedicated for the fire station), with at least one acre being contiguous public parkland or open space which will count towards the open space requirements for the PUD as provided in the annexation agreement.
11. The vesting period for the project shall be five years.
12. A deed restriction requiring the payment of a two percent real estate transfer assessment fee to the City shall apply to sale (excluding the first sale) of any townhome unit which is not a part of the City's affordable housing program.
13. A Master Plan application, per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, shall be submitted to the City within eight months, subject to the annexation agreement.

Rezoning

1. The applicant shall submit a Minor Subdivision application to create the two lots outlined in the request.
2. Future development shall comply with the various requirements outlined in the PUD, where applicable. The *Glenwood Springs Municipal Code* is otherwise applicable to any aspect not addressed therein.
3. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.
4. The PUD shall conform to the approved conditions outlined in the annexation and annexation agreement.

ANNEXATION AGREEMENT

THIS ANNEXATION AGREEMENT made and entered into this ___ day of _____, 20___ by and between the CITY OF GLENWOOD SPRINGS, COLORADO, a Colorado home-rule municipality (hereinafter "City"), GLENWOOD PARTNERSHIP LLLP, a Colorado limited liability limited partnership ("Owner"), and COMMERCIAL DEVELOPMENT SERVICES GROUP, LLC, a Delaware limited liability company ("CDSG"). Each of the City, Owner, and CDSG may be referred to as a Party, and all of the foregoing may be referred to hereinafter as the "Parties."

W I T N E S S E T H:

WHEREAS, Owner is the owner of certain real property currently located in unincorporated Garfield County, Colorado, more particularly described on Exhibit A attached hereto and incorporated herein (the "Property"); and

WHEREAS, CDSG is under contract to purchase a portion of the Property and develop that portion as mixed-use, multi-family housing development; and

WHEREAS, the portion of the Property to be retained by Owner is currently developed for office and warehouse purposes; and

WHEREAS, Owner desires to annex the Property and connect it to the City of Glenwood Springs and has filed a Petition for Annexation ("Petition") to do the same; and

WHEREAS, along with the Petition, Owner and CDSG submitted a zoning application for the Property asking that the City approve (i) Commercial (CO) zoning for Owner's retained portion of the Property and (ii) Planned Unit Development (PUD) zoning for CDSG's portion of the Property as more fully described in Exhibit B hereto; and

WHEREAS, on June 3, 2021, the City Council held a duly and properly noticed public hearing at which time the City Council adopted a resolution finding Owner's Petition to be in substantial compliance with the statutory requirements for annexation of the Property to the City; and

WHEREAS, on July 29, August 19, September 7, October 7, and October 21, 2021, the City Council held a duly and properly noticed annexation hearing at which time the City Council approved the annexation and zoning of the Property as set forth in Ordinance No. ~~___~~ 8, Series 2021, and Ordinance No. ~~____~~ 9, Series 2021; and

WHEREAS, C.R.S. §§31-12-101, *et seq*., authorizes the City and Owner to enter into an Annexation Agreement; and

WHEREAS, the City and Owner desire to enter into this Agreement to set forth their agreements in writing concerning the terms and conditions of annexation of the Property to the City.

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NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Purpose**. The purpose of this Agreement is to set forth the terms and conditions of the annexation of the Property to the City. Except as expressly provided for herein to the contrary, all conditions herein are in addition to any and all requirements concerning annexation contained in the Municipal Code of the City of Glenwood Springs (hereinafter "City Code") or the Municipal Annexation Act of 1965, as amended, C.R.S. §§31-12-101, *et seq*. This Agreement is intended to provide a contractual relationship between the City and Owner to ensure compliance with the City Code, state statutes, and all terms and conditions set forth herein. This Agreement includes additional terms and conditions for the purposes of the Municipal Annexation Act.

2. **Annexation**. The annexation of the Property shall be in accordance with the Colorado Municipal Annexation Act of 1965, C.R.S. §§31-12-101, *et seq*., as amended.

3. **Zoning**. The PUD Plan attached hereto as Exhibit B shall govern the development of that portion of the Property designated as "PUD" in the Plan. The remaining portion of the Property shall be zoned as Commercial (CO) and subject to the regulations set forth in the City's Municipal Code. The City agrees that, upon annexation of the Property, the zoning of a portion of the Property as PUD and the remaining portion as Commercial (CO) would be consistent with the City's Comprehensive Plan.

4. **Specific Conditions.** In consideration of the annexation of the Property, and in further consideration of the City providing municipal services to the Property, as hereinafter provided, the Parties agree that it is appropriate that the following payments, dedications and other exactions be made:

(a) CDSG or its successor or assign shall pay Fire and Emergency Services Impact Fees for the PUD portion of the Property in accordance with Section 070.040.030(g)(5) at the time of building permit for each phase of development. Said fees will be paid by Owner or its successor or assign on the Commercial (CO) portion of the Property if required at the time of any future development.

(b) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of land dedication for the benefit of schools in the RE-I School District (the "District") pursuant to Municipal Code Section 070.040.030(g)(4), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property. Such fees shall be applicable to the number of units proposed for all residential phases scheduled for development and shall be payable upon the issuance of a building permit for a residential dwelling unit. No school land dedication or fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped as residential.

(c) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of parkland dedication pursuant to Municipal Code Section 070.040.030(g)(2), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property, subject to reductions: (i) for private

recreation facilities to be constructed on the PUD portion of the Property; (ii) for the design and installation of the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (iii) for the design and installation of the southern bike lane and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road; (iv) parkland dedicated to the City; and (iv) on any other basis approved by the City under Municipal Code Section 070.040.030(g)(2). No parkland dedication or a fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped for residential purposes.

(d) CDSG or its successor or assign shall pay all water tap fee and water system improvement fees required under Municipal Code Section 080.040.010(c) and Article 080.060, respectively, applicable to the development of the PUD portion of the Property. No water tap fees or water system improvement fees will be required for the Commercial (CO) portion of the Property unless and until additional water capacity is needed therefor. Should a change in use of any structure on any portion of the Property occur in the future that causes an increase in water usage, the owner of the structure will be required to pay the system improvement fee associated with the increased use in accordance with Municipal Code in effect at the time if the change in use.

(e) Owner agrees to pay all actual costs incurred for notice publication, recording fees, attorney fees and similar reasonable administrative charges related to the annexation of the Property.

5. **Affordable Housing**. CDSG shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at ~~130~~120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied. The deed restricted unit mix shall be dispersed amongst the unit types and bedroom configurations.

CDSG shall construct a minimum of thirty-five (35) for sale units, all of which shall be resident occupied. Ten percent of the for-sale units constructed shall be deed restricted as to sale price. CDSG and the City shall negotiate the terms of said deed restriction and the financial contribution of the City as a part of the affordable housing deed-restriction agreement referenced below.

6. **Affordable Housing Agreement.** The Parties shall enter into an affordable housing deed-restriction agreement to be finalized and recorded at the earlier of (a) the closing of CDSG's purchase of the PUD portion of the Property or (b) issuance of the first building permit for the same.

7. **Dedication of Water Rights**. At or before the time of recordation of the final plat subdividing the Property as shown in the PUD Plan, Owner and/or CDSG, as appropriate, shall assign to the City, free and clear of all liens and encumbrances (subject only to the provisions of Section 8, below), all of Owner or CDSG's right, title, and interest in and to 614 shares of Reynolds & Cain Ditch Company stock (the "Shares") historically used on the undeveloped portion of the Property. By this conveyance, Owner and CDSG shall fully satisfy any and all water rights dedication requirements of the City for annexation and development of the Property as set forth in the Municipal Charter and Municipal Code and as approved by the City Council.

8. **Lease-Back of Water Rights**. As consideration for the Shares, the City hereby leases all of the water represented by the Shares to Owner and CDSG for irrigation of the PUD portion of the Property at the rate of $1.00 per year. The City agrees to lease the Shares to Owner and CDSG until such time as the City may be required to use the Shares for another purpose. In the event the City can no longer lease the Shares to Owner and CDSG, the City will provide notice to Owner and CDSG thereof at least sixty (60) days prior to the termination of use of the Shares and will waive any tap or service improvement fees Owner and CDSG would otherwise be required to pay for increasing their use of City water as a result of losing use of the Shares.

9. **Resource Conservation.** CDSG shall revise the PUD landscaping to provide drought resistant xeriscaping and design all improvements to provide leading edge and best management practices for conservation, fixtures, and practices for the development. In addition, the residential buildings within the PUD portion of the Property shall not use natural gas unless CDSG can demonstrate to the satisfaction of the City that it is the only alternative.

10. **Off-Site Improvements and Other Obligations**. As an element of the City's approval of (i) the Petition, (ii) the PUD zoning application, and (iii) acceptance of this Agreement, CDSG has agreed to design and, upon approval of the City Engineer, construct certain off-site improvements, and to make certain financial contributions and dedications to the City, namely:

(a) Install a bike lane along the north and south sides of Donegan Road for the length of the Property and extending east to Soccer Field Road;

(b) Install parallel parking and a detached 6-foot sidewalk on the south side of Donegan Road and extend the sidewalk and related improvements east to Soccer Field Road;

(c) Stripe bike lanes on the east and west side of Storm King Road south of Center Drive.

(d) Widen the east side of Storm King Drive north of Center Drive to add a northbound bike lane, parallel parking, and a detached 6 foot wide sidewalk.

(e) CDSG shall either amend the PUD as is necessary to include not less than one acre of land for the future construction of a new fire station for the Glenwood Springs Fire Department or provide such land at a location acceptable to the City. Said land shall be dedicated to the City. Notwithstanding the foregoing, the land to be dedicated to the City may be less than one acre if the City determines that less than one acre is needed for the fire station ~~only~~ or to the extent that shared parking for the fire station is located on adjacent property. CDSG and the City agree to cooperate in good faith to develop an urban firehouse plan and design for the new fire station.

(f) Whether on the Master Plan or major site plan for the PUD (see Sec. 11), CDSG shall dedicate not less than one contiguous acre of land for public parkland/open space, which area shall count toward the open space requirements for the PUD. Such open space will be managed and maintained by and subject to the rules and regulations of CDSG or its successor or assign.

~~(f)~~(g) CDSG shall provide $100,000 to be used for emergency planning and the cost to construct emergency access and egress improvements.

~~(g)~~(h) Amend the development proposal as is necessary to include ~~emergency~~ direct access to Highway 6 through the parcel to the south.

~~(h) Amend the annexation map to include the annexation of Storm King to Donegan to Mel Ray.~~

(i) Reconstruction of the foregoing streets before acceptance by the City.

The off-site street improvements described in this Section 10 shall be completed prior to or contemporaneously with the issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property. Parkland dedication fees required in connection with development of the PUD portion of the Property shall be reduced by the total actual costs incurred by CDSG to (i) engineer, design, and install the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (ii) engineer, design, and install the southern bike lane, sidewalk, and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road.

In addition to the foregoing, no final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property shall be issued unless: 1) the emergency access described in (h) above has been constructed and is operational; 2) a new water tank serving North and West Glenwood has been constructed and is operational; and 3) CDSG has dedicated the land for a new West Glenwood Fire Station. The foregoing shall not be a condition precedent of issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property unless the City has budgeted for the planning and completion of the emergency access improvements, water tank, and West Glenwood Fire Station in the Fiscal Year 2022 and 2023 budgets.

The City and CDSG agree that the improvements, dedications, and financial contributions listed in Section 4 and (a) – (i) of this Section establish the full and complete obligations of CDSG and its successors and assigns with respect to off-site pedestrian/traffic/transportation improvements, impact and dedication fees, and emergency planning related to the development of the PUD portion of the Property.

11. **Site Planning and Phasing**. Development of the PUD portion of the Property will require approval of a site plan through a public entitlement process. Site Plan approval shall be through a Master Plan pursuant to GSMC Title 070 and shall include the West Glenwood Mall site to the South of the PUD Property. The Master Plan application will be submitted within eight (8) months of the effective date of the annexation ordinance; provided, however, that (i) if CDSG or its affiliate, successor, or assign does not purchase the Mall property, ~~if~~ or (ii) if a Master Plan application is timely submitted to the City but the Master Plan is not approved within six (6) months of submission of the Master Plan application, the Master Plan shall not be a condition precedent to filing for a Site Plan on the PUD Property. In the event a Master Plan is not required pursuant to the foregoing sentence, then the development of the PUD portion of the Property will be phased as shown on Exhibit C. Construction of Phase 2 cannot be commenced until all other conditions of this Agreement have been completed. The restriction on construction of Phase 2 shall not apply to the construction of a fire station in the event the land dedicated pursuant to Section 10(e) is located in the area designated as Phase 2 on Exhibit C. CDSG agrees that if a Master Plan is not required as provided in this Section 11, CDSG will use good faith efforts to work with the

current or future owner/developer of the Mall property to integrate and transition the PUD portion of the Property with the redevelopment of the Mall property.

12. **Vested Rights**. In order to allow Owner and CDSG a reasonable opportunity to develop the Property in accordance with this Agreement and the PUD Plan, the PUD Plan and related development rights and uses approved hereby shall, to the extent allowed by law, constitute a "site specific development plan" under C.R.S. §§24-68-101 *et seq*., as amended. The site specific development plan shall be vested for a period of ~~ten~~ five years beginning on the date the final plat subdividing the Property as shown in the PUD Plan is recorded (the "Vested Period"). The Property as to which rights have been vested shall be immune from changes in the City's land use regulations for the duration of the Vested Period except as provided in this Section 12. Except in instances of force majure, the requirements of federal or state law, cases of preemption or other superior jurisdictional mandate, the City shall not initiate any zoning or land use action which would alter, impair, prevent, diminish, impose a moratorium on development, or otherwise unreasonably delay any of Owner's or CDSG's rights set forth in this Agreement or their plans for development or zoning, as approved by the City. Notwithstanding the foregoing, the establishment of vested property rights under this Agreement shall not prevent the City from enacting and enforcing regulations of general applicability (including, but not limited to, building, fire, plumbing, electrical and mechanical codes, including the preliminary plat and final plat subdivision requirements under the Municipal Code and other City ordinances), except where the approved plans for development of the Property or state or federal regulations provide otherwise, as all of such regulations exist on the date of this Agreement or may be enacted or amended after the date of this Agreement.

13. **Conditions Precedent**. Notwithstanding the date set forth in the introductory paragraph of this Agreement, annexation of the Property shall not be effective, and this Agreement shall not be in force, until:

(a) Final Approval has occurred, meaning the thirtieth day after the effective date of the latest of the motion, ordinance, and/or resolution by which the City Council approves (i) this Agreement; (ii) publication after final passage on second reading of the ordinance by which City Council approves the annexation of the Property; (iii) the zoning of the Property as PUD and Commercial (CO) as provided in Exhibit B; and (iv) subdivision and major site plan approval for the PUD portion of the Property consistent with Exhibit B; and

(b) The affordable housing agreement called for in Section 6 hereof has been approved by both the City and CDSG; and

(c) The annexation map has been recorded with the Garfield County Clerk & Recorder; and

(d) The Parties have executed and delivered this Agreement for recordation with the Garfield County Clerk & Recorder.

14. **Failure of Conditions**. Until all of the conditions set forth in subsection 13 above have been satisfied, this document shall constitute an offer by Owner and CDSG and the City to enter into this Agreement (notwithstanding the Parties' mutual execution and delivery of this document), and the annexation and zoning of the Property shall not be effective. Consequently, at

any time before such conditions are satisfied, Owner may withdraw the Petition and Owner and/or CDSG may withdraw its offer to enter into this Agreement. If Owner withdraws the Petition or Owner and/or CDSG withdraw its offer to enter into this Agreement, or if final approval does not otherwise occur for any reason, then this Agreement shall be deemed void and of no force or effect, and the Property shall be deemed not annexed to the City. Owner and CDSG may exercises their rights under this Section14 independently.

15. **Deannexation**. The provisions of this Agreement, as well as acceptable City zoning of the Property, are material considerations of Owner's agreement to annex the Property to the City. Therefore, in the event (a) the City fails to perform under the terms of this Agreement, or (b) Owner, CDSG, or both are unable to obtain, either before or after annexation proceedings are complete, Commercial (CO) and PUD zoning of the Property as described above and/or subdivision and/or development approval for development of the Property which they in their sole discretion find acceptable, Owner, CDSG, and the City stipulate and agree, pursuant to C.R.S. §31-12-501, that it shall be in the best interest of the City that the Property (or a portion of thereof) be de-annexed from the City. In such event, the City agrees that it shall initiate de-annexation proceedings, and to take all steps necessary to effect the de-annexation. The City further acknowledges and agrees that de-annexation is not prohibited by the City Charter or Municipal Code and ordinances, and that the City will not amend its ordinances to preclude a de-annexation permitted hereunder. The Parties' right to de-annex shall be in addition to any other rights available to them at law or under this Agreement. Upon the de-annexation of the Property (or portion thereof) from the municipal boundaries and specific jurisdiction of the City, the City agrees that it shall convey, assign, transfer and quitclaim to Owner or their successors and assigns, any and all water rights (the public dedication of which is more fully described by Section 6 hereof) previously dedicated by Owner hereunder to the City for the public use and benefit.

16. **Assignment**. The parties agree and acknowledge that the rights and obligations of Owner and CDSG under this Agreement may be assigned by them to persons or entities acquiring title to the Property or a portion thereof without the prior consent of the City if, and only if, such assignee agrees in writing to be bound by the terms and conditions of this Agreement, and the Owner or CDSG, as applicable, shall give notice to the City of any such conveyance, together with the assignee's written agreement to be bound by the terms and conditions of this Agreement.

17. **Waiver of Defects.** In executing this Agreement, Owner and CDSG waive all objections either may have concerning defects, if any, in the formalities whereby it is executed, or concerning the power of the City to impose conditions on Owner or CDSG as set forth herein, and concerning the procedure, substance and form of the ordinances or resolutions adopting this Agreement.

18. **Final Agreement**. This Agreement supersedes and controls all prior written and oral agreements and representations relating to the annexation of the Property to the City, and is the total integrated agreement between the City, Owner, and CDSG.

19. **Modifications**. This Agreement shall not be amended except by subsequent written agreement between the Parties hereto.

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20. **Release of Liability**. It is expressly understood that the City cannot legally be bound by the representations of any of its officers or agents or their designees except in accordance with the City Code, City ordinances and the laws of the State of Colorado. Owner and CDSG, when dealing with the City, act at their own risk as to any representation or undertaking by the City officers, agents or their designees which is subsequently held unlawful by a court of law.

21. **Captions**. The captions in this Agreement are inserted only for convenience and in no way define, limit, or prescribe the scope or intent of this Agreement or any part thereof.

22. **Binding Effect**. This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective heirs, successors, and assigns.

23. **Severability**. If any provision(s) of this Agreement shall be determined to be void or invalid by a court of competent jurisdiction, then such determination shall not affect any other provision hereof, all of which other provisions shall remain in full force and effect. It is the intention of the parties hereto that, if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.

24. **Governing Law**. The laws of the State of Colorado shall govern the validity, performance, and enforcement of this Agreement. Should either party institute legal suit or action for enforcement of any obligation contained herein, it is agreed that the venue of such suit or action shall be in Garfield County, Colorado.

25. **Attorneys' Fees; Survival**. Should this Agreement become the subject of litigation between the City and Owner or CDSG, the prevailing party shall be entitled to attorneys' fees and costs of suit actually incurred, including expert witness fees. All rights concerning remedies and/or attorneys' fees shall survive any termination of this Agreement.

26. **Gender**. Whenever the context shall require, the singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

27. **Counterparts**. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which, when taken together, shall be deemed one and the same instrument.

28. **Notice**. All notices required under this Agreement shall be in writing and shall be hand-delivered or sent by first class mail postage prepaid, to the addresses of the parties set forth herein. All notices by hand delivery shall be effective upon receipt. All notices by mail shall be considered effective seventy-two (72) hours after deposit in the United States Mail with the proper address as set forth below. Either party by notice so given may change the address to which future notices may be sent.

Notice to the City:
City Manager
City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

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With copy to:	City Attorney 101 West 8th Street Glenwood Springs, CO 81601
Notice to GP:	Glenwood Partnership, LLLP 214 Center Drive Glenwood Springs, CO 81601
Notice to CDSG:	Commercial Development Services Group, LLC P.O. Box 9833 Cincinnati, Ohio 45209

29. **Authority**. Each person signing this Agreement represents and warrants that he/she is fully authorized to enter into and execute this Agreement and to bind the Party it represents to the terms and conditions hereof.

WHEREFORE, the Parties hereto have executed duplicate originals of this Agreement on the day and year first written above.

CITY OF GLENWOOD SPRINGS

_____

Jonathan Godes, Mayor

ATTEST:

_____

Ryan Muse, City Clerk

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GLENWOOD PARTNERSHIP, LLLP:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____, as _____ of Glenwood Partnership, LLLP

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

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COMMERCIAL SERVICES DEVELOPMENT GROUP, LLC:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____ as _____ of Commercial Services Development Group, LLC

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

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Exhibit A

Description of Property

A PORTION OF THE FOLLOWING DESCRIBED REAL PROPERTY:

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE GLENWOOD SPRINGS MALL SUBDIVISION WHENCE THE WITNESS CORNER TO THE S1/4 CORNER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEARS N 89° 13' 08" E 866.63 FEET SAID POINT OF BEGINNING ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED AS PARCEL C IN BOOK 1205 AT PAGE 589 IN THE OFFICE OF THE GARFIELD COUNTY CLERK AND RECORDER;

THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;

THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;

THENCE N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;

THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;

THENCE DEPARTING SAID EAST LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;

THENCE S 47° 42' 00" W 125.06 FEET;

THENCE N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD

STATE OF COLORADO.

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EXHIBIT B

PUD Plan

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EXHIBIT C

Phasing Plan

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ANNEXATION AGREEMENT

THIS ANNEXATION AGREEMENT made and entered into this ___ day of _____, 20___ by and between the CITY OF GLENWOOD SPRINGS, COLORADO, a Colorado home-rule municipality (hereinafter "City"), GLENWOOD PARTNERSHIP LLLP, a Colorado limited liability limited partnership ("Owner"), and COMMERCIAL DEVELOPMENT SERVICES GROUP, LLC, a Delaware limited liability company ("CDSG"). Each of the City, Owner, and CDSG may be referred to as a Party, and all of the foregoing may be referred to hereinafter as the "Parties."

W I T N E S S E T H:

WHEREAS, Owner is the owner of certain real property currently located in unincorporated Garfield County, Colorado, more particularly described on Exhibit A attached hereto and incorporated herein (the "Property"); and

WHEREAS, CDSG is under contract to purchase a portion of the Property and develop that portion as mixed-use, multi-family housing development; and

WHEREAS, the portion of the Property to be retained by Owner is currently developed for office and warehouse purposes; and

WHEREAS, Owner desires to annex the Property and connect it to the City of Glenwood Springs and has filed a Petition for Annexation ("Petition") to do the same; and

WHEREAS, along with the Petition, Owner and CDSG submitted a zoning application for the Property asking that the City approve (i) Commercial (CO) zoning for Owner's retained portion of the Property and (ii) Planned Unit Development (PUD) zoning for CDSG's portion of the Property as more fully described in Exhibit B hereto; and

WHEREAS, on June 3, 2021, the City Council held a duly and properly noticed public hearing at which time the City Council adopted a resolution finding Owner's Petition to be in substantial compliance with the statutory requirements for annexation of the Property to the City; and

WHEREAS, on July 29, August 19, September 7, October 7, and October 21, 2021, the City Council held a duly and properly noticed annexation hearing at which time the City Council approved the annexation and zoning of the Property as set forth in Ordinance No. 8, Series 2021, and Ordinance No. 9, Series 2021; and

WHEREAS, C.R.S. §§31-12-101, *et seq*., authorizes the City and Owner to enter into an Annexation Agreement; and

WHEREAS, the City and Owner desire to enter into this Agreement to set forth their agreements in writing concerning the terms and conditions of annexation of the Property to the City.

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NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Purpose**. The purpose of this Agreement is to set forth the terms and conditions of the annexation of the Property to the City. Except as expressly provided for herein to the contrary, all conditions herein are in addition to any and all requirements concerning annexation contained in the Municipal Code of the City of Glenwood Springs (hereinafter "City Code") or the Municipal Annexation Act of 1965, as amended, C.R.S. §§31-12-101, *et seq*. This Agreement is intended to provide a contractual relationship between the City and Owner to ensure compliance with the City Code, state statutes, and all terms and conditions set forth herein. This Agreement includes additional terms and conditions for the purposes of the Municipal Annexation Act.

2. **Annexation**. The annexation of the Property shall be in accordance with the Colorado Municipal Annexation Act of 1965, C.R.S. §§31-12-101, *et seq*., as amended.

3. **Zoning**. The PUD Plan attached hereto as Exhibit B shall govern the development of that portion of the Property designated as "PUD" in the Plan. The remaining portion of the Property shall be zoned as Commercial (CO) and subject to the regulations set forth in the City's Municipal Code. The City agrees that, upon annexation of the Property, the zoning of a portion of the Property as PUD and the remaining portion as Commercial (CO) would be consistent with the City's Comprehensive Plan.

4. **Specific Conditions.** In consideration of the annexation of the Property, and in further consideration of the City providing municipal services to the Property, as hereinafter provided, the Parties agree that it is appropriate that the following payments, dedications and other exactions be made:

(a) CDSG or its successor or assign shall pay Fire and Emergency Services Impact Fees for the PUD portion of the Property in accordance with Section 070.040.030(g)(5) at the time of building permit for each phase of development. Said fees will be paid by Owner or its successor or assign on the Commercial (CO) portion of the Property if required at the time of any future development.

(b) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of land dedication for the benefit of schools in the RE-I School District (the "District") pursuant to Municipal Code Section 070.040.030(g)(4), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property. Such fees shall be applicable to the number of units proposed for all residential phases scheduled for development and shall be payable upon the issuance of a building permit for a residential dwelling unit. No school land dedication or fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped as residential.

(c) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of parkland dedication pursuant to Municipal Code Section 070.040.030(g)(2), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property, subject to reductions: (i) for private

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recreation facilities to be constructed on the PUD portion of the Property; (ii) for the design and installation of the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (iii) for the design and installation of the southern bike lane and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road; (iv) parkland dedicated to the City; and (iv) on any other basis approved by the City under Municipal Code Section 070.040.030(g)(2). No parkland dedication or a fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped for residential purposes.

(d) CDSG or its successor or assign shall pay all water tap fee and water system improvement fees required under Municipal Code Section 080.040.010(c) and Article 080.060, respectively, applicable to the development of the PUD portion of the Property. No water tap fees or water system improvement fees will be required for the Commercial (CO) portion of the Property unless and until additional water capacity is needed therefor. Should a change in use of any structure on any portion of the Property occur in the future that causes an increase in water usage, the owner of the structure will be required to pay the system improvement fee associated with the increased use in accordance with Municipal Code in effect at the time if the change in use.

(e) Owner agrees to pay all actual costs incurred for notice publication, recording fees, attorney fees and similar reasonable administrative charges related to the annexation of the Property.

5. **Affordable Housing**. CDSG shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at 120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied. The deed restricted unit mix shall be dispersed amongst the unit types and bedroom configurations.

CDSG shall construct a minimum of thirty-five (35) for sale units, all of which shall be resident occupied. Ten percent of the for-sale units constructed shall be deed restricted as to sale price. CDSG and the City shall negotiate the terms of said deed restriction and the financial contribution of the City as a part of the affordable housing deed-restriction agreement referenced below.

6. **Affordable Housing Agreement.** The Parties shall enter into an affordable housing deed-restriction agreement to be finalized and recorded at the earlier of (a) the closing of CDSG's purchase of the PUD portion of the Property or (b) issuance of the first building permit for the same.

7. **Dedication of Water Rights**. At or before the time of recordation of the final plat subdividing the Property as shown in the PUD Plan, Owner and/or CDSG, as appropriate, shall assign to the City, free and clear of all liens and encumbrances (subject only to the provisions of Section 8, below), all of Owner or CDSG's right, title, and interest in and to 614 shares of Reynolds & Cain Ditch Company stock (the "Shares") historically used on the undeveloped portion of the Property. By this conveyance, Owner and CDSG shall fully satisfy any and all water rights dedication requirements of the City for annexation and development of the Property as set forth in the Municipal Charter and Municipal Code and as approved by the City Council.

8. **Lease-Back of Water Rights**. As consideration for the Shares, the City hereby leases all of the water represented by the Shares to Owner and CDSG for irrigation of the PUD portion of the Property at the rate of $1.00 per year. The City agrees to lease the Shares to Owner and CDSG until such time as the City may be required to use the Shares for another purpose. In the event the City can no longer lease the Shares to Owner and CDSG, the City will provide notice to Owner and CDSG thereof at least sixty (60) days prior to the termination of use of the Shares and will waive any tap or service improvement fees Owner and CDSG would otherwise be required to pay for increasing their use of City water as a result of losing use of the Shares.

9. **Resource Conservation.** CDSG shall revise the PUD landscaping to provide drought resistant xeriscaping and design all improvements to provide leading edge and best management practices for conservation, fixtures, and practices for the development. In addition, the residential buildings within the PUD portion of the Property shall not use natural gas unless CDSG can demonstrate to the satisfaction of the City that it is the only alternative.

10. **Off-Site Improvements and Other Obligations**. As an element of the City's approval of (i) the Petition, (ii) the PUD zoning application, and (iii) acceptance of this Agreement, CDSG has agreed to design and, upon approval of the City Engineer, construct certain off-site improvements, and to make certain financial contributions and dedications to the City, namely:

(a) Install a bike lane along the north and south sides of Donegan Road for the length of the Property and extending east to Soccer Field Road;

(b) Install parallel parking and a detached 6-foot sidewalk on the south side of Donegan Road and extend the sidewalk and related improvements east to Soccer Field Road;

(c) Stripe bike lanes on the east and west side of Storm King Road south of Center Drive.

(d) Widen the east side of Storm King Drive north of Center Drive to add a northbound bike lane, parallel parking, and a detached 6 foot wide sidewalk.

(e) CDSG shall either amend the PUD as is necessary to include not less than one acre of land for the future construction of a new fire station for the Glenwood Springs Fire Department or provide such land at a location acceptable to the City. Said land shall be dedicated to the City. Notwithstanding the foregoing, the land to be dedicated to the City may be less than one acre if the City determines that less than one acre is needed for the fire station or to the extent that shared parking for the fire station is located on adjacent property. CDSG and the City agree to cooperate in good faith to develop an urban firehouse plan and design for the new fire station.

(f) Whether on the Master Plan or major site plan for the PUD (see Sec. 11), CDSG shall dedicate not less than one contiguous acre of land for public parkland/open space, which area shall count toward the open space requirements for the PUD. Such open space will be managed and maintained by and subject to the rules and regulations of CDSG or its successor or assign.

(g) CDSG shall provide $100,000 to be used for emergency planning and the cost to construct emergency access and egress improvements.

(h) Amend the development proposal as is necessary to include direct access to Highway 6 through the parcel to the south.

(i) Reconstruction of the foregoing streets before acceptance by the City.

The off-site street improvements described in this Section 10 shall be completed prior to or contemporaneously with the issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property. Parkland dedication fees required in connection with development of the PUD portion of the Property shall be reduced by the total actual costs incurred by CDSG to (i) engineer, design, and install the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (ii) engineer, design, and install the southern bike lane, sidewalk, and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road.

In addition to the foregoing, no final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property shall be issued unless: 1) the emergency access described in (h) above has been constructed and is operational; 2) a new water tank serving North and West Glenwood has been constructed and is operational; and 3) CDSG has dedicated the land for a new West Glenwood Fire Station. The foregoing shall not be a condition precedent of issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property unless the City has budgeted for the planning and completion of the emergency access improvements, water tank, and West Glenwood Fire Station in the Fiscal Year 2022 and 2023 budgets.

The City and CDSG agree that the improvements, dedications, and financial contributions listed in Section 4 and (a) – (i) of this Section establish the full and complete obligations of CDSG and its successors and assigns with respect to off-site pedestrian/traffic/transportation improvements, impact and dedication fees, and emergency planning related to the development of the PUD portion of the Property.

11. **Site Planning and Phasing**. Development of the PUD portion of the Property will require approval of a site plan through a public entitlement process. Site Plan approval shall be through a Master Plan pursuant to GSMC Title 070 and shall include the West Glenwood Mall site to the South of the PUD Property. The Master Plan application will be submitted within eight (8) months of the effective date of the annexation ordinance; provided, however, that (i) if CDSG or its affiliate, successor, or assign does not purchase the Mall property, or (ii) if a Master Plan application is timely submitted to the City but the Master Plan is not approved within six (6) months of submission of the Master Plan application, the Master Plan shall not be a condition precedent to filing for a Site Plan on the PUD Property. In the event a Master Plan is not required pursuant to the foregoing sentence, then the development of the PUD portion of the Property will be phased as shown on Exhibit C. Construction of Phase 2 cannot be commenced until all other conditions of this Agreement have been completed. The restriction on construction of Phase 2 shall not apply to the construction of a fire station in the event the land dedicated pursuant to Section 10(e) is located in the area designated as Phase 2 on Exhibit C. CDSG agrees that if a Master Plan is not required as provided in this Section 11, CDSG will use good faith efforts to work with the current or future owner/developer of the Mall property to integrate and transition the PUD portion of the Property with the redevelopment of the Mall property.

12. **Vested Rights**. In order to allow Owner and CDSG a reasonable opportunity to develop the Property in accordance with this Agreement and the PUD Plan, the PUD Plan and related development rights and uses approved hereby shall, to the extent allowed by law, constitute a "site specific development plan" under C.R.S. §§24-68-101 *et seq*., as amended. The site specific development plan shall be vested for a period of five years beginning on the date the final plat subdividing the Property as shown in the PUD Plan is recorded (the "Vested Period"). The Property as to which rights have been vested shall be immune from changes in the City's land use regulations for the duration of the Vested Period except as provided in this Section 12. Except in instances of force majure, the requirements of federal or state law, cases of preemption or other superior jurisdictional mandate, the City shall not initiate any zoning or land use action which would alter, impair, prevent, diminish, impose a moratorium on development, or otherwise unreasonably delay any of Owner's or CDSG's rights set forth in this Agreement or their plans for development or zoning, as approved by the City. Notwithstanding the foregoing, the establishment of vested property rights under this Agreement shall not prevent the City from enacting and enforcing regulations of general applicability (including, but not limited to, building, fire, plumbing, electrical and mechanical codes, including the preliminary plat and final plat subdivision requirements under the Municipal Code and other City ordinances), except where the approved plans for development of the Property or state or federal regulations provide otherwise, as all of such regulations exist on the date of this Agreement or may be enacted or amended after the date of this Agreement.

13. **Conditions Precedent**. Notwithstanding the date set forth in the introductory paragraph of this Agreement, annexation of the Property shall not be effective, and this Agreement shall not be in force, until:

(a) Final Approval has occurred, meaning the thirtieth day after the effective date of the latest of the motion, ordinance, and/or resolution by which the City Council approves (i) this Agreement; (ii) publication after final passage on second reading of the ordinance by which City Council approves the annexation of the Property; (iii) the zoning of the Property as PUD and Commercial (CO) as provided in Exhibit B; and (iv) subdivision and major site plan approval for the PUD portion of the Property consistent with Exhibit B; and

(b) The affordable housing agreement called for in Section 6 hereof has been approved by both the City and CDSG; and

(c) The annexation map has been recorded with the Garfield County Clerk & Recorder; and

(d) The Parties have executed and delivered this Agreement for recordation with the Garfield County Clerk & Recorder.

14. **Failure of Conditions**. Until all of the conditions set forth in subsection 13 above have been satisfied, this document shall constitute an offer by Owner and CDSG and the City to enter into this Agreement (notwithstanding the Parties' mutual execution and delivery of this document), and the annexation and zoning of the Property shall not be effective. Consequently, at any time before such conditions are satisfied, Owner may withdraw the Petition and Owner and/or CDSG may withdraw its offer to enter into this Agreement. If Owner withdraws the Petition or Owner and/or CDSG withdraw its offer to enter into this Agreement, or if final approval does not

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otherwise occur for any reason, then this Agreement shall be deemed void and of no force or effect, and the Property shall be deemed not annexed to the City. Owner and CDSG may exercises their rights under this Section14 independently.

15. **Deannexation**. The provisions of this Agreement, as well as acceptable City zoning of the Property, are material considerations of Owner's agreement to annex the Property to the City. Therefore, in the event (a) the City fails to perform under the terms of this Agreement, or (b) Owner, CDSG, or both are unable to obtain, either before or after annexation proceedings are complete, Commercial (CO) and PUD zoning of the Property as described above and/or subdivision and/or development approval for development of the Property which they in their sole discretion find acceptable, Owner, CDSG, and the City stipulate and agree, pursuant to C.R.S. §31-12-501, that it shall be in the best interest of the City that the Property (or a portion of thereof) be de-annexed from the City. In such event, the City agrees that it shall initiate de-annexation proceedings, and to take all steps necessary to effect the de-annexation. The City further acknowledges and agrees that de-annexation is not prohibited by the City Charter or Municipal Code and ordinances, and that the City will not amend its ordinances to preclude a de-annexation permitted hereunder. The Parties' right to de-annex shall be in addition to any other rights available to them at law or under this Agreement. Upon the de-annexation of the Property (or portion thereof) from the municipal boundaries and specific jurisdiction of the City, the City agrees that it shall convey, assign, transfer and quitclaim to Owner or their successors and assigns, any and all water rights (the public dedication of which is more fully described by Section 6 hereof) previously dedicated by Owner hereunder to the City for the public use and benefit.

16. **Assignment**. The parties agree and acknowledge that the rights and obligations of Owner and CDSG under this Agreement may be assigned by them to persons or entities acquiring title to the Property or a portion thereof without the prior consent of the City if, and only if, such assignee agrees in writing to be bound by the terms and conditions of this Agreement, and the Owner or CDSG, as applicable, shall give notice to the City of any such conveyance, together with the assignee's written agreement to be bound by the terms and conditions of this Agreement.

17. **Waiver of Defects.** In executing this Agreement, Owner and CDSG waive all objections either may have concerning defects, if any, in the formalities whereby it is executed, or concerning the power of the City to impose conditions on Owner or CDSG as set forth herein, and concerning the procedure, substance and form of the ordinances or resolutions adopting this Agreement.

18. **Final Agreement**. This Agreement supersedes and controls all prior written and oral agreements and representations relating to the annexation of the Property to the City, and is the total integrated agreement between the City, Owner, and CDSG.

19. **Modifications**. This Agreement shall not be amended except by subsequent written agreement between the Parties hereto.

20. **Release of Liability**. It is expressly understood that the City cannot legally be bound by the representations of any of its officers or agents or their designees except in accordance with the City Code, City ordinances and the laws of the State of Colorado. Owner and CDSG,

when dealing with the City, act at their own risk as to any representation or undertaking by the City officers, agents or their designees which is subsequently held unlawful by a court of law.

21. **Captions**. The captions in this Agreement are inserted only for convenience and in no way define, limit, or prescribe the scope or intent of this Agreement or any part thereof.

22. **Binding Effect**. This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective heirs, successors, and assigns.

23. **Severability**. If any provision(s) of this Agreement shall be determined to be void or invalid by a court of competent jurisdiction, then such determination shall not affect any other provision hereof, all of which other provisions shall remain in full force and effect. It is the intention of the parties hereto that, if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.

24. **Governing Law**. The laws of the State of Colorado shall govern the validity, performance, and enforcement of this Agreement. Should either party institute legal suit or action for enforcement of any obligation contained herein, it is agreed that the venue of such suit or action shall be in Garfield County, Colorado.

25. **Attorneys' Fees; Survival**. Should this Agreement become the subject of litigation between the City and Owner or CDSG, the prevailing party shall be entitled to attorneys' fees and costs of suit actually incurred, including expert witness fees. All rights concerning remedies and/or attorneys' fees shall survive any termination of this Agreement.

26. **Gender**. Whenever the context shall require, the singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

27. **Counterparts**. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which, when taken together, shall be deemed one and the same instrument.

28. **Notice**. All notices required under this Agreement shall be in writing and shall be hand-delivered or sent by first class mail postage prepaid, to the addresses of the parties set forth herein. All notices by hand delivery shall be effective upon receipt. All notices by mail shall be considered effective seventy-two (72) hours after deposit in the United States Mail with the proper address as set forth below. Either party by notice so given may change the address to which future notices may be sent.

Notice to the City:
City Manager
City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

With copy to:
City Attorney
101 West 8th Street
Glenwood Springs, CO 81601

Notice to GP:	Glenwood Partnership, LLLP 214 Center Drive Glenwood Springs, CO 81601
Notice to CDSG:	Commercial Development Services Group, LLC P.O. Box 9833 Cincinnati, Ohio 45209

29. **Authority**. Each person signing this Agreement represents and warrants that he/she is fully authorized to enter into and execute this Agreement and to bind the Party it represents to the terms and conditions hereof.

WHEREFORE, the Parties hereto have executed duplicate originals of this Agreement on the day and year first written above.

CITY OF GLENWOOD SPRINGS

_____

Jonathan Godes, Mayor

ATTEST:

_____

Ryan Muse, City Clerk

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GLENWOOD PARTNERSHIP, LLLP:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____, as _____ of Glenwood Partnership, LLLP

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

DRAFT

COMMERCIAL SERVICES DEVELOPMENT GROUP, LLC:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____ as _____ of Commercial Services Development Group, LLC

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

DRAFT

Exhibit A

Description of Property

A PORTION OF THE FOLLOWING DESCRIBED REAL PROPERTY:

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE GLENWOOD SPRINGS MALL SUBDIVISION WHENCE THE WITNESS CORNER TO THE S1/4 CORNER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEARS N 89° 13' 08" E 866.63 FEET SAID POINT OF BEGINNING ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED AS PARCEL C IN BOOK 1205 AT PAGE 589 IN THE OFFICE OF THE GARFIELD COUNTY CLERK AND RECORDER;

THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;

THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;

THENCE N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;

THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;

THENCE DEPARTING SAID EAST LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;

THENCE S 47° 42' 00" W 125.06 FEET;

THENCE N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD

STATE OF COLORADO.

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EXHIBIT B

PUD Plan

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EXHIBIT C

Phasing Plan

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City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Ordinance 2021-08: Annexing Property to the City, Second Reading

Action Requested: **Action 1 – Ordinance 2021-08 - Annexation** – of a 15.818 acre parcel into the municipal limits of the City of Glenwood Springs.

Department: Economic and Community Development

Presented By: Trent Hyatt, Senior Planner

Background Info: This is the second reading of the annexation approved by City Council on October 21, 2021. Please see the attached revised and updated annexation agreement, ordinance, and map exhibit outlining the changes made at said meeting. Additionally, staff has attached an updated list of conditions of approval.

Issues:

Staff Recommendation: Staff recommends **approval** in accordance with the Council's previous decision on October 21, 2021.

Revised List of Conditions of Approval

Planning Item 09-20
November 4, 2021

(Added language is depicted in red underlined, deleted language is shown in ~~red strikethrough~~)

Annexation

~~1. Prior to second reading of the annexation ordinance, the applicant shall revise the annexation map to include adjacent Storm King, and Donegan Roads rights-of-way roadway sections related to the project.~~

~~2.~~1. The applicant shall comply with/address all City staff comments related to the proposal prior to submittal of any future development permit application.

~~3.~~2. Future development shall comply with the various requirements outlined in the PUD, where applicable, related items such as uses, building heights, densities, minimum open space, parking, and/or landscaping.

~~4.~~3. The exact locations of site features may change upon site/architectural or master plan review. The *Glenwood Springs Municipal Code* is otherwise applicable to any standards not addressed therein.

~~5.~~4. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.

~~6.~~5. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.

~~7.~~6. The applicant shall enter into an annexation agreement with the City. Said agreement shall provide for the following items related to the to the annexed property:

a. A payment in the amount of $100,000 to aid in the planning for and implementation of necessary emergency evacuation measures.
b. The dedication to the City of not less than one acre of land, unless less land area is determined necessary by City, for the future construction of a new fire station for the Glenwood Springs Fire Department.
c. The applicant shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at ~~130~~120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied.
d. Any future development proposal shall include direct access to Highway 6 through the parcel to the south.
e. All related offsite transportation, bicycle, and pedestrian related improvements to the Storm King, and Donegan Roads rights-of-way.

~~8.~~7. The subject property shall be developed pursuant to a Master Plan per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, unless otherwise permitted by the annexation agreement.

8. The approval allows for a total count of up to 300 units on the subject property.

9. The applicant shall dedicate not less than two acres of public open space (inclusive of the land dedicated for the fire station), with at least one acre being contiguous public parkland or open

space which will count towards the open space requirements for the PUD as provided in the annexation agreement.

10. The vesting period for the project shall be five years.
11. A deed restriction requiring the payment of a two percent real estate transfer assessment fee to the City shall apply to sale (excluding the first sale) of any townhome unit which is not a part of the City's affordable housing program.
12. A Master Plan application, per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, shall be submitted to the City within eight months, subject to the annexation agreement.

Rezoning

1. The applicant shall submit a Minor Subdivision application to create the two lots outlined in the request.
2. Future development shall comply with the various requirements outlined in the PUD, where applicable. The *Glenwood Springs Municipal Code* is otherwise applicable to any aspect not addressed therein.
3. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.
4. The PUD shall conform to the approved conditions outlined in the annexation and annexation agreement.

ORDINANCE NO. 08

Series of 2021

AN ORDINANCE OF THE CITY OF GLENWOOD SPRINGS, COLORADO, ANNEXING ~~PROPERTY~~ A PARCEL OF LAND INTO THE CITY.

WHEREAS, the City of Glenwood Springs ("Glenwood Springs" or the "City") is a home-rule municipality organized pursuant to Article XX of the Colorado Constitution and with the authority of the Glenwood Springs Home Rule Charter; and

WHEREAS, GLENWOOD PARTNERSHIP LLLP, a Colorado limited liability limited partnership ("Owner") is the owner of certain real property currently located in unincorporated Garfield County, Colorado, more particularly described on **Exhibit A** attached hereto and incorporated herein (the "Property"); and

WHEREAS, COMMERCIAL DEVELOPMENT SERVICES GROUP, LLC, a Delaware limited liability company ("CDSG") is under contract to purchase a portion of the Property and develop that portion as mixed-use, multi-family housing development; and

WHEREAS, C.R.S. §§31-12-101, *et seq*., authorizes the City and Owner to enter into an Annexation Agreement; and

WHEREAS, the portion of the Property to be retained by Owner is currently developed for office and warehouse purposes; and

WHEREAS, Owner desires to annex the Property and connect it to the City of Glenwood Springs and has filed a Petition for Annexation ("Petition") to do the same; and

WHEREAS, the City desires to annex into its boundaries a the Property currently located in unincorporated Garfield County (the "Annexation Parcel", as described on **Exhibit A**); and

WHEREAS, the Annexation Parcel is not solely a public street or right-of-way, and is eligible for annexation in accordance with Article II, Section 30 of the Colorado Constitution, and sections 31-12-104 and 31-12-105, C.R.S.; and

WHEREAS, the Glenwood Springs City Council finds that it is necessary and desirable to annex the Annexation Parcel into the City to permit the development of the area in accordance with the City Code; and

WHEREAS, the City Council therefore desires to annex the Annexation Parcel into the City by the ordinance, in accordance with C.R.S. §§ 31-12-106 and 31-12-501.

WHEREAS, on March 23, April 27 and May 25, 2021, the Glenwood Springs Planning Commission held a public hearing to consider the annexation of the Property; and

WHEREAS, on July 29, August 19, September 7, October 7, and October 21, 2021, the City Council held a public hearing to consider the annexation of the Property; and

NOW, THEREFORE, IT IS ORDAINED BY THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, THAT:

Section 1. The recitals above are hereby adopted as findings.

Section 2. The City Council find and determines that the Annexation Parcel is eligible for annexation in accordance with Section 30(1)(c) of Article II of the Colorado Constitution and C.R.S. §§ 31-12-104(1)(a), 31-12-105, and 31-12-106(3), in that the proposed annexation:

(a) Would not divide any lands held in identical ownership;
(b) Is less than twenty acres and, as such, does not implicate C.R.S. § 31-12-105(1)(b);
(c) Is for territory for which no annexation proceedings have been commenced for annexation into another municipality;
(d) Would not result in the detachment of area from any school district and the attachment of the same to another school district;
(e) Would not result in the extension of the City's geographic boundary more than three miles in any direction from any point of the current boundary; and
(f) Is property for which not less than one-sixth the perimeter is contiguous with the current City boundary.

Section 3. The City Council does hereby annex the Annexation Parcel to be included in the corporate boundaries of the City of Glenwood Springs.

Section 5. The City Clerk shall promptly complete all filings required of the City to be made by the provisions of Section 31-12-113, C.R.S.

INTRODUCED, READ ON FIRST READING, PASSED, AND ORDERED PUBLISHED BY TITLE ONLY THIS ~~——~~21st DAY OF ~~JULY~~ October 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

ATTEST:

Jonathan Godes, Mayor

Ryan Muse, City Clerk

INTRODUCED, READ ON SECOND READING, PASSED AND ORDERED PUBLISHED BY TITLE ONLY TO BE EFFECTIVE TEN DAYS FOLLOWING THE DATE OF SECOND PUBLICATION THIS 4th DAY OF November 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

ATTEST:

Jonathan Godes, Mayor

Ryan Muse, City Clerk

ANNEXATION MAP OF:

480 DONEGAN

SITUATED IN A PORTION OF SECTION 6, TOWNSHIP 6 SOUTH,
RANGE 89 WEST OF THE 6TH P.M. COUNTY OF GARFIELD, STATE OF COLORADO

SHEET 1 OF 1

TITLE DESCRIPTION (THIS SURVEY EDITS/ADDITIONS)

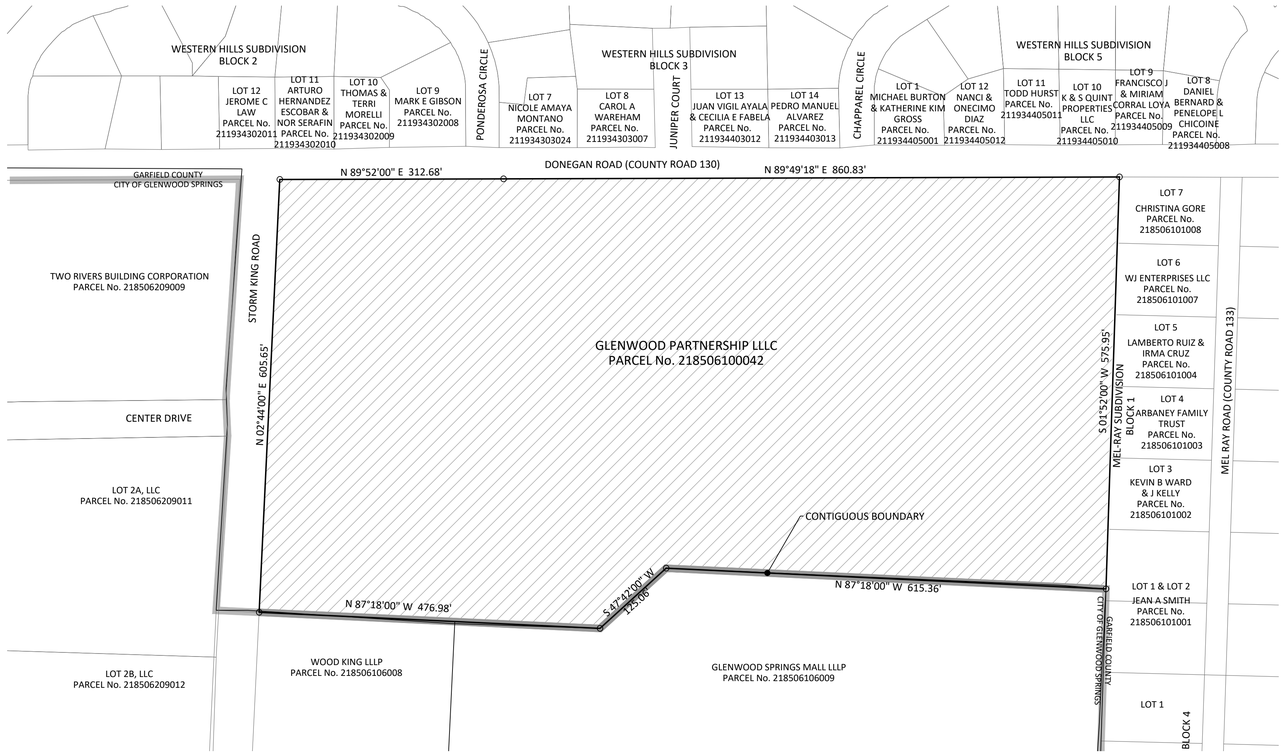
A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;
THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;
THENCE (CONTINUING ALONG SAID RIGHT-OF-WAY) N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;
THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;
THENCE DEPARTING SAID EAST (WEST) LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) S 47° 42' 00" W 125.06 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD
STATE OF COLORADO.

CONTIGUOUS BOUNDARY CALCULATION

TOTAL BOUNDARY	3572.51'
1/6TH CONTIGUITY (3572.51 x 1/6)	595.42'
CONTIGUOUS BOUNDARY	1217.40'

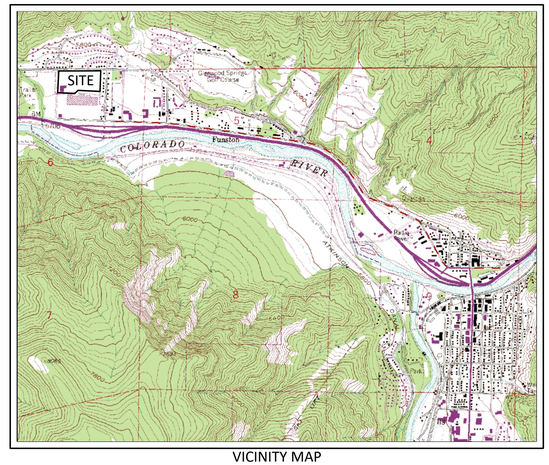


GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

AREA TO BE ANNEXED



VICINITY MAP
SCALE: 1" = 2000'

MAP NOTES

1) DATE OF PREPARATION: October 2020
UPDATED: January 2021

2) BASIS OF BEARING: A bearing of S 01°52'00" W along the westerly boundary line of Mel-Ray Subdivision, according to the map thereof recorded in Book 245 at Page 515 of the Garfield County records.

3) BASIS OF MAP: The Resubdivision of Glenwood Springs Mall Subdivision, the Map of Mel-Ray Subdivision, the Improvement Survey prepared by Sopris Engineering dated January 25, 2021, and the Title Commitment prepared by Land Title Guarantee Company under Order No. ABS63014094-2, effective date January 10, 2020.

4) This survey does not constitute a title search by Sopris Engineering, LLC (SE) to determine ownership or easements of record. For all information regarding easements, rights-of-way and/or title of record SE relied upon the items outlined in Note 3.

5) Adjoiner information was taken from the Garfield County GIS website and is accurate as of this date, January 25, 2021.

6) All references to recorded documents and plats indicated herein refer to the records of the Garfield County Clerk and Recorder.

CITY COUNCIL CERTIFICATE

The annexation depicted on this map was approved by the City Council of Glenwood Springs, Garfield County, Colorado, by Ordinance No. ___, Series of _____, on the _____ day of _____, 2021.

_____
Mayor

Witness my hand and the seal of the City of Glenwood Springs.

ATTEST:

_____
City Clerk

SURVEYOR'S STATEMENT

I, Mark S. Beckler, L.S. No. 28643, a professional land surveyor licensed under the laws of the State of Colorado, do hereby state that the Annexation Map of 480 Donegan, as shown hereon, was prepared under my supervision on the basis of certain plats, deeds and other documents of record which were augmented with a field inspection conducted under my supervision and that such Annexation Map is true and correct to the best of my knowledge and belief.

BY:_____
Mark S. Beckler, L.S. No.28643

_____
Dated

CLERK AND RECORDER'S ACCEPTANCE

This Annexation Map was filed for record in the office of the Clerk and Recorder of Garfield County at _____ o'clock ___.M. on the _____ day of _____, 2021, as Reception No._____.

_____
Clerk and Recorder

By_____
Deputy

SOPRIS ENGINEERING - LLC
CIVIL CONSULTANTS
502 MAIN STREET, SUITE A3
CARBONDALE, COLORADO 81623
(970) 704-0311 SOPRISENG@SOPRISENG.COM

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

jb 1/25/2021 - 30017 - G:\2020\30017\SURVEY\Survey DWGs\Survey Plots\30017_ANNEX.dwg

ANNEXATION AGREEMENT

THIS ANNEXATION AGREEMENT made and entered into this ___ day of _____, 20___ by and between the CITY OF GLENWOOD SPRINGS, COLORADO, a Colorado home-rule municipality (hereinafter "City"), GLENWOOD PARTNERSHIP LLLP, a Colorado limited liability limited partnership ("Owner"), and COMMERCIAL DEVELOPMENT SERVICES GROUP, LLC, a Delaware limited liability company ("CDSG"). Each of the City, Owner, and CDSG may be referred to as a Party, and all of the foregoing may be referred to hereinafter as the "Parties."

W I T N E S S E T H:

WHEREAS, Owner is the owner of certain real property currently located in unincorporated Garfield County, Colorado, more particularly described on Exhibit A attached hereto and incorporated herein (the "Property"); and

WHEREAS, CDSG is under contract to purchase a portion of the Property and develop that portion as mixed-use, multi-family housing development; and

WHEREAS, the portion of the Property to be retained by Owner is currently developed for office and warehouse purposes; and

WHEREAS, Owner desires to annex the Property and connect it to the City of Glenwood Springs and has filed a Petition for Annexation ("Petition") to do the same; and

WHEREAS, along with the Petition, Owner and CDSG submitted a zoning application for the Property asking that the City approve (i) Commercial (CO) zoning for Owner's retained portion of the Property and (ii) Planned Unit Development (PUD) zoning for CDSG's portion of the Property as more fully described in Exhibit B hereto; and

WHEREAS, on June 3, 2021, the City Council held a duly and properly noticed public hearing at which time the City Council adopted a resolution finding Owner's Petition to be in substantial compliance with the statutory requirements for annexation of the Property to the City; and

WHEREAS, on July 29, August 19, September 7, October 7, and October 21, 2021, the City Council held a duly and properly noticed annexation hearing at which time the City Council approved the annexation and zoning of the Property as set forth in Ordinance No. ~~__~~ 8, Series 2021, and Ordinance No. ~~____~~ 9, Series 2021; and

WHEREAS, C.R.S. §§31-12-101, *et seq*., authorizes the City and Owner to enter into an Annexation Agreement; and

WHEREAS, the City and Owner desire to enter into this Agreement to set forth their agreements in writing concerning the terms and conditions of annexation of the Property to the City.

DRAFT

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Purpose**. The purpose of this Agreement is to set forth the terms and conditions of the annexation of the Property to the City. Except as expressly provided for herein to the contrary, all conditions herein are in addition to any and all requirements concerning annexation contained in the Municipal Code of the City of Glenwood Springs (hereinafter "City Code") or the Municipal Annexation Act of 1965, as amended, C.R.S. §§31-12-101, *et seq*. This Agreement is intended to provide a contractual relationship between the City and Owner to ensure compliance with the City Code, state statutes, and all terms and conditions set forth herein. This Agreement includes additional terms and conditions for the purposes of the Municipal Annexation Act.

2. **Annexation**. The annexation of the Property shall be in accordance with the Colorado Municipal Annexation Act of 1965, C.R.S. §§31-12-101, *et seq*., as amended.

3. **Zoning**. The PUD Plan attached hereto as Exhibit B shall govern the development of that portion of the Property designated as "PUD" in the Plan. The remaining portion of the Property shall be zoned as Commercial (CO) and subject to the regulations set forth in the City's Municipal Code. The City agrees that, upon annexation of the Property, the zoning of a portion of the Property as PUD and the remaining portion as Commercial (CO) would be consistent with the City's Comprehensive Plan.

4. **Specific Conditions.** In consideration of the annexation of the Property, and in further consideration of the City providing municipal services to the Property, as hereinafter provided, the Parties agree that it is appropriate that the following payments, dedications and other exactions be made:

(a) CDSG or its successor or assign shall pay Fire and Emergency Services Impact Fees for the PUD portion of the Property in accordance with Section 070.040.030(g)(5) at the time of building permit for each phase of development. Said fees will be paid by Owner or its successor or assign on the Commercial (CO) portion of the Property if required at the time of any future development.

(b) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of land dedication for the benefit of schools in the RE-I School District (the "District") pursuant to Municipal Code Section 070.040.030(g)(4), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property. Such fees shall be applicable to the number of units proposed for all residential phases scheduled for development and shall be payable upon the issuance of a building permit for a residential dwelling unit. No school land dedication or fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped as residential.

(c) CDSG or its successor or assign shall pay and the City shall accept fees in lieu of parkland dedication pursuant to Municipal Code Section 070.040.030(g)(2), or any amended version thereof in force and effect at the time of the final development permit approval for the PUD portion of the Property, subject to reductions: (i) for private

recreation facilities to be constructed on the PUD portion of the Property; (ii) for the design and installation of the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (iii) for the design and installation of the southern bike lane and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road; (iv) parkland dedicated to the City; and (iv) on any other basis approved by the City under Municipal Code Section 070.040.030(g)(2). No parkland dedication or a fee in lieu thereof will be required for the Commercial (CO) portion of the Property unless and until the Property is redeveloped for residential purposes.

(d) CDSG or its successor or assign shall pay all water tap fee and water system improvement fees required under Municipal Code Section 080.040.010(c) and Article 080.060, respectively, applicable to the development of the PUD portion of the Property. No water tap fees or water system improvement fees will be required for the Commercial (CO) portion of the Property unless and until additional water capacity is needed therefor. Should a change in use of any structure on any portion of the Property occur in the future that causes an increase in water usage, the owner of the structure will be required to pay the system improvement fee associated with the increased use in accordance with Municipal Code in effect at the time if the change in use.

(e) Owner agrees to pay all actual costs incurred for notice publication, recording fees, attorney fees and similar reasonable administrative charges related to the annexation of the Property.

5. **Affordable Housing**. CDSG shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at ~~130~~120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied. The deed restricted unit mix shall be dispersed amongst the unit types and bedroom configurations.

CDSG shall construct a minimum of thirty-five (35) for sale units, all of which shall be resident occupied. Ten percent of the for-sale units constructed shall be deed restricted as to sale price. CDSG and the City shall negotiate the terms of said deed restriction and the financial contribution of the City as a part of the affordable housing deed-restriction agreement referenced below.

6. **Affordable Housing Agreement.** The Parties shall enter into an affordable housing deed-restriction agreement to be finalized and recorded at the earlier of (a) the closing of CDSG's purchase of the PUD portion of the Property or (b) issuance of the first building permit for the same.

7. **Dedication of Water Rights**. At or before the time of recordation of the final plat subdividing the Property as shown in the PUD Plan, Owner and/or CDSG, as appropriate, shall assign to the City, free and clear of all liens and encumbrances (subject only to the provisions of Section 8, below), all of Owner or CDSG's right, title, and interest in and to 614 shares of Reynolds & Cain Ditch Company stock (the "Shares") historically used on the undeveloped portion of the Property. By this conveyance, Owner and CDSG shall fully satisfy any and all water rights dedication requirements of the City for annexation and development of the Property as set forth in the Municipal Charter and Municipal Code and as approved by the City Council.

8. **Lease-Back of Water Rights**. As consideration for the Shares, the City hereby leases all of the water represented by the Shares to Owner and CDSG for irrigation of the PUD portion of the Property at the rate of $1.00 per year. The City agrees to lease the Shares to Owner and CDSG until such time as the City may be required to use the Shares for another purpose. In the event the City can no longer lease the Shares to Owner and CDSG, the City will provide notice to Owner and CDSG thereof at least sixty (60) days prior to the termination of use of the Shares and will waive any tap or service improvement fees Owner and CDSG would otherwise be required to pay for increasing their use of City water as a result of losing use of the Shares.

9. **Resource Conservation.** CDSG shall revise the PUD landscaping to provide drought resistant xeriscaping and design all improvements to provide leading edge and best management practices for conservation, fixtures, and practices for the development. In addition, the residential buildings within the PUD portion of the Property shall not use natural gas unless CDSG can demonstrate to the satisfaction of the City that it is the only alternative.

10. **Off-Site Improvements and Other Obligations**. As an element of the City's approval of (i) the Petition, (ii) the PUD zoning application, and (iii) acceptance of this Agreement, CDSG has agreed to design and, upon approval of the City Engineer, construct certain off-site improvements, and to make certain financial contributions and dedications to the City, namely:

(a) Install a bike lane along the north and south sides of Donegan Road for the length of the Property and extending east to Soccer Field Road;

(b) Install parallel parking and a detached 6-foot sidewalk on the south side of Donegan Road and extend the sidewalk and related improvements east to Soccer Field Road;

(c) Stripe bike lanes on the east and west side of Storm King Road south of Center Drive.

(d) Widen the east side of Storm King Drive north of Center Drive to add a northbound bike lane, parallel parking, and a detached 6 foot wide sidewalk.

(e) CDSG shall either amend the PUD as is necessary to include not less than one acre of land for the future construction of a new fire station for the Glenwood Springs Fire Department or provide such land at a location acceptable to the City. Said land shall be dedicated to the City. Notwithstanding the foregoing, the land to be dedicated to the City may be less than one acre if the City determines that less than one acre is needed for the fire station ~~only~~ or to the extent that shared parking for the fire station is located on adjacent property. CDSG and the City agree to cooperate in good faith to develop an urban firehouse plan and design for the new fire station.

(f) Whether on the Master Plan or major site plan for the PUD (see Sec. 11), CDSG shall dedicate not less than one contiguous acre of land for public parkland/open space, which area shall count toward the open space requirements for the PUD. Such open space will be managed and maintained by and subject to the rules and regulations of CDSG or its successor or assign.

~~(f)~~(g) CDSG shall provide $100,000 to be used for emergency planning and the cost to construct emergency access and egress improvements.

~~(g)~~(h) Amend the development proposal as is necessary to include ~~emergency~~ direct access to Highway 6 through the parcel to the south.

~~(h) Amend the annexation map to include the annexation of Storm King to Donegan to Mel Ray.~~

(i) Reconstruction of the foregoing streets before acceptance by the City.

The off-site street improvements described in this Section 10 shall be completed prior to or contemporaneously with the issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property. Parkland dedication fees required in connection with development of the PUD portion of the Property shall be reduced by the total actual costs incurred by CDSG to (i) engineer, design, and install the northern bike lane along Donegan Road from the western edge of the Property east to Soccer Field Road; (ii) engineer, design, and install the southern bike lane, sidewalk, and wall (where necessary) along Donegan Road from the eastern boundary of the Property east to Soccer Field Road.

In addition to the foregoing, no final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property shall be issued unless: 1) the emergency access described in (h) above has been constructed and is operational; 2) a new water tank serving North and West Glenwood has been constructed and is operational; and 3) CDSG has dedicated the land for a new West Glenwood Fire Station. The foregoing shall not be a condition precedent of issuance of a final and permanent certificate of occupancy for the first building to be constructed within the PUD portion of the Property unless the City has budgeted for the planning and completion of the emergency access improvements, water tank, and West Glenwood Fire Station in the Fiscal Year 2022 and 2023 budgets.

The City and CDSG agree that the improvements, dedications, and financial contributions listed in Section 4 and (a) – (i) of this Section establish the full and complete obligations of CDSG and its successors and assigns with respect to off-site pedestrian/traffic/transportation improvements, impact and dedication fees, and emergency planning related to the development of the PUD portion of the Property.

11. **Site Planning and Phasing**. Development of the PUD portion of the Property will require approval of a site plan through a public entitlement process. Site Plan approval shall be through a Master Plan pursuant to GSMC Title 070 and shall include the West Glenwood Mall site to the South of the PUD Property. The Master Plan application will be submitted within eight (8) months of the effective date of the annexation ordinance; provided, however, that (i) if CDSG or its affiliate, successor, or assign does not purchase the Mall property, ~~if~~ or (ii) if a Master Plan application is timely submitted to the City but the Master Plan is not approved within six (6) months of submission of the Master Plan application, the Master Plan shall not be a condition precedent to filing for a Site Plan on the PUD Property. In the event a Master Plan is not required pursuant to the foregoing sentence, then the development of the PUD portion of the Property will be phased as shown on Exhibit C. Construction of Phase 2 cannot be commenced until all other conditions of this Agreement have been completed. The restriction on construction of Phase 2 shall not apply to the construction of a fire station in the event the land dedicated pursuant to Section 10(e) is located in the area designated as Phase 2 on Exhibit C. CDSG agrees that if a Master Plan is not required as provided in this Section 11, CDSG will use good faith efforts to work with the

current or future owner/developer of the Mall property to integrate and transition the PUD portion of the Property with the redevelopment of the Mall property.

12. **Vested Rights**. In order to allow Owner and CDSG a reasonable opportunity to develop the Property in accordance with this Agreement and the PUD Plan, the PUD Plan and related development rights and uses approved hereby shall, to the extent allowed by law, constitute a "site specific development plan" under C.R.S. §§24-68-101 *et seq*., as amended. The site specific development plan shall be vested for a period of ~~ten~~ five years beginning on the date the final plat subdividing the Property as shown in the PUD Plan is recorded (the "Vested Period"). The Property as to which rights have been vested shall be immune from changes in the City's land use regulations for the duration of the Vested Period except as provided in this Section 12. Except in instances of force majure, the requirements of federal or state law, cases of preemption or other superior jurisdictional mandate, the City shall not initiate any zoning or land use action which would alter, impair, prevent, diminish, impose a moratorium on development, or otherwise unreasonably delay any of Owner's or CDSG's rights set forth in this Agreement or their plans for development or zoning, as approved by the City. Notwithstanding the foregoing, the establishment of vested property rights under this Agreement shall not prevent the City from enacting and enforcing regulations of general applicability (including, but not limited to, building, fire, plumbing, electrical and mechanical codes, including the preliminary plat and final plat subdivision requirements under the Municipal Code and other City ordinances), except where the approved plans for development of the Property or state or federal regulations provide otherwise, as all of such regulations exist on the date of this Agreement or may be enacted or amended after the date of this Agreement.

13. **Conditions Precedent**. Notwithstanding the date set forth in the introductory paragraph of this Agreement, annexation of the Property shall not be effective, and this Agreement shall not be in force, until:

(a) Final Approval has occurred, meaning the thirtieth day after the effective date of the latest of the motion, ordinance, and/or resolution by which the City Council approves (i) this Agreement; (ii) publication after final passage on second reading of the ordinance by which City Council approves the annexation of the Property; (iii) the zoning of the Property as PUD and Commercial (CO) as provided in Exhibit B; and (iv) subdivision and major site plan approval for the PUD portion of the Property consistent with Exhibit B; and

(b) The affordable housing agreement called for in Section 6 hereof has been approved by both the City and CDSG; and

(c) The annexation map has been recorded with the Garfield County Clerk & Recorder; and

(d) The Parties have executed and delivered this Agreement for recordation with the Garfield County Clerk & Recorder.

14. **Failure of Conditions**. Until all of the conditions set forth in subsection 13 above have been satisfied, this document shall constitute an offer by Owner and CDSG and the City to enter into this Agreement (notwithstanding the Parties' mutual execution and delivery of this document), and the annexation and zoning of the Property shall not be effective. Consequently, at

any time before such conditions are satisfied, Owner may withdraw the Petition and Owner and/or CDSG may withdraw its offer to enter into this Agreement. If Owner withdraws the Petition or Owner and/or CDSG withdraw its offer to enter into this Agreement, or if final approval does not otherwise occur for any reason, then this Agreement shall be deemed void and of no force or effect, and the Property shall be deemed not annexed to the City. Owner and CDSG may exercises their rights under this Section14 independently.

15. **Deannexation**. The provisions of this Agreement, as well as acceptable City zoning of the Property, are material considerations of Owner's agreement to annex the Property to the City. Therefore, in the event (a) the City fails to perform under the terms of this Agreement, or (b) Owner, CDSG, or both are unable to obtain, either before or after annexation proceedings are complete, Commercial (CO) and PUD zoning of the Property as described above and/or subdivision and/or development approval for development of the Property which they in their sole discretion find acceptable, Owner, CDSG, and the City stipulate and agree, pursuant to C.R.S. §31-12-501, that it shall be in the best interest of the City that the Property (or a portion of thereof) be de-annexed from the City. In such event, the City agrees that it shall initiate de-annexation proceedings, and to take all steps necessary to effect the de-annexation. The City further acknowledges and agrees that de-annexation is not prohibited by the City Charter or Municipal Code and ordinances, and that the City will not amend its ordinances to preclude a de-annexation permitted hereunder. The Parties' right to de-annex shall be in addition to any other rights available to them at law or under this Agreement. Upon the de-annexation of the Property (or portion thereof) from the municipal boundaries and specific jurisdiction of the City, the City agrees that it shall convey, assign, transfer and quitclaim to Owner or their successors and assigns, any and all water rights (the public dedication of which is more fully described by Section 6 hereof) previously dedicated by Owner hereunder to the City for the public use and benefit.

16. **Assignment**. The parties agree and acknowledge that the rights and obligations of Owner and CDSG under this Agreement may be assigned by them to persons or entities acquiring title to the Property or a portion thereof without the prior consent of the City if, and only if, such assignee agrees in writing to be bound by the terms and conditions of this Agreement, and the Owner or CDSG, as applicable, shall give notice to the City of any such conveyance, together with the assignee's written agreement to be bound by the terms and conditions of this Agreement.

17. **Waiver of Defects.** In executing this Agreement, Owner and CDSG waive all objections either may have concerning defects, if any, in the formalities whereby it is executed, or concerning the power of the City to impose conditions on Owner or CDSG as set forth herein, and concerning the procedure, substance and form of the ordinances or resolutions adopting this Agreement.

18. **Final Agreement**. This Agreement supersedes and controls all prior written and oral agreements and representations relating to the annexation of the Property to the City, and is the total integrated agreement between the City, Owner, and CDSG.

19. **Modifications**. This Agreement shall not be amended except by subsequent written agreement between the Parties hereto.

DRAFT

20. **Release of Liability**. It is expressly understood that the City cannot legally be bound by the representations of any of its officers or agents or their designees except in accordance with the City Code, City ordinances and the laws of the State of Colorado. Owner and CDSG, when dealing with the City, act at their own risk as to any representation or undertaking by the City officers, agents or their designees which is subsequently held unlawful by a court of law.

21. **Captions**. The captions in this Agreement are inserted only for convenience and in no way define, limit, or prescribe the scope or intent of this Agreement or any part thereof.

22. **Binding Effect**. This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective heirs, successors, and assigns.

23. **Severability**. If any provision(s) of this Agreement shall be determined to be void or invalid by a court of competent jurisdiction, then such determination shall not affect any other provision hereof, all of which other provisions shall remain in full force and effect. It is the intention of the parties hereto that, if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.

24. **Governing Law**. The laws of the State of Colorado shall govern the validity, performance, and enforcement of this Agreement. Should either party institute legal suit or action for enforcement of any obligation contained herein, it is agreed that the venue of such suit or action shall be in Garfield County, Colorado.

25. **Attorneys' Fees; Survival**. Should this Agreement become the subject of litigation between the City and Owner or CDSG, the prevailing party shall be entitled to attorneys' fees and costs of suit actually incurred, including expert witness fees. All rights concerning remedies and/or attorneys' fees shall survive any termination of this Agreement.

26. **Gender**. Whenever the context shall require, the singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

27. **Counterparts**. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which, when taken together, shall be deemed one and the same instrument.

28. **Notice**. All notices required under this Agreement shall be in writing and shall be hand-delivered or sent by first class mail postage prepaid, to the addresses of the parties set forth herein. All notices by hand delivery shall be effective upon receipt. All notices by mail shall be considered effective seventy-two (72) hours after deposit in the United States Mail with the proper address as set forth below. Either party by notice so given may change the address to which future notices may be sent.

Notice to the City:
City Manager
City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

DRAFT

With copy to:	City Attorney 101 West 8th Street Glenwood Springs, CO 81601
Notice to GP:	Glenwood Partnership, LLLP 214 Center Drive Glenwood Springs, CO 81601
Notice to CDSG:	Commercial Development Services Group, LLC P.O. Box 9833 Cincinnati, Ohio 45209

29. **Authority**. Each person signing this Agreement represents and warrants that he/she is fully authorized to enter into and execute this Agreement and to bind the Party it represents to the terms and conditions hereof.

WHEREFORE, the Parties hereto have executed duplicate originals of this Agreement on the day and year first written above.

CITY OF GLENWOOD SPRINGS

_____

Jonathan Godes, Mayor

ATTEST:

_____

Ryan Muse, City Clerk

DRAFT

GLENWOOD PARTNERSHIP, LLLP:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____, as _____ of Glenwood Partnership, LLLP

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

DRAFT

COMMERCIAL SERVICES DEVELOPMENT GROUP, LLC:

_____

TITLE:_____

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Subscribed, sworn to and acknowledged before me this _____ day of _____, 20___, by _____ as _____ of Commercial Services Development Group, LLC

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

DRAFT

Exhibit A

Description of Property

A PORTION OF THE FOLLOWING DESCRIBED REAL PROPERTY:

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE GLENWOOD SPRINGS MALL SUBDIVISION WHENCE THE WITNESS CORNER TO THE S1/4 CORNER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEARS N 89° 13' 08" E 866.63 FEET SAID POINT OF BEGINNING ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED AS PARCEL C IN BOOK 1205 AT PAGE 589 IN THE OFFICE OF THE GARFIELD COUNTY CLERK AND RECORDER;

THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;

THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;

THENCE N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;

THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;

THENCE DEPARTING SAID EAST LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;

THENCE S 47° 42' 00" W 125.06 FEET;

THENCE N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD

STATE OF COLORADO.

DRAFT

EXHIBIT B

PUD Plan

DRAFT

EXHIBIT C

Phasing Plan

DRAFT

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Ordinance 2021-09: Zoning a Parcel of Land Annexed Into the City, Second Reading

Action Requested: **Action 1 -Ordinance 2021-09** - Initial Zoning/Rezoning – of 3.533 acres to Commercial (CO) District and 12.285 acres to Planned Unit Development (PUD) District.

Department: Economic and Community Development

Presented By: Trent Hyatt, Senior Planner

Background Info: This is the second reading of the rezoning related to the annexation approved by City Council on October 21, 2021. Please see the attached revised and updated rezoning ordinance, annexation map, conceptual plat, and revised Lot 2 PUD plan exhibits. The attached annexation map does not include the adjacent County road sections as the request and City decision to include them came after the annexation noticing had been done. As a result, the City will process a separate annexation map to annex the roads. Additionally, staff has attached an updated list of conditions of approval.

Issues:

Staff Recommendation: Staff recommends **approval** in accordance with the Council's previous decision on October 21, 2021.

ORDINANCE NO. 09

Series of 2021

AN ORDINANCE OF THE CITY OF GLENWOOD SPRINGS, COLORADO, ZONING A PARCEL OF LAND ANNEXED INTO THE CITY.

WHEREAS, the City Council of the City of Glenwood Springs ("Glenwood Springs" or the "City"), at a duly noticed and held ~~_____~~ public hearing on July 29, August 19, September 7, October 7, and October 21, 2021, authorized the annexation of a ~~City-owned~~ parcel of land ~~_____ and~~ identified as the "Annexation Parcel" on **Exhibit A**, attached and incorporated herein by this reference; and

WHEREAS, on ~~_____~~ March 23, April 27 and May 25, 2021, the Glenwood Springs Planning Commission held a public hearing to consider the rezoning of the Annexation Parcel; and

WHEREAS, on ~~_____~~ July 29, August 19, September 7, October 7, and October 21, 2021, the City Council held a public hearing to consider the rezoning of the Annexation Parcel; and

WHEREAS, the City Council find and determines that the nature, character, and best use of the Annexation Parcel is consistent with the Commercial (CO) District and ~~_____~~ Planned Unit Development (PUD) District ~~and as a PUD~~; and

WHEREAS, the City Council therefore desires to implement zoning on the Annexation Parcel and make the Annexation Parcel subject to all regulations therein.

NOW, THEREFORE, IT IS ORDAINED BY THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, THAT:

Section 1. The recitals above are hereby adopted as findings.

Section 2. The Annexation Parcel described on **Exhibit A** is hereby zoned Commercial (CO) District (3.533 acres described as Lot 1) and Planned Unit Development (PUD) District (12.285 described as Lot 2) as depicted on **Exhibit B** attached. Future development of Lot 2 is subject to the PUD standards outlined on **Exhibit C** attached.

Section 3. Promptly following adoption of this Ordinance, the City Clerk shall cause the terms of this Ordinance to be incorporated into the Zone District Map of the City of Glenwood Springs as required in the Municipal Code.

INTRODUCED, READ ON FIRST READING, PASSED, AND ORDERED PUBLISHED BY TITLE ONLY THIS ~~____~~ 21st DAY OF ~~_____~~ October 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

_____

Jonathan Godes, Mayor

ATTEST:

_____

Ryan Muse, City Clerk

INTRODUCED, READ ON SECOND READING, PASSED AND ORDERED PUBLISHED BY TITLE ONLY TO BE EFFECTIVE TEN DAYS FOLLOWING THE DATE OF SECOND PUBLICATION THIS 4th DAY OF November 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

_____

ATTEST: Jonathan Godes, Mayor

_____

Ryan Muse, City Clerk

ANNEXATION MAP OF:

480 DONEGAN

SITUATED IN A PORTION OF SECTION 6, TOWNSHIP 6 SOUTH,
RANGE 89 WEST OF THE 6TH P.M. COUNTY OF GARFIELD, STATE OF COLORADO

SHEET 1 OF 1

TITLE DESCRIPTION (THIS SURVEY EDITS/ADDITIONS)

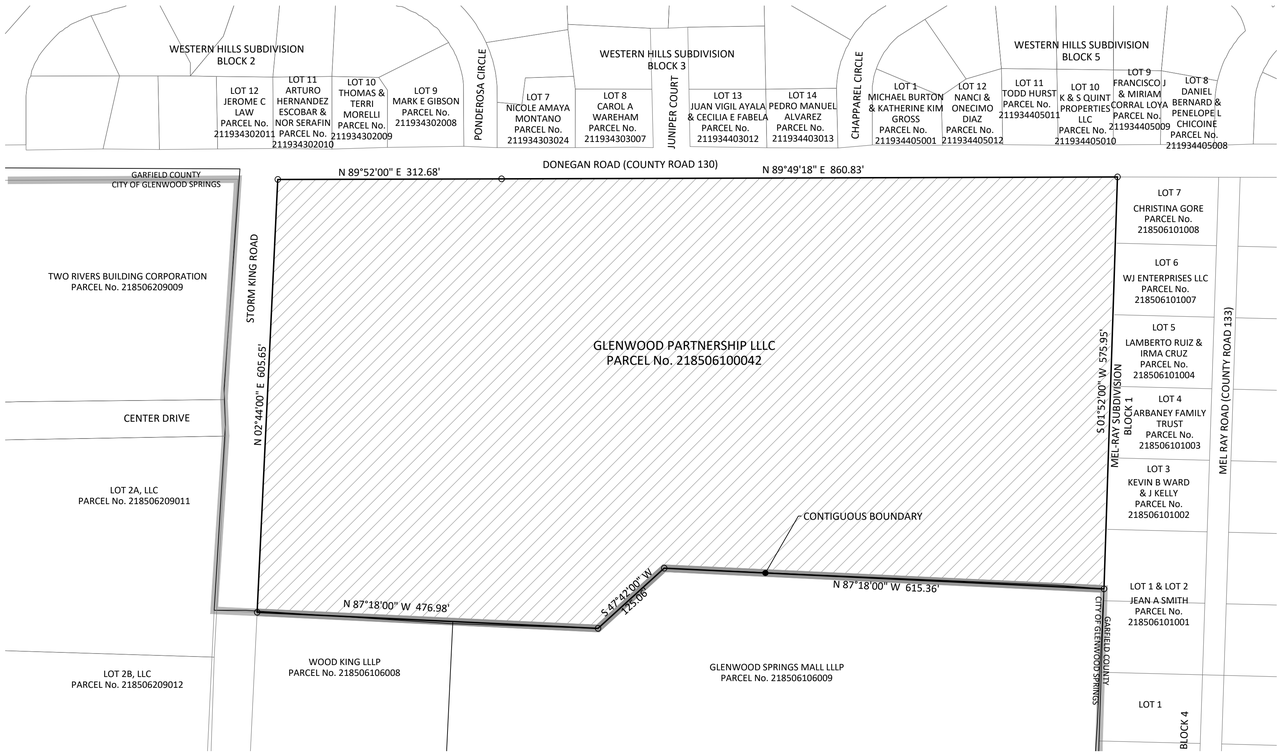
A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE GLENWOOD SPRINGS MALL SUBDIVISION WHENCE THE WITNESS CORNER TO THE S1/4 CORNER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEARS N 89° 13' 08" E 866.63 FEET (N 38°40'53" E 853.45 FEET FIELD) SAID POINT OF BEGINNING ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED AS PARCEL C IN BOOK 1205 AT PAGE 589 IN THE OFFICE OF THE GARFIELD COUNTY CLERK AND RECORDER;
THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;
THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;
THENCE (CONTINUING ALONG SAID RIGHT-OF-WAY) N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;
THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;
THENCE DEPARTING SAID EAST (WEST) LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) S 47° 42' 00" W 125.06 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD
STATE OF COLORADO.

CONTIGUOUS BOUNDARY CALCULATION

TOTAL BOUNDARY	3572.51'
1/6TH CONTIGUITY (3572.51 x 1/6)	595.42'
CONTIGUOUS BOUNDARY	1217.40'

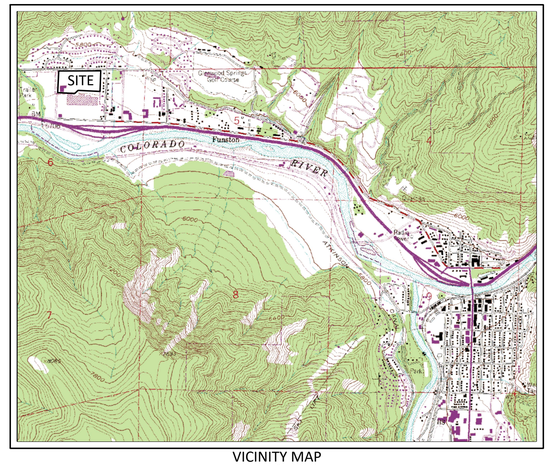


GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

AREA TO BE ANNEXED



VICINITY MAP
SCALE: 1" = 2000'

MAP NOTES

1) DATE OF PREPARATION: October 2020
UPDATED: January 2021

2) BASIS OF BEARING: A bearing of S 01°52'00" W along the westerly boundary line of Mel-Ray Subdivision, according to the map thereof recorded in Book 245 at Page 515 of the Garfield County records.

3) BASIS OF MAP: The Resubdivision of Glenwood Springs Mall Subdivision, the Map of Mel-Ray Subdivision, the Improvement Survey prepared by Sopris Engineering dated January 25, 2021, and the Title Commitment prepared by Land Title Guarantee Company under Order No. ABS63014094-2, effective date January 10, 2020.

4) This survey does not constitute a title search by Sopris Engineering, LLC (SE) to determine ownership or easements of record. For all information regarding easements, rights-of-way and/or title of record SE relied upon the items outlined in Note 3.

5) Adjoiner information was taken from the Garfield County GIS website and is accurate as of this date, January 25, 2021.

6) All references to recorded documents and plats indicated herein refer to the records of the Garfield County Clerk and Recorder.

CITY COUNCIL CERTIFICATE

The annexation depicted on this map was approved by the City Council of Glenwood Springs, Garfield County, Colorado, by Ordinance No. ___, Series of _____, on the _____ day of _____, 2021.

_____
Mayor

Witness my hand and the seal of the City of Glenwood Springs.

ATTEST:

_____
City Clerk

SURVEYOR'S STATEMENT

I, Mark S. Beckler, L.S. No. 28643, a professional land surveyor licensed under the laws of the State of Colorado, do hereby state that the Annexation Map of 480 Donegan, as shown hereon, was prepared under my supervision on the basis of certain plats, deeds and other documents of record which were augmented with a field inspection conducted under my supervision and that such Annexation Map is true and correct to the best of my knowledge and belief.

BY:_____
Mark S. Beckler, L.S. No.28643

_____
Dated

CLERK AND RECORDER'S ACCEPTANCE

This Annexation Map was filed for record in the office of the Clerk and Recorder of Garfield County at _____ o'clock ___.M. on the _____ day of _____, 2021, as Reception No._____.

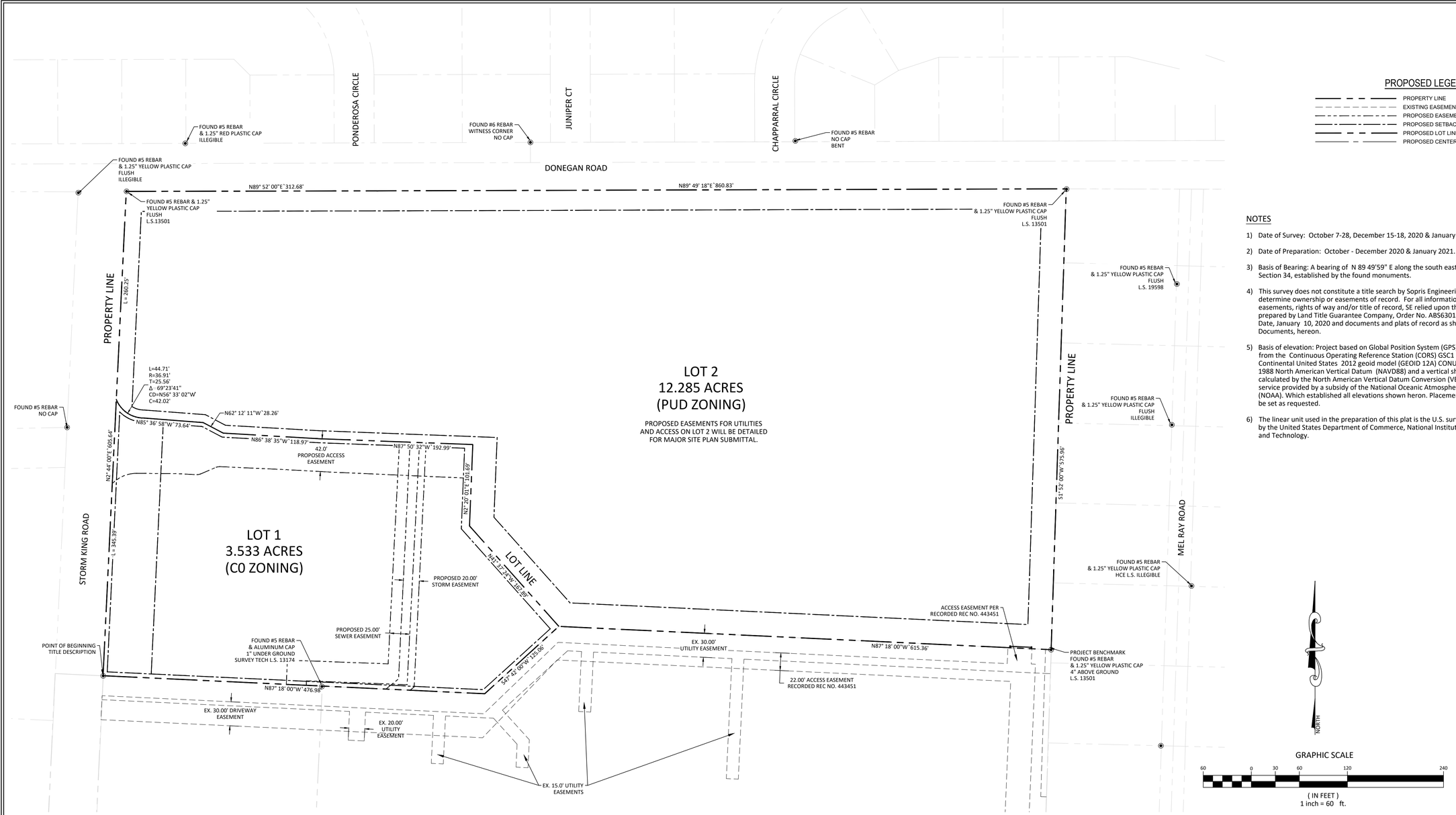
_____
Clerk and Recorder

By_____
Deputy

SOPRIS ENGINEERING - LLC
CIVIL CONSULTANTS
502 MAIN STREET, SUITE A3
CARBONDALE, COLORADO 81623
(970) 704-0311 SOPRISENG@SOPRISENG.COM

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

jb 1/25/2021 - 30017 - G:\2020\30017\SURVEY\Survey DWGs\Survey Plots\30017_ANNEX.dwg



PROPOSED LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED CENTERLINE

NOTES

1) Date of Survey: October 7-28, December 15-18, 2020 & January 5, 8, 14, 2021
2) Date of Preparation: October - December 2020 & January 2021.
3) Basis of Bearing: A bearing of N 89 49'59" E along the south east section line of Section 34, established by the found monuments.
4) This survey does not constitute a title search by Sopris Engineering, LLC (SE) to determine ownership or easements of record. For all information regarding easements, rights of way and/or title of record, SE relied upon the Title Report prepared by Land Title Guarantee Company, Order No. ABS63014094-2, Effective Date, January 10, 2020 and documents and plats of record as shown in the Source Documents, hereon.
5) Basis of elevation: Project based on Global Position System (GPS) observations from the Continuous Operating Reference Station (CORS) GSC1 utilizing the Continental United States 2012 geoid model (GEOID 12A) CONUS and based the 1988 North American Vertical Datum (NAVD88) and a vertical shift of -4.22 feet as calculated by the North American Vertical Datum Conversion (VERTCON) an online service provided by a subsidy of the National Oceanic Atmospheric Administration (NOAA). Which established all elevations shown heron. Placement benchmarks to be set as requested.
6) The linear unit used in the preparation of this plat is the U.S. survey foot as defined by the United States Department of Commerce, National Institute of Standards and Technology.

GENERAL PLAN NOTES:

TITLE DESCRIPTION (THIS SURVEY EDITS/ADDITIONS)

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE GLENWOOD SPRINGS MALL SUBDIVISION
WHENCE THE WITNESS CORNER TO THE S1/4 CORNER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEARS N 89° 13' 08" E 866.63 FEET (N 38°40'53" E 853.45 FEET FIELD) SAID POINT OF BEGINNING ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED AS PARCEL C IN BOOK 1205 AT PAGE 589 IN THE OFFICE OF THE GARFIELD COUNTY CLERK AND RECORDER;
THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 605.64 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NO. 130;
THENCE ALONG SAID RIGHT-OF-WAY N 89° 52' 00" E 312.68 FEET;
THENCE (CONTINUING ALONG SAID RIGHT-OF-WAY) N 89° 49' 18" E 860.83 FEET TO THE WEST LINE OF THE MEL-RAY SUBDIVISION;
THENCE ALONG SAID WEST LINE S 1° 52' 00" W 575.96 FEET;
THENCE DEPARTING SAID EAST (WEST) LINE AND ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL N 87° 18' 00" W 615.36 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) S 47° 42' 00" W 125.06 FEET;
THENCE (CONTINUING ALONG SAID NORTH LINE) N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD
STATE OF COLORADO.

THE SITE IS WITHIN ZONE 'C' OF FEMA FIRM 0800711043C WHICH ARE 'AREAS OF MINIMAL FLOODING'.

LOT 1 DESCRIPTION:

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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THENCE ALONG THE EAST LINE OF SAID PARCEL C N 2° 44' 00" E 345.39 FEET;
THENCE DEPARTING SAID EAST PARCEL LINE ALONG THE ARC OF A NON TANGENT CURVE TO THE LEFT HAVING A RADUIS OF 36.91 FEET AND A CENTRAL ANGLE OF 69° 23' 41", A DISTANCE OF 44.71 FEET (CHORD BEARS S 56° 33' 02" E 42.02 FEET)
THENCE S 85° 36' 58" E 73.64 FEET;
THENCE S 62° 12' 11" E 28.26 FEET;
THENCE S 86° 38' 35" E 118.97 FEET;
THENCE S 87° 50' 32" E 192.99 FEET;
THENCE S 2° 20' 01" W 101.69 FEET;
THENCE S 41° 37' 24" E 167.89 FEET TO A POINT ON THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL SUBDIVISION;
THENCE ALONG THE NORTH LINE OF SAID GLENWOOD SPRINGS MALL S 47° 42' 00" W 125.06 FEET;
THENCE CONTINUING ALONG SAID NORTH LINE N 87° 18' 00" W 476.98 FEET TO THE POINT OF BEGINNING.

SAID LOT 1 CONTAINING 3.533 ACRES, MORE OR LESS

COUNTY OF GARFIELD
STATE OF COLORADO

LOT 2 DESCRIPTION:

A TRACT OF LAND SITUATED IN SECTION 6, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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SAID LOT 2 CONTAINING 12.285 ACRES, MORE OR LESS

COUNTY OF GARFIELD
STATE OF COLORADO.

SOPRIS ENGINEERING, LLC.
CIVIL CONSULTANTS
502 MAIN STREET
CARBONDALE, CO 81623
(970) 704-0311
FAX: (970)-704-0313

DESIGNED BY	JPP	
DRAWN BY	JPP	
CHECKED BY	YTN	
DATE:	03/12/2021	
JOB NO.	30017	

480 DONEGAN
GLENWOOD SPRINGS, COLORADO

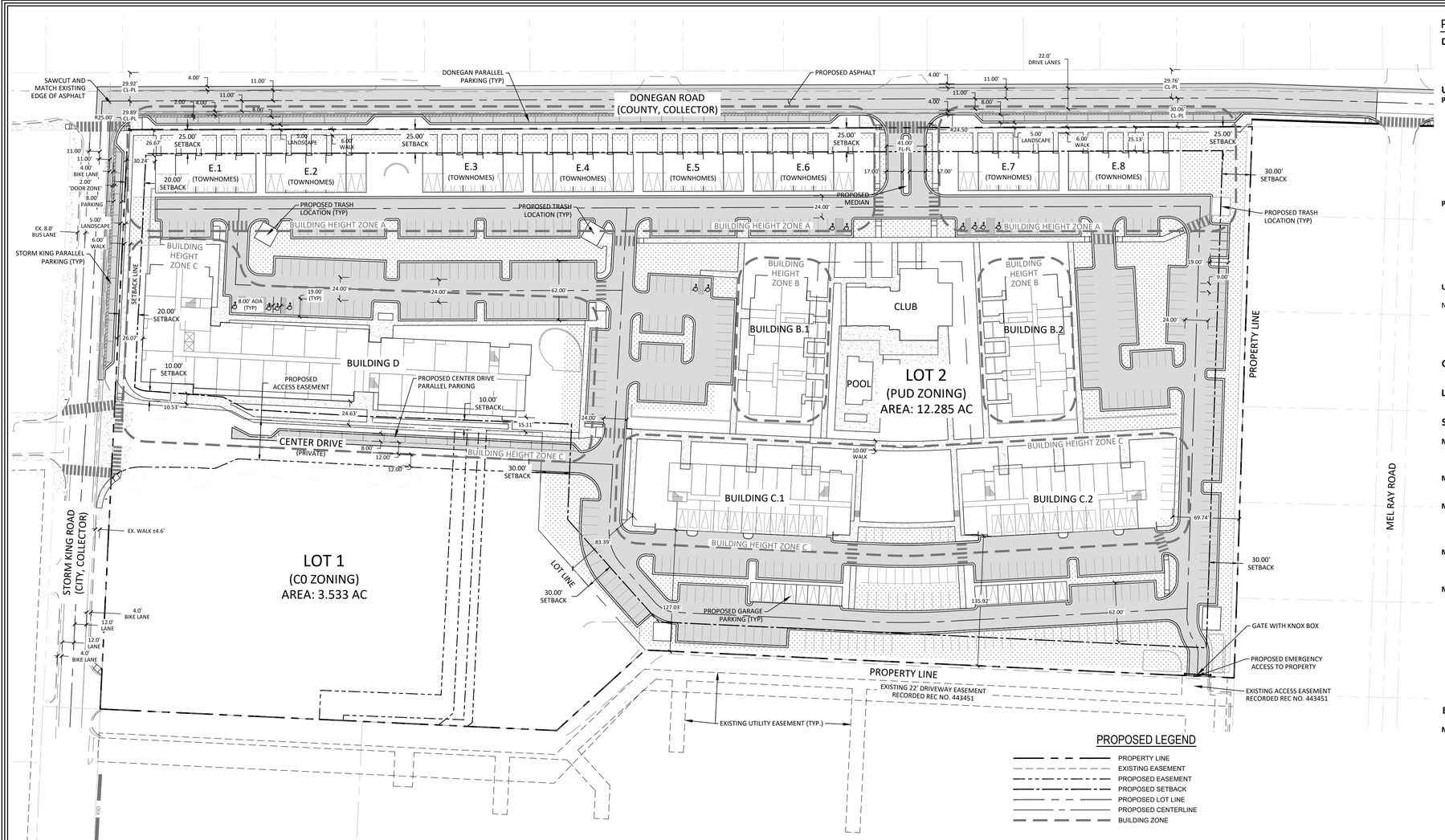
ANNEXATION AND ZONING SUBMISSION

DATE	REVISION

TITLE
CONCEPTUAL PLAT

DRAWING NO.
C-1.3

G:\2020\30017\CIVIL\CIVIL DWGS\PLOT\SHEET SET\30017-CONCEPTUAL PLAT.DWG - Mar 12, 2021 - 8:55am



NORTH

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

Know what's **below.** **Call** before you dig.

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

GENERAL PLAN NOTES:

LOT 2 DESCRIPTION:

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SAID LOT 2 CONTAINING 12.285 ACRES, MORE OR LESS

COUNTY OF GARFIELD
STATE OF COLORADO.

LEGEND:

SNOW STORAGE AREA:

PUD DEVELOPMENT STANDARDS:

DEVELOPENT DENSITY

Maximum Gross Residential Density (includes Live-Work Units):	24.4 DU/AC
Maximum Gross Non-Residential(Residential & Clubhouse Amenity Space Only):	14,000 GSF
Maximum Gross Non-Residential(Civic Facility):	14,000 GSF

Uses

Permitted Uses
- Multi-Family Dwelling
- Townhouse Dwelling
- Live-Work Dwelling
- Residential amenities (workout facilities, business center, meeting spaces)
- Restaurant
- Administrative or Professional Office
- Park/Playground/Open Space
- Home Occupation
- Civic Facility

Prohibited Uses
- Adult care facilities
- Adult entertainment establishments
- Maintenance and repair services, including automotive repair
- Marijuana establishments
- Commercial laundry and dry cleaning
- Recreational vehicle park
- Industrial Uses

Uses Requiring Special Review Use Permit
- Any use not listed as a permitted or prohibited use

Notes:
1. *The definitions set forth in the Glenwood Springs Municipal Code will apply to the above list of uses.*
2. *Live-work units may provide space for the following non-residential uses Home Occupation, and Administrative / Professional Offices. Other non-residential uses potentially considered within a Live-Work Dwellings will require a special review use permit.*

COMMON OPEN SPACE

Minimum Required:	20% of the Development Site Area

LOT AREA

Lot Area	No minimum
Landscaped Area	20% of Development Site Area

SETBACKS

Minimum Building Setback from Public Streets:

Donegan Road	25 feet from street right-of-way
Storm King Road	20 feet from street right-of-way

Minimum Building Setback from Private Streets:

Center Drive	10 feet from property line

Minimum Building Setback Internal to the Property

Face of Garage	3 feet from driveway
Abutting Properties	30 feet from property line
Building to Building	20 feet from main building face

Minimum Garage Setback from Public Streets:

Donegan Road	30 feet from street right-of-way
Storm King Road	25 feet from street right-of-way

Minimum Side or Rear Parking, Garageand Dumpster Enclosure Setback

Abutting Properties	10 feet from lot line

Notes:
1. Setbacks are measured from the face of the building to the existing public street right-of-way, edge of driveway or from abutting property lines.
2. Permitted setback encroachments from public streets include the following:
   a. Front porches, stoops and balconies may encroach six (6) feet into the setback.
   b. Porches, slabs, patios, walks and steps may encroach into setback by any amount provided all components of the encroachment are no greater than 36 inches above ground level.
   c. Building roof eaves and other incidental architectural features may encroach 18 inches into setback.
   d. Other exceptions to structures within a setback shall comply with Glenwood Springs Development Code.

BUILDING HEIGHT

Maximum Building Height:

Residential Buildings	
Zone A[1]	27 Feet
Zone B[2]	43 Feet
Zone C[2]	53 Feet
Non-Residential Building [2]	38 Feet
Freestanding Garages[2]	25 feet

Notes:
1. *Height shall be measured as the vertical distance above the finished grade along the building face oriented to Donegan Road to the highest point of the coping of a flat roof or to the deck line of a mansard roof, or to the midpoint of the highest gable of a pitched or hipped roof.*
2. *Height shall be measured as the vertical distance above the finished grade to the highest point of the coping of a flat roof or to the deck line of a mansard roof, or to the midpoint of the highest gable of a pitched or hipped roof.*

PARKING

Minimum Required Parking:

Residential	
Dwelling: Live-Work	1.0 SP/DU
Dwelling: Townhouse	1.5 SP/DU
Dwelling: Multifamily	1.5 SP/DU
Guest Parking[1]	1.0 SP/5 DU
Non-Residential	
Restaurant	1 SP/200 SF
Office & Amenity	1 SP/1,000 SF
Civic Facility[2]	1 SP/300 SF

Notes:
1. *Guest Parking applies to Dwelling: Townhouse and MultifamilyUses Only (Table 030.1: Table of Allowed Uses)*
2. *Civic facility floor area excludes space dedicated to vehicle storage and parking.*

OTHER

Snow Storage Areas:
A. Snow may be stored in landscape areas and parking areas provided that accumulated snow does not restrict access and circulation and is not stored in a manner to obscure sight lines at driveways, sidewalks, or other access points to public or private rights-of-way or fire lanes.
B. No minimum amount of additional snow storage area is required. Up to ten (10) percent of the required off-street parking spaces and one hundred (100) percent of those parking spaces in excess of those required under this PUD may be used as snow storage.
C. Public rights-of-way shall not be used for snow storage.

Application of City of Glenwood Development Standards: Unless modified by this PUD, the Development Standards set forth in Article 070.040 of the Glenwood Springs Municipal Code, as amended from time to time, including, but not limited to, residential, non-residential, and mixed-use site and building design standards, as applicable, shall apply to this PUD.

SOPRIS ENGINEERING, LLC.
CIVIL CONSULTANTS
502 MAIN STREET
CARBONDALE, CO 81623
(970) 704-0311
FAX: (970)-704-0313

DESIGNED BY	JPP	
DRAWN BY	JPP	
CHECKED BY	YTN	
DATE:	03/12/2021	
JOB NO.	30017	

480 DONEGAN
GLENWOOD SPRINGS, COLORADO

ANNEXATION AND ZONING SUBMISSION

DATE	REVISION
07/09/21	1-TOWNHOMES ON DONEGAN
10/21/21	2-SITE REVISIONS
10/29/21	3-SITE REVISIONS

TITLE

LOT 2 PUD PLAN

DRAWING NO.

C-1.2

G:\2020\30017\CIVIL\CIVIL DWGS\PLOT\ANNEX REZONE SUBM\30017 SITE PLAN.DWG - Oct 29, 2021 - 6:25am

Revised List of Conditions of Approval

Planning Item 09-20
November 4, 2021

(Added language is depicted in red underlined, deleted language is shown in ~~red strikethrough~~)

Annexation

1. ~~Prior to second reading of the annexation ordinance, t~~The applicant shall provide a separate ~~revise the~~ annexation map which ~~to~~ includes adjacent Storm King (from Center Drive north to Donegan Road), and Donegan Road~~s~~ (from Storm King Road to Soccer Field Road) rights-of-way roadway sections related to the project.
2. The applicant shall comply with/address all City staff comments related to the proposal prior to submittal of any future development permit application.
3. Future development shall comply with the various requirements outlined in the PUD, where applicable, related items such as uses, building heights, densities, minimum open space, parking, and/or landscaping.
4. The exact locations of site features may change upon site/architectural or master plan review. The *Glenwood Springs Municipal Code* is otherwise applicable to any standards not addressed therein.
5. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.
6. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.
7. The applicant shall enter into an annexation agreement with the City. Said agreement shall provide for the following items related to the to the annexed property:
   a. A payment in the amount of $100,000 to aid in the planning for and implementation of necessary emergency evacuation measures.
   b. The dedication to the City of not less than one acre of land, unless less land area is determined necessary by City, for the future construction of a new fire station for the Glenwood Springs Fire Department.
   c. The applicant shall deed restrict a minimum of 10 percent of the residential apartment units at 80 percent of area median income and 10 percent of the residential apartment units at ~~130~~120 percent of area median income. A minimum of 20 percent of the total residential apartment units shall be resident occupied.
   d. Any future development proposal shall include direct access to Highway 6 through the parcel to the south.
   e. All related offsite transportation, bicycle, and pedestrian related improvements to the Storm King, and Donegan Roads rights-of-way.
8. The subject property shall be developed pursuant to a Master Plan per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, unless otherwise permitted by the annexation agreement.
9. The approval allows for a total count of up to 300 units on the subject property.

10. The applicant shall dedicate not less than two acres of public open space (inclusive of the land dedicated for the fire station), with at least one acre being contiguous public parkland or open space which will count towards the open space requirements for the PUD as provided in the annexation agreement.
11. The vesting period for the project shall be five years.
12. A deed restriction requiring the payment of a two percent real estate transfer assessment fee to the City shall apply to sale (excluding the first sale) of any townhome unit which is not a part of the City's affordable housing program.
13. A Master Plan application, per Section 070.060.050(b) of the *Glenwood Springs Municipal Code*, shall be submitted to the City within eight months, subject to the annexation agreement.

Rezoning

1. The applicant shall submit a Minor Subdivision application to create the two lots outlined in the request.

2. Future development shall comply with the various requirements outlined in the PUD, where applicable. The *Glenwood Springs Municipal Code* is otherwise applicable to any aspect not addressed therein.

3. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein and approved by the Community Development Director.

4. The PUD shall conform to the approved conditions outlined in the annexation and annexation agreement.

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Planning File 60-20 - Consideration of a Major Site/Architectural Plan Review application for the construction of 300-unit multi-family development in 14 separate buildings in Glenwood Meadows.

Action Requested: **Action 1 – Major Site/Architectural Plan Review** – for the construction of 300 multi-family residential apartment units.

Department: Economic and Community Development

Presented By: Trent Hyatt, Senior Planner

Background Info: The Planning and Zoning Commission (Commission) is the recommending body to City Council for all Major Site/Architectural Plan Review applications. The Commission considered the proposal at their August 24, 2021 regular meeting where public comment was taken. All information/materials provided to the Commission and the minutes from each meeting are attached for your review.

Issues: For a complete analysis of various issues related to the proposal, please refer to the attached staff reports, staff memos and public comments submitted to date. However, the list below is a summary of the topics addressed by the Commission during the review process.

Issues Addressed/Recommendations to Applicant

1. Request to add affordable/attainable/inclusionary housing to the project via City's voluntary system improvement fee waiver program;
2. Need to improve pedestrian connectivity, add more stairways to Wulfsohn;
3. Improve screening/buffering of proposed parking areas;
4. Similarity of building design and bedroom configurations;
5. Landscaping and related water use;
6. Need to provide details related to proposed shuttle operations;
7. Proposal limited to only one housing type (apartments);
8. Concerns regarding density and addition of traffic to and condition of Wulfsohn Road.

Planning and Zoning Commission Discussion/Recommendation

The Commission voted unanimously 6-0 to recommend approval of the application to City Council with the following findings and conditions.

Recommended Findings:

1. The site/architectural plan is consistent with the general purpose and intent of the Code;
2. The site/architectural plan appears to be consistent with all dimensional, design, development, and all other standards of the Glenwood Meadows Zoning and Development Plan and Glenwood Springs Municipal Code;
3. The site/architectural plan does is consistent with the precedent setting land use approval, the Glenwood Meadows Annexation Zoning and Development Plan; and
4. The site/architectural plan is substantially consistent with the Comprehensive Plan and other adopted City policies and plans.

Recommended Conditions:

1. The applicant shall comply with/address all Glenwood Springs Municipal Code specific City staff comments prior to submittal of any future development permit (including but not limited to a Final Plans Review) application.
2. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein.
3. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.
4. The applicant shall receive approval of the related Minor Subdivision application to create the development parcel and residual lots.
5. The development shall comply with the requirements of the Code except where specific variances have been granted. Any future physical changes or improvements to the property or buildings on the parcel are subject to the review and approval of the Community Development Director for compliance with applicable requirements of the Glenwood Springs Municipal Code.
6. The applicant shall comply fully with the Memorandum of Understanding between the City and Glenwood Meadows, LLC executed May 5, 2021.
7. The applicant shall deed restrict a minimum of 10 units as owner occupied at 100 percent of AMI for a period of five years.
8. Prior to submitting a building or grading permit application, the applicant shall
a. Submit a Final Plans Review application in accordance with Municipal Code section 070.060.050(c).
b. Enter into a development agreement with the City which shall be recorded with the Garfield County Clerk and Recorder.
c. Submit an engineer's estimate of all public improvement and submit a financial security for any required improvement not yet completed.
d. Schedule a pre-construction meeting with applicable City departments.

Applicant Response
Regarding attainable housing, the applicant improved upon their initial offering of voluntarily restricting 10 units to 100% of AMI by increasing the number to 15. While they are not voluntarily offering to restrict 20% of the total units as resident of occupied, they do intend to meet the requirements via procedures outlines in the response letter attached to the staff report.

Related to the design, the applicant has increased variations in materials and colors in an attempt to diversify the similar aesthetic of the proposed buildings. Please see pages 72-83 of the revised plan set attached hereto.

Staff Recommendation: **Action 1 – Major Site/Architectural Plan Review** – for the construction of 300 multi-family residential apartment units.

Staff Recommendation
Staff recommends **approval (with conditions)** of the Site/Architectural Plan Review application with the findings and conditions outlined below. Please note, the recommended conditions include revisions related to the applicant's changes stemming from the Commission's recommendations.

Recommended Findings:
1. The site/architectural plan is consistent with the general purpose and intent of the Code;
2. The site/architectural plan appears to be consistent with all dimensional, design, development, and all other standards of the Glenwood Meadows Zoning and Development Plan and Glenwood Springs Municipal Code;
3. The site/architectural plan does is consistent with the precedent setting land use approval, the Glenwood Meadows Annexation Zoning and Development Plan; and
4. The site/architectural plan is substantially consistent with the Comprehensive Plan and other adopted City policies and plans.

Recommended Conditions:

1. The applicant shall comply with/address all Glenwood Springs Municipal Code specific City staff comments prior to submittal of any future development permit (including but not limited to a Final Plans Review) application.
2. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein.
3. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.
4. The applicant shall receive approval of the related Minor Subdivision application to create the development parcel and residual lots.
5. The development shall comply with the requirements of the Code except where specific variances have been granted. Any future physical changes or improvements to the property or buildings on the parcel are subject to the review and approval of the Community Development Director for compliance with applicable requirements of the Glenwood Springs Municipal Code.
6. The applicant shall comply fully with the Memorandum of Understanding between the City and Glenwood Meadows, LLC executed May 5, 2021.
7. The applicant shall deed restrict a minimum of 15 units as owner occupied at an average of 100 percent of AMI per the City's voluntary system improvement fee waiver program.
8. Prior to submitting a building or grading permit application, the applicant shall

a. Submit a Final Plans Review application in accordance with Municipal Code section 070.060.050(c).
b. Enter into a development agreement with the City which shall be recorded with the Garfield County Clerk and Recorder.
c. Submit an engineer’s estimate of all public improvement and submit a financial security for any required improvement not yet completed.
d. Schedule a pre-construction meeting with applicable City departments.

BLD GROUP AFFORDABLE HOUSING PLAN

BLD Group filed its application for 300 rental apartment units in Glenwood Meadows in December 2020, prior to the City's February 2021 enactment of its current Community Housing Standards. This means BLD is not subject to these Community Housing Standards, which require 20% of residential units to be "resident occupied community housing" and one half of these units, 10%, to be deed restricted to an initial rental price based on an average of no more than 100% AMI.

Moreover, there is already Community Housing constructed within the Glenwood Meadows master plan. In fact, Glenwood Meadows, LLC, the current owner of the parcel, was responsible for creating 60 of the most affordable units in the City when it constructed the Glenwood Greens project in 2013. These 60 units are deed restricted to 40/60/80% of AMI and are adjacent to the BLD project. Both parcels are within the Residential High zone district of the Meadows. When considering the existing 60 affordable units within Glenwood Meadows' RH district out of the total 475 permitted units, a minimum of 12.6% of the entire Glenwood Meadows RH zone development will be deed restricted affordable units—at levels exceeding the current code requirement to average 100% AMI.

BLD's application was stalled for several months while City Staff and BLD negotiated contributions to various infrastructure improvements to serve the project. Pursuant to the Memorandum of Understanding between the City and BLD, BLD has committed to contributing up to $625,000 for City infrastructure upgrades contingent upon approval of this site plan. Nonetheless, BLD has heard the requests from Staff and the Planning Commission that community housing is desperately wanted and needed within the City. Therefore, BLD is offering the following:

(1) Voluntary Affordable and Workforce Housing Program.

BLD will place 15 of its units into the City's voluntary Affordable and Workforce Housing program as described in 070.045.120(b), which requires 100% AMI rents to local occupants and allows for the waiver of certain City fees. With the addition of these units, upon completion of the BLD project, 21% of completed units in the Glenwood Meadows RH zone district will be deed restricted units, more than double the City's recently enacted Community Housing Standard of 10%, at rents averaging below 100% of AMI.

(2) Local Preference.

The current Community Housing Guidelines require 20% of units to be "resident occupied." According to the Lofts at Red Mountain Management, the Lofts are currently at 65% resident occupied. We have every reason to believe BLD's project will far exceed 20% resident occupied. The City's current RO guidelines as enacted require waiting and lease periods, and other administrative burdens that would materially impact occupancy, available financing for the project, and ultimately its viability. Consequently, BLD cannot agree to the City's current RO guidelines. Nonetheless, BLD strongly believes in serving the community. Therefore, BLD is willing to offer a local preference for its units as follows:

Upon request from the City, BLD will annually report to the City the percentage of its units which qualify as "resident occupied" under the City's current Code. Additionally, in the event the percentage of "resident occupied" units is ever below 20%, BLD Group will implement a preference to prospective tenants who otherwise qualify and meet the City's current occupancy requirement for community housing:

(a) Employed to primarily work at a physical location within the 81601 zip code;
(b) Directly employed by a company that has its principal office located within the 81601 zip code;
(c) Enrolled as a full-time student at a local educational institution;
(d) Is sixty-five years of age or older; or
(e) Is receiving social security disability benefits.

GLENWOOD MEADOWS MULTI-FAMILY HOUSING

Glenwood Springs, Colorado

MAJOR SITE / ARCHITECTURE REVIEW

SUBMITTAL #4: October 07, 2021

INDEX OF SHEETS

ALTA Land Title Survey

SHEET 1 OF 4
SHEET 2 OF 4
SHEET 3 OF 4
SHEET 4 OF 4

Civil Sheet Set

GR1	PRELIMINARY GRADING PLAN - SHEET 1
GR2	PRELIMINARY GRADING PLAN - SHEET 2
UT1	PRELIMINARY UTILITY PLAN - SHEET 1
UT2	PRELIMINARY UTILITY PLAN - SHEET 2

Landscape Sheet Set

L1.0	OVERALL SITE PLAN
L1.1	DEVELOPMENT AREA SITE PLAN
L1.2	SITE PLAN ENLARGEMENT KEY PLAN
L1.3	ENLARGED SITE PLAN
L1.4	ENLARGED SITE PLAN
L1.5	ENLARGED SITE PLAN
L1.6	ENLARGED SITE PLAN
L1.7	ENLARGED SITE PLAN
L1.8	ENLARGED SITE PLAN
L1.9	ENLARGED SITE PLAN
L2.0	PLANT LIST AND GENERAL NOTES
L2.1	PLANTING DETAILS
LP.1	SITE LIGHTING ENLARGEMENT KEY PLAN
LP.2	SITE LIGHTING ENLARGEMENT PLAN
LP.3	SITE LIGHTING ENLARGEMENT PLAN
LD.1	DESIGN IMAGERY SHEET
LD.2	DESIGN IMAGERY SHEET
EXBT 1	SITE PLAN RENDERING
EXBT 2	PERSPECTIVE ILLUSTRATION
EXBT 3	PERSPECTIVE ILLUSTRATION
EXBT 4	PERSPECTIVE ILLUSTRATION
EXBT 5	PERSPECTIVE ILLUSTRATION
EXBT 6	PERSPECTIVE ILLUSTRATION
EXBT 7	PERSPECTIVE ILLUSTRATION
EXBT 8	PERSPECTIVE ILLUSTRATION
EXBT 9	PERSPECTIVE ILLUSTRATION
EXBT 10	PERSPECTIVE ILLUSTRATION
EXBT 11	PERSPECTIVE ILLUSTRATION
EXBT 12.1	SITE SECTION
EXBT 12.2	SITE SECTION
EXBT 12.3	SITE SECTION
EXBT 13	WEST ENTRY PLAN AND PROFILE
EXBT 14	POOL WALL GRADING

Architecture Sheet Set

A-1	BUILDING TYPE 1 FLOOR PLANS
A-2	BUILDING TYPE 1 FLOOR PLANS
A-3	BUILDING TYPE 1 FLOOR PLANS
A-4	BUILDING TYPE 1 FLOOR PLANS
A-5	BUILDING TYPE 1 FLOOR PLANS
A-6	BUILDING TYPE 1 ROOF PLAN
A-7	BUILDING TYPE 1 N/S ELEVATIONS
A-8	BUILDING TYPE 1 E/W ELEVATIONS
A-9	BUILDING TYPE 1 SECTION
A-10	BUILDING TYPE 2 FLOOR PLANS
A-11	BUILDING TYPE 2 FLOOR PLANS
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A-14	BUILDING TYPE 2 FLOOR PLANS
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A-16	BUILDING TYPE 2 N/S ELEVATIONS
A-17	BUILDING TYPE 2 E/W ELEVATIONS
A-18	BUILDING TYPE 2 SECTION

Architecture Sheet Set (Cont.)

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A-20	BUILDING TYPE 3 FLOOR PLANS
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A-22	BUILDING TYPE 3 FLOOR PLANS
A-23	BUILDING TYPE 3 FLOOR PLANS
A-24	BUILDING TYPE 3 ROOF PLAN
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PROJECT TEAM

LANDSCAPE ARCHITECT

DHM DESIGN CORPORATION
311 MAIN STREET, SUITE 102
CARBONDALE, CO 81623
PHONE: (970) 963-6520
CONTACT: JEN DICUOLLO

ARCHITECTURE

BLD GROUP
1500 CORDOVA RD
FORT LAUDERDALE, FL 33316
PHONE: (954) 578-6008
CONTACT: RICHARD COBA

CIVIL ENGINEER

HIGH COUNTRY ENGINEERING
1517 BLAKE AVE, #101
GLENWOOD SPRINGS, CO 81601
PHONE: (970) 945-8676
CONTACT: ROGER NEAL

BASIS OF BEARING / BENCHMARK

BEARINGS ARE BASED UPON A #5 REBAR WITH ALUMINUM CAP L.S. #5933 FOUND AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.

LOCATION MAP



UNIT AND SITE AMENITY DATA

LOT SIZE INFORMATION	Acres	SF	LOT COVERAGE	Required (SF & %)	Proposed (SF & %)
Lot 2 - Phase 1	**27.9 Acres**	**1,215,160 sf**		**50% Max. Lot Coverage**	**591,051 sf** *49% Lot Size*
LIMITS OF DISTURBANCE		Proposed (SF & %)	**AVERAGE SLOPE WITHIN LIMITS OF DISTURBANCE**	Percentage (%)	
Lot 2 - Phase 1		**895.561 sf** **74%** *Lot Size*		**16%**	
OFF-STREET PARKING SPACES	Required # Vehicle Spaces	Proposed # Vehicle Spaces	**BICYCLE PARKING**	Required # Spaces	Proposed # Spaces
Residence Parking *1.7 spaces per unit*	**510 Spaces** *Phase 1 Count: 300 units*	**510 Spaces**	**Bike Racks** *150 parking spaces- 9 bike parking spaces plus 1 space for each 50 vehicle spaces provided after the first 150 spaces*	**17 Bike Parking Spaces** *Phase 1 Count: 538 Parking Spaces*	**160 Bike Parking Spaces**
Clubhouse *1 per 400 sf of building area plus 1 per 10,000 sf of outdoor space*	**29 Spaces** *Phase 1 Count: 10,900 sf Building and 11,000 sf of Outside area*	**29 Spaces**			
ADA	**20 Spaces**	**38 Spaces**			
TOTAL PARKING	**539 Spaces**	**539 Spaces**			

RESIDENTIAL UNITS	Buildings	Units	COMMON AMENITY SPACE	Required (SF)	Provided (SF)
Building Type 1	**7 Buildings**	**168 Units**	Community Center & Daycare		**20,960 sf**
Building Type 2	**3 Buildings**	**60 Units**	Community Gardens		**7,665 sf**
Building Type 3	**3 Buildings**	**72 Units**	Amenity Spaces between Buildings		**30,160 sf**
TOTAL	**13 Buildings**	**300 Units**	Trail Connections		**2,058 sf**
BUILDING HEIGHT	Required	Proposed	Dog Yard		**36,432 sf**
	40 ft. maximum	**37 ft.** *roof center line to grade*	**TOTAL**	**60,000 sf** *Required: 200 sf per unit Phase 1 Count: 300 units*	**97,275 sf**

LANDSCAPE DATA

OPEN SPACE	SQUARE FOOTAGE	TREES		SHRUBS	
		REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Upper tier - disturbed	87,483 SF	73	74	219	366
Lower tier - disturbed	79,351 SF	66	66	198	285

INTERNAL DRIVEWAY	LINEAR FEET	TREES	
		REQUIRED *(1/35 LF)*	PROVIDED
Flat Tops View Dr (Sunny Aspen)	2,071 LF	59	60
Wolf Liam Lane	1,735 LF	50	50
Adios Avenue	1,748 LF	50	50

PARKING AREAS	Total Parking Area (SF)	Landscaped Area (SF & %)	TREES		SHRUBS	
			REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Parking Lots	29,694 SF	10,485 SF *(35% of the parking area)*	25	40	74	240

TOTAL LANDSCAPED AREA	Proposed (SF & %)	OPEN SPACE	Required (SF & %)	Proposed (SF & %)
	304,510 sf *25% Lot Size*		**486,064 sf** *40% Lot Size*	**504,083 sf** *41.5% Lot Size*
TOTAL IMPERVIOUS AREA	Proposed (SF & %)			
	591,051 sf *49% Lot Size*			

SNOW STORAGE NOTE: ON-SITE SNOW STORAGE WILL BE PROVIDED IN LANDSCAPE AREAS AT THE EAST AND WEST ENDS OF THE BUILDING ROWS AND BEHIND THE CURB WHERE SIDEWALKS DO NOT EXIST. FINAL SNOW MANAGEMENT WILL BE REFINED BASED ON GEOTECHNICAL REVIEW, RECOMMENDATIONS, AND GRADING & DRAINAGE PLAN.

LEGAL DESCRIPTION

PARCEL A:
****
NOTE: THE FOLLOWING LEGAL DESCRIPTION IS PRELIMINARY AND IS SUBJECT TO CHANGE UPON COMPLIANCE WITH THE REQUIREMENTS UNDER SCHEDULE B-1, HEREIN.
****
LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
COUNTY OF GARFIELD, STATE OF COLORADO
PARCEL B:
EASEMENTS FOR UTILITIES, DRAINAGE AND ACCESS AS DESCRIBED AND DEPICTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 5, 17, 2012 UNDER RECEPTION NO. 818857 AND FIRST AMENDMENTS TO RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

FEMA FLOODPLAIN STATEMENT

PARCELS A & B ARE LOCATED WITHIN ZONE D ACCORDING TO FEMA MAP PANELS 0802051431B AND 0802051432B BOTH EFFECTIVE 01/03/1986. ACCORDING TO FEMA, NO ADDITIONAL DIGITAL DATA IS AVAILABLE IN THIS AREA.

PUBLIC IMPROVEMENTS STATEMENT

THE PUBLIC IMPROVEMENTS FOR THE ENTIRETY OF THE GLENWOOD MEADOWS SUBDIVISION HAVE BEEN SATISFIED AS MEMORIALIZED IN THE JULY 2013 MOU BETWEEN THE DEVELOPER (GLENWOOD MEADOWS, LLC) AND THE CITY OF GLENWOOD SPRINGS. THESE PUBLIC IMPROVEMENTS INCLUDED OFF-SITE TRAFFIC IMPROVEMENTS, ON- AND OFF-SITE PEDESTRIAN TRAIL IMPROVEMENTS, WATER RIGHTS CONVEYANCES, OFF-SITE RIVERTRAIL CONTRIBUTIONS, TRANSIT IMPROVEMENTS, AND PUBLIC OPEN SPACE DEDICATIONS. IN JUNE OF 2021 THE CITY OF GLENWOOD SPRINGS AND GLENWOOD MEADOWS, LLC ENTERED INTO A MOU THAT ADDED PUBLIC IMPROVEMENTS ABOVE AND BEYOND THE PREVIOUSLY SATISFIED REQUIREMENTS, INCLUDING INFRASTRUCTURE UPGRADES AND TRAFFIC IMPACT FEES. THE PROJECT PROPOSAL INCLUDES ON-SITE PUBLIC IMPROVEMENTS INCLUDING A SIDEWALK EXTENSION ALONG WULFSOHN ROAD, PUBLICLY-ACCESSIBLE TRAILHEADS TO OPEN SPACE, AND A PUBLICLY-AVAILABLE DAYCARE FACILITY.

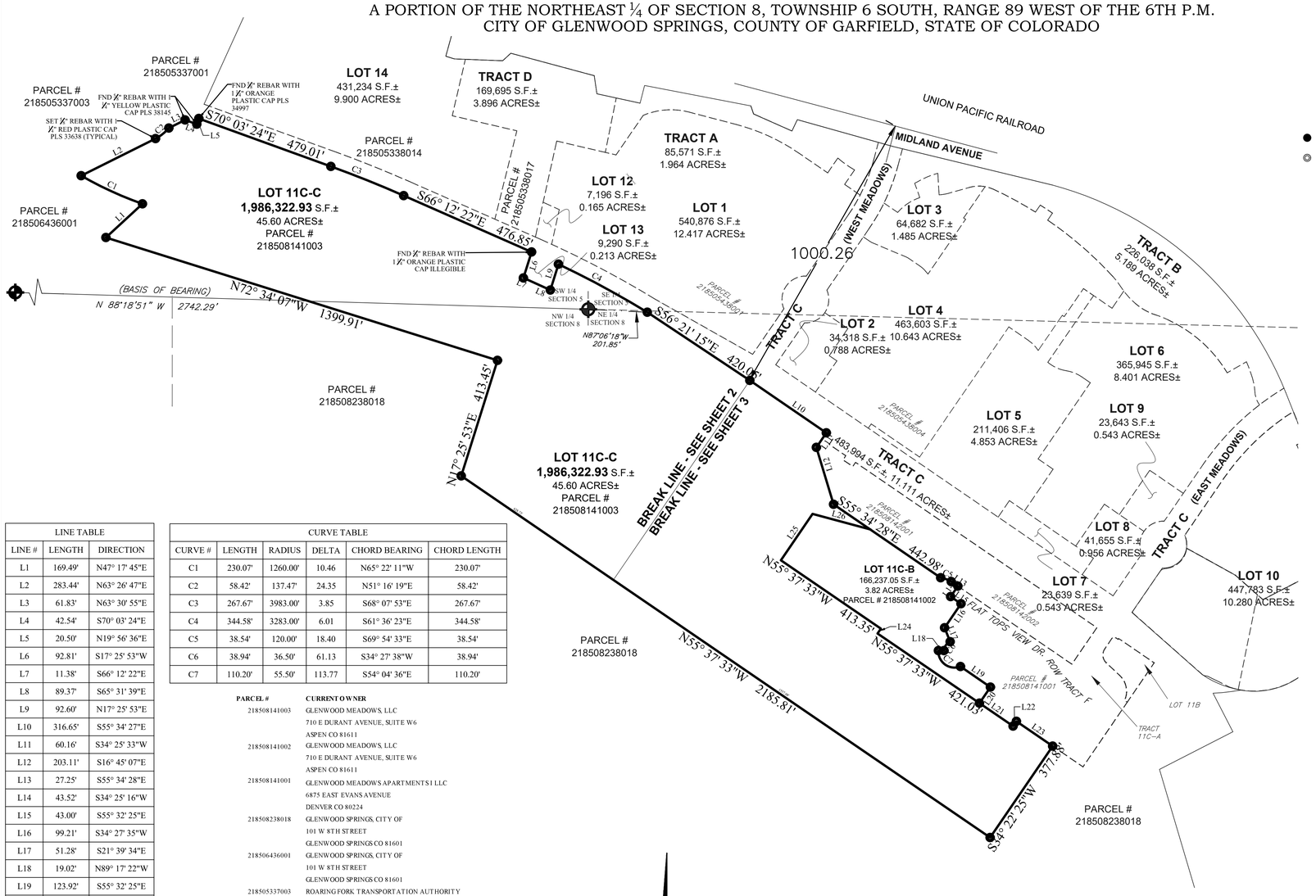
GEOLOGIC HAZARDS DISCLOSURE

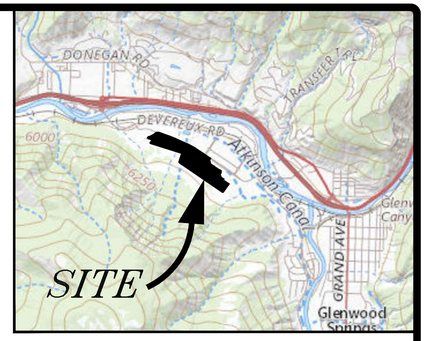
THE PROPERTY IS SUBJECT TO GEOLOGIC HAZARDS PER THE ADOPTED MAPPING BY THE CITY OF GLENWOOD SPRINGS. HAZARDS TO NOTE ARE SEVERE POTENTIAL FOR HYDROCOMPACTION, AND FOR OFF-SITE DEBRIS FLOW. A FINAL GEOLOGIC HAZARD REPORT WILL BE SUBMITTED UPON APPLICATION OF A BUILDING PERMIT.

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037

A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO





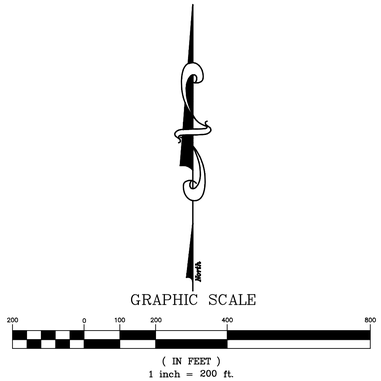
VICINITY MAP
SCALE: 1" = 3000'

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	169.49'	N47° 17' 45"E
L2	283.44'	N63° 26' 47"E
L3	61.83'	N63° 30' 55"E
L4	42.54'	S70° 03' 24"E
L5	20.50'	N19° 56' 36"E
L6	92.81'	S17° 25' 53"W
L7	11.38'	S66° 12' 22"E
L8	89.37'	S65° 31' 39"E
L9	92.60'	N17° 25' 53"E
L10	316.65'	S55° 34' 27"E
L11	60.16'	S34° 25' 33"W
L12	203.11'	S16° 45' 07"E
L13	27.25'	S55° 34' 28"E
L14	43.52'	S34° 25' 16"W
L15	43.00'	S55° 32' 25"E
L16	99.21'	S34° 27' 35"W
L17	51.28'	S21° 39' 34"E
L18	19.02'	N89° 17' 22"W
L19	123.92'	S55° 32' 25"E
L20	66.33'	S34° 22' 27"W
L21	138.97'	S55° 37' 33"E
L22	20.00'	N34° 22' 25"E
L23	150.00'	S55° 37' 33"E

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	230.07'	1260.00'	10.46	N65° 22' 11"W	230.07'
C2	58.42'	137.47'	24.35	N51° 16' 19"E	58.42'
C3	267.67'	3983.00'	3.85	S68° 07' 53"E	267.67'
C4	344.58'	3283.00'	6.01	S61° 36' 23"E	344.58'
C5	38.54'	120.00'	18.40	S69° 54' 33"E	38.54'
C6	38.94'	36.50'	61.13	S34° 27' 38"W	38.94'
C7	110.20'	55.50'	113.77	S54° 04' 36"E	110.20'

LINE TABLE		
LINE #	LENGTH	DIRECTION
L24	20.00'	N34° 22' 27"E
L25	191.73'	N34° 22' 04"E
L26	202.63'	S75° 00' 01"E

PARCEL #	CURRENT OWNER
218508141003	GLENWOOD MEADOWS, LLC 710 E DURANT AVENUE, SUITE W6 ASPEN CO 81611
218508141002	GLENWOOD MEADOWS, LLC 710 E DURANT AVENUE, SUITE W6 ASPEN CO 81611
218508141001	GLENWOOD MEADOWS APARTMENTS I LLC 6875 EAST EVANS AVENUE DENVER CO 80224
218508238018	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218506436001	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218505337003	ROARING FORK TRANSPORTATION AUTHORITY 0766 INDUSTRY WAY CARBONDALE CO 81623
218505337001	ROARING FORK TRANSPORTATION AUTHORITY 0051 SERVICE CENTER DRIVE ASPEN CO 81611
218505338014	CENTURA VENTURES LLC 9100 E MINERAL CIRCLE ENGLEWOOD CO 80112
218505338017	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218508142001	SC GLENWOOD I LLC 760 W MAIN STREET, STE 140 BARRINGTON IL 60010
218508142002	SC GLENWOOD II LLC 760 W MAIN STREET, STE 140 BARRINGTON IL 60010
218505438004	TARGET CORPORATION PO BOX 72028 PHOENIX AZ 85050
218505438001	WEINGARTEN MILLER GLENWOOD LLC 6900 EAST BELLEVIEW AVENUE SUITE 300 GREENWOOD VILLAGE CO 80111



LEGEND AND NOTES:

● - INDICATES FOUND MONUMENT AS DESCRIBED

◎ - INDICATES MONUMENT TO BE SET AS DESCRIBED

- DATE OF SURVEY: SEPTEMBER 5 - 8, 2020

- UNIT OF MEASUREMENT: US SURVEY FOOT

- ZONING DATA TO BE PROVIDED BY CLIENT

- PARCELS A & B ARE LOCATED WITHIN ZONE D ACCORDING TO FEMA MAP PANELS 0802051431B AND 0802051432B BOTH EFFECTIVE 01/03/1986. ACCORDING TO FEMA, NO ADDITIONAL DIGITAL DATA IS AVAILABLE IN THIS AREA.

- BEARINGS ARE BASED UPON A #5 REBAR WITH ALUMINUM CAP L.S. #5933 FOUND AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.

- THIS ALTA LAND TITLE SURVEY IS BASED UPON INFORMATION PROVIDED BY LAND TITLE GUARANTEE COMPANY IN ORDER NUMBER ABS63015235-4 DATED AUGUST 26, 2020. THIS PROPERTY IS SUBJECT TO THE FOLLOWING EXCEPTIONS PER SAID ORDER NUMBER ABS63015235-4:

8. EXISTING LEASES AND TENANCIES, IF ANY. **NOTHING TO PLOT.**

9. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 268. **NOTHING TO PLOT.**

10. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 269. **NOTHING TO PLOT.**

11. EASEMENTS AND RIGHTS OF WAY AS GRANTED TO THE MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY IN INSTRUMENT RECORDED JUNE 25, 1936 IN BOOK 183 AT PAGE 430. **NOTHING TO PLOT.**

12. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 270. **NOTHING TO PLOT.**

13. (THIS ITEM WAS INTENTIONALLY DELETED) **NOTHING TO PLOT.**

14. TERMS, CONDITIONS AND PROVISIONS OF ANNEXATION AND DEVELOPMENT AGREEMENT RECORDED DECEMBER 06, 2002 IN BOOK 1414 AT PAGE 526 AND THE AMENDMENT RECORDED MAY 6, 2004 IN BOOK 1585 AT PAGE 438 AND THE AMENDED AGREEMENT RECORDED JULY 26, 2004 IN BOOK 1607 AT PAGE 895 AND THIRD AMENDMENT RECORDED DECEMBER 2, 2010 UNDER RECEPTION 795138 AND AMENDED AND RESTATED THIRD AMENDMENT RECORDED AUGUST 16, 2011 UNDER RECEPTION NO. 806719 AND RERECORDED AUGUST 18, 2011 UNDER RECEPTION NO. 806794 AND FOURTH AMENDMENT RERECORDED AUGUST 8, 2013 UNDER RECEPTION NO. 839074 AND FOURTH AMENDMENT RERECORDED APRIL 10, 2015 UNDER RECEPTION NO. 861345. **NOTHING TO PLOT.**

NOTE: INCLUSIONARY HOUSING CREDITS ASSIGNMENT IN CONNECTION WITH THE ABOVE AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION NO. 818854. MEMORANDUM OF UNDERSTANDING RECORDED JULY 18, 2013 UNDER RECEPTION NO. 838187

15. (THIS ITEM WAS INTENTIONALLY DELETED) **NOTHING TO PLOT.**

16. EASEMENTS AND NOTES AS SHOWN ON THE PLAT FOR GLENWOOD MEADOWS NO. 2, RECORDED AUGUST 9, 2004 UNDER RECEPTION NO. 657439. **PLOTTED HEREON.**

17. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 4 RECORDED OCTOBER 28, 2009 UNDER RECEPTION NO. 776958. **UNCLEAR DOCUMENTS, UNABLE TO EVALUATE.**

18. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 5 RECORDED MAY 17, 2010 UNDER RECEPTION NO. 818851. **PLOTTED HEREON.**

19. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 4 - LOT LINE ADJUSTMENT RECORDED MARCH 13, 2012 UNDER RECEPTION NO. 815777. **PLOTTED HEREON.**

20. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN AGREEMENT RECORDED JUNE 29, 2012 UNDER RECEPTION NO. 820756. **NOTHING TO PLOT.**

21. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN AGREEMENT RECORDED JUNE 29, 2012 UNDER RECEPTION NO. 820755. **NOTHING TO PLOT.**

22. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION 818857. **NOTHING TO PLOT.**

EASEMENT MODIFICATION RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

23. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN ACCESS AND MAINTENANCE AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION 818859. **PLOTTED HEREON.**

24. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN DEVELOPMENT AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION NO. 818856 AND AMENDMENT RECORDED MAY 18, 2017 AT RECEPTION NO. 892527. **NOTHING TO PLOT.**

25. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

26. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

27. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 6 RECORDED SEPTEMBER 7, 2017 UNDER RECEPTION NO. 897037. **PLOTTED HEREON.**

28. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

LEGAL DESCRIPTION:

PARCEL A:

****
NOTE: THE FOLLOWING LEGAL DESCRIPTION IS PRELIMINARY AND IS SUBJECT TO CHANGE UPON COMPLIANCE WITH THE REQUIREMENTS UNDER SCHEDULE B-1, HEREIN.
****

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
COUNTY OF GARFIELD, STATE OF COLORADO

PARCEL B:

EASEMENTS FOR UTILITIES, DRAINAGE AND ACCESS AS DESCRIBED AND DEPICTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 5, 17, 2012 UNDER RECEPTION NO. 818857 AND FIRST AMENDMENTS TO RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6(B), 8, 11, 13, 14, 16, 17, 18, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON MARCH 28, 2020 DATE OF PLAT OR MAP: SEPTEMBER 2-8, 2020.

COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 — DATE

NOTICE: ACCORDING TO COLORADO LAW, YOU **MUST** COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

TUTTLE SURVEYING SERVICES
923 COOPER AVENUE
GLENWOOD SPRINGS, COLORADO 81601
(970) 928-9708 (FAX 947-9007)
Email- jeff@tss-us.com

TUTTLE SURVEYING SERVICES

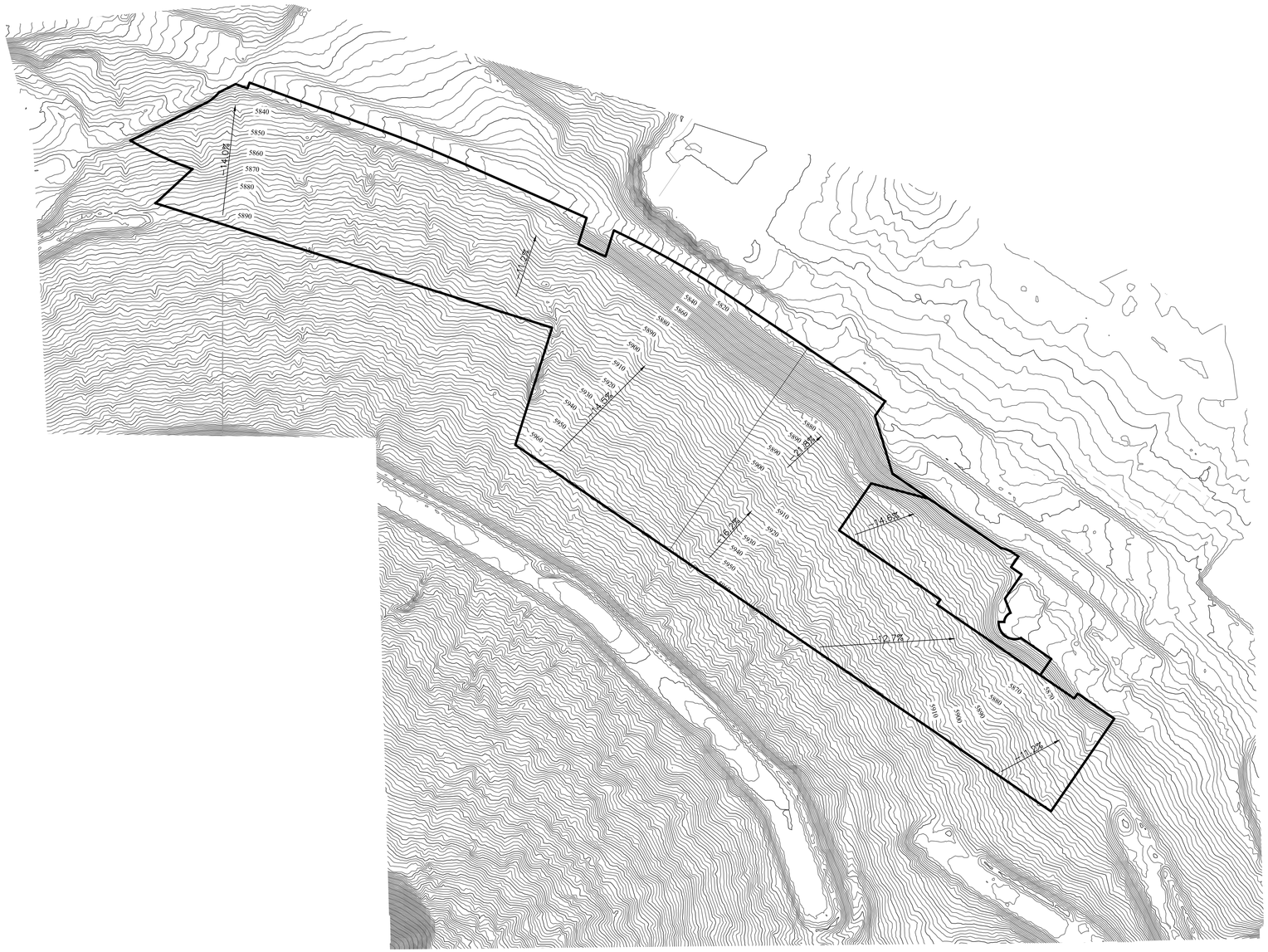
ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

NOTES:

CONTOUR DATA OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA,
STATE PLAIN NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY
IN AREAS CRITICAL TO DESIGN.

SURVEYOR'S CERTIFICATE:

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ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
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DATE OF PLAT OR MAP: SEPTEMBER 2-8, 2020.

COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 DATE

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Email- jeff@tss-us.com
TUTTLE SURVEYING SERVICES

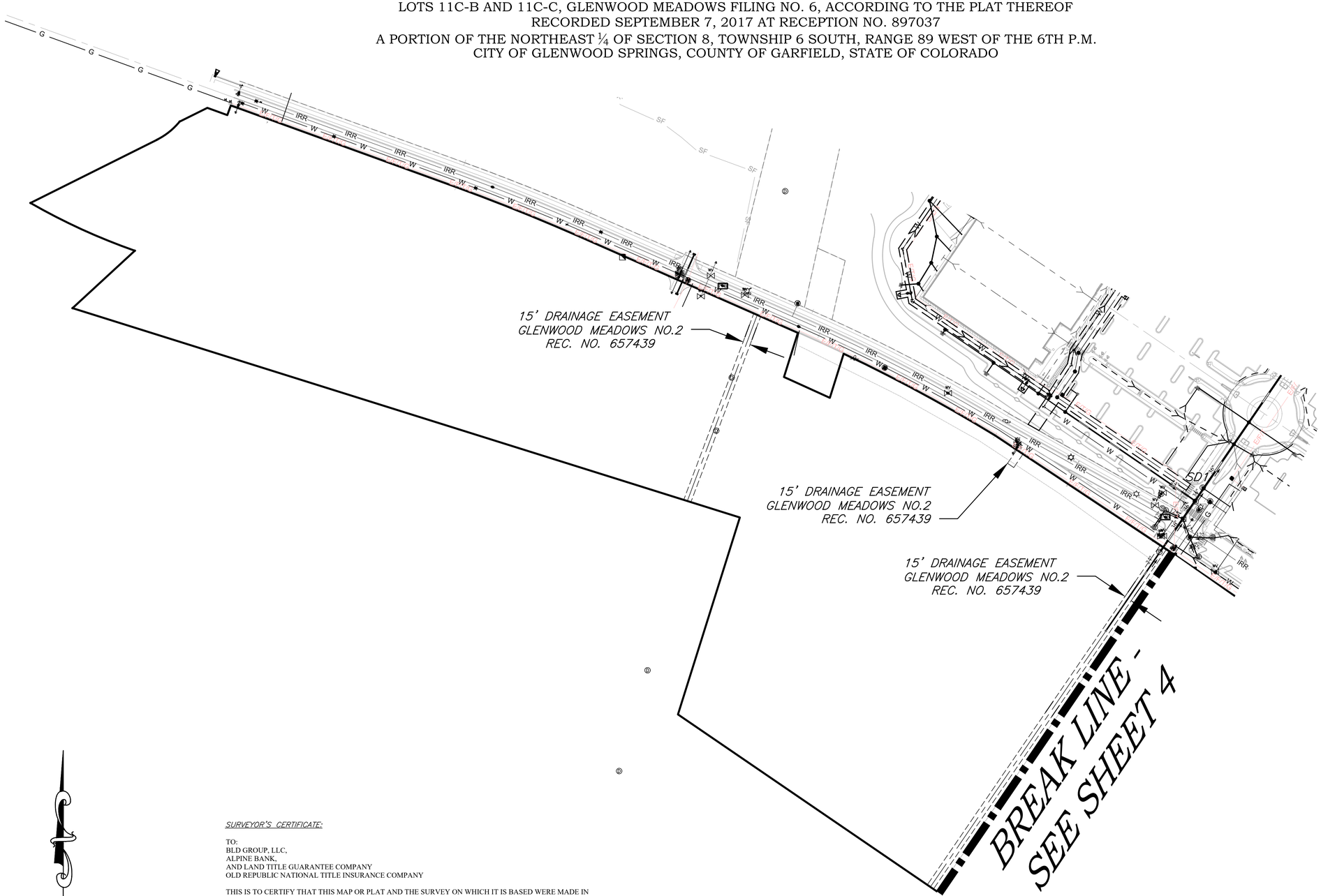
ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



LEGEND

- TV PEDESTAL
- ELECTRICAL TRANS
- CLEAN–OUT
- WATER VALVE
- TELE. PEDESTAL
- ELEC. PEDESTAL
- SET #5 REBAR & CAP L.S. NO. 33638
- FOUND PROPERTY CORNER AS DESCRIBED
- UTILITY POLE/ POWER POLE
- ANCHOR
- TELE. VAULT
- ELECT. VAULT
- LIGHT POLE
- MARKER/ SIGN
- HANDICAP
- FIRE HYDRANT
- WATER SHUTOFF
- GAS VALVE
- SAN. SEWER MH
- ST. SEWER MH
- ELECT. MH
- TELEPHONE MH
- WATER MH
- WATER METER
- GAS METER
- ELECTRICAL METER
- STORM GRATE
- ELECTRIC MARKER
- GAS MARKER
- IRRIGATION VALVE BOX

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

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COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 — DATE

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TUTTLE SURVEYING SERVICES

ALTA/ACSM LAND TITLE SURVEY

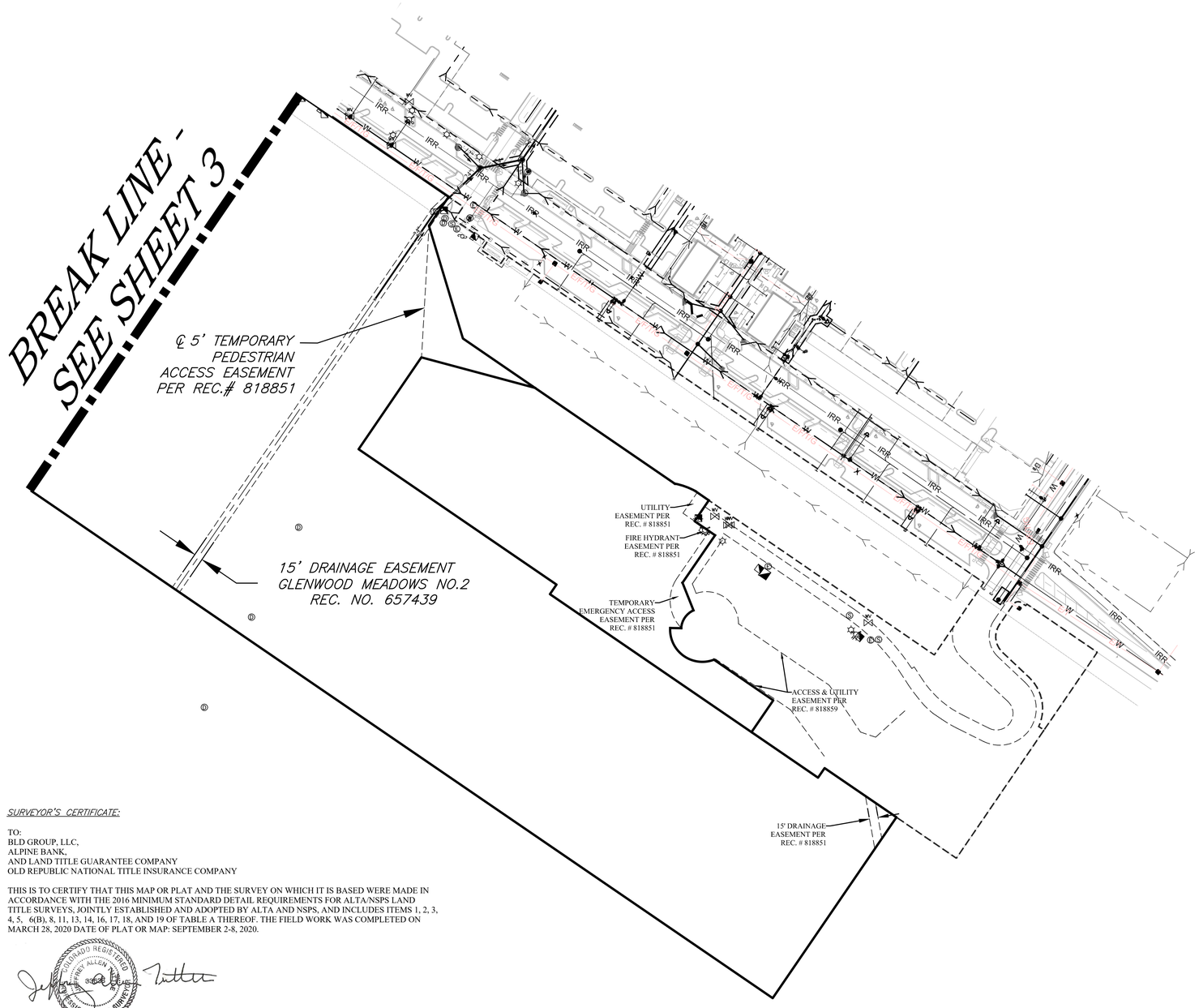
TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

3 OF 4

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



LEGEND

- TV PEDESTAL
- ELECTRICAL TRANS
- CLEAN–OUT
- WATER VALVE
- TELE. PEDESTAL
- ELEC. PEDESTAL
- SET #5 REBAR & CAP L.S. NO. 33638
- FOUND PROPERTY CORNER AS DESCRIBED
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- TELEPHONE MH
- WATER MH
- WATER METER
- GAS METER
- ELECTRICAL METER
- STORM GRATE
- ELECTRIC MARKER
- GAS MARKER
- IRRIGATION VALVE BOX

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
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COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

JEFFREY ALLEN TUTTLE L.S. 33638 — 09/16/2020 DATE

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TUTTLE SURVEYING SERVICES

ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

WULFSOHN RD.

INSTALL NEW LOT 14 CURB CUT ACROSS FORM PROPOSED ACCESS

EXISTING CURB CUT TO BE REMOVED. INSTALL 74–LF, 24–IN STANDARD CURB & GUTTER. EXISTING UTILITY STUBS TO REMAIN

TW: 5887.68
BW: 5882.68

TW: 5893.15
BW: 5888.03

TW: 5882.68
BW: 5876.68

TW: 5886.47
BW: 5880.58

TW: 5883.94
BW: 5878.01

TW: 5881.44
BW: 5877.32

TW: 5912.01
BW: 5906.23

TW: 5917.85
BW: 5915.77

TW: 5923.68
BW: 5919.24

TW: 5938.20
BW: 5934.75

TW: 5938.72
BW: 5923.16

TW: 5919.18
BW: 5917.85

TW: 5922.03
BW: 5919.99

TW: 5940.21
BW: 5938.75

TW: 5928.46
BW: 5928.72

TW: 5945.11
BW: 5941.65

TW: 5944.85
BW: 5938.85

TW: 5938.34
BW: 5932.34

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALUMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.

COLORADO 811
CALL BEFORE YOU DIG
Utility Notification Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG
4	8/13/21	MAJOR SITE / ARCH. REVIEW #4	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE: 8/13/2021
FILE:
SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY GRADING PLAN

SHEET 1

PROJECT NO.
2201044.00

GR1

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY
NOT FOR
CONSTRUCTION

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN-OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT-OF-WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS	SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

NOTES:

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5-8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALUMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.

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Utility Notification Center of Colorado

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2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG
4	8/13/21	MAJOR SITE / ARCH. REVIEW #4	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE: SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY GRADING PLAN
SHEET 2

PROJECT NO.
2201044.00

GR2

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

WULFSOHN RD.

CONNECT TO EXISTING IRRIGATION MAIN PER CITY OF GLENWOOD SPRINGS STANDARDS

CONNECT TO EXISTING WATERMAIN PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING WATERMAIN STUBS TO BE ABANDONED PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING IRRIGATION STUBS TO BE ABANDONED PER CITY OF GLENWOOD SPRINGS STANDARDS

INSTALL NEW MANHOLE ON EXISTING STORM SEWER

249.99'–12" HDPE @ 2.31%

EXISTING CURB CUT TO BE REMOVED

24.06'–12" HDPE @ 1.00%

12.19'–15" HDPE @ 19.23%

CONNECT TO EXISTING STORM SEWER STRUCTURE

116.60'–15" HDPE @ 17.79%

14.00'–12" HDPE @ 2.00%

229.99'–12" HDPE @ 0.75%

229.98'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 2.00%

14.00'–12" HDPE @ 5.70%

EXISTING 24" STORM PIPE "1B"

INSTALL MANHOLE ON EXISTING STORM SEWER

144.48'

134.80'–12" HDPE @ 4.00%

333.20'–12" HDPE @ 1.09%

333.20'–12" HDPE @ 1.09%

400.00'–8" PVC @ 1.10%

227.44'–8" PVC @ 1.10%

8" D.I.P. WATER MAIN

SAN–MH8

SAN–MH7

63.43'–12" HDPE @ 2.24%

24.00'–12" HDPE @ 1.00%

141.58'–12" HDPE @ 6.97%

62.32'–12" HDPE @ 3.62%

24.00'–12" HDPE

95.95'–12" HDPE @ 9.05%

116.56'–12" HDPE @ 10.77%

11.0' TYP.
10. MIN.

6" PVC SANITARY SERVICE, TYP.

6" D.I.P. WATER SERVICE, TYP.

51.17'–12" HDPE @ 4.12%

260.75'–8" PVC @ 1.13%

8" D.I.P. WATER MAIN

SAN–MH14

COMBINED FIRE/DOMESTIC WATER SERVICE CONNECTIONS TO BE NFPA24 COMPLIANT, TYP.

EXISTING STORM SEWER TO BE ABANDONED/REMOVED

358.86' SEE SHEET 2

56.01'–24" HDPE @ 6.00%

38.93'–24" HDPE @ 6.00%

8" D.I.P. WATER MAIN

INSTALL MANHOLE ON EXISTING STORM SEWER

LEGEND

EXISTING	PROPOSED
STORM MANHOLE	WATER SHUTOFF VALVE
SANITARY CLEAN–OUT	WATER VALVE
SANITARY MANHOLE	TEE W/THRUST BLOCK
FIRE HYDRANT	BEND W/THRUST BLOCK
WATER VALVE	FIRE HYDRANT
WATER MANHOLE	INLET
GAS METER	CURB INLET
TELEPHONE PEDESTAL	STORM MANHOLE
LIGHT POLE	SANITARY CLEANOUT
UTILITY POLE	CABLE MANHOLE
SIGN	ELECTRIC VAULT
	ELECTRIC TRANSFORMER

BOUNDARY
RIGHT–OF–WAY
EASEMENT
STRUCTURE
ASPHALT
GRAVEL
CONCRETE
RETAINING WALL
CENTERLINE ROAD
CURB AND GUTTER
FLOWLINE
PAVEMENT STRIPING
WATER MAIN (W)
WATER SERVICE (WS)
SEWER MAIN (S)
SEWER SERVICE (SS)
OVERHEAD ELECTRIC (OE)
ELECTRIC (E)
CATV (CTV)
TELEPHONE (T)
GAS (G)
IRRIGATION (IRR)
STORM SEWER

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALIMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.
4. ALL COMBINED FIRE/DOMESTIC WATER SERVICES SHALL BE NFPA24 COMPLIANT.
5. PUBLICLY DEDICATED UTILITIES SHALL HAVE UTILITY EASEMENT FOR ACCESS AND MAINTENANCE.
6. ALL FIRE HYDRANTS TO HAVE 15' EASEMENT FOR ACCESS AND MAINTENANCE.
7. ALL UTILITY EASEMENTS TO BE SHOW AN FINALIZED ON PERMIT PLANS.
8. ALL WET UTILITIES WILL REQUIRE JOINTS/BELLS WITHIN ENTIRE PROJECT AREA.
9. ALL UNUSED UTILITY STUBS SHALL BE ABANDONED PER COGS STANDARDS.

COLORADO 811 CALL BEFORE YOU DIG Utility Notification Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG
4	8/13/21	MAJOR SITE / ARCH. REVIEW #4	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE: 8/13/2021
FILE:
SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

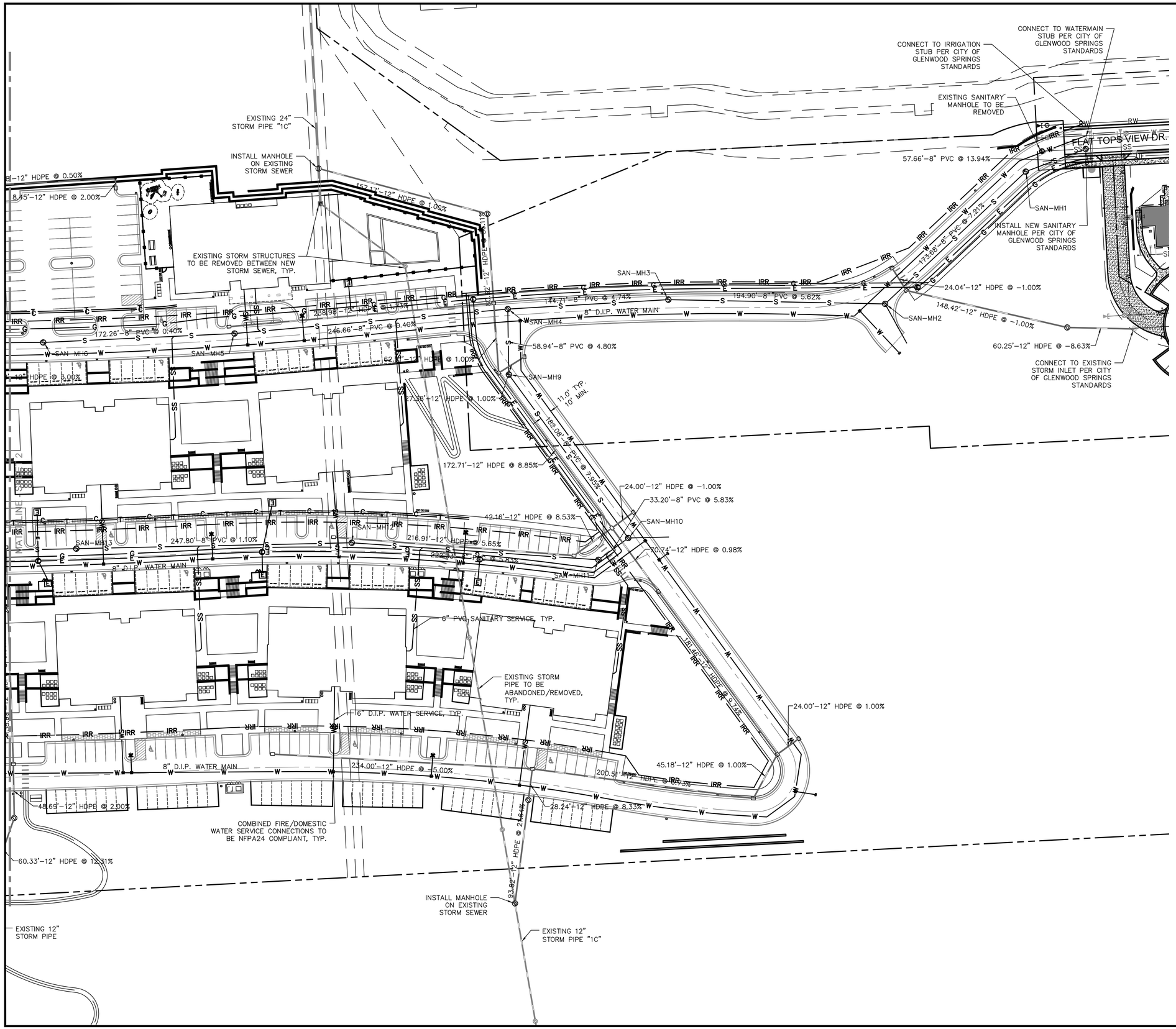
BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN
SHEET 1

PROJECT NO.
2201044.00

UT1



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
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	TELEPHONE PEDESTAL	STORM MANHOLE
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	UTILITY POLE	SANITARY CLEANOUT
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BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
IRRIGATION		IRR
STORM SEWER		

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4	8/13/21	MAJOR SITE / ARCH. REVIEW #4	MGG

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CHECKED BY: MGG
DATE:
FILE: SCALE 1" = 40'

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GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN

SHEET 2

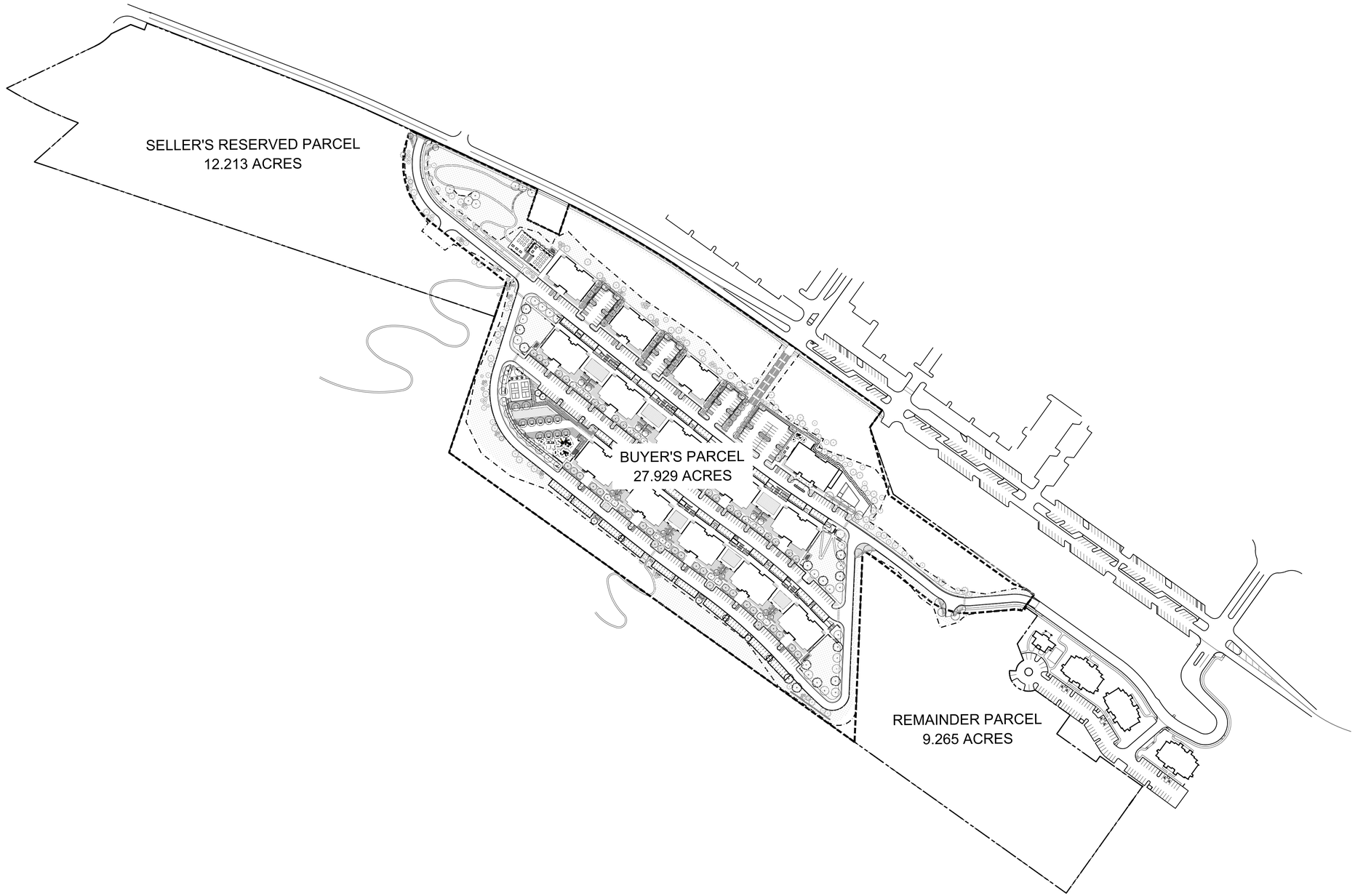
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2201044.00

UT2

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LAYOUT: 11x17
DATE: 10/5/2021 - 10:13AM



DHM DESIGN
311 Main Street
#102
Carbondale, Co. 81623
970.963.6520
www.dhmdesign.com

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NOT FOR CONSTRUCTION

GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

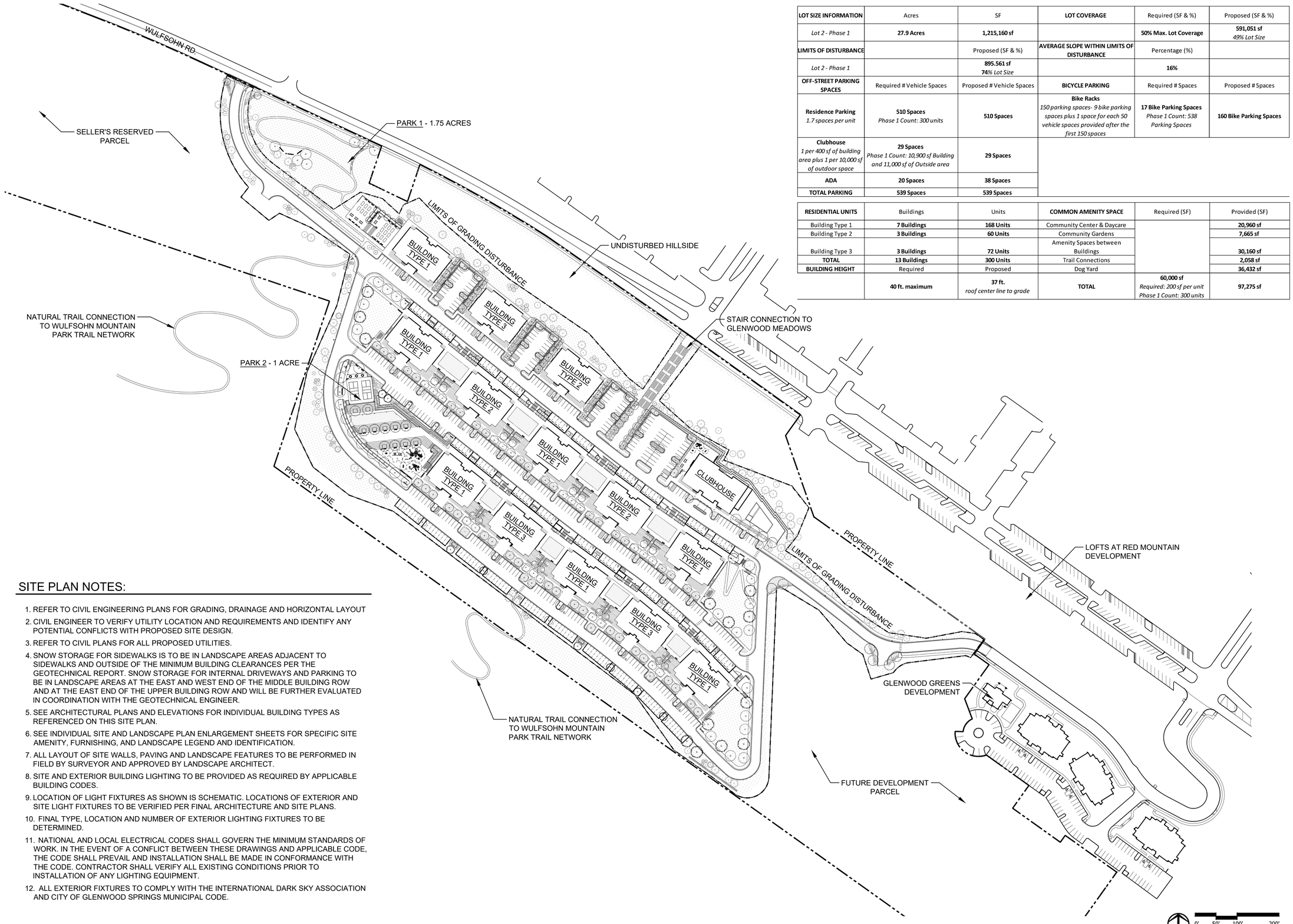
JOB DESCRIPTION:
MAJOR SITE /
ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN

SCALE:

SHEET NUMBER:
L1.0

SHEET_____OF_____



UNIT AND SITE AMENITY DATA:

LOT SIZE INFORMATION	Acres	SF	LOT COVERAGE	Required (SF & %)	Proposed (SF & %)
Lot 2 - Phase 1	**27.9 Acres**	**1,215,160 sf**		**50% Max. Lot Coverage**	**591,051 sf** *49% Lot Size*
LIMITS OF DISTURBANCE		Proposed (SF & %)	**AVERAGE SLOPE WITHIN LIMITS OF DISTURBANCE**	Percentage (%)	
Lot 2 - Phase 1		**895.561 sf** **74**% *Lot Size*		**16%**	
OFF-STREET PARKING SPACES	Required # Vehicle Spaces	Proposed # Vehicle Spaces	**BICYCLE PARKING**	Required # Spaces	Proposed # Spaces
Residence Parking *1.7 spaces per unit*	**510 Spaces** *Phase 1 Count: 300 units*	**510 Spaces**	**Bike Racks** *150 parking spaces- 9 bike parking spaces plus 1 space for each 50 vehicle spaces provided after the first 150 spaces*	**17 Bike Parking Spaces** *Phase 1 Count: 538 Parking Spaces*	**160 Bike Parking Spaces**
Clubhouse *1 per 400 sf of building area plus 1 per 10,000 sf of outdoor space*	**29 Spaces** *Phase 1 Count: 10,900 sf Building and 11,000 sf of Outside area*	**29 Spaces**			
ADA	**20 Spaces**	**38 Spaces**			
TOTAL PARKING	**539 Spaces**	**539 Spaces**			

RESIDENTIAL UNITS	Buildings	Units	COMMON AMENITY SPACE	Required (SF)	Provided (SF)
Building Type 1	**7 Buildings**	**168 Units**	Community Center & Daycare		**20,960 sf**
Building Type 2	**3 Buildings**	**60 Units**	Community Gardens		**7,665 sf**
Building Type 3	**3 Buildings**	**72 Units**	Amenity Spaces between Buildings		**30,160 sf**
TOTAL	**13 Buildings**	**300 Units**	Trail Connections		**2,058 sf**
BUILDING HEIGHT	Required	Proposed	Dog Yard		**36,432 sf**
	40 ft. maximum	**37 ft.** *roof center line to grade*	**TOTAL**	**60,000 sf** *Required: 200 sf per unit* *Phase 1 Count: 300 units*	**97,275 sf**

SITE PLAN NOTES:

1. REFER TO CIVIL ENGINEERING PLANS FOR GRADING, DRAINAGE AND HORIZONTAL LAYOUT
2. CIVIL ENGINEER TO VERIFY UTILITY LOCATION AND REQUIREMENTS AND IDENTIFY ANY POTENTIAL CONFLICTS WITH PROPOSED SITE DESIGN.
3. REFER TO CIVIL PLANS FOR ALL PROPOSED UTILITIES.
4. SNOW STORAGE FOR SIDEWALKS IS TO BE IN LANDSCAPE AREAS ADJACENT TO SIDEWALKS AND OUTSIDE OF THE MINIMUM BUILDING CLEARANCES PER THE GEOTECHNICAL REPORT. SNOW STORAGE FOR INTERNAL DRIVEWAYS AND PARKING TO BE IN LANDSCAPE AREAS AT THE EAST AND WEST END OF THE MIDDLE BUILDING ROW AND AT THE EAST END OF THE UPPER BUILDING ROW AND WILL BE FURTHER EVALUATED IN COORDINATION WITH THE GEOTECHNICAL ENGINEER.
5. SEE ARCHITECTURAL PLANS AND ELEVATIONS FOR INDIVIDUAL BUILDING TYPES AS REFERENCED ON THIS SITE PLAN.
6. SEE INDIVIDUAL SITE AND LANDSCAPE PLAN ENLARGEMENT SHEETS FOR SPECIFIC SITE AMENITY, FURNISHING, AND LANDSCAPE LEGEND AND IDENTIFICATION.
7. ALL LAYOUT OF SITE WALLS, PAVING AND LANDSCAPE FEATURES TO BE PERFORMED IN FIELD BY SURVEYOR AND APPROVED BY LANDSCAPE ARCHITECT.
8. SITE AND EXTERIOR BUILDING LIGHTING TO BE PROVIDED AS REQUIRED BY APPLICABLE BUILDING CODES.
9. LOCATION OF LIGHT FIXTURES AS SHOWN IS SCHEMATIC. LOCATIONS OF EXTERIOR AND SITE LIGHT FIXTURES TO BE VERIFIED PER FINAL ARCHITECTURE AND SITE PLANS.
10. FINAL TYPE, LOCATION AND NUMBER OF EXTERIOR LIGHTING FIXTURES TO BE DETERMINED.
11. NATIONAL AND LOCAL ELECTRICAL CODES SHALL GOVERN THE MINIMUM STANDARDS OF WORK. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND APPLICABLE CODE, THE CODE SHALL PREVAIL AND INSTALLATION SHALL BE MADE IN CONFORMANCE WITH THE CODE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INSTALLATION OF ANY LIGHTING EQUIPMENT.
12. ALL EXTERIOR FIXTURES TO COMPLY WITH THE INTERNATIONAL DARK SKY ASSOCIATION AND CITY OF GLENWOOD SPRINGS MUNICIPAL CODE.

IMAGES
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X-ORTHOPHOTO [\\Vail\V-SITE IMPROVEMENTS\ORTHOPHOTO\ORTHOPHOTO_PHASE 1.dwg]
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NAME
Insert GLENWOOD MEADOWS APARTMENTS-2019\6_Land Use Permit Revisions\CAD Drawings\SITE PLAN SUBMITTAL.dwg
Layout: Site Plan - Color

DHM DESIGN
311 Main Street
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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
DEVELOPMENT AREA SITE PLAN

SCALE:

SHEET NUMBER:
L1.1

SHEET____OF____

LANDSCAPE AREA:

OPEN SPACE	SQUARE FOOTAGE	TREES		SHRUBS	
		REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Upper tier - disturbed	87,483 SF	73	74	219	366
Lower tier - disturbed	79,351 SF	66	66	198	285

INTERNAL DRIVEWAY	LINEAR FEET	TREES	
		REQUIRED *(1/35 LF)*	PROVIDED
Flat Tops View Dr (Sunny Aspen)	2,071 LF	59	60
Wolf Liam Lane	1,735 LF	50	50
Adios Avenue	1,748 LF	50	50

PARKING AREAS	Total Parking Area (SF)	Landscaped Area (SF & %)	TREES		SHRUBS	
			REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Parking Lots	29,694 SF	10,485 SF *(35% of the parking area)*	25	40	74	240

TOTAL LANDSCAPED AREA	Proposed (SF & %)	OPEN SPACE	Required (SF & %)	Proposed (SF & %)
	304,510 sf *25% Lot Size*		**486,064 sf** *40% Lot Size*	**504,083 sf** *41.5% Lot Size*

TOTAL IMPERVIOUS AREA	Proposed (SF & %)
	591,051 sf *49% Lot Size*

L1.3

L1.4

L1.5

L1.6

L1.7

L1.8

L1.9

0' 50' 100' 200'
Scale: 1" = 100'

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REVISIONS:

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MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT KEY PLAN

SCALE:

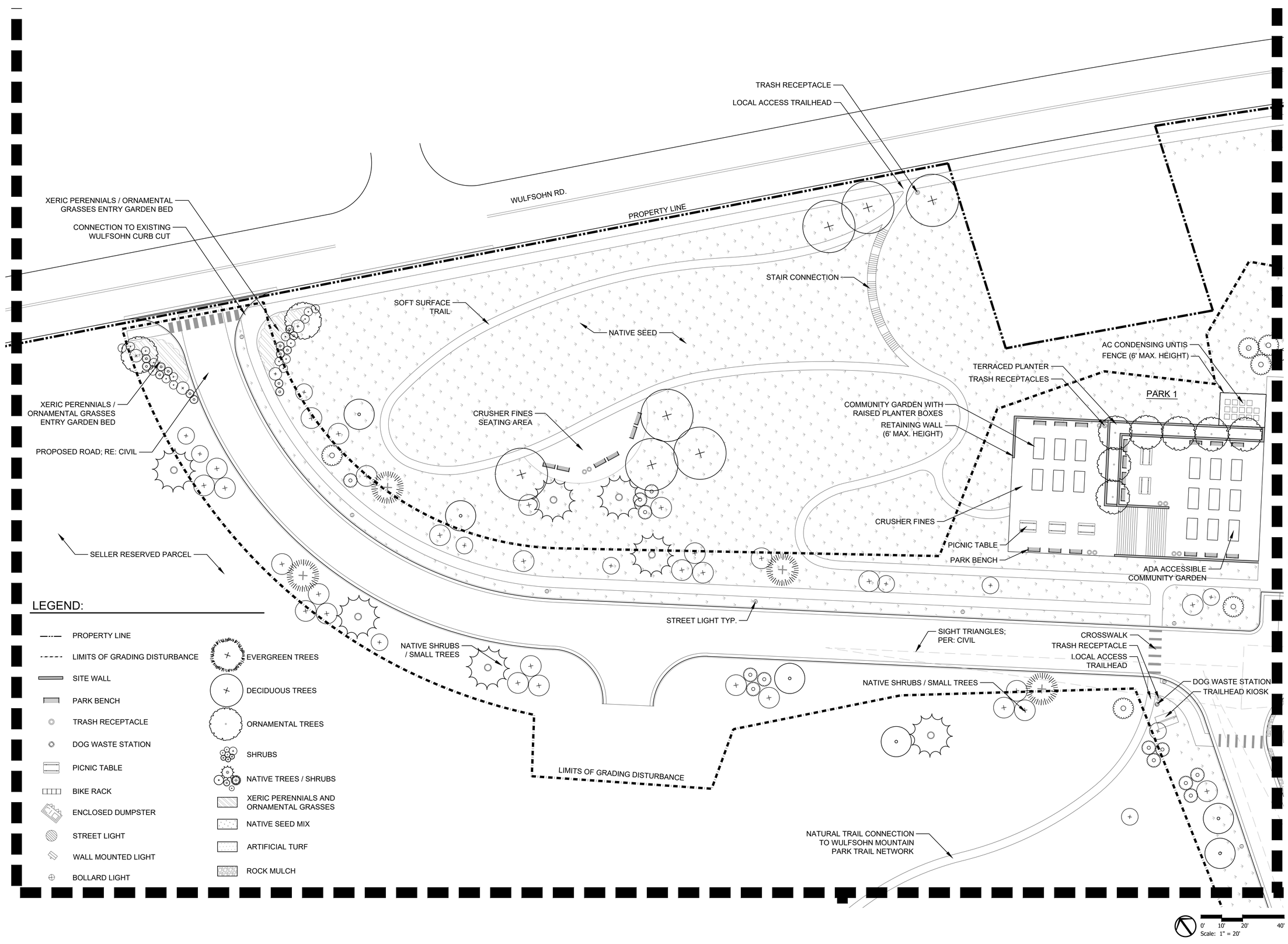
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L1.2

SHEET_____OF_____

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LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.3

SHEET_____OF_____

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WULFSOHN RD.

PROPERTY LINE

WULFSOHN SIDEWALK

NATIVE SEED

EXISTING LANDSCAPE TO REMAIN

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

LIMITS OF GRADING DISTURBANCE

NATIVE TREES AND SHRUBS TO SCREEN RETAINING WALLS AT PARKING

NATIVE TREES AND SHRUBS TYP.

NATIVE REVEGETATION AREA

NATIVE TREES AND SHRUBS TYP.

MATCHLINE: REFERENCE SHEET L1.3

SIDEWALK

RETAINING WALL (6' MAX. HEIGHT)

AC CONDENSING UNITS

BUILDING TYPE 1

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

ROCK MULCH TYP.

BIKE RACK

RESIDENT PARKING LOT

19'-0" TYP.

9'-0" TYP.

ROCK MULCH TYP.

BUILDING TYPE 3

SIDEWALK

RETAINING WALL (6' MAX. HEIGHT)

AC CONDENSING UNITS

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

SIDEWALK

ROCK MULCH TYP.

BUILDING TYPE 2

BIKE RACK

RESIDENT PARKING LOT

MATCHLINE: REFERENCE SHEET L1.5

SIGHT TRIANGLES; PER: CIVIL

MAILBOXES

SIDEWALK

STREET LIGHT TYP.

STREET PARKING

MOUNTED STREETLIGHT TYP.

ENCLOSED BICYCLE PARKING AREA

SHRUBS TO SCREEN DUMPSTERS TYP.

WALL MOUNTED STREET LIGHT TYP.

ENCLOSED BICYCLE PARKING AREA

DUMPSTER ENCLOSURE

TERRACED PLANTERS

DOG WASTE STATION

SIDEWALK

BOLLARD LIGHT TYP.

COVERED GARAGE / PARKING BELOW; RE: ARCH

RETAINING WALL (6' MAX. HEIGHT)

STAIRCASE

COVERED GARAGE / PARKING BELOW; RE: ARCH

PARK BENCH

DOG YARD

RETAINING WALL (6' MAX. HEIGHT)

STAIRCASE

BUILDING TYPE 1

ARTIFICIAL TURF

ROCK MULCH TYP.

BUILDING TYPE 2

ARTIFICIAL TURF

BUILDING TYPE 1

TERRACED PLANTERS

MATCHLINE: REFERENCE SHEET L1.7

MATCHLINE: REFERENCE SHEET L1.8

0' 10' 20' 40'

Scale: 1" = 20'

DHM DESIGN
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www.dhmdesign.com

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.4

SHEET____OF____

WULFSOHN RD.

WULFSOHN SIDEWALK

ENTRY PLANTING WITH XERIC PERENNIALS AND ORNAMENTAL GRASSES

NATIVE SEED

PLANTER TYP.

BOLLARD LIGHT TYP.

STAIRCASE

LIMITS OF GRADING DISTURBANCE

XERIC PERENNIALS AND ORNAMENTAL GRASSES

EXISTING LANDSCAPE TO REMAIN

PROPERTY LINE

RETAINING WALL (6' MAX. HEIGHT)

MATCHLINE: REFERENCE SHEET L1.4

CLUBHOUSE / DAYCARE PARKING LOT

RESIDENT PARKING LOT

19'-0" TYP.

9'-0" TYP.

19'-0" TYP.

9'-0" TYP.

19'-0" TYP.

11'-0" TYP.

39'-0"

38'-0"

19'-0"

9'-0" TYP.

13'-6"

38'-0"

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

GARAGE / PARKING BELOW; RE: ARCH

ENCLOSED BICYCLE PARKING AREA

DAYCARE PLAYGROUND (AGES 2-5)

FENCE (6' MAX. HEIGHT)

AC CONDENSING UNITS

CLUBHOUSE

GATE

MAILBOXES

BIKE RACK

19'-0" TYP.

30'-4"

19'-0" TYP.

9'-0" TYP.

33'-6"

CLUBHOUSE AND DAYCARE COVERED DROP OFF AREA

ENCLOSED BICYCLE PARKING AREA

COVERED GARAGE / PARKING BELOW; RE: ARCH

TERRACED PLANTERS

RETAINING WALL (6' MAX. HEIGHT)

ROCK MULCH TYP.

BUILDING TYPE 1

ARTIFICIAL TURF

BUILDING TYPE 2

ARTIFICIAL TURF

BUILDING TYPE 1

RETAINING WALL (6' MAX. HEIGHT)

MATCHLINE: REFERENCE SHEET L1.8

RETAINING WALL (6' MAX. HEIGHT)

NATIVE TREES AND SHRUBS TYP.

POOL DECK

FENCE (6' MAX. HEIGHT)

POOL

SPA

BIKE RACK

19'-0" TYP.

9'-0" TYP.

9'-0" TYP.

SIGHT TRIANGLES; PER: CIVIL

SIGHT TRIANGLES; PER: CIVIL

SIDEWALK

MAILBOXES

ENCLOSED BICYCLE PARKING AREA

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

BOLLARD LIGHT TYP.

DOG WASTE STATION

MATCHLINE: REFERENCE SHEET L1.6

MATCHLINE: REFERENCE SHEET L1.9

0' 10' 20' 40'

Scale: 1" = 20'

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

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REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.5

SHEET____OF____

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LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
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- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

MATCHLINE: REFERENCE SHEET L1.5

PROPERTY LINE

UNDISTURBED HILLSIDE

EXISTING RED MOUNTAIN LOFTS DEVELOPMENT

GLENWOOD GREENS DEVELOPMENT

NATIVE TREES AND SHRUBS TYP.

SIDEWALK

STREET LIGHT TYP.

ENTRY ROAD; RE: CIVIL

FUTURE DEVELOPMENT PARCEL

SIGHT TRIANGLES; PER: CIVIL

SIGHT TRIANGLES; PER: CIVIL

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

NATIVE SEED

SIGHT TRIANGLES; PER: CIVIL

LIMITS OF GRADING DISTURBANCE

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

CONNECTION POINT FOR FUTURE DEVELOPMENT ROAD

MATCHLINE: REFERENCE SHEET L1.9

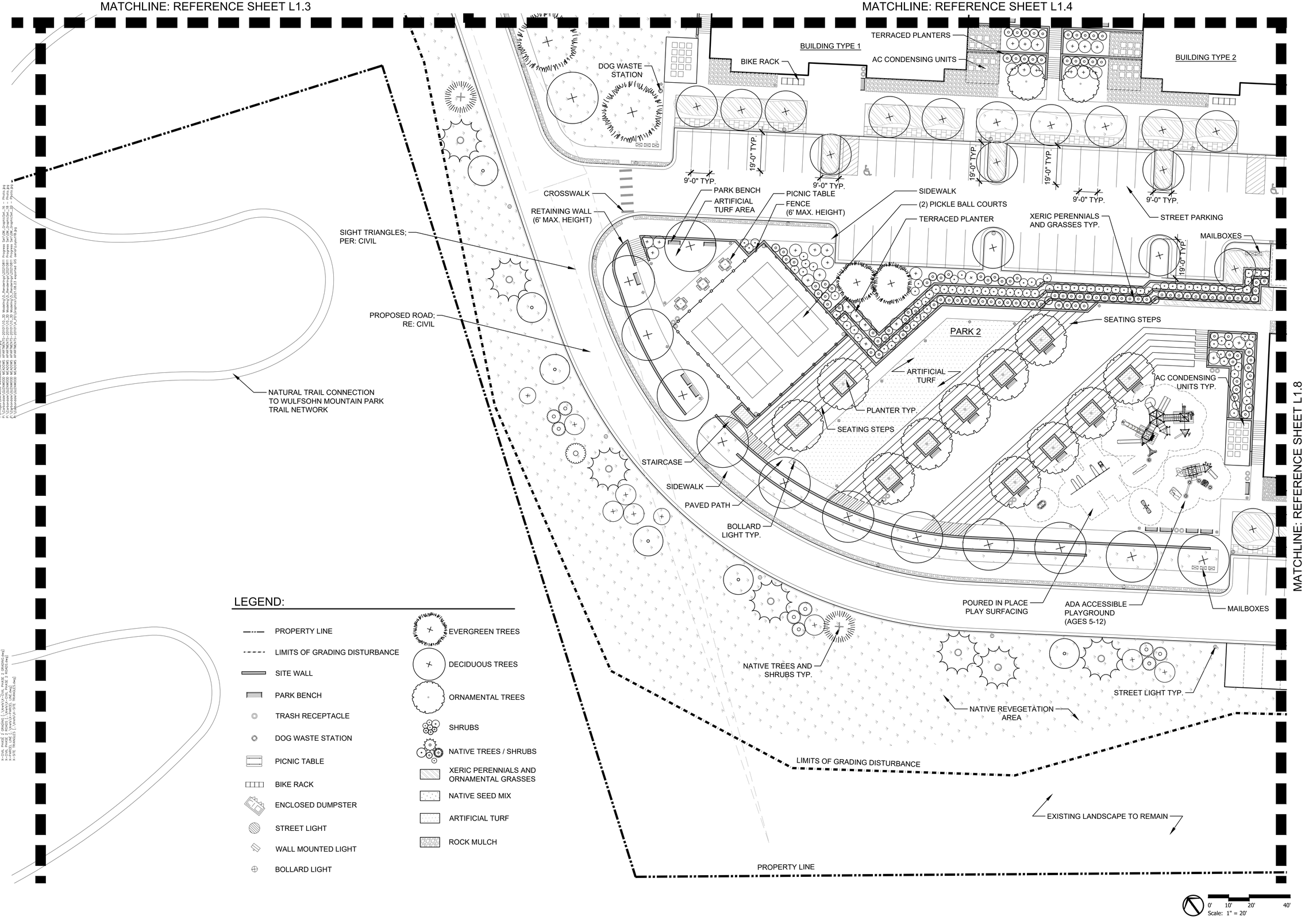
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MATCHLINE: REFERENCE SHEET L1.3

MATCHLINE: REFERENCE SHEET L1.4

MATCHLINE: REFERENCE SHEET L1.8



LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

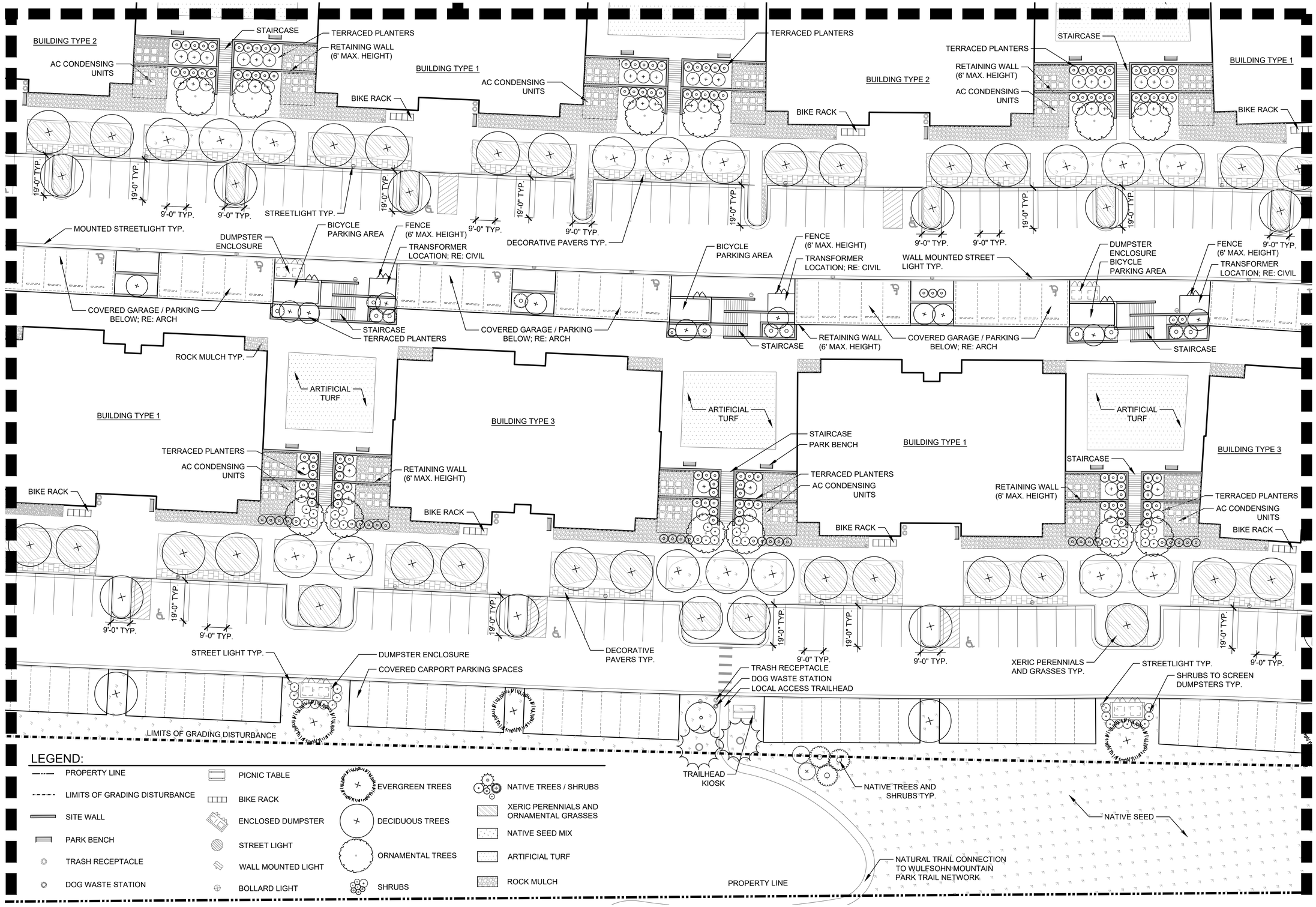
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SHEET NUMBER:
L1.7

SHEET____OF____

MATCHLINE: REFERENCE SHEET L1.4

MATCHLINE: REFERENCE SHEET L1.5



MATCHLINE: REFERENCE SHEET L1.7

MATCHLINE: REFERENCE SHEET L1.9

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
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- SHRUBS
- NATIVE TREES / SHRUBS
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- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

0' 10' 20' 40'
Scale: 1" = 20'

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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

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SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

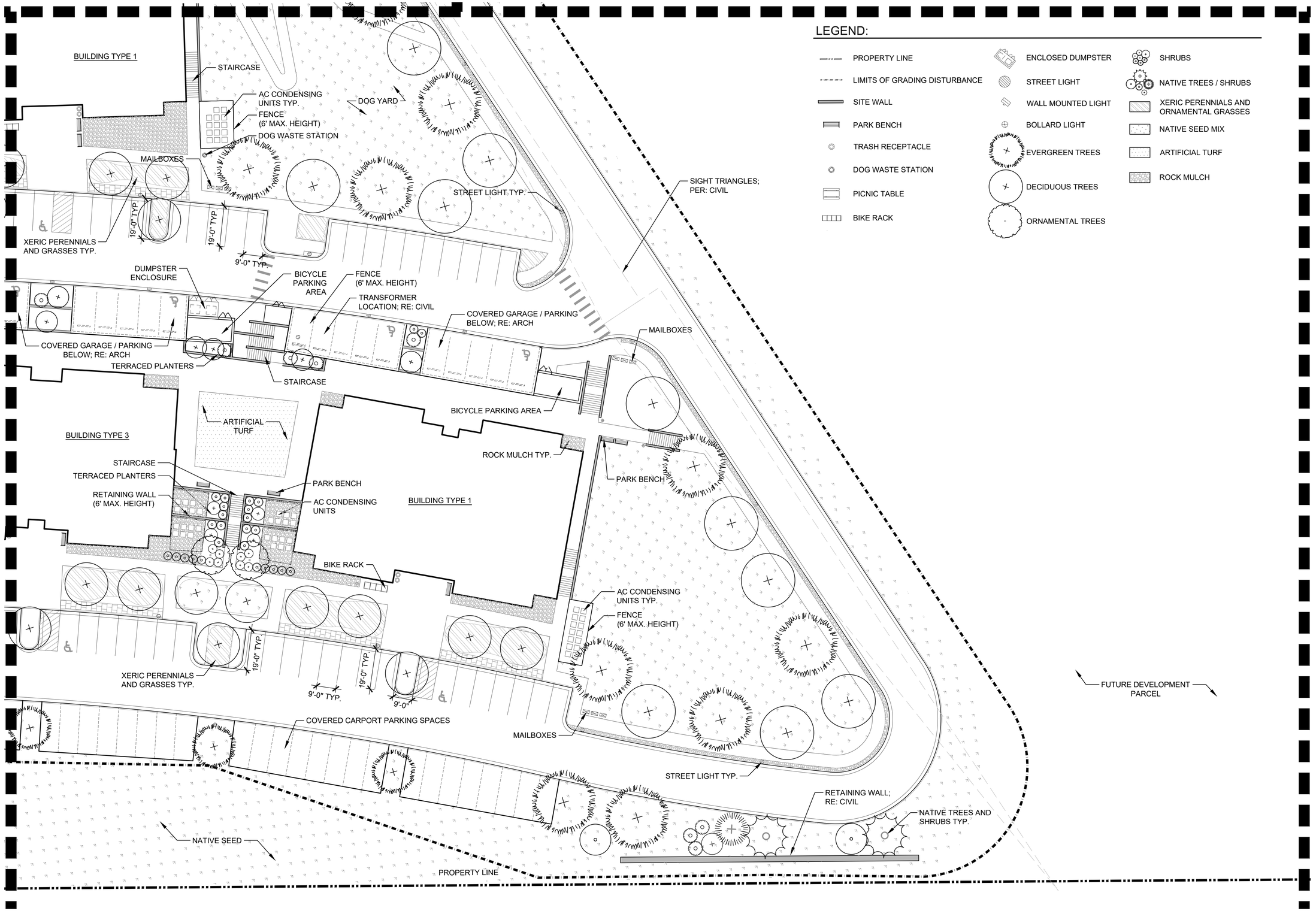
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L1.8

SHEET_____OF_____

MATCHLINE: REFERENCE SHEET L1.5

MATCHLINE: REFERENCE SHEET L1.6

MATCHLINE: REFERENCE SHEET L1.8



LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

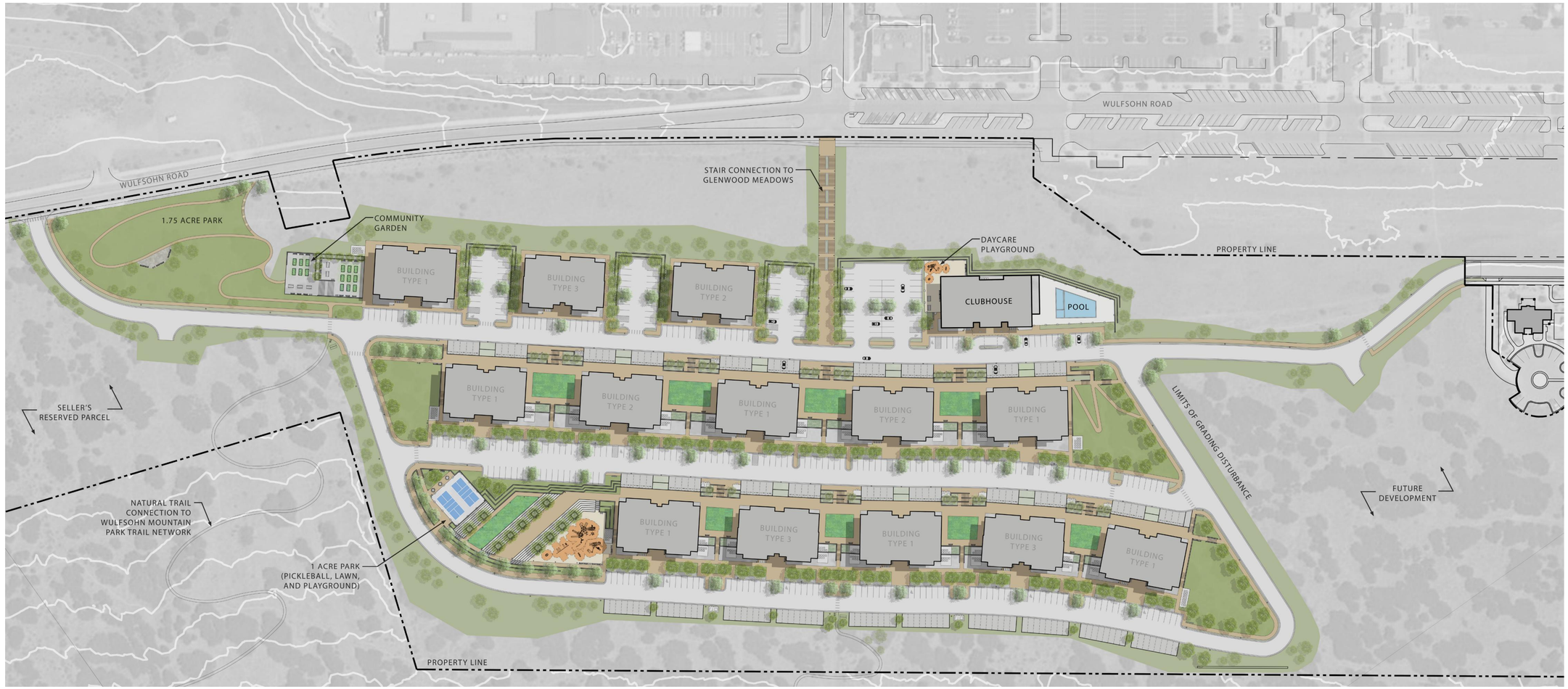
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MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.9

SHEET_____OF_____



0' 40' 80' 160'
Scale: 1" = 80'-0"

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11/5/21 - 10:41 AM - J. Allen

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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN RENDERING

SCALE:

SHEET NUMBER:
EXBT 1

SHEET_____OF_____



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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 2

SHEET_____OF_____

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 3

SHEET_____OF_____



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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 4

SHEET_____OF_____



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Layout:EXBT 5
Date: 10/07/2021 - 10:47:12am

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 5

SHEET_____OF_____



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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE:
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 7

SHEET_____OF_____



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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

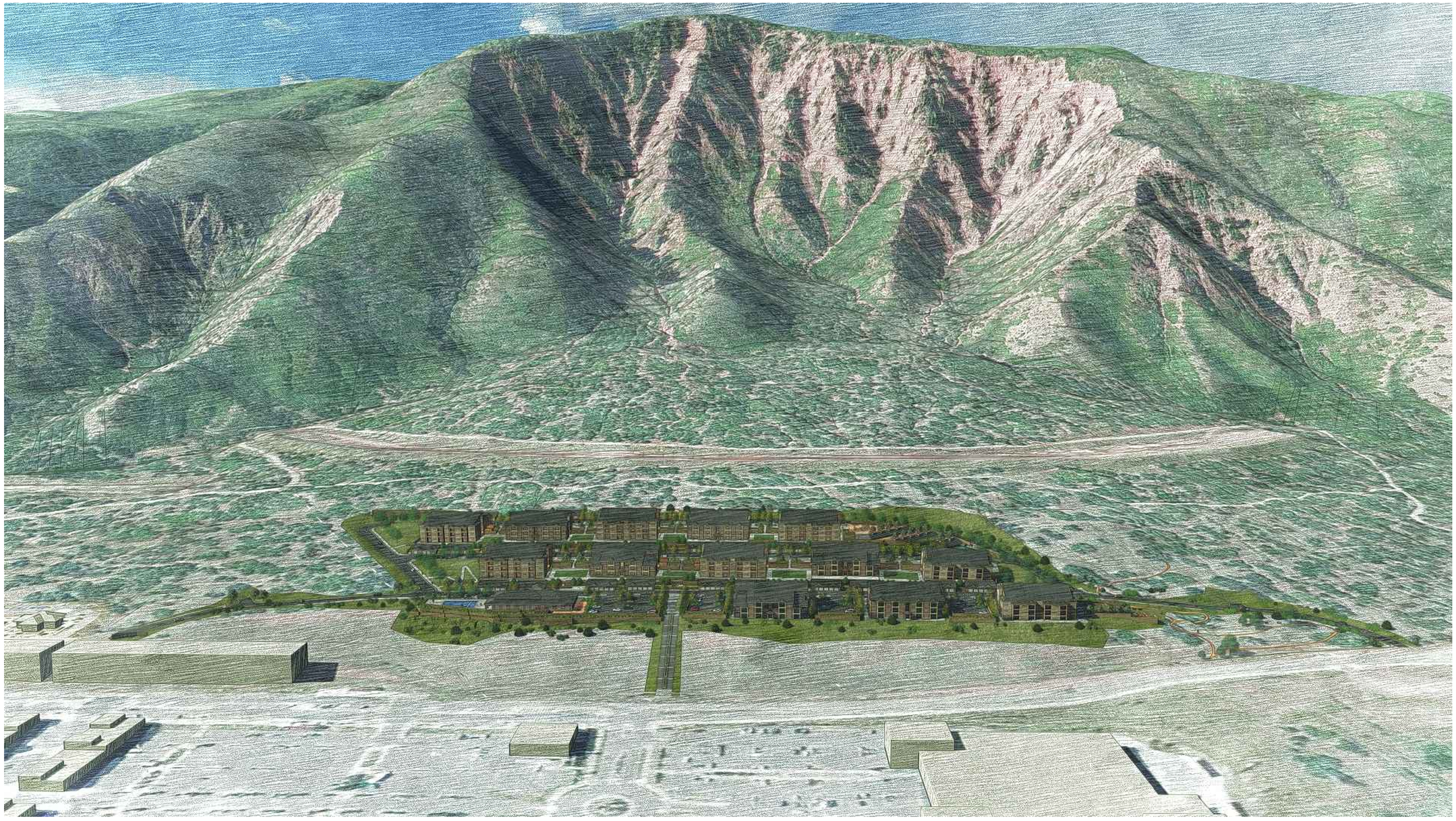
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MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 8

SHEET_____OF_____



NAME
Josh Gilliland, MOORE ARCHITECTS - 2201FY_Land Use Permit Revision1\CAD\Sheets\EXT PLAN_SUBMITTAL.dwg
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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE:
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 9

SHEET_____OF_____

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DATE: Aug 26, 2021 - 2:39pm

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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 10

SHEET_____OF_____



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X-CIVIL [\\Vwts\V-CIVIL.dwg]
X-SITE TRIANGLE [\\Vwts\V-SITE TRIANGLE.dwg]

NAME
I:\Colorado\GLENWOOD MEADOWS APARTMENTS-2019\Land Use Permit Revision\CAD Sheets\SITE PLAN SUBMITAL.dwg
DATE
Fri, Oct 01, 2021 - 10:48am

DHM DESIGN
311 Main Street
#102
Carbondale, Co. 81623
970.963.6520
www.dhmdesign.com

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.10.07

REVISIONS:
SUBMITTAL #4: 2021.08.13
SUBMITTAL #5: 2021.10.07
REVISIONS:

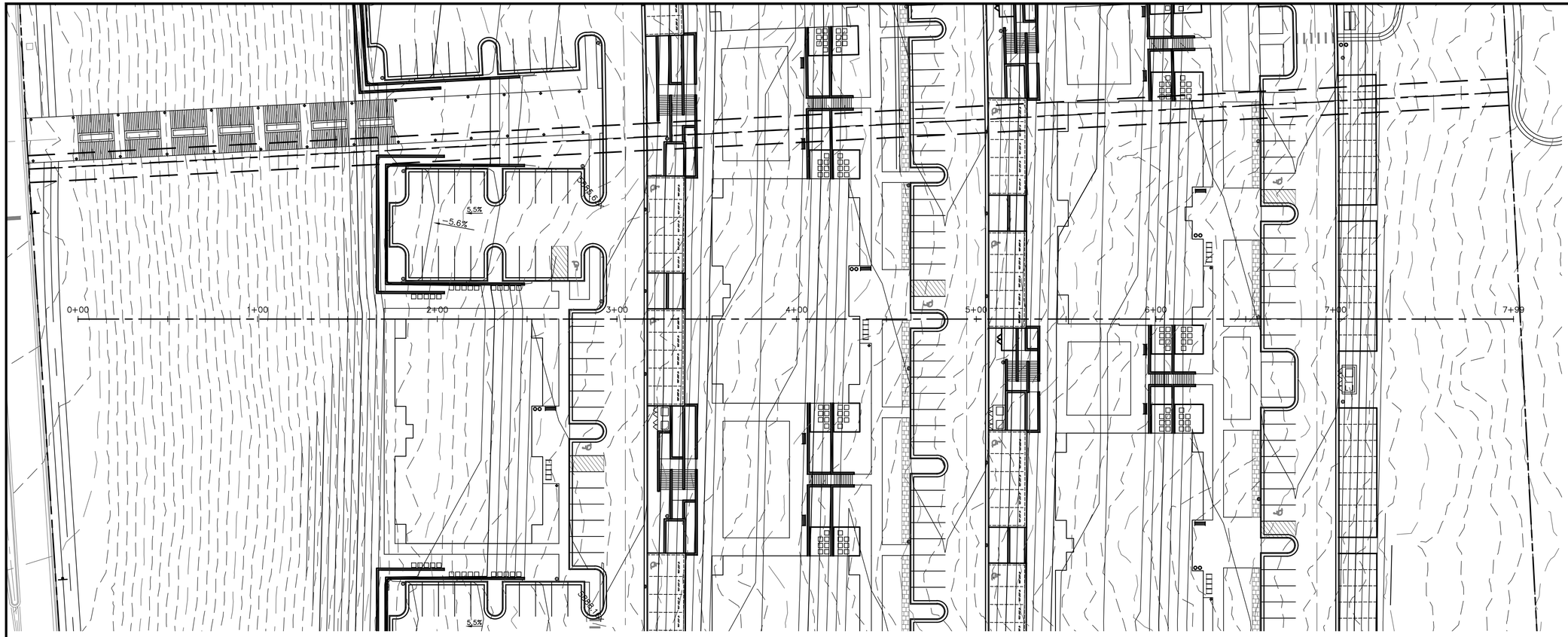
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MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

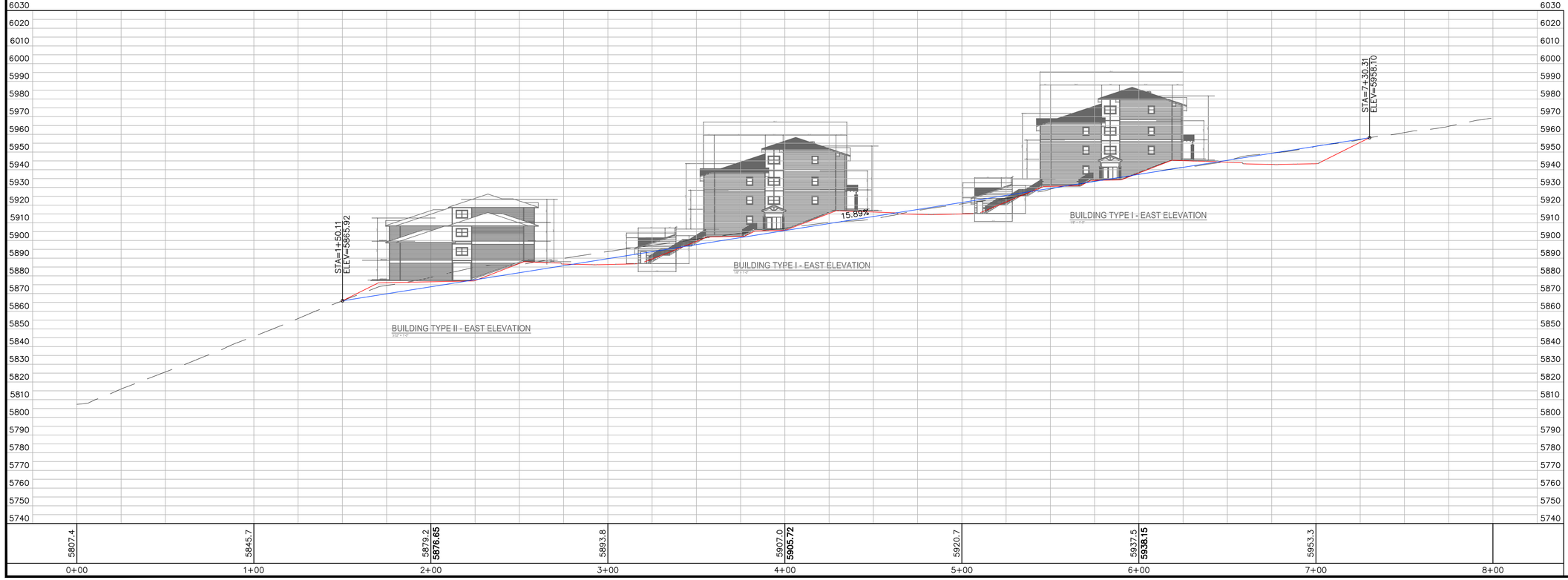
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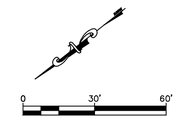
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EXBT 11

SHEET____OF____



SECTION PROFILE





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2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
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WWW.HCENG.COM

BLD GROUP, LLC;
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

SITE SECTIONS
EXHIBIT

PROJECT NO.
2201044.00

EXBT 12,1

SECTION2 PROFILE

PRELIMINARY
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0 30' 60'

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1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
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3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

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SITE SECTIONS
EXHIBIT

PROJECT NO.
2201044.00

EXBT 12.2

SECTION3 PROFILE

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2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

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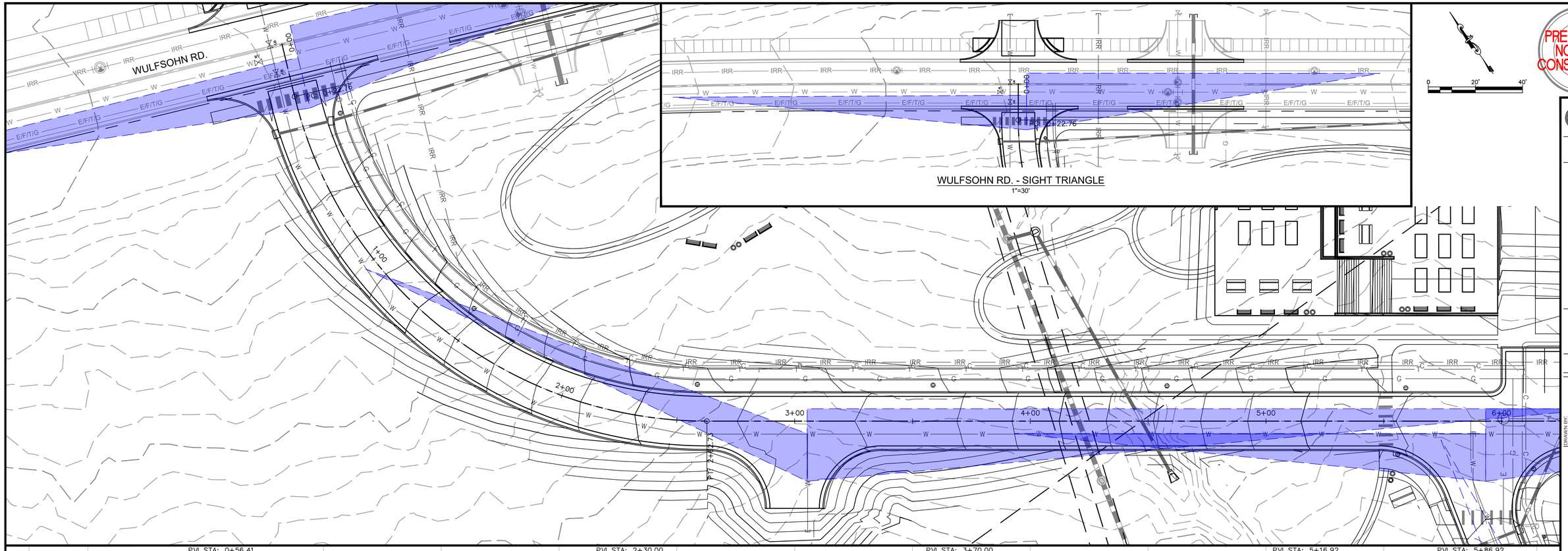
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SITE SECTIONS
EXHIBIT

PROJECT NO.
2201044.00

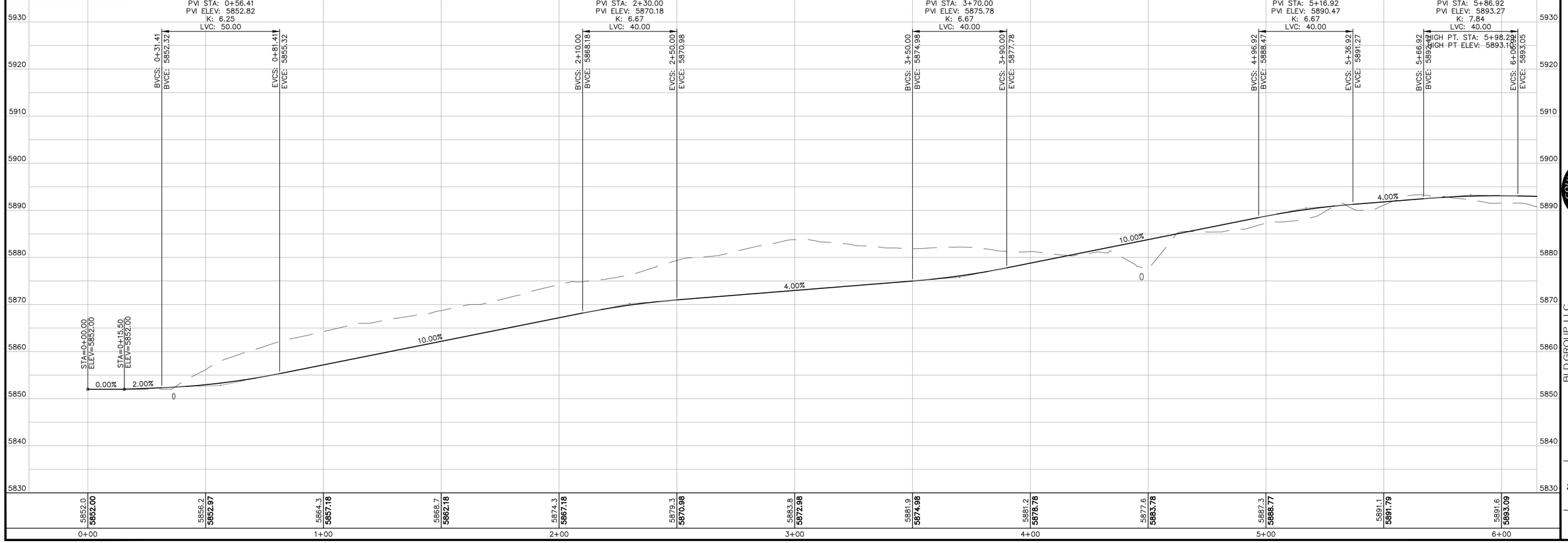
EXBT 12.3



WULFSOHN RD. - SIGHT TRIANGLE
1"=30'

0 20' 40'

PRELIMINARY NOT FOR CONSTRUCTION



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NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

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CHECKED BY: MGG
DATE:
FILE:
SCALE 1" = 20'

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WEST ENTRY PLAN & PROFILE
EXHIBIT

PROJECT NO.
2201044.00

EXBT 13

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

FOR PRELIMINARY REVIEW

TW: 5865.00
BW: 5859.00
TW: 5872.00
BW: 5866.00
TW: 5879.00
BW: 5873.00

5866 5864 5862 5864 5862 5860 5864 5866 5868

5818 5820 5822 5824 5826 5828 5830 5832 5834 5836 5838 5840 5842 5844 5846 5848 5850 5852 5854 5856 5858 5860 5862 5864 5866 5868

5824 5826 5828 5830 5832 5834 5836 5838 5840 5842 5844 5846 5848 5850 5852 5854 5856 5858

2.0%

COLORADO 811
CALL BEFORE YOU DIG
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NO.	DATE	REVISION	BY

DRAWN BY: HCE
CHECKED BY: HCE
DATE: MO/DA/YEAR
FILE: FILE

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GLENWOOD MEADOWS MULTI-FAMILY

POOL WALL GRADING EXHIBIT

PROJECT NO.
2201044.00
TASK

EXHBT 14

GLENWOOD SPRINGS

COLORADO

DESCRIPTION OF DRAWINGS

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A 27	Bldg Type-III - Section		

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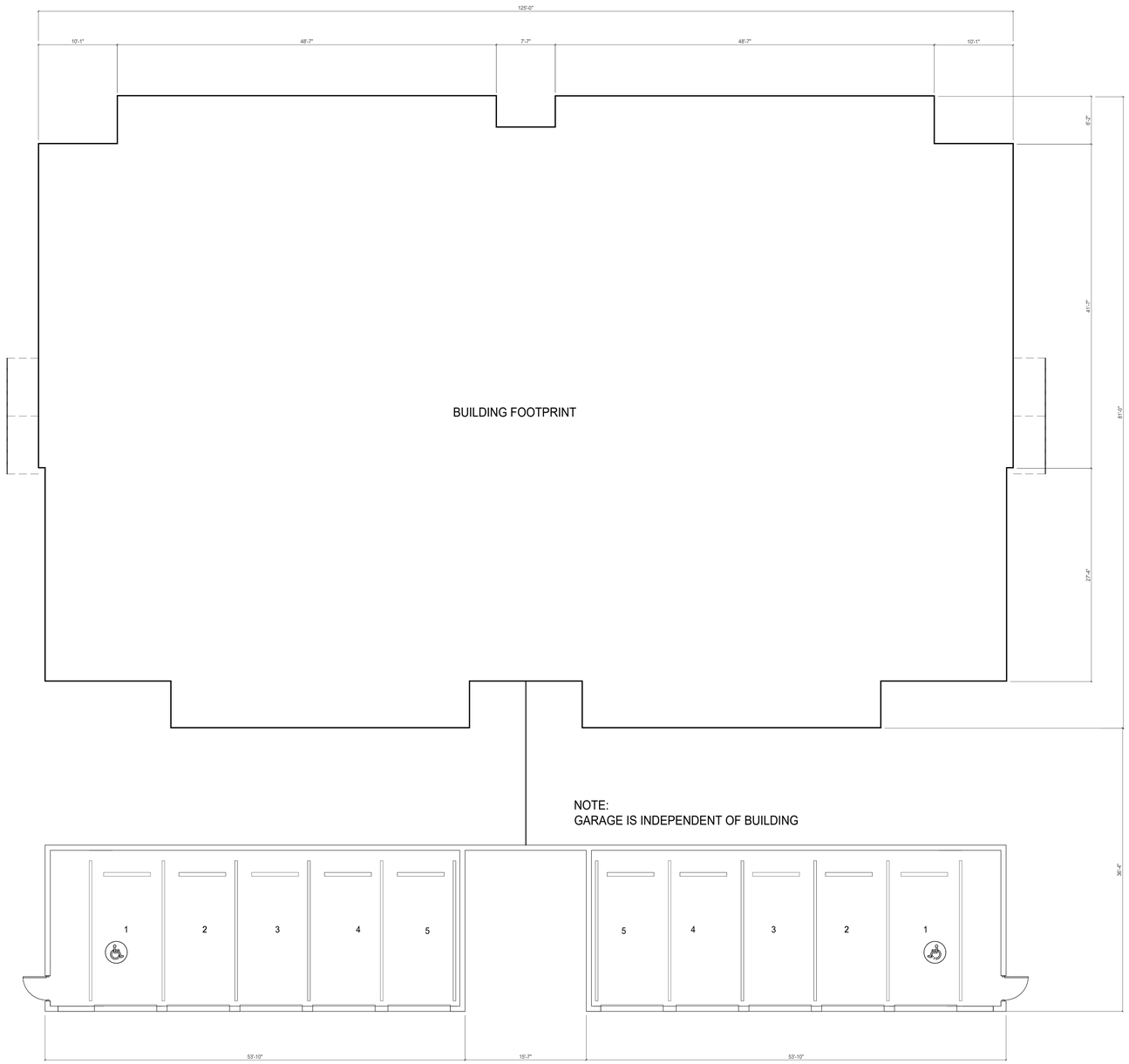
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
1	06/29/2021	
2	07/26/2021	
BY:	RC	
DATE:	12/26/2020	
SCALE:	NTS	

INDEX

A–01



BUILDING TYPE I - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE I				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	5,855	0	1824	4031
1ST LEVEL	9,623	0	1653	7970
2ND LEVEL	9,623	243	1648	7732
3RD LEVEL	5,675	243	1732	3700
TOTAL BUILDING	33,406			23,433
NO. OF BUILDINGS	7			7
TOTAL FOR BUILDING TYPE I	233,842			164,031

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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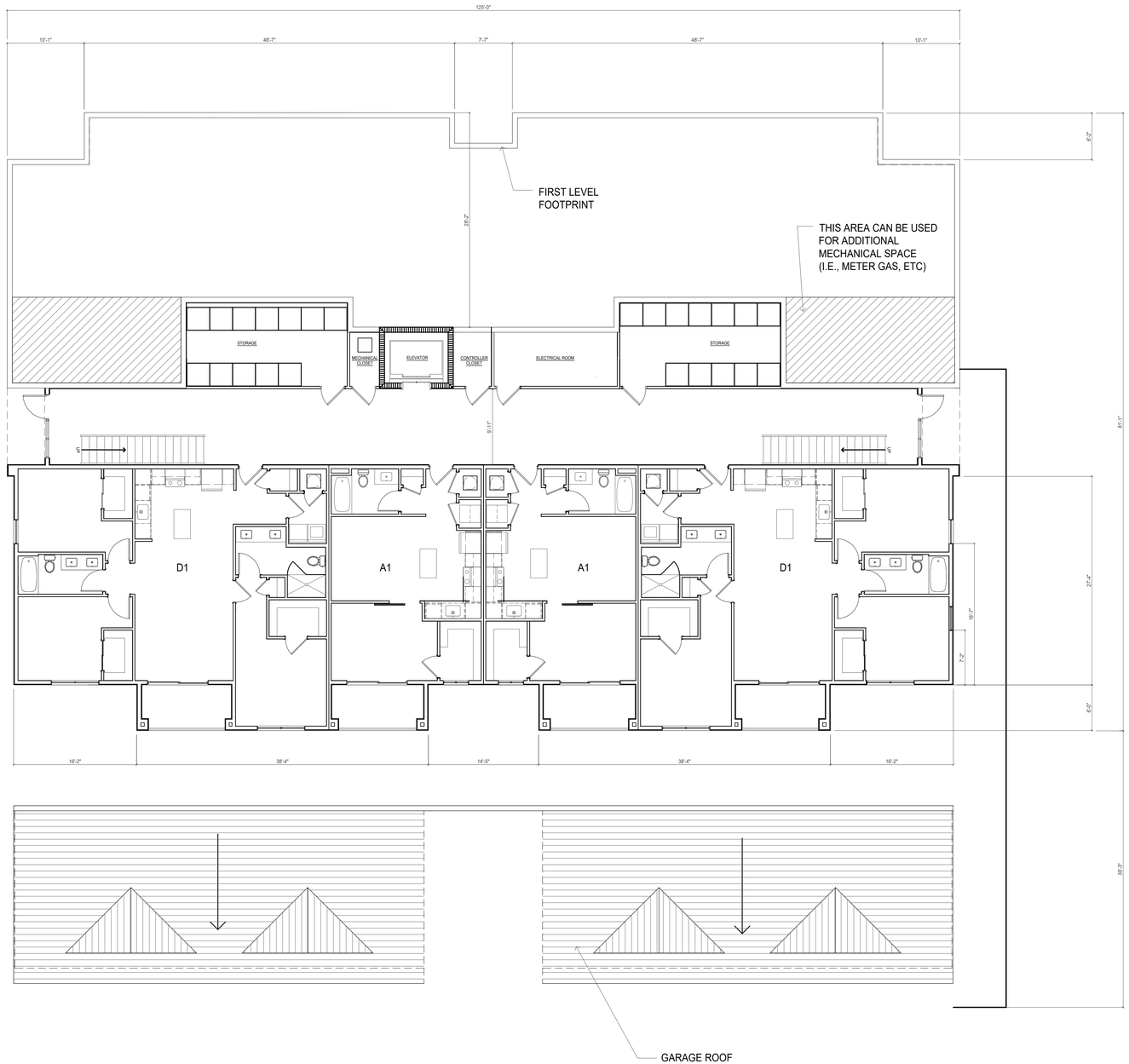
PROJECT:
GLENWOOD SPRINGS
COLORADO

BY	DATE	COMMENT
RC	12/28/2020	
2	07/26/2021	

SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-1



BUILDING TYPE I - LOWER LEVEL

1/8" = 1'-0"

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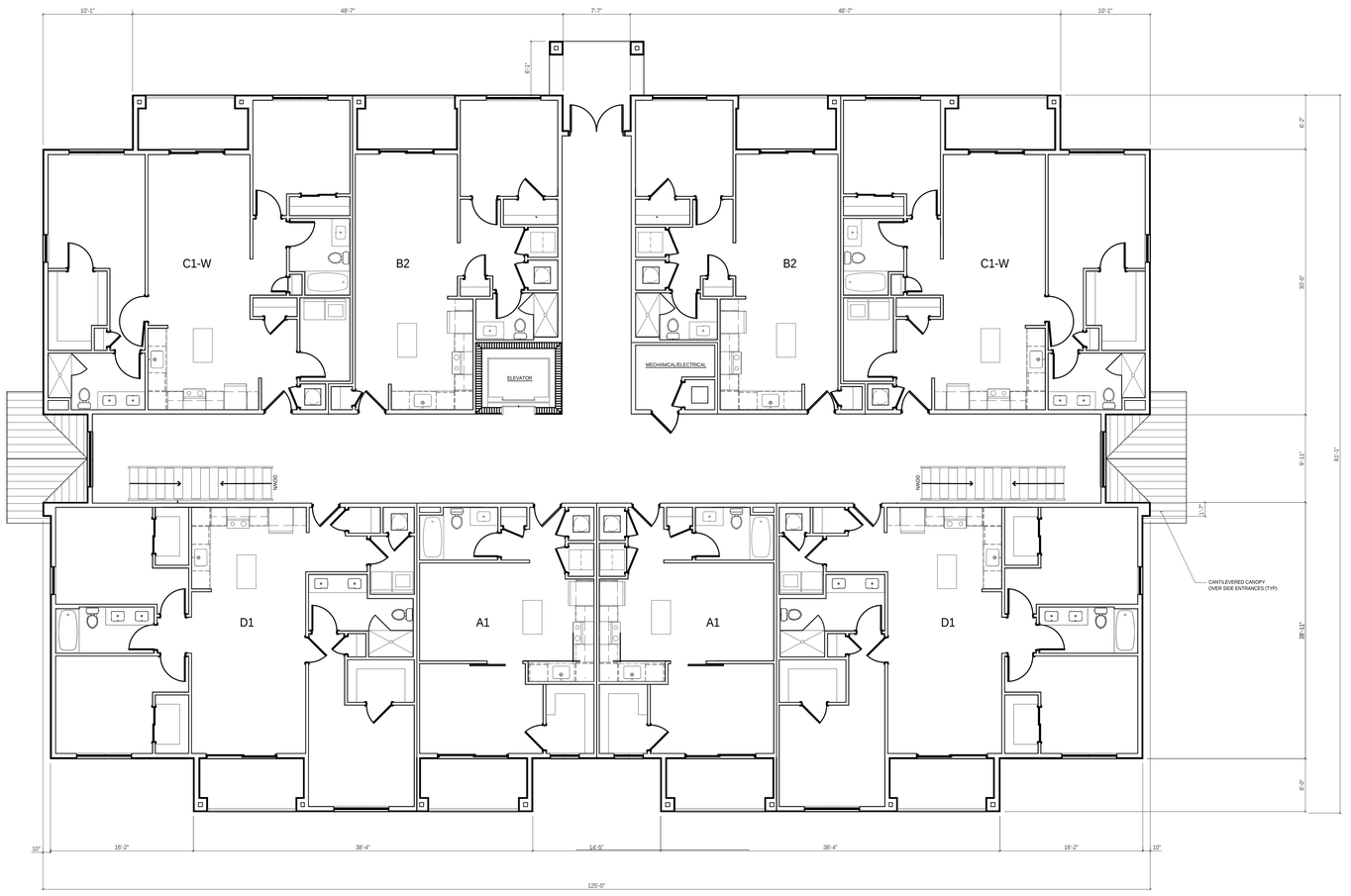
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-2



BUILDING TYPE I - FIRST FLOOR

1/8" = 1'-0"

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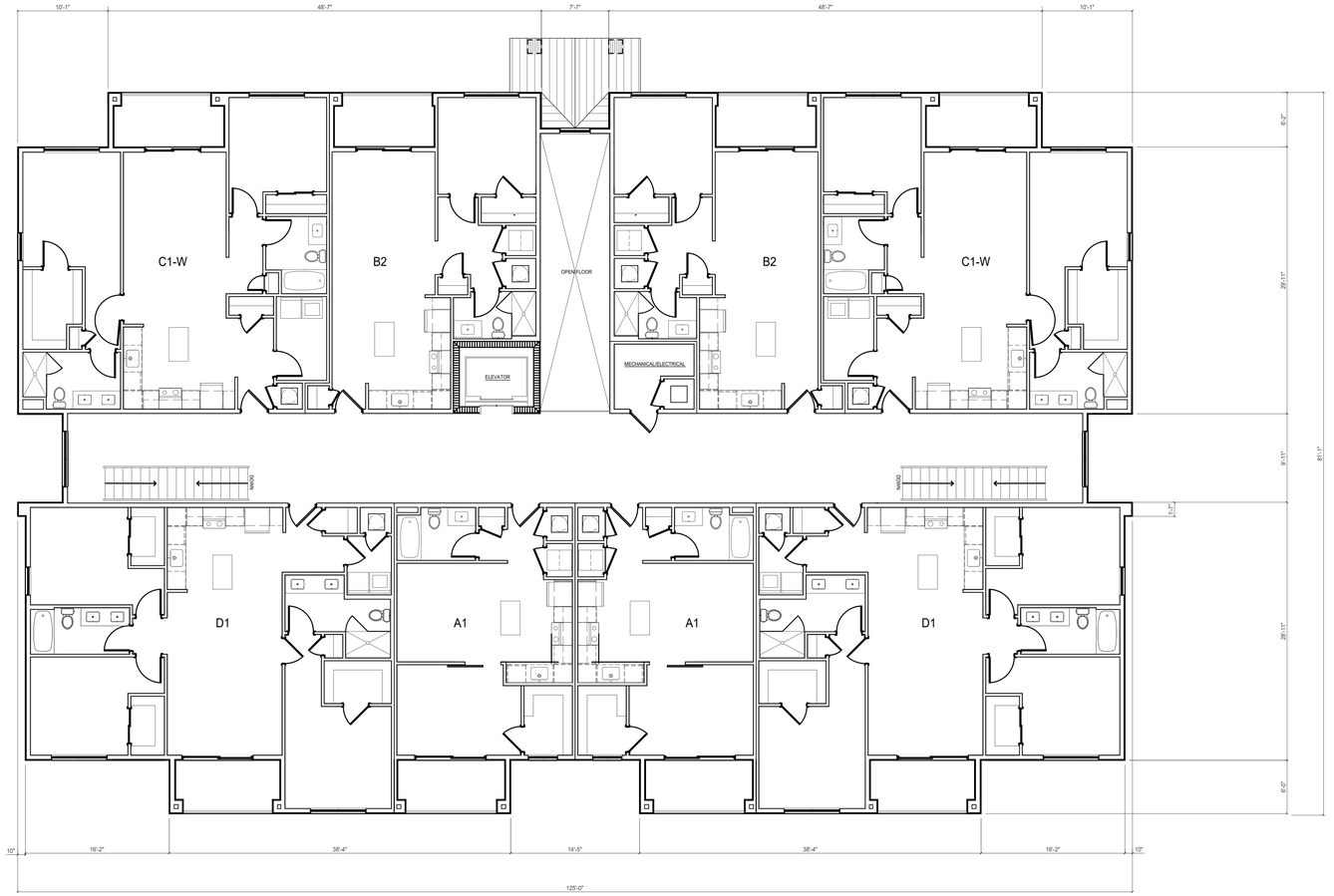
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-3



BUILDING TYPE I - SECOND FLOOR

1/8" = 1'-0"

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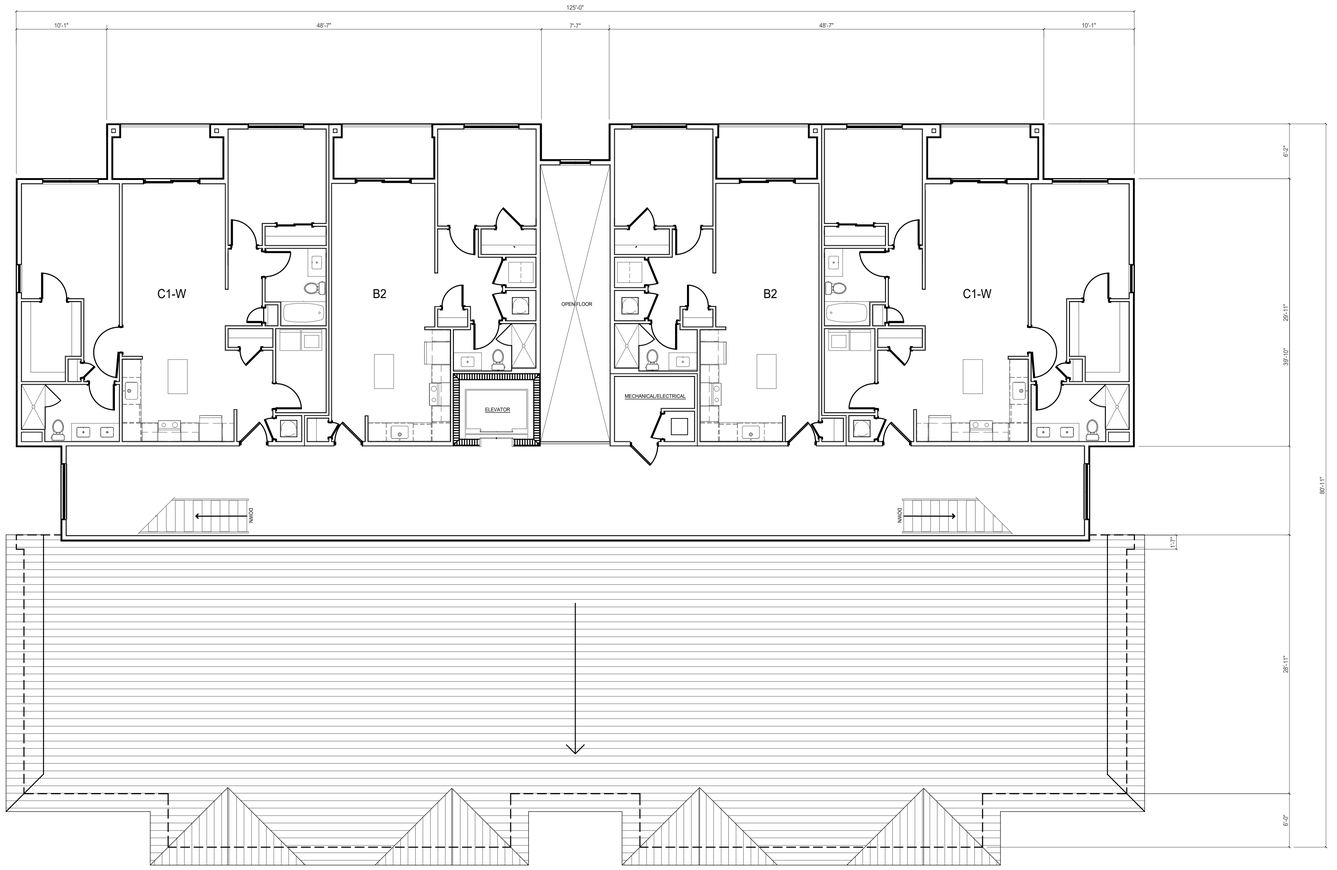
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REV	COMMENT	DATE

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SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-4



BUILDING TYPE I - THIRD FLOOR

1/8" = 1'-0"

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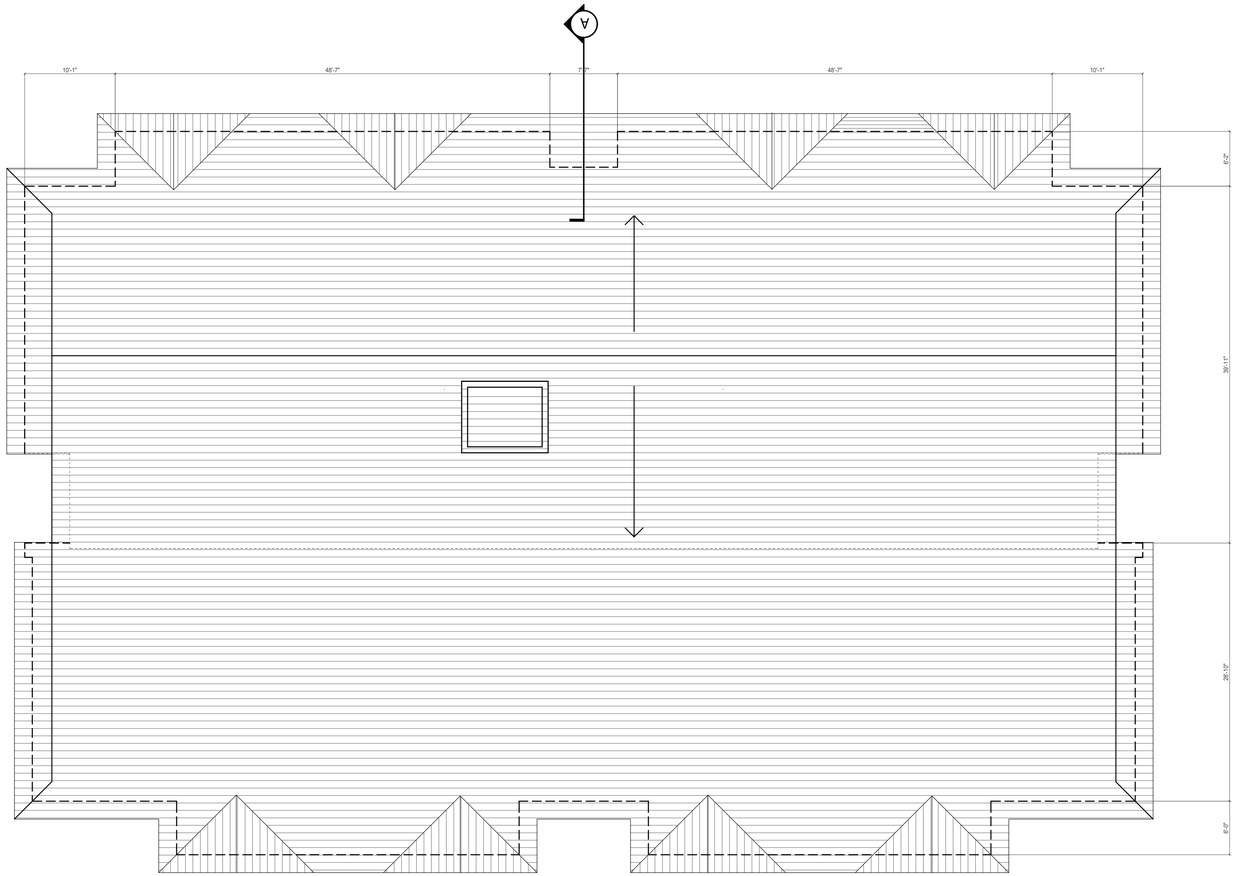
PROJECT:
GLENWOOD SPRINGS
COLORADO

BY:	DATE	COMMENT
RC	12/26/2020	
2	07/26/2021	

SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-5



BUILDING TYPE I - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

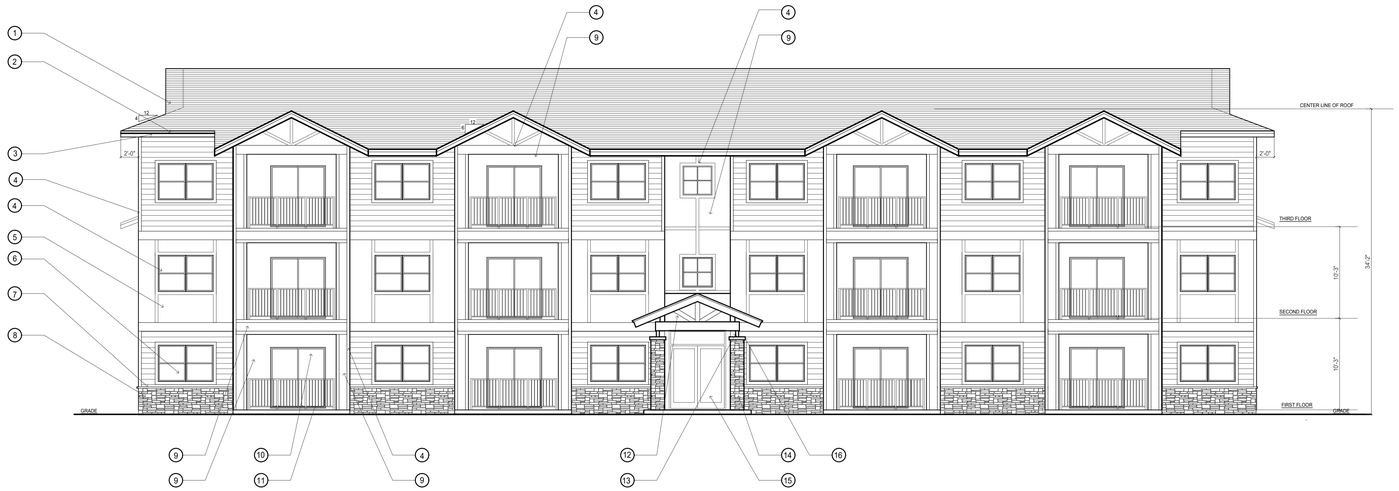
BUILDING TYPE I

A-6



BUILDING TYPE I - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE I - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	**ITEM**	**PRODUCT**	**COLOR**
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE I					
NORTH ELEVATION			**SOUTH ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	4089	NA	**GROSS WALL**	3866.00	NA
NET STONE CLADDING	169.91	4.2%	**NET STONE CLADDING**	187.48	4.8%
NET SIDING	1460.59	35.7%	**NET SIDING**	1371.74	35.5%
NET STUCCO FINISH	1584	38.7%	**NET STUCCO FINISH**	1269.10	32.8%
NET GLAZING	874.5	21.4%	**NET GLAZING**	1037.68	26.8%
EAST ELEVATION			**WEST ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	3294	NA	**GROSS WALL**	3294	NA
NET STONE CLADDING	-	-	**NET STONE CLADDING**	-	-
NET SIDING	2672.23	81.1%	**NET SIDING**	2672.23	81.1%
NET STUCCO FINISH	451.37	13.7%	**NET STUCCO FINISH**	451.37	13.7%
NET GLAZING	170.4	5.2%	**NET GLAZING**	170.4	5.2%

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/28/2021	

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

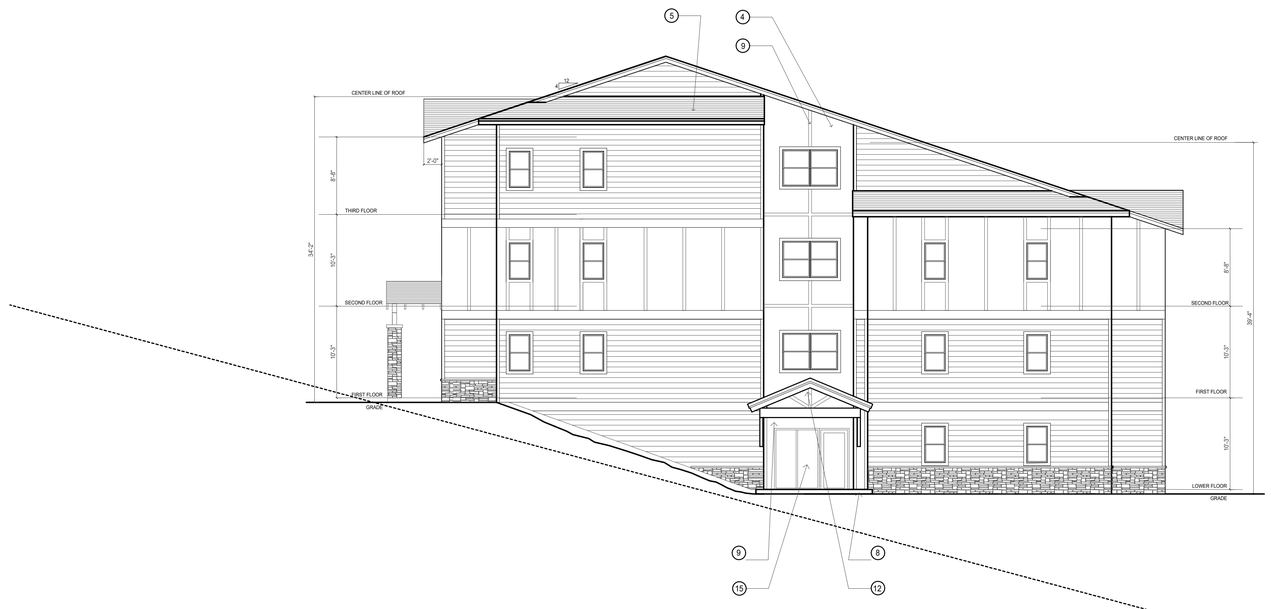
BUILDING TYPE I

A – 7



BUILDING TYPE I - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE I - WEST ELEVATION

1/8" = 1'-0"

BUILDING TYPE I - EAST ELEVATION

1/8" = 1'-0"

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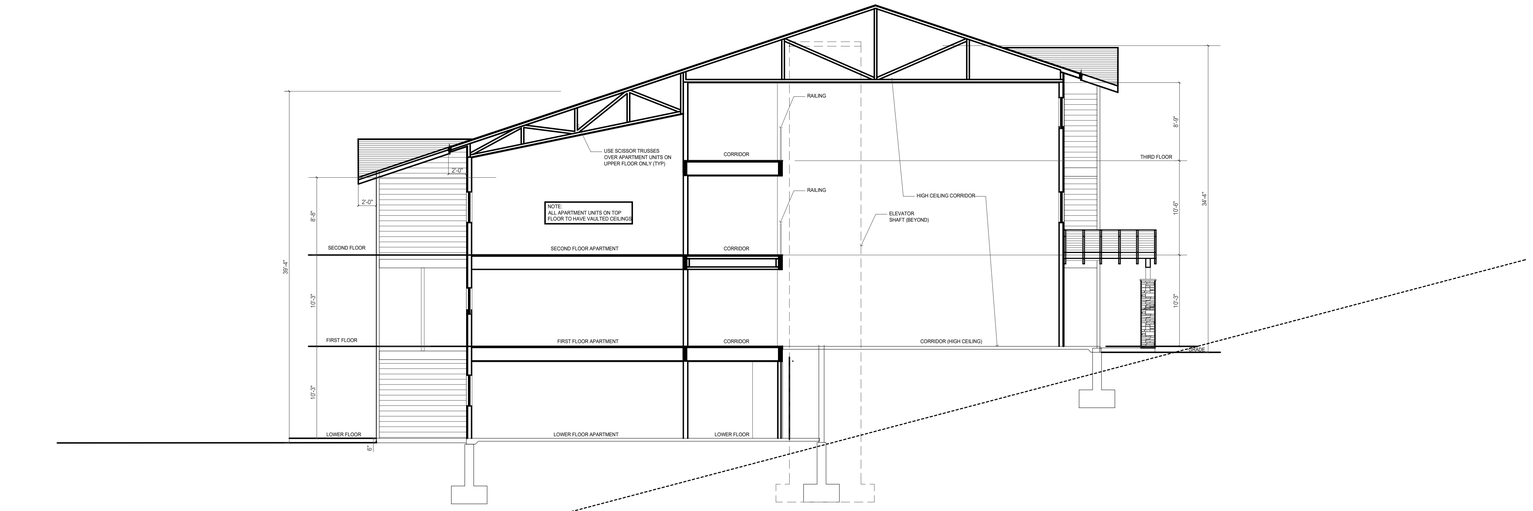
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-8



BUILDING TYPE I - SECTION A

1/8" = 1'-0"

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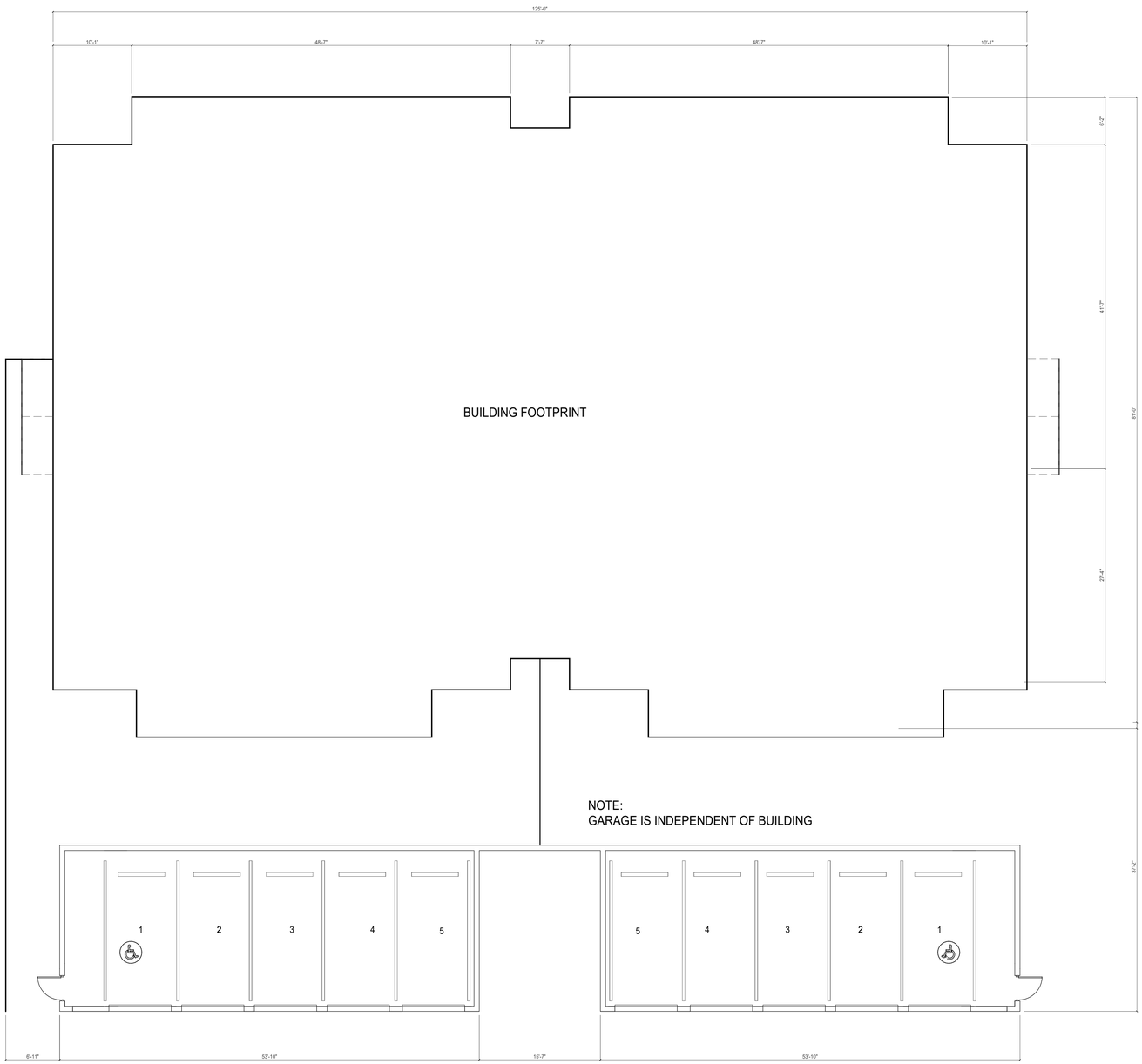
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
BY:	RC	
DATE:	12/26/2020	
SCALE:	1/8" = 1' - 0"	

BUILDING
TYPE I

A–9



BUILDING TYPE II - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE II				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	6,038	0	1830	4208
1ST LEVEL	9,778	0	1653	8125
2ND LEVEL	8,245	486	1147	6612
3RD LEVEL	5,697	243	1508	3946
TOTAL BUILDING	32,388			22,891
NO. OF BUILDINGS	3			3
TOTAL FOR BUILDING TYPE II	97,164			68,673

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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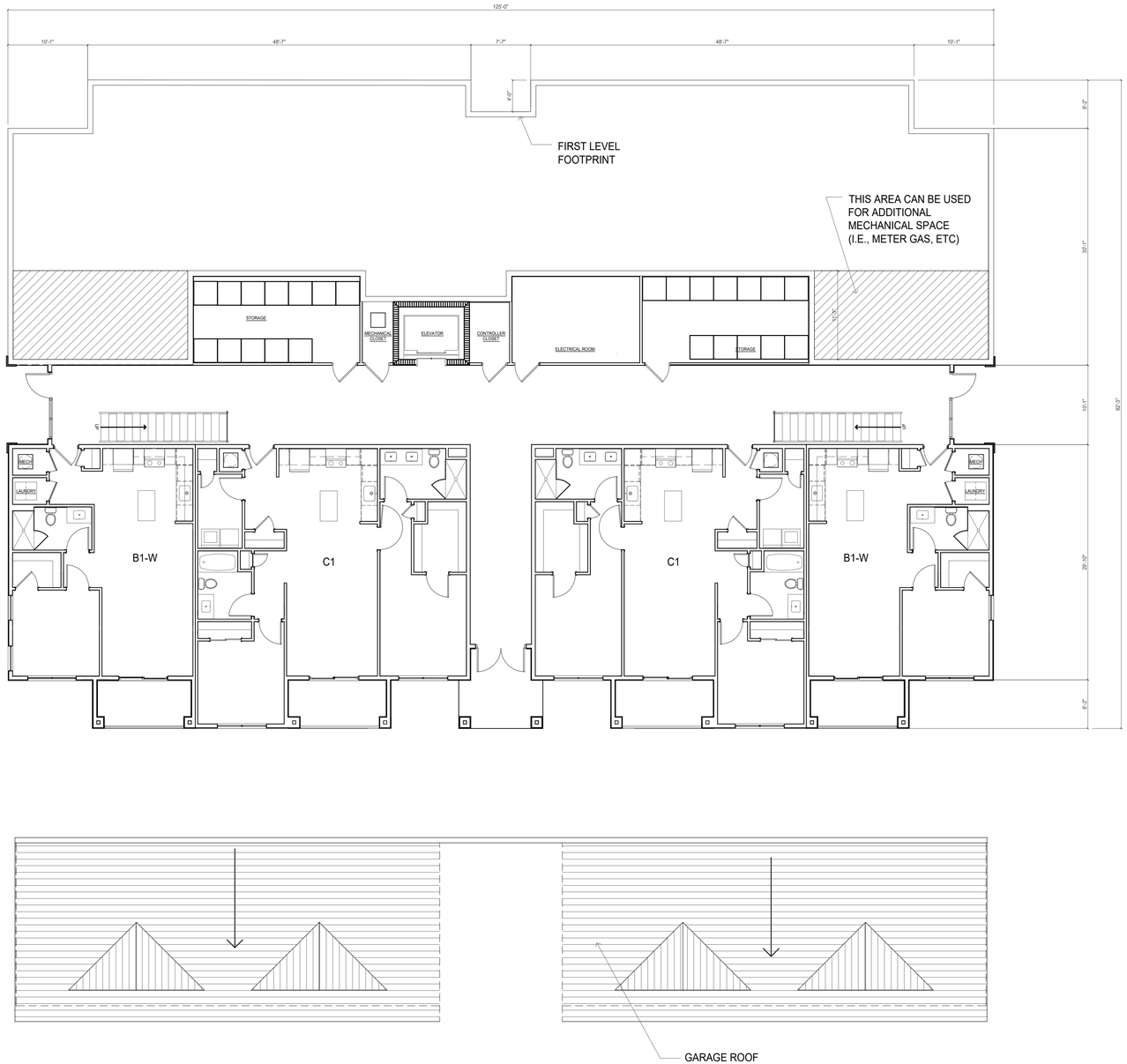
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/28/2021	

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-10



BUILDING TYPE II - LOWER LEVEL

1/8" = 1'-0"

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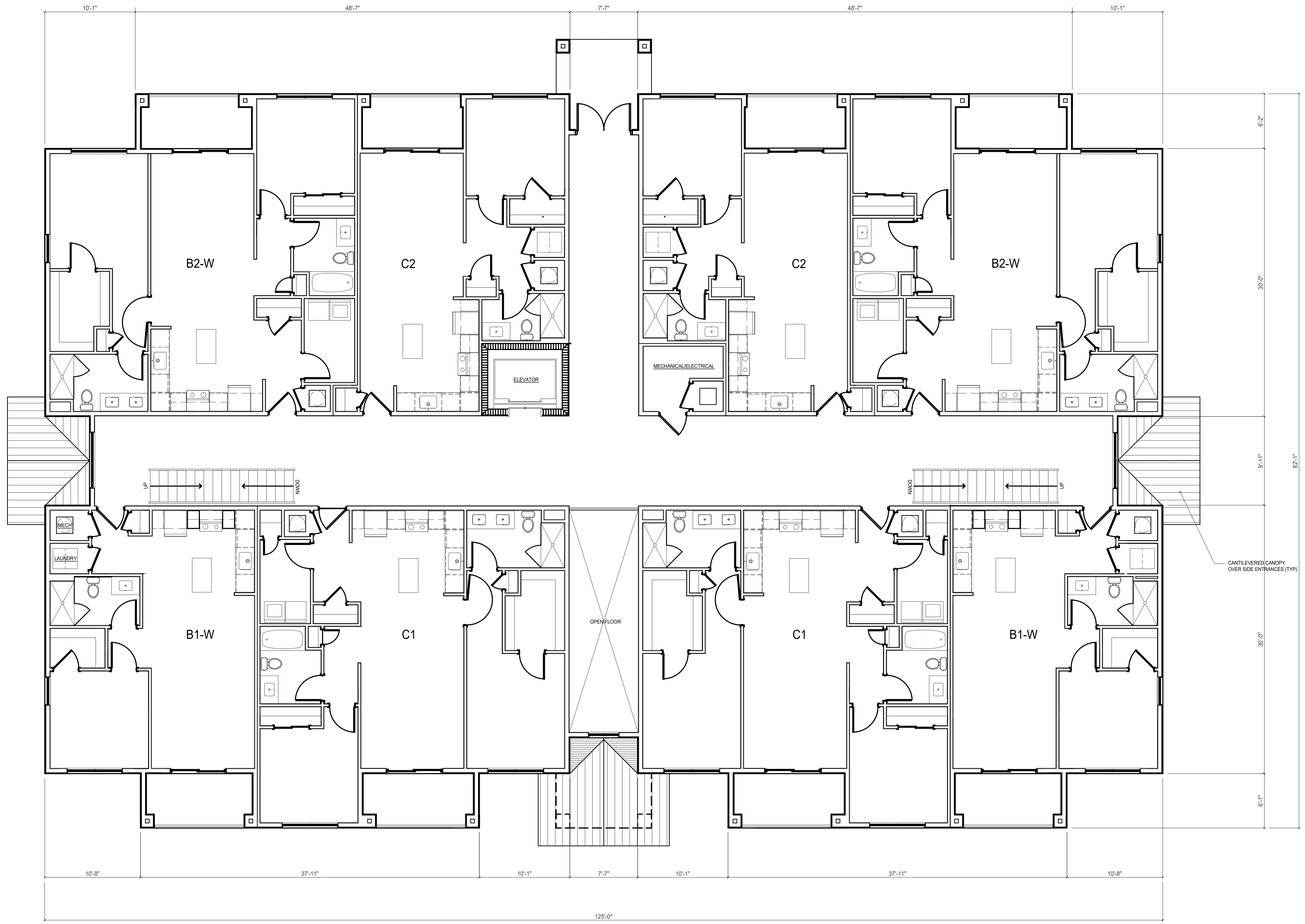
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	R/C	
DATE:	12/26/2020	
SCALE:	1/8" = 1' - 0"	

BUILDING TYPE II

A–11



BUILDING TYPE II - FIRST FLOOR

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/24/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-12



BUILDING TYPE II - SECOND FLOOR

1/8" = 1'-0"

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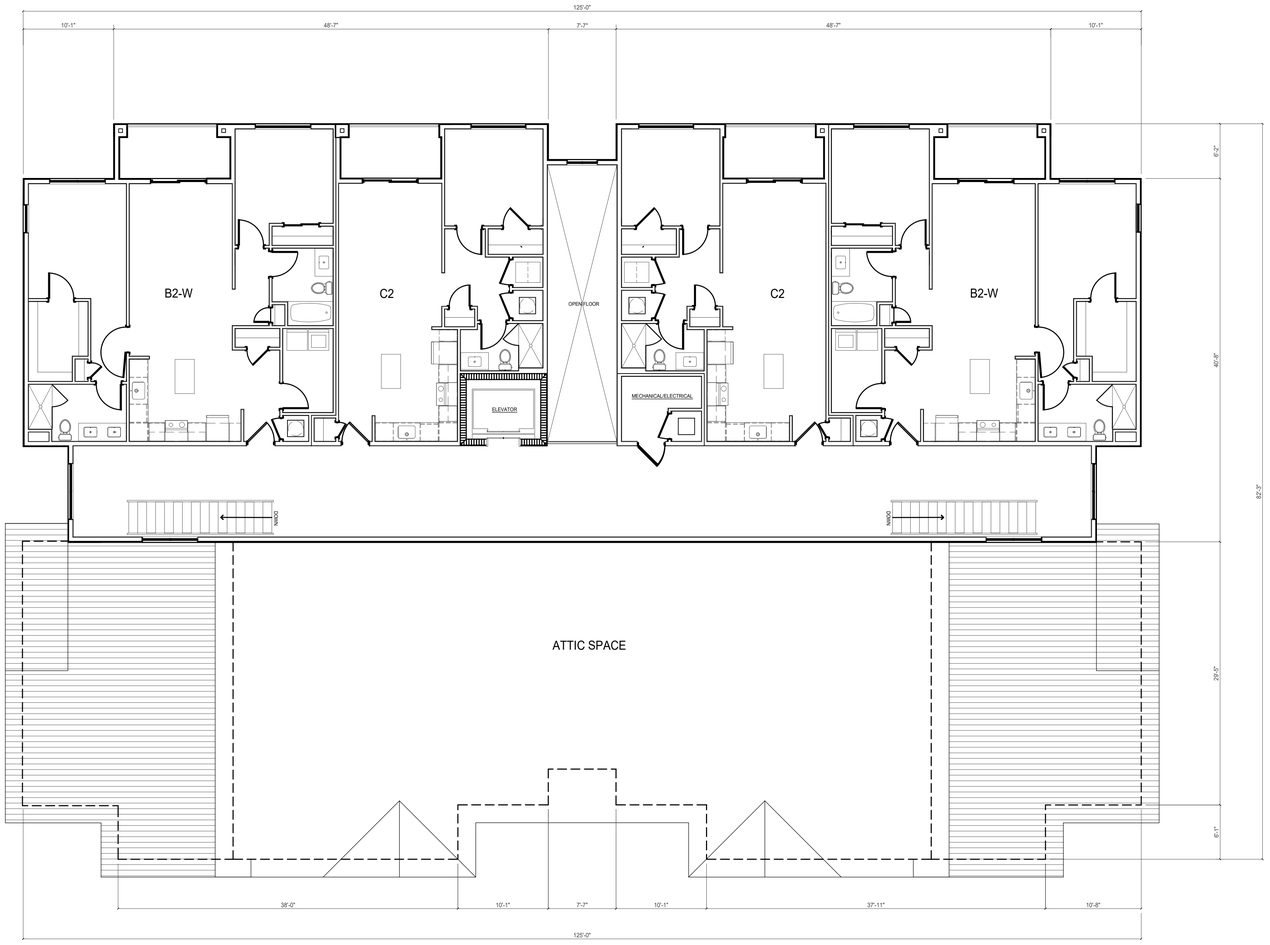
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-13



BUILDING TYPE II - THIRD FLOOR

1/8" = 1'-0"

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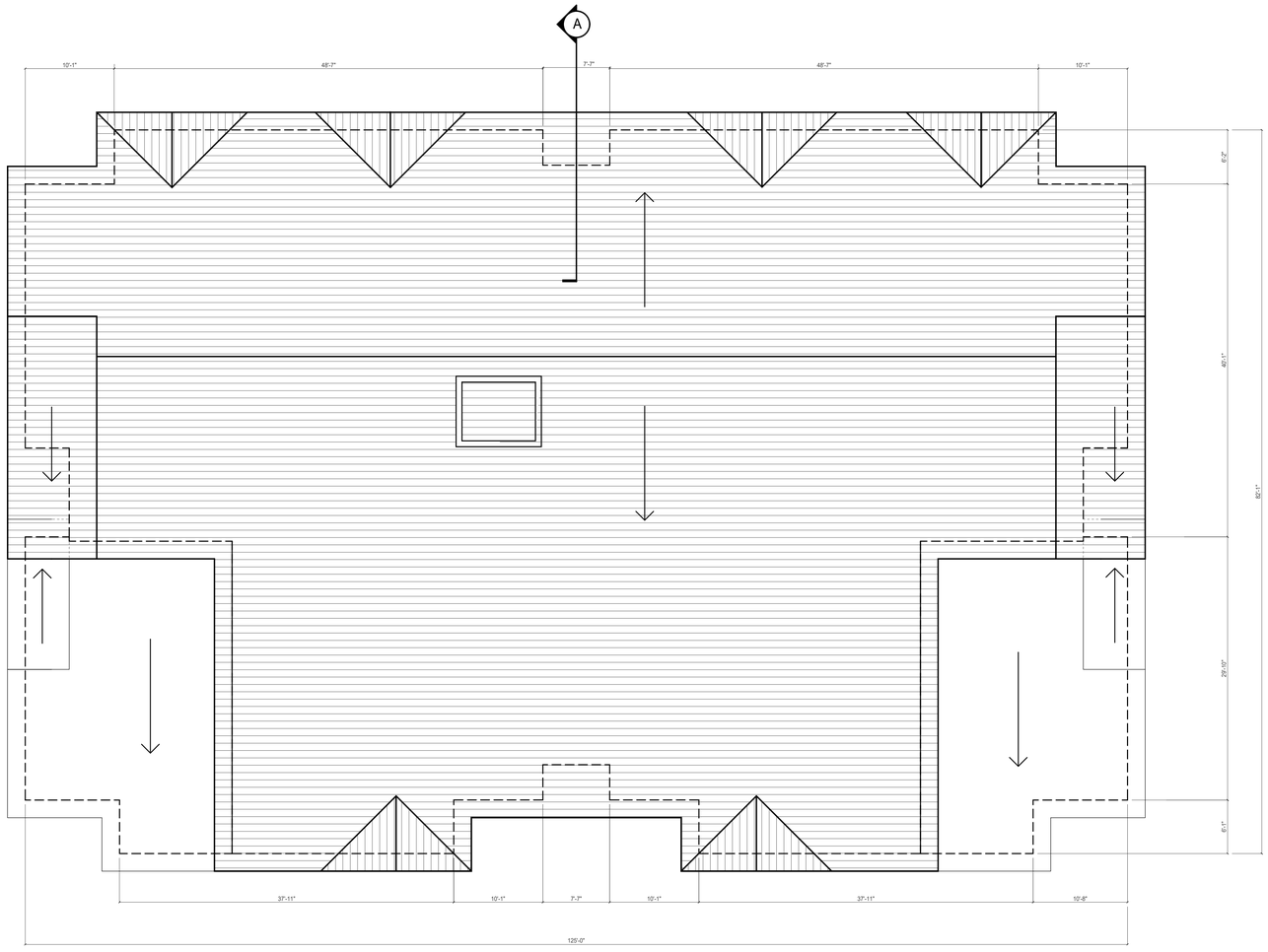
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1' - 0"

BUILDING TYPE II

A-14



BUILDING TYPE II - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1' - 0"

BUILDING TYPE II

A-15



BUILDING TYPE II - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE II - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	**ITEM**	**PRODUCT**	**COLOR**
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE II		
NORTH ELEVATION		
	SURFACE AREA	**PERCENTAGE OF NET**
GROSS WALL	4071	NA
NET STONE CLADDING	212.56	-
NET SIDING	1720.9	42.3%
NET STUCCO FINISH	1126.73	27.7%
NET GLAZING	1010.81	24.8%

SOUTH ELEVATION		
	SURFACE AREA	**PERCENTAGE OF NET**
GROSS WALL	3866.00	NA
NET STONE CLADDING	#REF!	#REF!
NET SIDING	#REF!	#REF!
NET STUCCO FINISH	1269.10	32.8%
NET GLAZING	1037.68	26.8%

EAST ELEVATION		
	SURFACE AREA	**PERCENTAGE OF NET**
GROSS WALL	3270.19	NA
NET STONE CLADDING	-	-
NET SIDING	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%
NET GLAZING	132.63	4.1%

WEST ELEVATION		
	SURFACE AREA	**PERCENTAGE OF NET**
GROSS WALL	3270.19	NA
NET STONE CLADDING	-	-
NET SIDING	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%
NET GLAZING	132.63	4.1%

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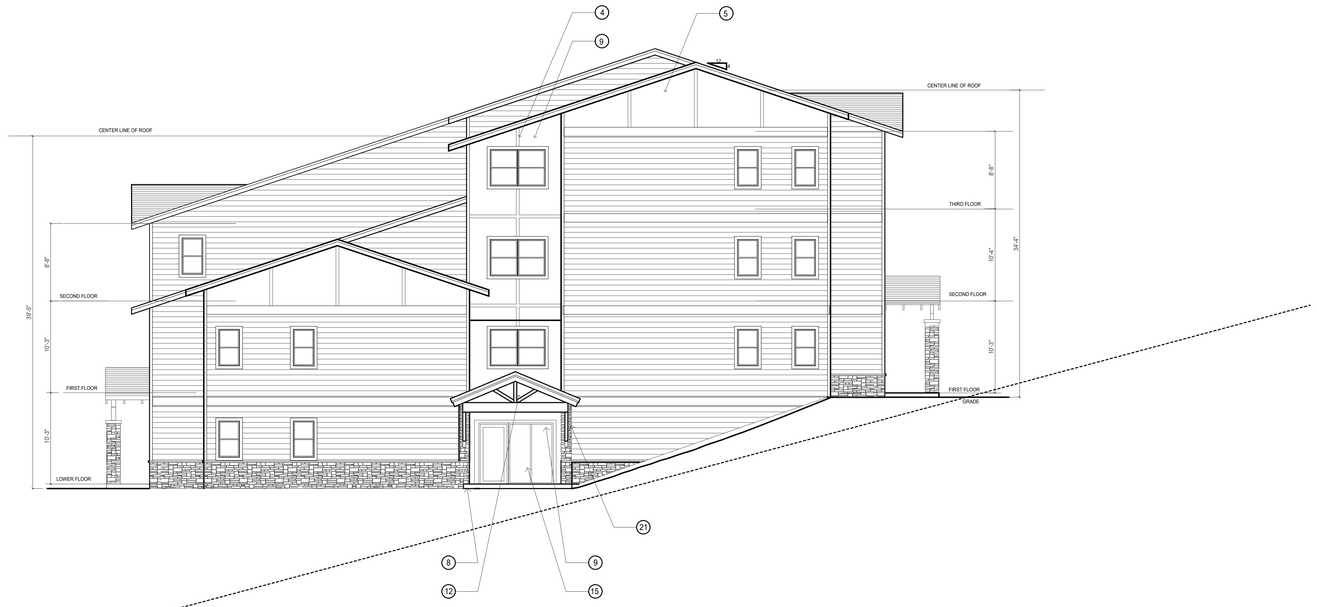
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

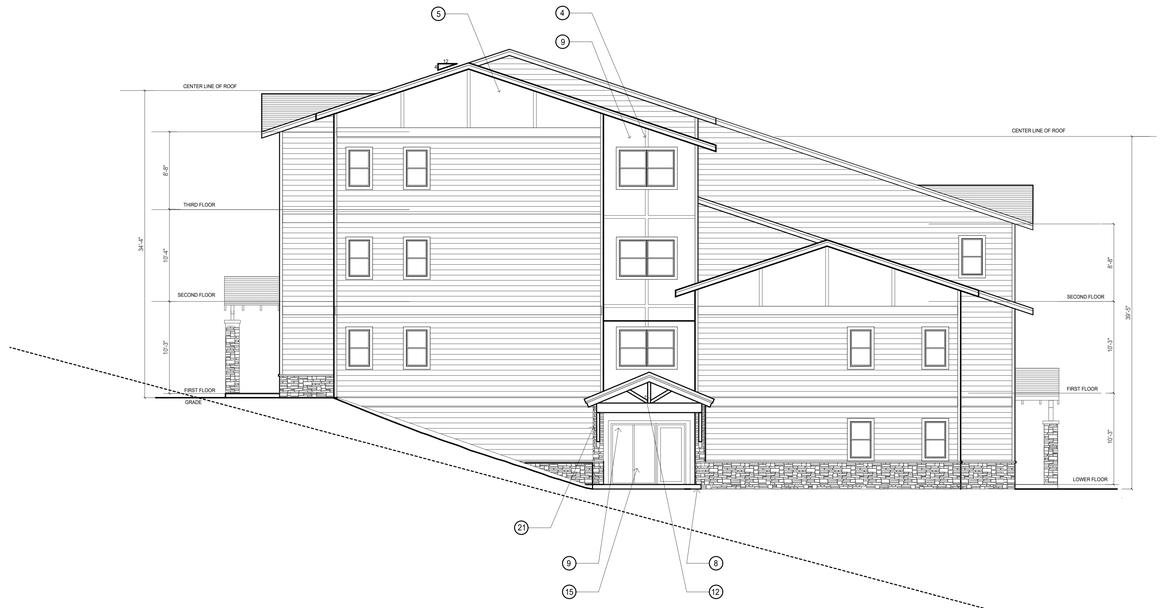
BUILDING TYPE II

A-16



BUILDING TYPE II - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE II - EAST ELEVATION

1/8" = 1'-0"

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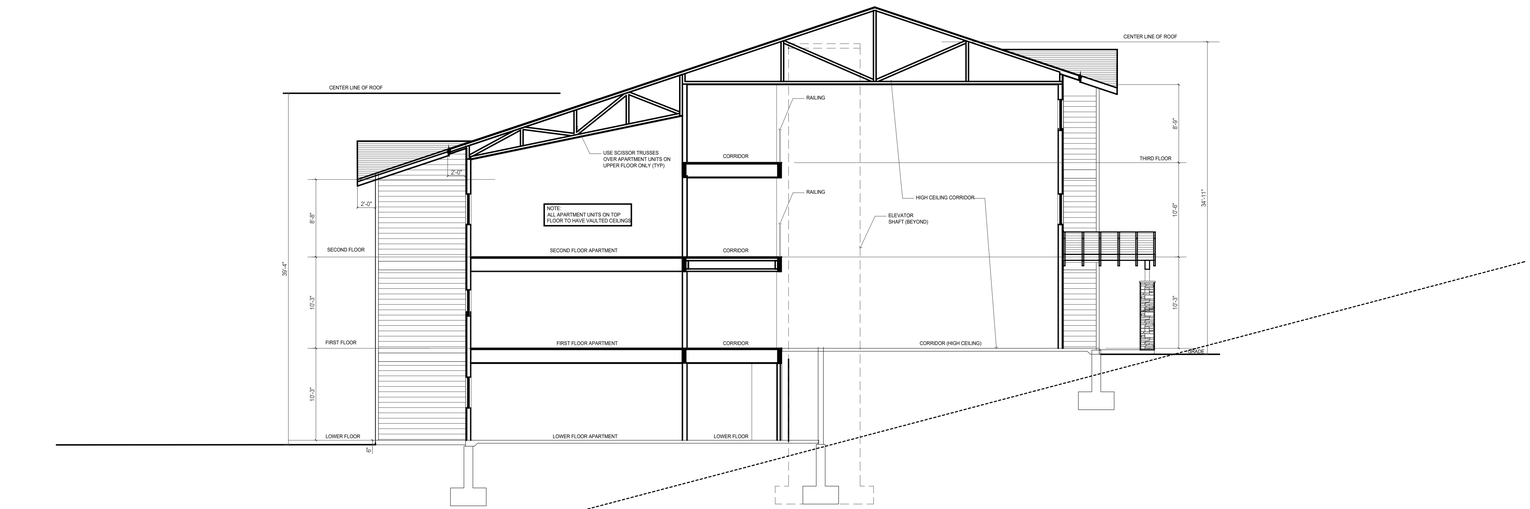
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV:	COMMENT	DATE
		BY: RC
		DATE: 12/28/2020
		SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A–17



BUILDING TYPE II - SECTION A

1/8" = 1'-0"

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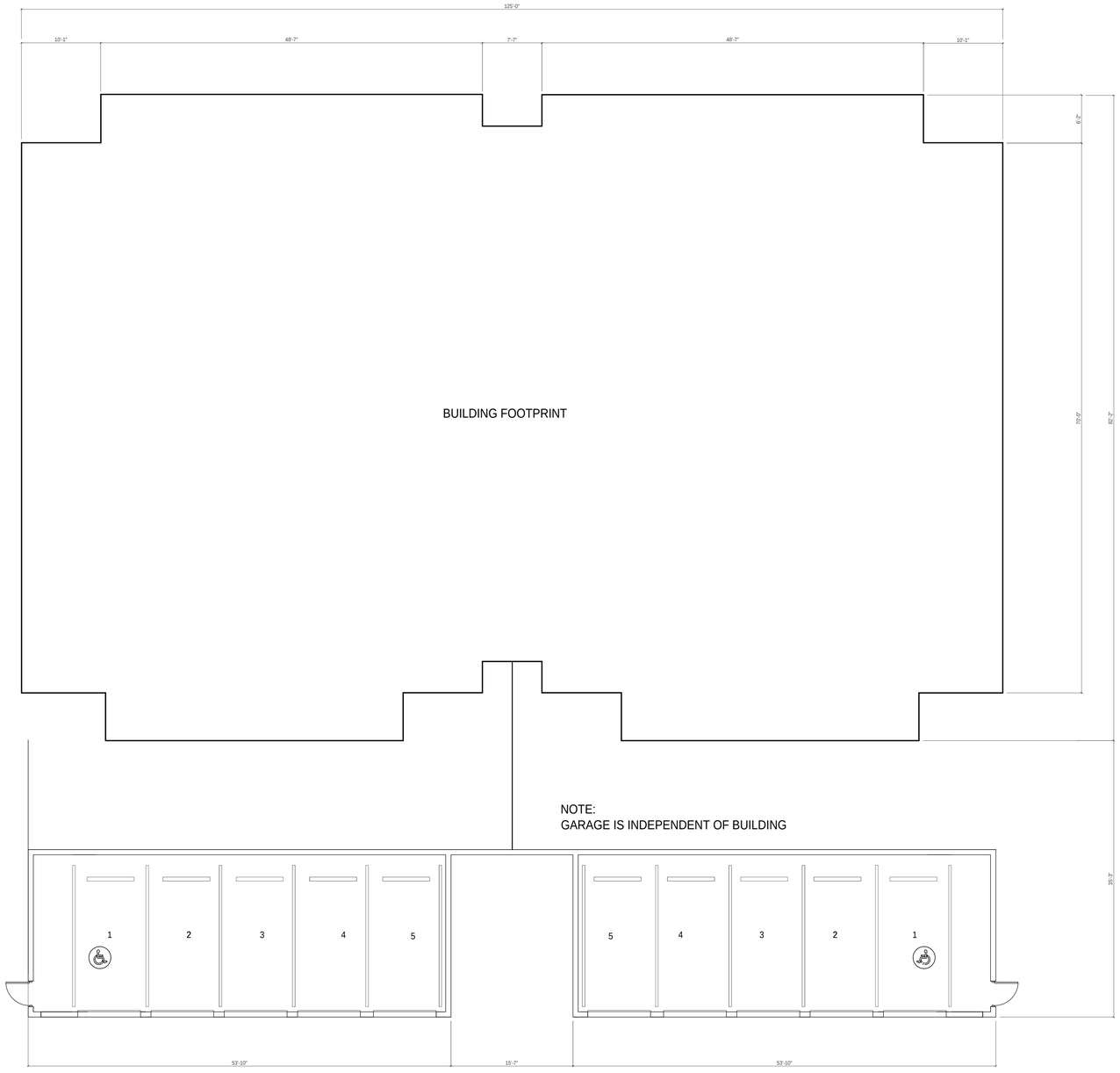
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-18



BUILDING TYPE III - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE III				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	6,038	0	1830	4208
1ST LEVEL	9,778	0	1653	8125
2ND LEVEL	9,778	486	1147	8145
3RD LEVEL	5,675	243	1508	3924
TOTAL BUILDING	33,899			24,402
NO. OF BUILDINGS	3			3
TOTAL FOR BUILDING TYPE III	101,697			73,206

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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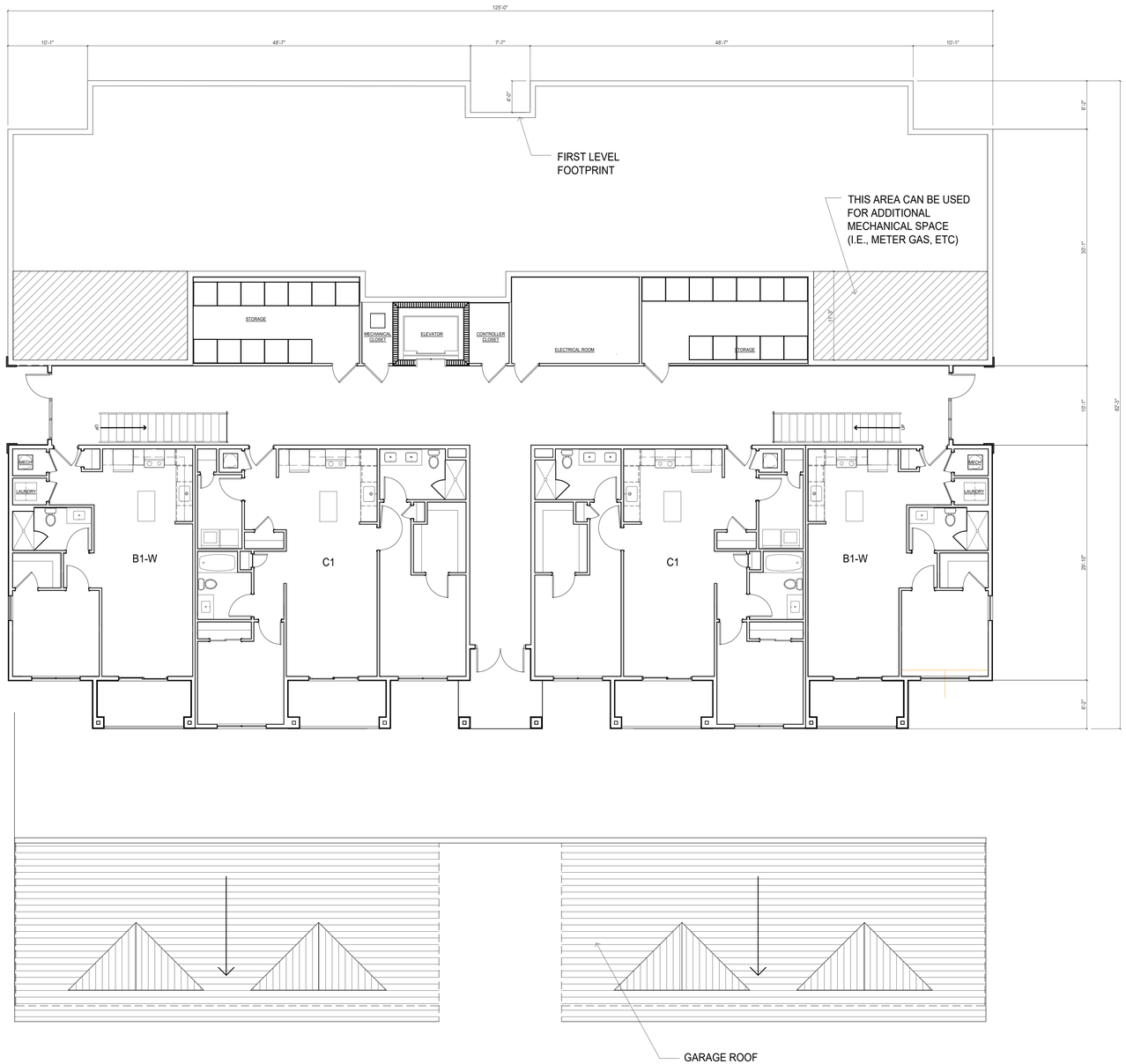
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	COMMENT
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE III

A-19



BUILDING TYPE III - LOWER LEVEL

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING
TYPE III

A-20



BUILDING TYPE III - FIRST FLOOR

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	RC	
DATE:	12/28/2020	
SCALE:	1/8" = 1'-0"	

BUILDING TYPE III

A-21



BUILDING TYPE III - SECOND FLOOR

1/8" = 1'-0"

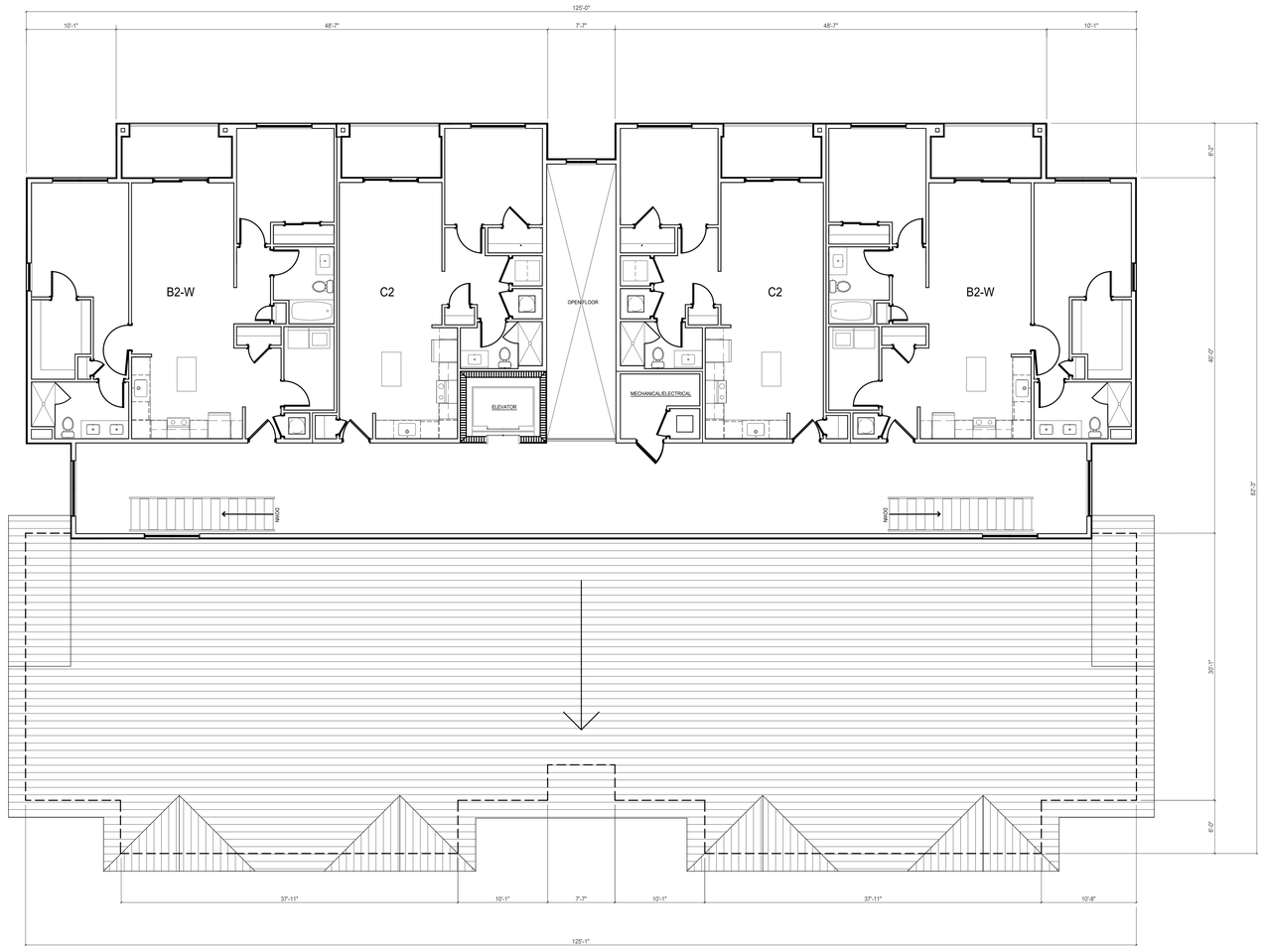
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE



BUILDING TYPE III - THIRD FLOOR

1/8" = 1'-0"

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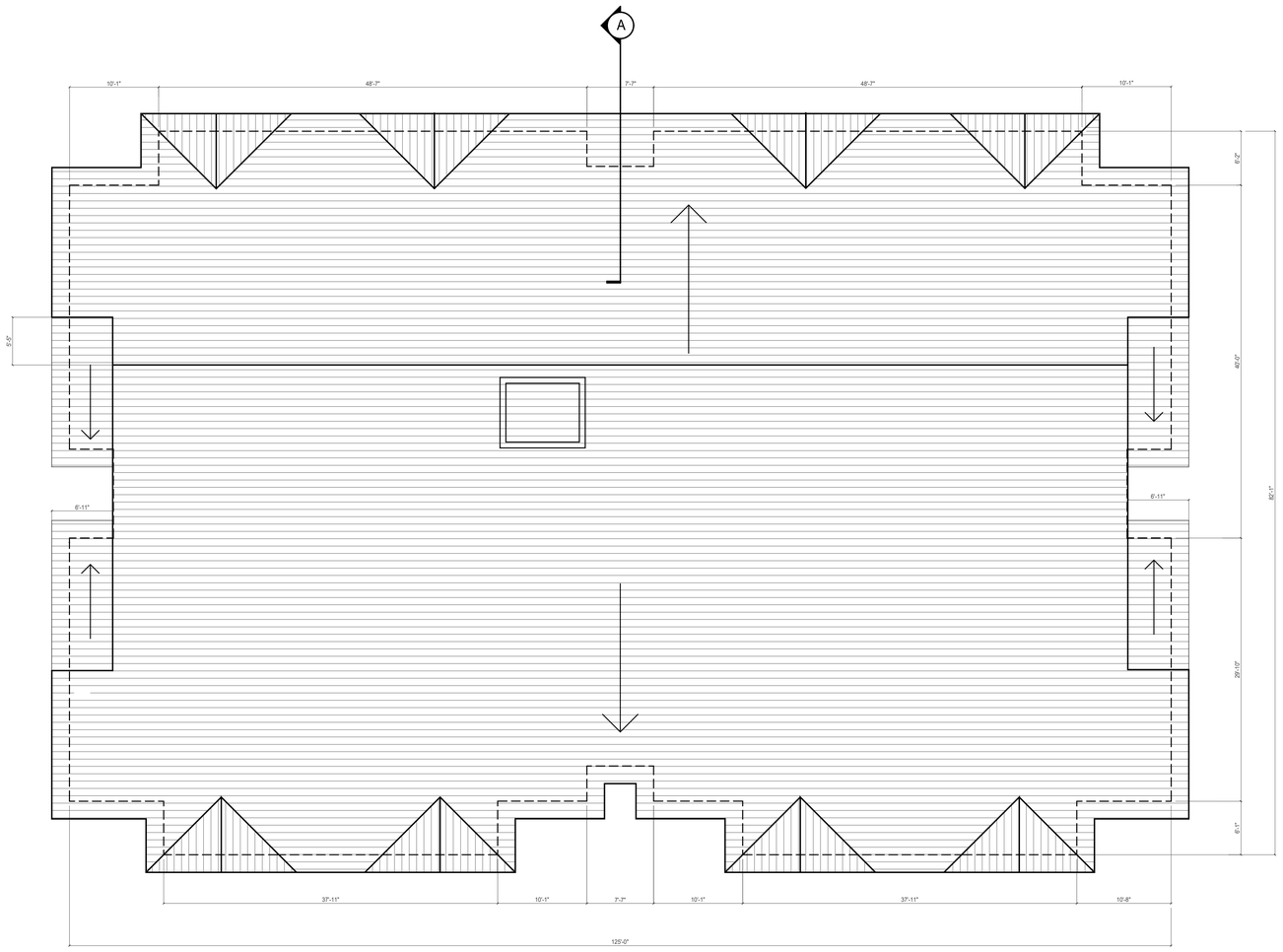
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE III

A-23



BUILDING TYPE III - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

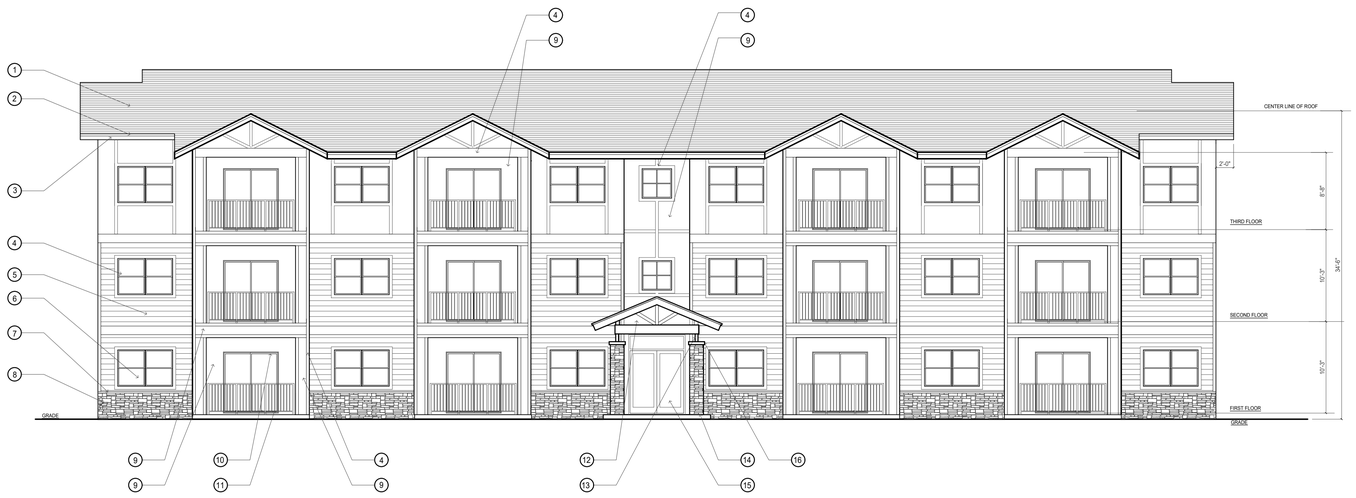
BUILDING TYPE III

A-24



BUILDING TYPE III - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE III - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	**ITEM**	**PRODUCT**	**COLOR**
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE III					
NORTH ELEVATION			**SOUTH ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	4112.73	NA	**GROSS WALL**	3866.00	NA
NET STONE CLADDING	205.64	5.0%	**NET STONE CLADDING**	#REF!	#REF!
NET SIDING	1590.56	38.7%	**NET SIDING**	#REF!	#REF!
NET STUCCO FINISH	1278.8	31.1%	**NET STUCCO FINISH**	1269.10	32.8%
NET GLAZING	1037.73	25.2%	**NET GLAZING**	1037.68	26.8%
EAST ELEVATION			**WEST ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	3270.19	NA	**GROSS WALL**	3270.19	NA
NET STONE CLADDING	-	-	**NET STONE CLADDING**	-	-
NET SIDING	2759.89	84.4%	**NET SIDING**	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%	**NET STUCCO FINISH**	377.67	11.5%
NET GLAZING	132.63	4.1%	**NET GLAZING**	132.63	4.1%

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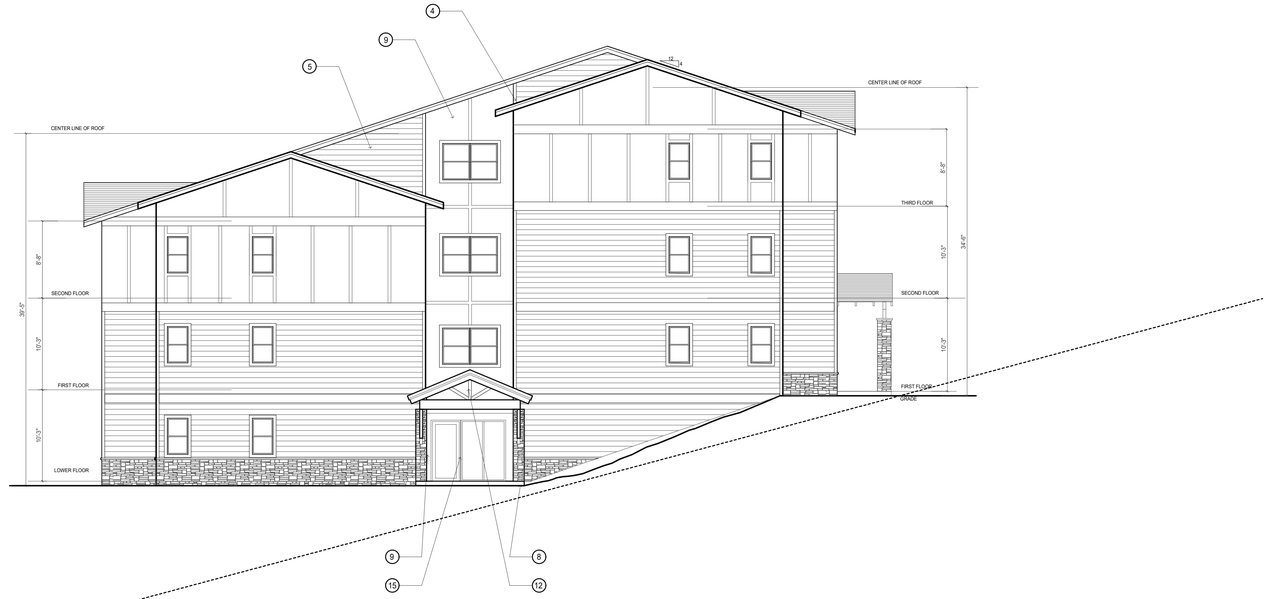
BLDGROUP
1500 Cordova Road - Suite 300
Ft Lauderdale, FL 33316

PROJECT:
GLENWOOD SPRINGS
COLORADO

BY:	DATE	COMMENT
2	07/26/2021	
RC	12/26/2020	
SCALE:	1/8" = 1'-0"	

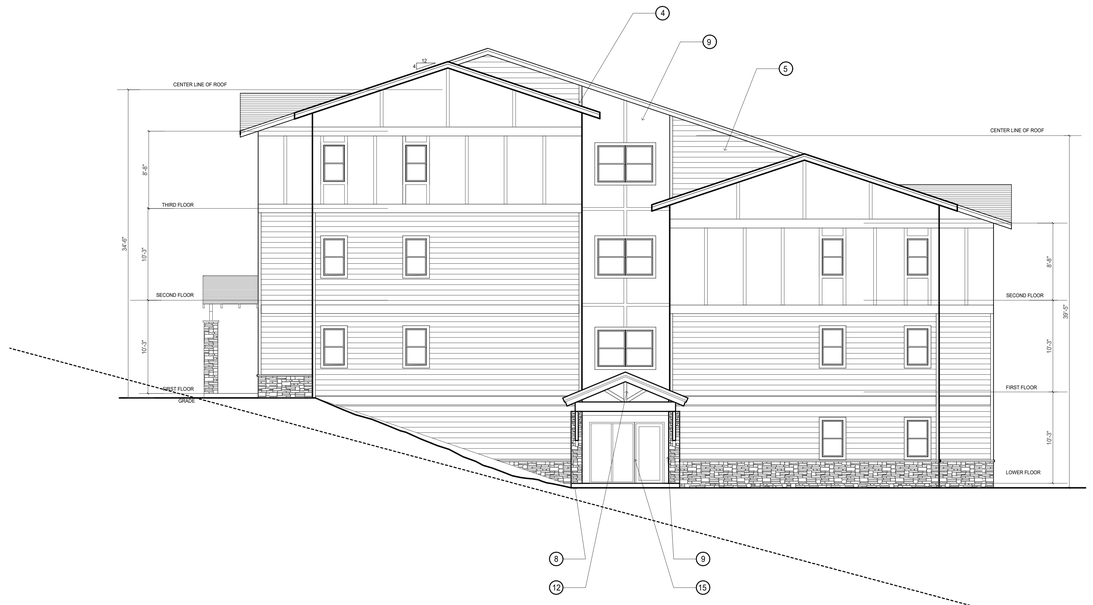
BUILDING TYPE III

A-25



BUILDING TYPE III - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE III - WEST ELEVATION

1/8" = 1'-0"

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Architect
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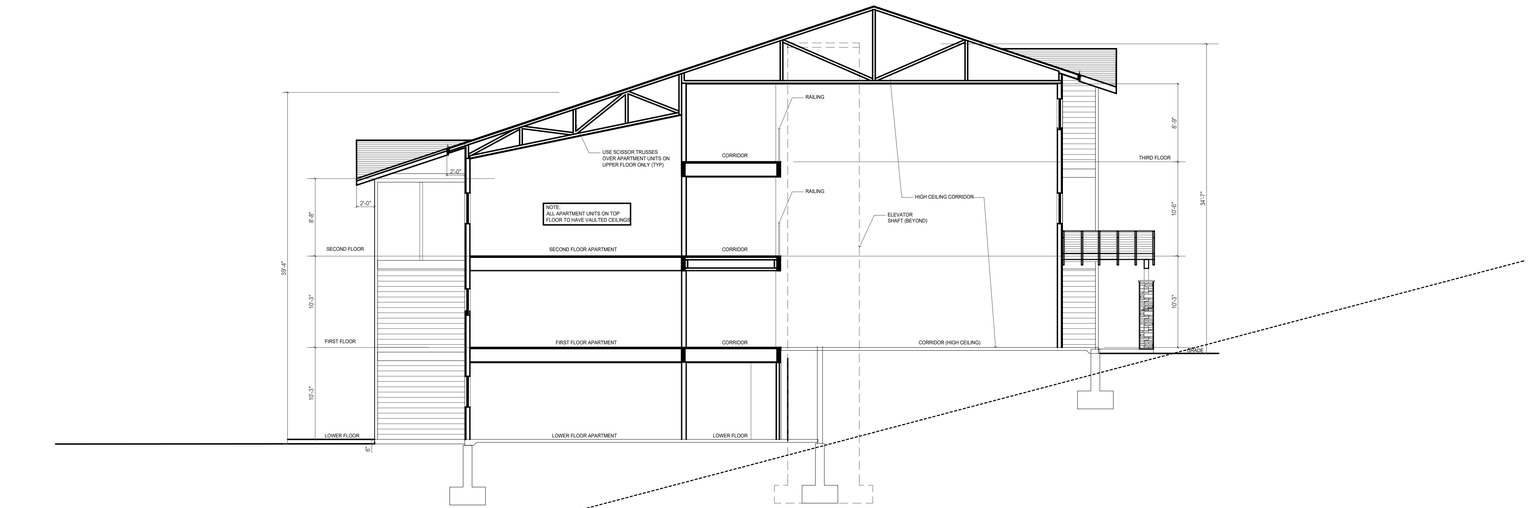
BLDGROUP
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	
		BY: RC
		DATE: 12/26/2020
		SCALE: 1/8" = 1'-0"

BUILDING TYPE III

A-26



BUILDING TYPE III - SECTION A

1/8" = 1'-0"

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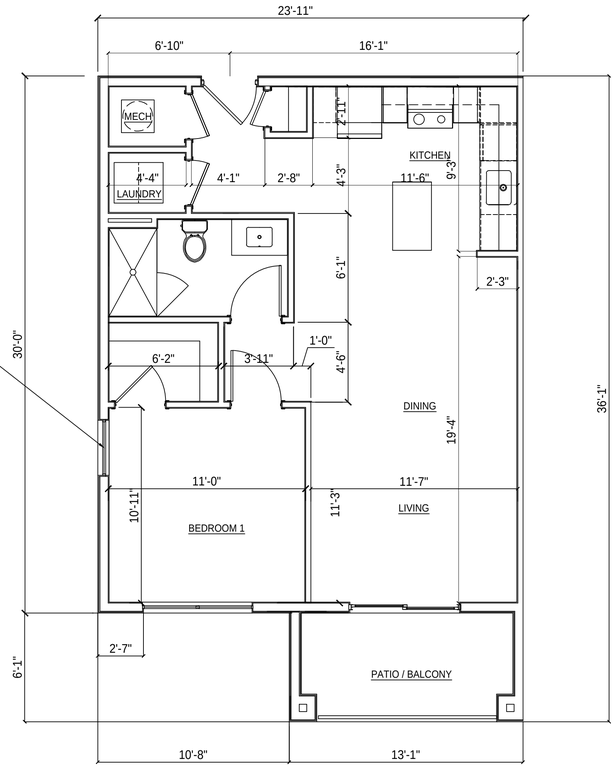
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

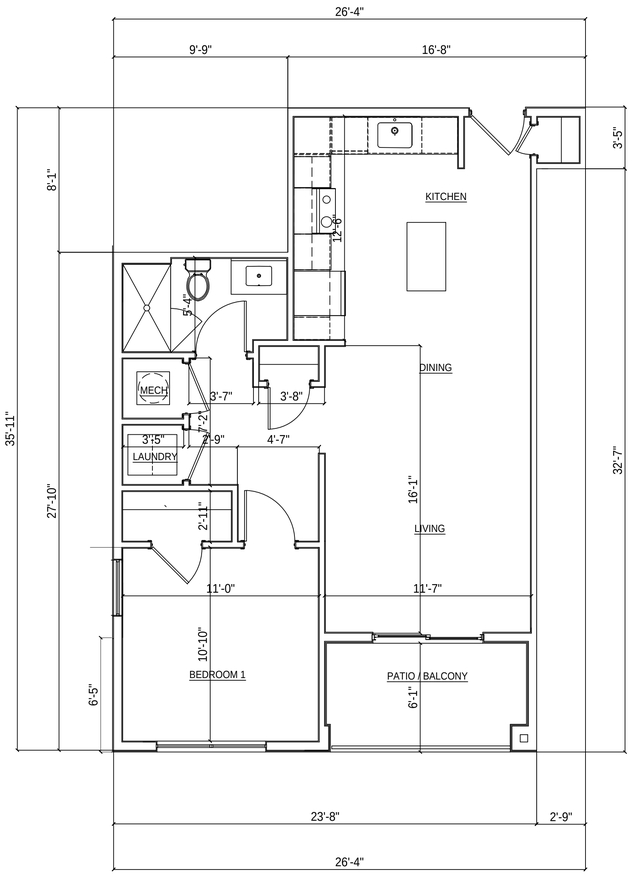
BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE III

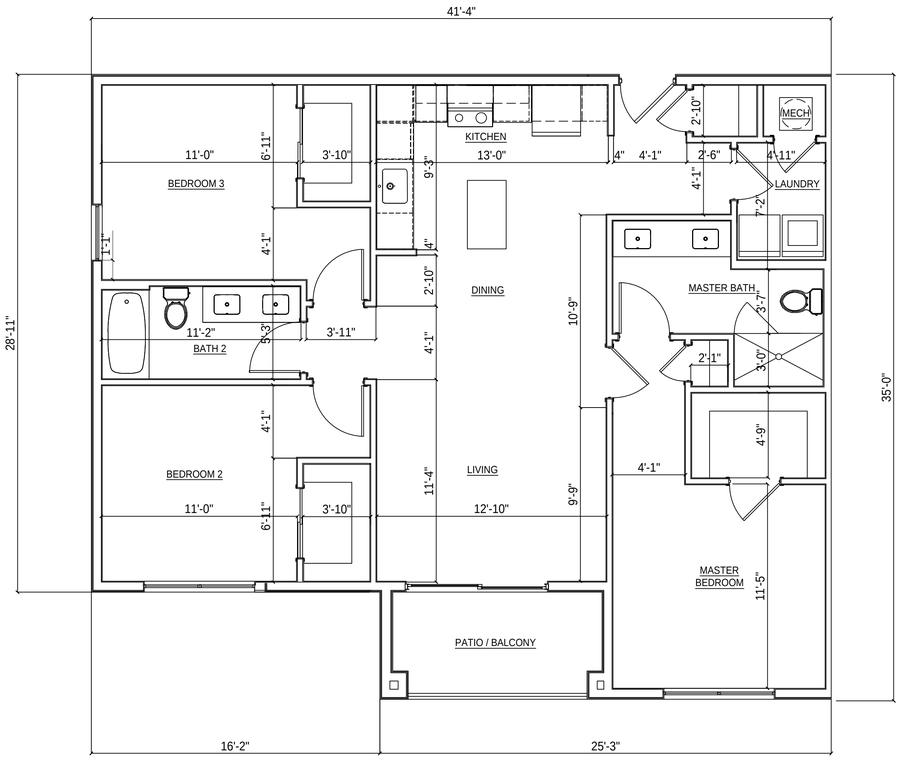
A-27



1 BEDROOM (UNIT B1)
1 BEDROOM (UNIT B1-W)
1/4" = 1'-0"



1 BEDROOM (UNIT B2)
1 BEDROOM (UNIT B2-W)
1/4" = 1'-0"



3 BEDROOM APARTMENT (UNIT D1)
1/4" = 1'-0"

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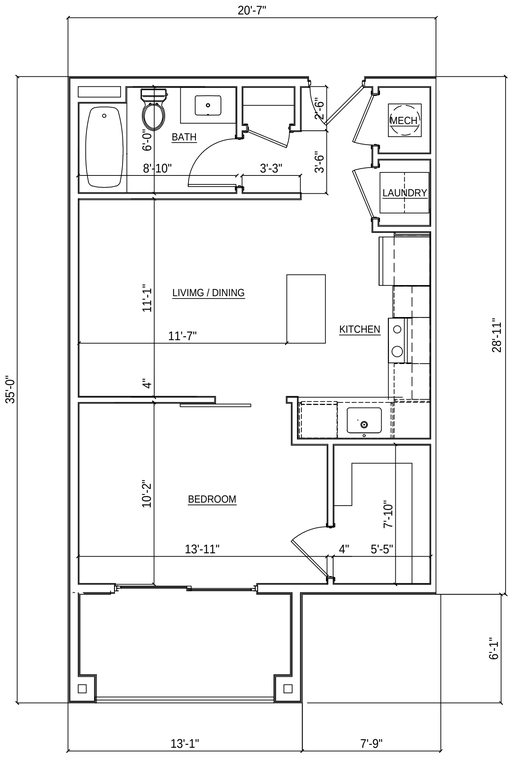
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/26/2020
SCALE: 1/4" = 1' - 0"

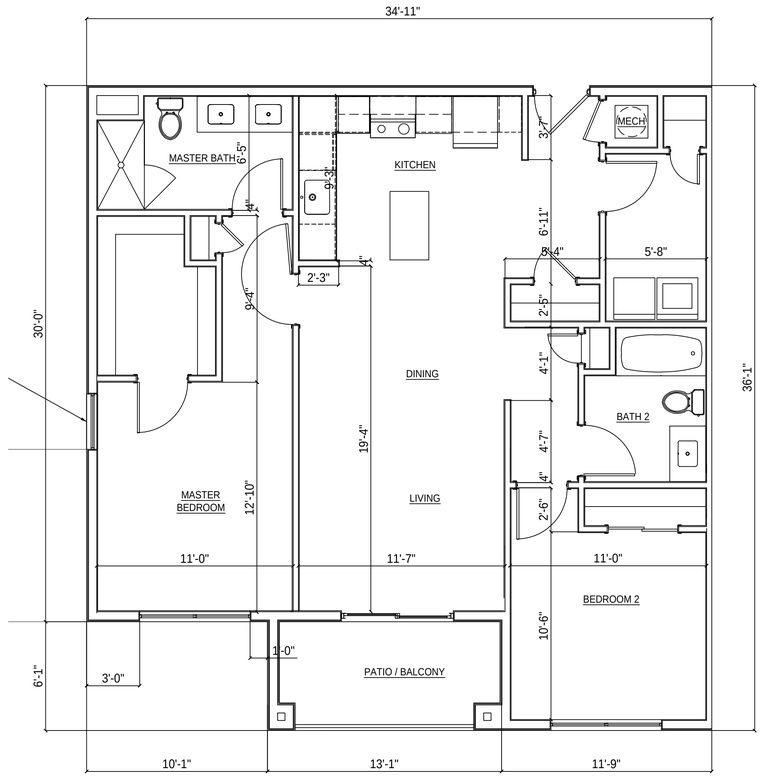
APARTMENT FLOOR PLANS

A-28



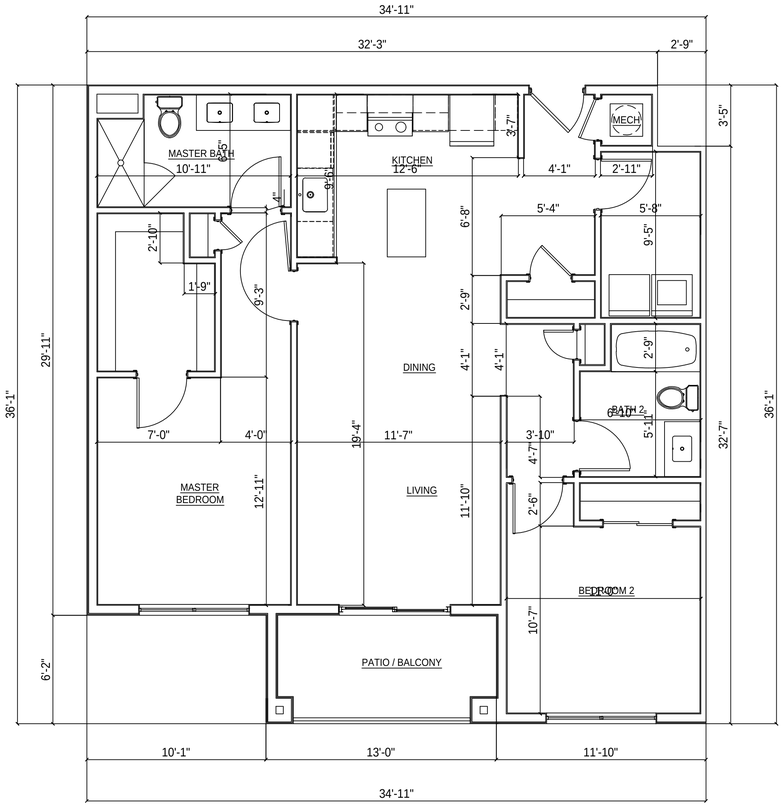
STUDIO (UNIT A1)

1/4" = 1'-0"



2 BEDROOM APARTMENT (UNIT C1)
2 BEDROOM APARTMENT (UNIT C1-W)

1/4" = 1'-0"



2 BEDROOM APARTMENT (UNIT C2)

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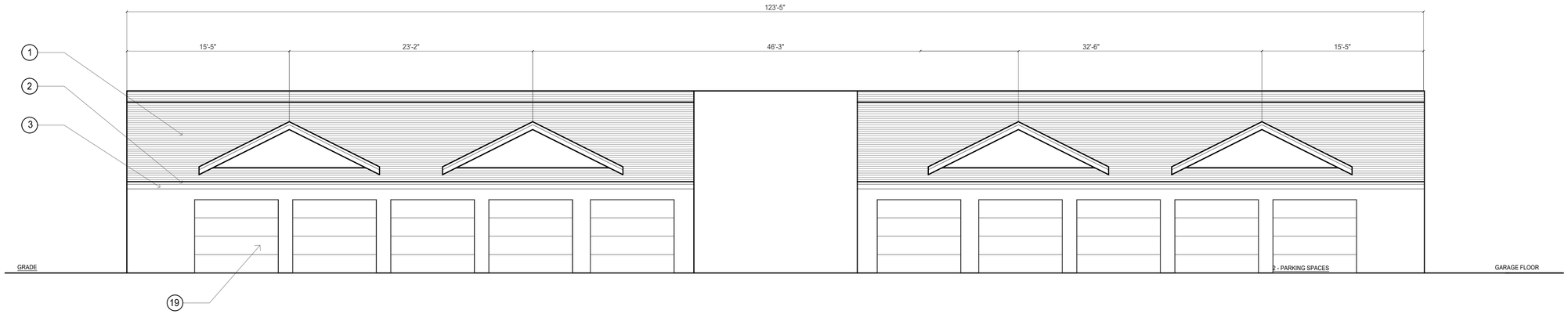
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

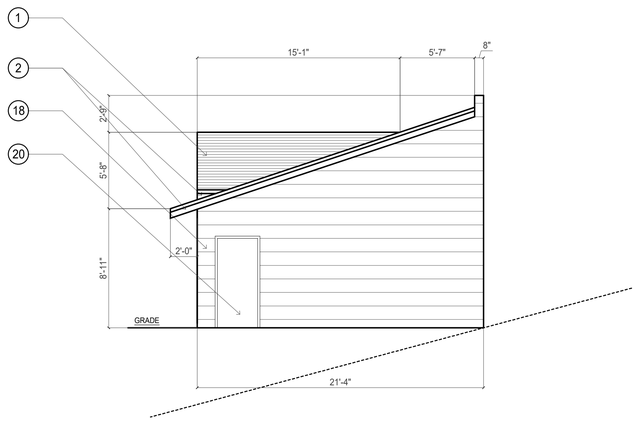
BY: RC
DATE: 12/26/2020
SCALE: 1/4" = 1' - 0"

APARTMENT
FLOOR PLANS

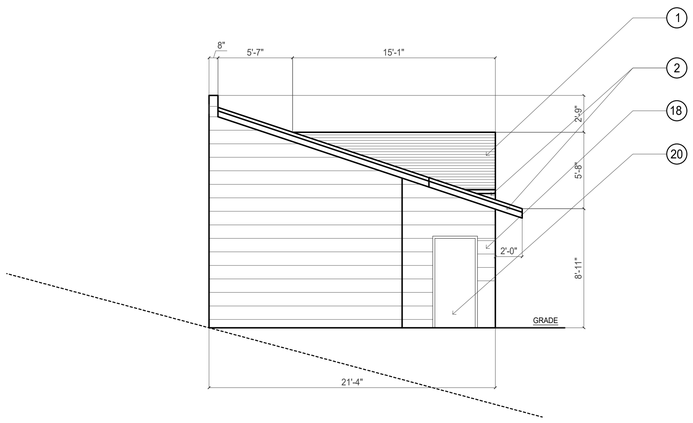
A-29



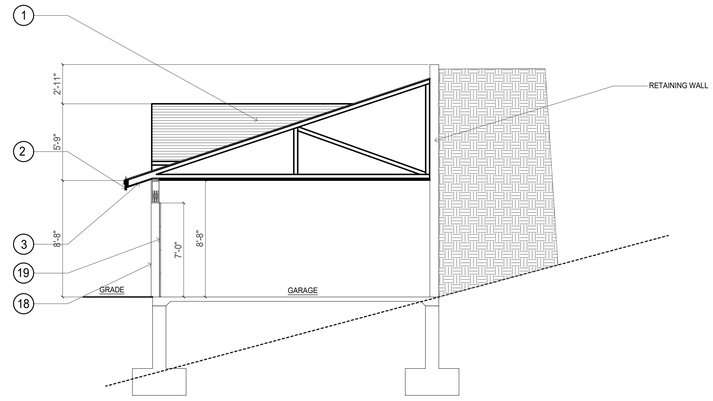
GARAGE - NORTH ELEVATION
3/16" = 1'-0"



GARAGE - EAST ELEVATION
3/16" = 1'-0"



GARAGE - WEST ELEVATION
3/16" = 1'-0"



GARAGE - SECTION
3/16" = 1'-0"

GARAGE ELEVATION FOR BUILDING TYPE I, II, III

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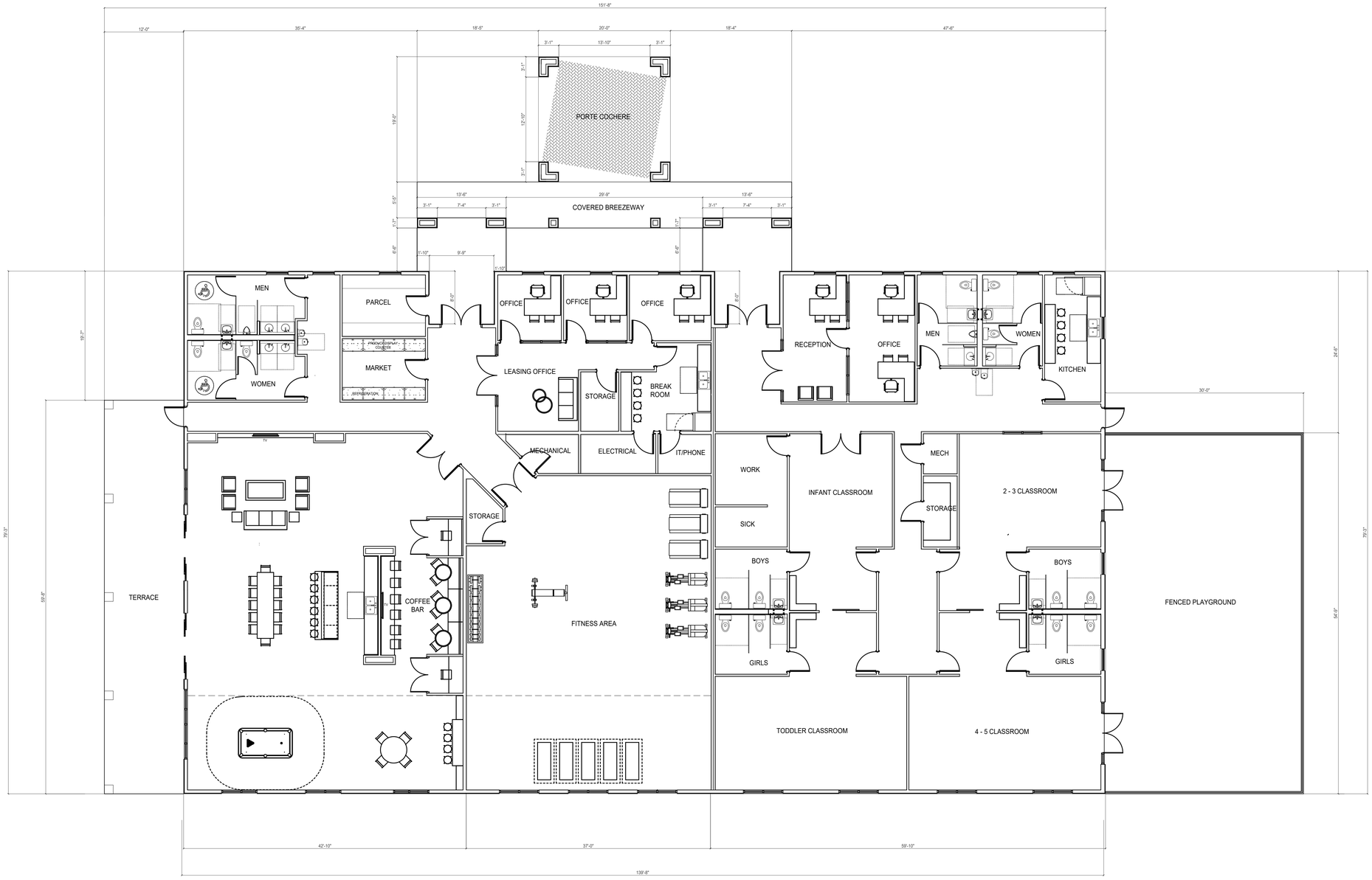
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/4" = 1'-0"

GARAGE ELEVATIONS

A-30



CLUBHOUSE **DAYCARE CENTER**

CLUBHOUSE & DAYCARE CENTER

1/8" = 1'-0"

CLUBHOUSE & DAYCARE				
LEVEL	AREA	COVERED ENTRANCE	TERRACE	TOTAL AREA
CLUBHOUSE	6,284	187	716	7187
DAYCARE	4,629	187	-	4816
BREEZEWAY	364	-	-	364
PORTE COCHERE	380	-	-	380
TOTAL FOR CLUBHOUSE	**11,657**	**374**	**716**	**12,747**

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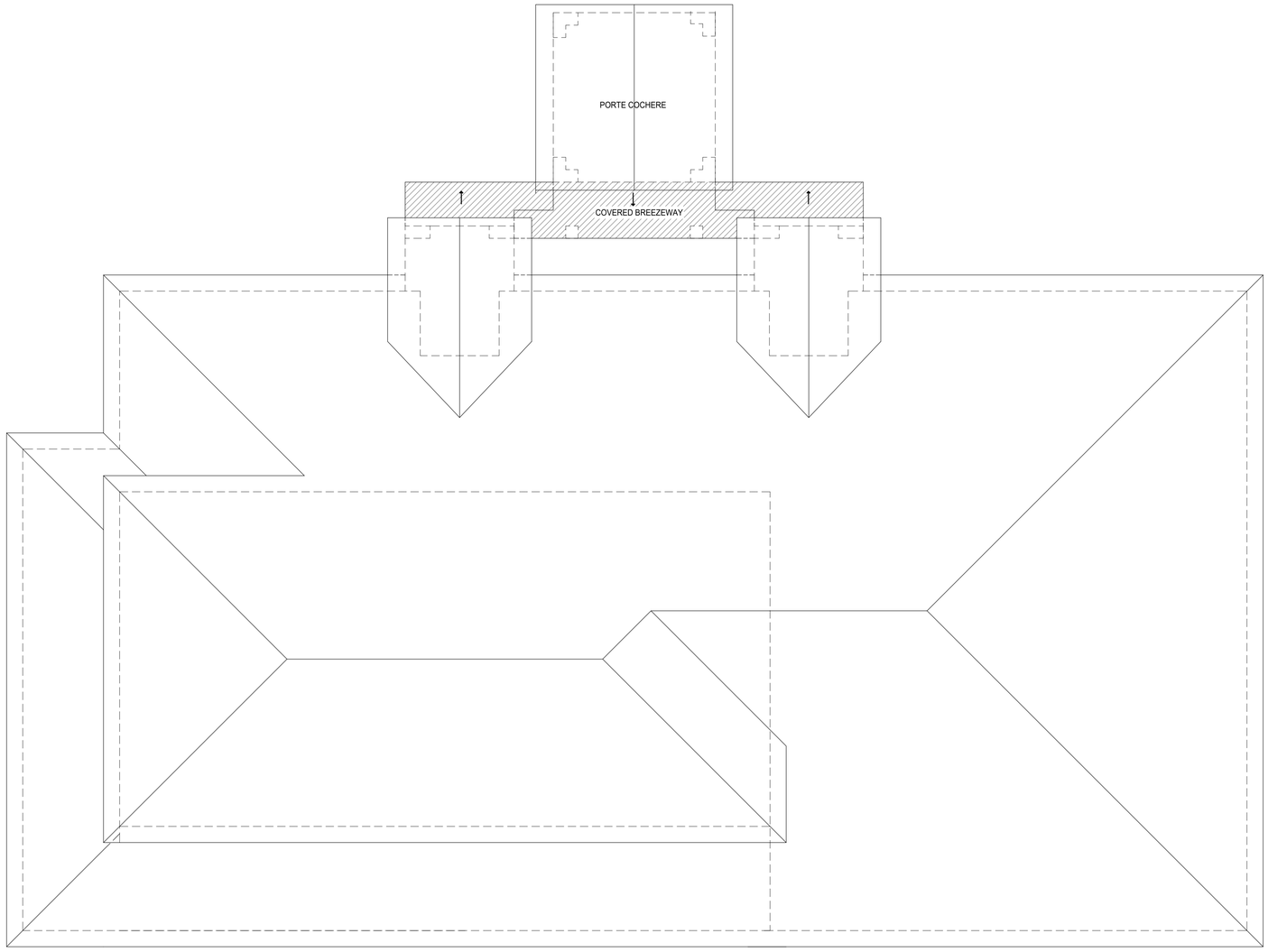
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PROJECT: GLENWOOD SPRINGS COLORADO

REV	Comment	DATE
BY: RC		
DATE: 12/26/2020		
SCALE: 1/8" = 1' - 0"		

CLUBHOUSE FLOOR PLAN

A – 31



CLUBHOUSE & DAYCARE CENTER - ROOF PLAN

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

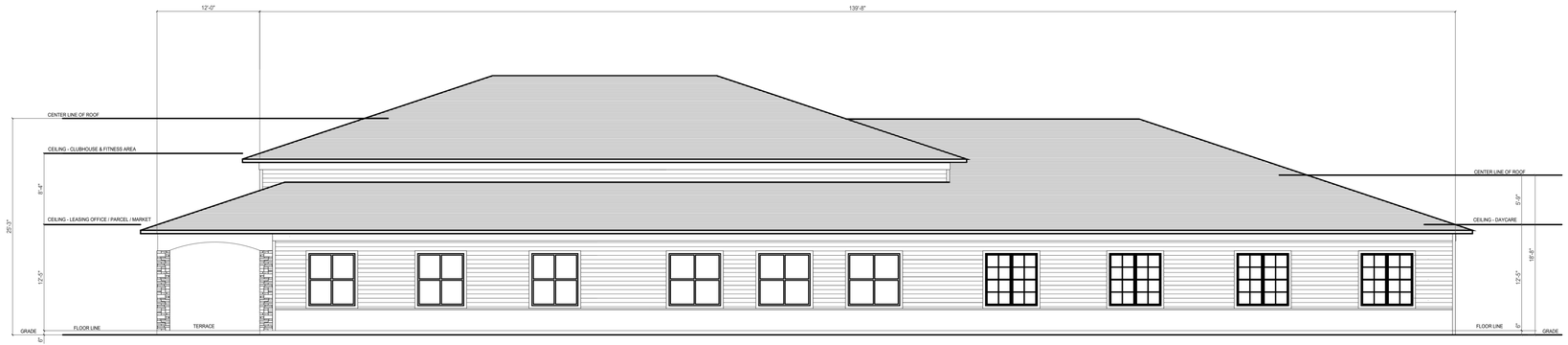
REV	COMMENT	DATE

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1' - 0"

CLUBHOUSE
ROOF PLAN

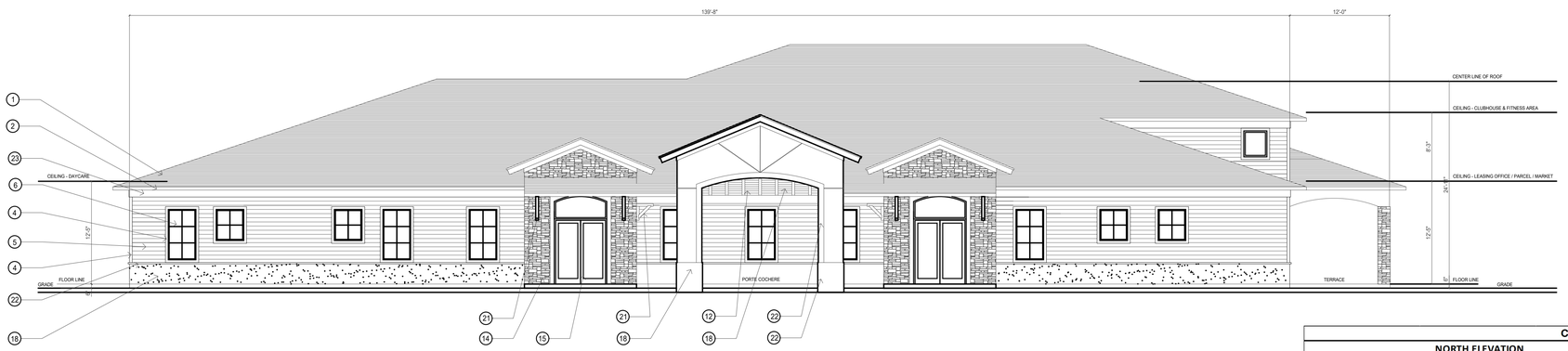
A-32

EXTERIOR FINISH SCHEDULE - CLUBHOUSE			
LABEL	ITEM	PRODUCT	COLOR
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 6" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	BOOTHBAY BLUE
6	WINDOW	ALUMINUM - SINGLE HUNG	WHITE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	COBBLE STONE
10	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
11	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
12	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
13	STUCCO	3 - COAT SMOOTH CEMENT STUCCO FINISH	COBBLE STONE
14	WALL BRACKET SUPPORT	HEABY TIMBER	MINWAX JACOBEEAN #2750
15	STUCCO MOLDING - CLUBHOUSE	STYROTRIM MOLDING 3.5" X 3.5"	COBBLE STONE
16	TRIM - CLUBHOUSE	HARDIE BOARD - 5/4 BOARD 9.25" WIDE	ARTIC WHITE
17	CARPORT AND BREZEWAY CEILING	T&G WOOD	BROWN TINT



CLUBHOUSE & DAYCARE - NORTH ELEVATION

1/8" = 1'-0"



CLUBHOUSE & DAYCARE - SOUTH ELEVATION

1/8" = 1'-0"

CLUBHOUSE & DAYCARE CENTER		
NORTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	2337.84	NA
NET STONE CLADDING	14	0.6%
NET SIDING	1113.7	47.6%
NET STUCCO FINISH	651.48	27.9%
NET GLAZING	558.66	23.9%

SOUTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	1683.19	NA
NET STONE CLADDING	263.22	15.6%
NET SIDING	751.57	44.7%
NET STUCCO FINISH	345.06	20.5%
NET GLAZING	323.34	19.2%

EAST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	2143.88	NA
NET STONE CLADDING	70	3.3%
NET SIDING	1,416.30	66.1%
NET STUCCO FINISH	321.65	15.0%
NET GLAZING	335.93	15.7%

WEST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	1014.67	NA
NET STONE CLADDING	32.95	3.2%
NET SIDING	600.13	59.1%
NET STUCCO FINISH	169.7	16.7%
NET GLAZING	211.89	20.9%

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV:	DATE:	BY:
COMMENT	12/28/2020	RC
	SCALE:	1/8" = 1'-0"

CLUBHOUSE ELEVATIONS

A – 33



CLUBHOUSE & DAYCARE - WEST ELEVATION

1/8" = 1'-0"



CLUBHOUSE & DAYCARE - EAST ELEVATION

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV:	DATE	COMMENT

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DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

CLUBHOUSE ELEVATIONS

A-34

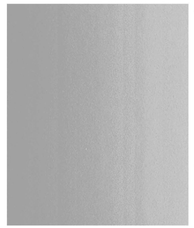
JAMES HARDIE FIBER CEMENT SIDING



AVAILABLE SIZES

THICKNESS:	0.312"	
LENGTH:	144" boards	
WIDTHS:	6.25"	8.25"
EXPOSURES:	5"	7"
	9.25"	12"
	8"	10.75"
	5.25"	7.25"
	4"	6"

Horizontal Siding



AVAILABLE SIZES

THICKNESS:	0.312"	
LENGTH:	108"	120"
WIDTHS:	48"	48"
	96"	
	48"	

Vertical Siding



AVAILABLE SIZES

THICKNESS:	1"	
LENGTH:	144" boards	
WIDTHS:	3.5"	5.5"
EXPOSURES:	3.5"	5.5"
	7.25"	9.25"
	7.25"	9.25"
	11.25"	
	11.25"	

Battens & Trims

CERTAINTEED STONE facade



Appalachian Twilight



Pocono Autumn



Highland Slate / Black Granite

CERTAINTEED SHINGLE ROOFING

SHERWIN WILLIAMS EXTERIOR BUILDING COLORS

TYPE-I VERTICAL/HORIZONTAL SIDING SW 6053	TYPE-I BALCONY PANELS SW 6115	TYPE-I BALCONY INTERIOR SW 6055	TYPE-I BATTEN AND TRIM SW 6113

Building Type I

TYPE-II VERTICAL/HORIZONTAL SIDING SW 6115	TYPE-II BALCONY PANELS SW 6054	TYPE-II BALCONY INTERIOR SW 6055	TYPE-II BATTEN AND TRIM SW 6113

Building Type II

TYPE-III VERTICAL/HORIZONTAL SIDING SW 6067	TYPE-III BALCONY PANELS SW 6054	TYPE-III BALCONY INTERIOR SW 6055	TYPE-III BATTEN AND TRIM SW 6114

Building Type III

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	R/C	
DATE:	12/24/2020	
SCALE:	1/8" = 1' - 0"	

EXTERIOR MATERIALS

A – 35



BUILDING TYPE I - SOUTH FACADE ELEVATION

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CONSULTANTS:

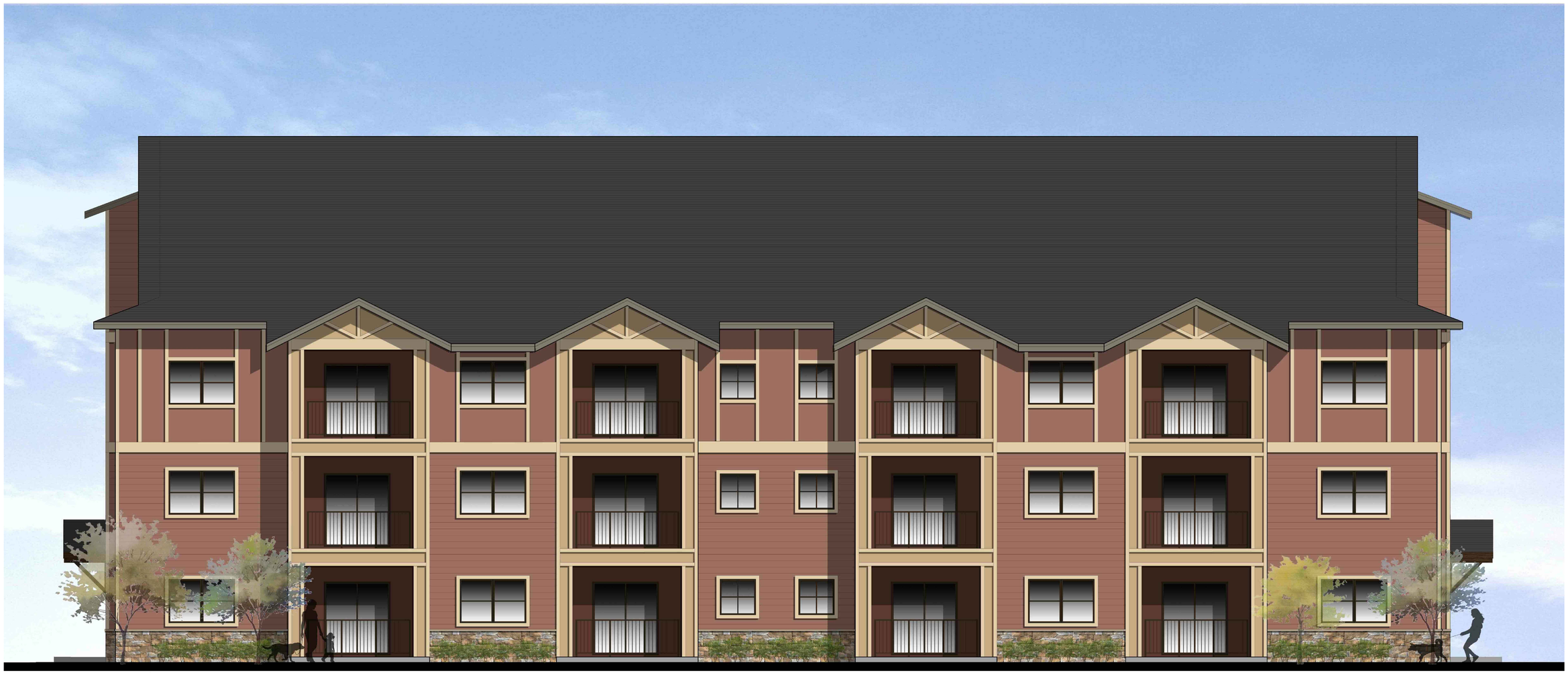
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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

No.	Comment	Date
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE I
ELEVATION

DRAWING NUMBER:
A-36



BUILDING TYPE I - NORTH FACADE ELEVATION

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PROJECT NUMBER:

PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

NO.	Content	DATE
3	Exterior Color Revision	09/17/2021

DRAWING NAME:
BLDG TYPE I
ELEVATION

DRAWING NUMBER:
A-37



BLDG TYPE I - EAST FACADE ELEVATION

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CONSULTANTS:

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

BY	Comment	DATE
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE I
ELEVATION

DRAWING NUMBER:
A-38



BLDG TYPE I - WEST FACADE ELEVATION

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

PROJECT NUMBER:

BY	Comment	DATE
3	Exterior Color Revision	09/17/2020

DRAWING name:
BLDG TYPE I
ELEVATION

DRAWING NUMBER:
A-39



BUILDING TYPE II - SOUTH FACADE ELEVATION

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Architect

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CONSULTANTS:

CONSULTANTS:

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

#	Issued	Date
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE II
ELEVATION

DRAWING NUMBER:
A-40



BUILDING TYPE II - NORTH FACADE ELEVATION

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

PROJECT NUMBER:

BY	Comment	DATE
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE II
ELEVATION

DRAWING NUMBER:
A-41



BLDG TYPE II - EAST FACADE ELEVATION

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

No.	Comment	Date
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE II
ELEVATION

DRAWING NUMBER:
A-42



BLDG TYPE II - WEST FACADE ELEVATION

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PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

PROJECT NUMBER:

BY	Issued	DATE
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE II
ELEVATION

DRAWING NUMBER:
A-43



BUILDING TYPE III - SOUTH FACADE ELEVATION

INTERNATIONAL CONSTRUCTION & DEVELOPMENT ADVISORS, INC.
Architects-Planners-Construction-Consultants
1150 S. Dixie Highway - Suite 214
Pompano Beach, FL 33316
O (305)321-4172

RICHARD COBA
Architect
AR No. 10,173

CONSULTANTS:

BLDGROUP
1300 Cordova Road - Suite 300
Ft. Lauderdale, FL 33316

PROJECT NUMBER:
PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

No	Comment	Date
3	Exterior Color Revision	05/17/2021

DRAWING NAME:
BLDG TYPE III
ELEVATION

DRAWING NUMBER:
A-44



BUILDING TYPE III - NORTH FACADE ELEVATION

INTERNATIONAL CONSTRUCTION & DEVELOPMENT ADVISORS, INC.
Architects–Planners–Construction–Consultants
11121 S. Dixie Highway – Suite 214
Pinecrest, FL 33156
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RICHARD COBA
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CONSULTANTS:

CONSULTANTS:

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Ft. Lauderdale, FL 33316

PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

PROJECT NUMBER:

Rev	Comment	Date
3	Exterior Color Revision	09/17/2021

DRAWING NAME:
BLDG TYPE III
ELEVATION

DRAWING NUMBER:
A-45



BLDG TYPE III - EAST FACADE ELEVATION

INTERNATIONAL CONSTRUCTION & DEVELOPMENT ADVISORS, INC.
Architects–Planners–Construction–Consultants
15041 S. Dixie Highway – Suite 214
Miami, Florida 33176
O (305)321-4172

RICHARD COBA
Architect
AR No. 10,173

CONSULTANTS:

BLDGROUP
1300 Cordova Road - Suite 300
Ft. Lauderdale, FL 33316

PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

No.	Content	DATE
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE III
ELEVATION

DRAWING NUMBER:
A-46



BLDG TYPE III - WEST FACADE ELEVATION

INTERNATIONAL CONSTRUCTION & DEVELOPMENT ADVISORS, INC.
Architects–Planners–Construction–Consultants
15041 S. Dixie Highway - Suite 214
Miami, Florida 33176
O (305)321-4172

RICHARD COBA
Architect
AR No. 10,173

CONSULTANTS:

BLDGROUP
1300 Cordova Road - Suite 300
Ft. Lauderdale, FL 33316

PROJECT NAME:
GLENWOOD SPRINGS
COLORADO

No.	Issued	DATE
3	Exterior Color Revision	09/17/2020

DRAWING NAME:
BLDG TYPE III
ELEVATION

DRAWING NUMBER:
A-47

Planning and Zoning Commission Report

Date: August 24, 2021
To: Planning and Zoning Commission
From: Trent L. Hyatt, Senior Planner
Subject: #60-20– BLD Group Major Site/Architectural Plan Review

REQUEST	Major Site/Architectural Plan Review for the construction of 300 multi-family residential apartment units.
APPLICANT	BLD Group
OWNER	Glenwood Meadows, LLC
LOCATION	Lots 11 C-B and 11 C-C of Glenwood Meadows Subdivision No. 6, adjacent to Flat Tops View Drive and Wulfsohn Road (PIN: 2185-081-41-002 and 2185-081-41-003)
ZONE	Residential High Density (RH) District (R/3 per Glenwood Meadows Zoning and Development Plan)
SURROUNDING LAND USES	North: Mixed residential/commercial South: Vacant East: Multi-family residential West: Vacant
LOT SIZE	Approximately 27.929 acres

ACTION ITEM

Per Section 070.060.020/Table 060.1 of the *Glenwood Springs Municipal Code* (Code), the Planning and Zoning Commission (Commission) reviews and provides a recommendation to City Council for Major Site/Architectural Plan Review applications including 25 or more new dwelling units and/or more than 30,000 gross square feet of nonresidential space. Following any approval (with or without conditions) of an application, the applicant must still submit and receive approval of a Final Plans Review application from City staff prior to submitting a building or grading permit application.

Action 1 – Major Site/Architectural Plan Review – construction of 300 multi-family residential apartment units.

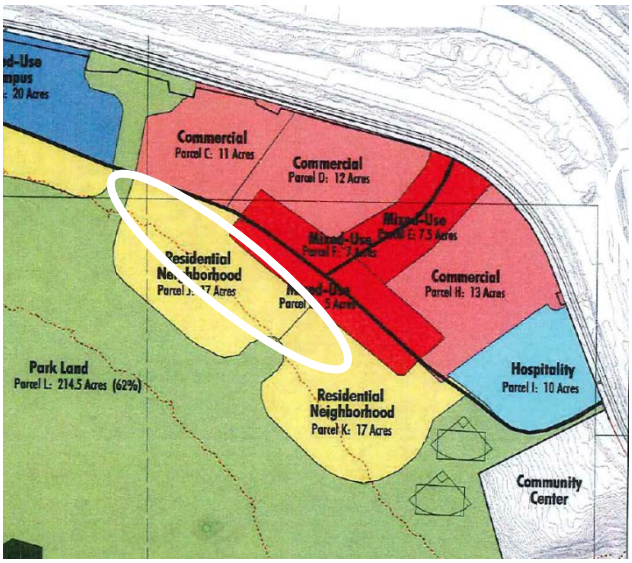
Staff recommendation: *Staff recommends **approval with conditions** of the Major Site/Architectural Plan Review with the findings and conditions on Page 10.*

BACKGROUND/ANALYSIS

History

In 2002, City Council approved the Glenwood Meadows annexation, rezoning, and development plan, which is memorialized in the attached Glenwood Meadows Annexation and Development Agreement which includes the Zoning and Development Plan (GMZDP) as an exhibit. The

document separated the 345-acre Glenwood Meadows property into 12 parcels and five zoning districts. The GMZDP includes general and zone-specific development standards, which at the time, intended to provide an elevated quality of site and building design beyond that of the *Glenwood Springs Municipal Code* (GSMC).



Glenwood Meadows Zoning Map

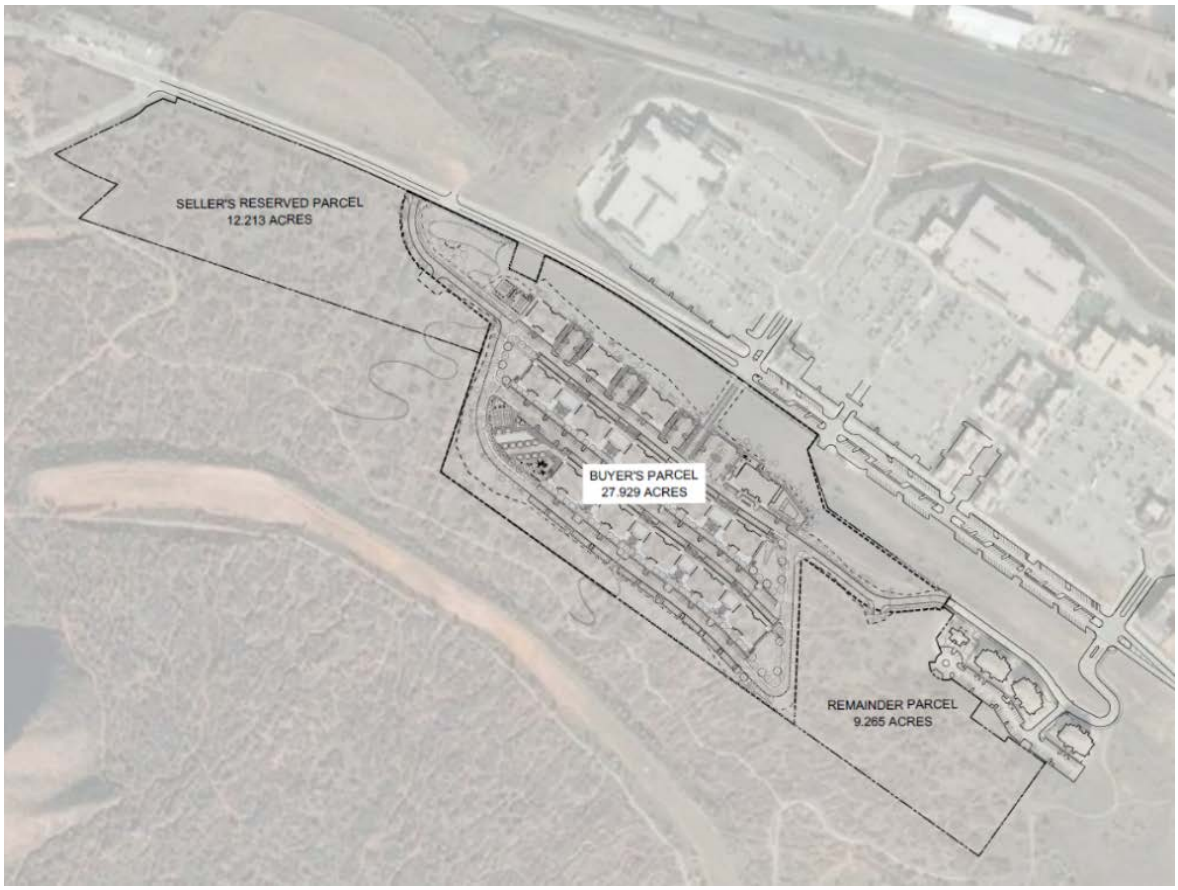


City Zoning Map

As depicted above left, the current application involves portion of Parcels J and K (circled in white) which are designated Residential Neighborhood (RN) in yellow. The RN area was previously zoned R/3 but is Residential High Density (RH) today as depicted in brown above right. The GMZDP allows a total maximum of 300 apartments units in the parcels designated RN, excluding 60 units to the southeast further discussed below. Approval of the proposal, if applicable, will eliminate the possibility of further multi-family apartment development on RN areas of Glenwood Meadows.

As mentioned above, BLD Group proposes the construction of 300 multi-family apartment units in 13 separate buildings on the approximately 27.929 acre (10.74 dwellings units per acre) subject property depicted below. The project also includes the construction of an approximately 20,960 square foot clubhouse and daycare building, and 20 detached garage buildings.

The site lies to the west of Flat Tops View Drive and south of Wulfsohn Road. A Minor Subdivision, which is administrative and not part of this review, is required to create the development parcel depicted below. Application materials include a site plan, floor plans, perspective views, section views, elevations, landscaping plan, grading plan, and related reports which are attached for your review.



Site plan-development site and remaining parcels



Aerial view look east (photo credit: Google Maps)



Similar perspective view to above aerial

Annexation and Development Agreement/Memorandum of Understanding

Upon receipt of the original application submittal in December 2020, staff questioned whether the GMZDP allowed additional multi-family apartment development beyond the 300 unit maximum outlined therein. We were concerned the current proposal would exceed the maximum number of units allowed when combined with the previous development phases of the Lofts at Red Mountain (LARM) to the north. The applicant submitted an appeal of the Community Development Director's interpretation/decision which was never heard by the Commission as it was determined that the 300 multi-family only applies to R-3 designated parcels within Glenwood Meadows, not C-2. Regardless, the owner of the property and the City have entered into the attached memorandum of understanding (MOU) to address certain issues associated with development of the proposal moving forward such as lift station upgrades and traffic impacts.

Development Standards

Site layout, building design, parking, landscaping, and other specifics related to development within Glenwood Meadows are subject to the GMZDP. Sections therein provide General Development Standards (Chapter V. beginning on page 11) as well as standards specific to each area (Chapter X, beginning on page 39) within the development. Where not addressed by the GMZDP, Section 070.040 of the Code applies. Staff provides an overview of the various applicable standards below.

Landscaping and Open Space

Chapter V.H of the GMZDP requires R-3 parcels provide a minimum of 40 percent open space and landscaping based on that amount. Required park land space for the Glenwood Meadows development has been previously satisfied by various improvements or land transfers to the City including the creation of hiking/biking trails, pedestrian infrastructure such as the Midland Trail, transfer of Community Center/garden property, etc. Common open space for future residents of the current proposal is provided via a clubhouse, pickleball courts, community gardens, a dog park, and various trail connections. Native and new landscaping is used to screen interior and exterior

open space, parking, and streetscape areas.

Off Street Parking and Loading

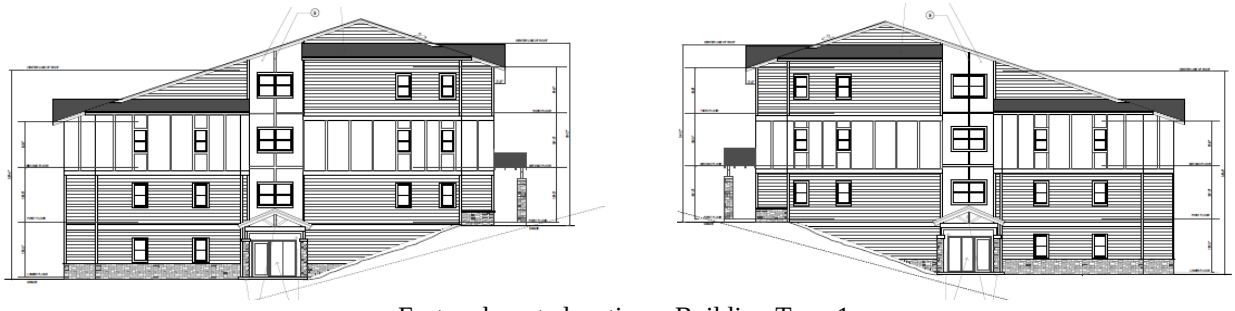
Section 070.030.020(e)/Table 030.1 Table of Allowed Uses outlines 1.5 spaces per multi-family dwelling unit (regardless of size) and one guest space per five dwelling units requiring 510 total spaces for the apartment unit. An additional 27 spaces are provided for the clubhouse. The Code also allows for compact spaces to account for 20 percent of the required number of spaces.

Residential Neighborhoods (R-3) Site Layout and Building Design

Section X of the GMZDP outlines design specifics for the R-3 parcels related to building orientation, architectural elements, heights, and façade articulation. All sides of residential buildings shall display similar architectural interest. The applicant has revised the elevations multiple times to address staff concerns/questions related to design in order to improve building aesthetic. All elevations of each proposed building type display similar interest to the more prominent front and rear (north/south) sides. Multi-family buildings proposed also do not exceed 125 feet in length as outlined in the GMZDP. At least every 50 linear feet, wall planes shall contain offsets or setbacks with a differential in horizontal plane of at least five feet. Roof line/heights along the east and west elevations were revised to be within the maximum height of 40 feet as outlined by Section 070.020.070(b)/Table 020.9 of the Code. Additionally, garage structures were broken up to comply with maximum size standards.



South color elevation-Building Type II



East and west elevations -Building Type 1



North elevation-Building Type 1

Traffic Impacts

Per the attached GMZDP, individual applicants are only required to submit information related to the expected traffic generation associated with each development proposal. This is in lieu of a detailed traffic impact analysis (TIA) per the City's Engineering Standards. Based on the letter submitted with the application, the proposal is expected to generate approximately 1,632 weekday daily trips (108 AM peak hour, 138 PM peak hour). The daycare use is not addressed in the information provided but is not expected to exceed previously estimated trip generation for the development. The property owner has agreed to a $500 per unit traffic impact fee payment toward future Midland Avenue intersection improvements, where needed. While a TIA is not required in this instance, an access permit and related improvements determined necessary may be required by the Colorado Department of Transportation if a 20 percent increase at any state highway intersection (i.e. Interstate 70 exit 114 8th Street at Highway 82/Grand Avenue) is associated with the project. However, the costs of any required improvements will not be borne by the applicant.

Inclusionary Housing

It is important to note that 60 affordable multi-family units, known as the Glenwood Green Apartments, offered at various average medium income (AMI) rates, were previously approved and currently exist within the Glenwood Meadows development. This represents approximately 12.6 of the total residential units approved (475) in the R-3 zoned portion (which excludes LARM approved and proposed units in C-2). However, the applicant has agreed to deed restrict 10 units as owner occupied at 100 precent of AMI for a period of five years.

Site/Architectural Plan Review Approval Criteria

A Major Site/Architectural Plan Review application must adhere to the approval criteria outlined in Section 070.060.050(6) of the Code as outlined in ***bold italics*** below. Other language is provided by staff.

a. The site/architectural plan is consistent with the general purpose and intent of this Code;

The proposal is consistent with the general purpose and intent of the Code regarding guarding against natural hazards, efficient development, compatible design, and addressing development impacts.

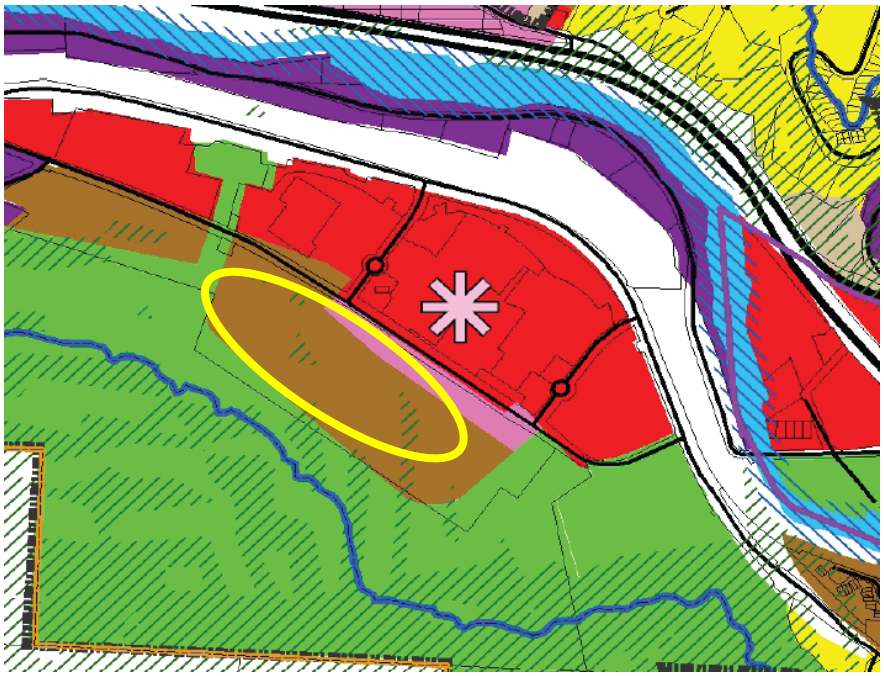
b. The site/architectural plan is consistent with the dimensional, design, development, and all other standards of this Code;

As outlined above, the applicant has worked with staff to address certain aspect of the project that were previously not in compliance with numerous applicable dimensional, design, development, or other standards outlined in the GMZDP and/or GSMC.

c. The site/architectural plan is consistent with any previously approved plat, PUD, or any other precedent land use approval; and

As outlined above, the applicant has worked with staff to address certain aspect of the project that were previously not in compliance with numerous applicable dimensional, design, development, or other standards outlined in the GMZDP and/or GSMC.

d. The site/architectural plan is consistent with the Comprehensive Plan and other adopted City policies and plans.



As shown at right, *Map 2.1 Future Land Use – North Portion of the City of the Glenwood Springs* of the Comprehensive Plan (Comp Plan) identifies the area as "Multi-family Residential" in brown and "Hillside Preservation" with green hatching. According to the Comp Plan, the "Multi-family Residential" designation "*… accommodates multifamily structures of 3 units or greater. Home occupations, assisted living facilities, institutional uses such as churches, schools, public building, parks and trails are allowed uses."* "Hillside Preservation" are areas of "*…defined by prominent ridge lines, steep slopes, varied unstable geologic conditions, rock outcroppings, and extensive vegetation*". This includes slopes which are equal to or greater than 20 percent where development requires special care or is discouraged.

The Code requires identification of the Limits of Disturbance (LOD) and an exact measurement of the average slope within the LOD. The project summary on sheet L1.1 outlines that slopes average below the maximum 20 percent.

Numerous community goals and related objectives and strategies are outlined in the Executive Summary and subsequent chapters of the Comp Plan which are summarized in the following table.

Comprehensive Plan Goal Supported	**Objective and Strategies**
Promote long-term, sustainable, diverse, economic development	-Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34)
Staff Comment: The objective/strategy outlined above are supported by the current application as it includes infill development/redevelopment.	
Preserve small town character while maintaining the livability of Glenwood Springs and increasing the vibrancy and commercial success of the downtown	-Develop according to the vision (Chapter 4, Page 34) -Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34) -Enhance pedestrian–friendliness while facilitating traffic (Chapter 3, Page 36) -Direct growth inward (Chapter 9, Page 102)
Staff Comment: Infill, as proposed, makes improvements more cost effective. The design of the project is in character with surrounding the site area and aligns with the GMZDP district purpose.	
Address transportation and provide multiple convenient travel choices	-Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34) -Encourage reduction of single occupant vehicles and encourage alternate travel modes through land use planning and community design (Chapter 5, Page 66)
Staff Comment: Dense infill, as proposed, is a land use strategy used to address transportation issues per the Comp Plan which also encourages the use of public transportation to reduce single occupancy vehicle use.	
Direct development to locations and building forms that are cost effective to serve	-Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34) -Direct growth to areas where utilities and services can be provided efficiently (Chapter 7, Page 82) -Direct growth inward (Chapter 9, Page 102)
Staff Comment: Infill/redevelopment, as proposed, makes improvements more cost effective. Therefore, the objectives/strategies associated with the project support the Comp Plan goal.	
Provide housing opportunities for the entire community	-Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34) -Increase the supply of housing that is affordable to the workforce (community

	housing) by implementing the Strategic Housing Plan. (Chapter 6, Page 75) -Encourage housing variety and affordability throughout the community (Chapter 6, Page 76) -Require good design for mixed-use and higher density project (Chapter 6, Page 78)
Staff Comment: Attainable housing supports the City's workforce. Infill/redevelopment, as proposed, makes improvements more cost effective while providing a nice aesthetic. Therefore, the objectives/strategies associated with the project support the Comp Plan goal.	
Support social diversity	-Direct development into a compact form: infill and redevelopment (Chapter 3, Page 34) -Increase the supply of housing that is affordable to the workforce (community housing) by implementing the Strategic Housing Plan. (Chapter 6, Page 75) -Require good design for mixed-use and higher density projects (Chapter 6, Page 78) -Direct growth inward (Chapter 9, Page 102)
Staff Comment: Attainable housing supports the City's workforce and infill/development allows for easier access to goods/services for the entire community.	

Reviewing Agency Comments
An overview of the attached comments received from referral agencies regarding various application submittals (December 2020, July 2021, and August 2021) is provided below. Please note, many of the comments have been addressed by the applicant throughout the review process.

Engineering - Comments received outline issues related to grading, asphalt depths, soil inconsistencies, and traffic.

Parks and Recreation – Comments received outline the need for suitable plant species, increased recreational opportunities, and trail connections.

Public Works - Comments received outline that all utilities remain private, the need for irrigation details, fire design requirements, necessary water and sewer details, electric system requirements, concerns related to site soils and slopes.

Transportation - Comments received outline the need for better access to transit and sidewalk connectivity.

ACTION ALTERNATIVES AND STAFF RECOMMENDATION:

Section 070.060.030(g)(1)d outlines the review and decision procedures for applications being considered by the Commission and/or City Council stating, "[T]he applicable review body shall **approve, approve with conditions, or deny** the application **based on the applicable approval**

criteria listed in the application-specific procedures. The body may also **continue** the hearing…"

Action 1 – Major Site/Architectural Plan Review – construction of 300 multi-family residential apartment units.

Staff Recommendation/Suggested Motion
Staff recommends **approval with conditions** of the Major Site/Architectural Plan Review application with the findings and conditions outlined below.

Recommended Findings:
1. The site/architectural plan is consistent with the general purpose and intent of the Code;
2. The site/architectural plan appears to be consistent with all dimensional, design, development, and all other standards of the *Glenwood Meadows Zoning and Development Plan* and *Glenwood Springs Municipal Code*;
3. The site/architectural plan does is consistent with the precedent setting land use approval, the *Glenwood Meadows Annexation Zoning and Development Plan*; and
4. The site/architectural plan is substantially consistent with the Comprehensive Plan and other adopted City policies and plans.

Recommended Conditions
1. The applicant shall comply with/address all *Glenwood Springs Municipal Code* specific City staff comments prior to submittal of any future development permit (including but not limited to a Final Plans Review) application.
2. The applicant shall comply with all verbal representations made in the public hearings, as outlined in all application materials, and/or as revised per conditions herein.
3. Prior to approval of any future development review application, the applicant shall apply for and receive the approval of a CDOT access permit, where applicable.
4. The applicant shall receive approval of the related Minor Subdivision application to create the development parcel and residual lots.
5. The development shall comply with the requirements of the Code except where specific variances have been granted. Any future physical changes or improvements to the property or buildings on the parcel are subject to the review and approval of the Community Development Director for compliance with applicable requirements of the Glenwood Springs Municipal Code.
6. The applicant shall comply fully with the Memorandum of Understanding between the City and Glenwood Meadows, LLC executed May 5, 2021.
7. The applicant shall deed restrict a minimum of 10 units as owner occupied at 100 precent of AMI for a period of five years.
8. Prior to submitting a building or grading permit application, the applicant shall
    a. Submit a Final Plans Review application in accordance with Municipal Code section 070.060.050(c).
    b. Enter into a development agreement with the City which shall be recorded with the Garfield County Clerk and Recorder.
    c. Submit an engineer's estimate of all public improvement and submit a financial security for any required improvement not yet completed.
    d. Schedule a pre-construction meeting with applicable City departments.

GLENWOOD MEADOWS MULTI-FAMILY HOUSING

Glenwood Springs, Colorado

MAJOR SITE / ARCHITECTURE REVIEW

SUBMITTAL #4: August 13, 2021

INDEX OF SHEETS

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GR2	PRELIMINARY GRADING PLAN - SHEET 2
UT1	PRELIMINARY UTILITY PLAN - SHEET 1
UT2	PRELIMINARY UTILITY PLAN - SHEET 2

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L1.1	DEVELOPMENT AREA SITE PLAN
L1.2	SITE PLAN ENLARGEMENT KEY PLAN
L1.3	ENLARGED SITE PLAN
L1.4	ENLARGED SITE PLAN
L1.5	ENLARGED SITE PLAN
L1.6	ENLARGED SITE PLAN
L1.7	ENLARGED SITE PLAN
L1.8	ENLARGED SITE PLAN
L1.9	ENLARGED SITE PLAN
L2.0	PLANT LIST AND GENERAL NOTES
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LP.1	SITE LIGHTING ENLARGEMENT KEY PLAN
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EXBT 6	PERSPECTIVE ILLUSTRATION
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EXBT 8	PERSPECTIVE ILLUSTRATION
EXBT 9	PERSPECTIVE ILLUSTRATION
EXBT 10	PERSPECTIVE ILLUSTRATION
EXBT 11	PERSPECTIVE ILLUSTRATION
EXBT 12.1	SITE SECTION
EXBT 12.2	SITE SECTION
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EXBT 13	WEST ENTRY PLAN AND PROFILE
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Architecture Sheet Set

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A-4	BUILDING TYPE 1 FLOOR PLANS
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PROJECT TEAM

LANDSCAPE ARCHITECT

DHM DESIGN CORPORATION
311 MAIN STREET, SUITE 102
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PHONE: (954) 578-6008
CONTACT: RICHARD COBA

CIVIL ENGINEER

HIGH COUNTRY ENGINEERING
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GLENWOOD SPRINGS, CO 81601
PHONE: (970) 945-8676
CONTACT: ROGER NEAL

LOCATION MAP



UNIT AND SITE AMENITY DATA

LOT SIZE INFORMATION	Acres	SF	LOT COVERAGE	Required (SF & %)	Proposed (SF & %)
Lot 2 - Phase 1	**27.9 Acres**	**1,215,160 sf**		**50% Max. Lot Coverage**	**591,051 sf** *49% Lot Size*
LIMITS OF DISTURBANCE		Proposed (SF & %)	**AVERAGE SLOPE WITHIN LIMITS OF DISTURBANCE**	Percentage (%)	
Lot 2 - Phase 1		**895.561 sf** **74%** *Lot Size*		**16%**	
OFF-STREET PARKING SPACES	Required # Vehicle Spaces	Proposed # Vehicle Spaces	**BICYCLE PARKING**	Required # Spaces	Proposed # Spaces
Residence Parking *1.7 spaces per unit*	**510 Spaces** *Phase 1 Count: 300 units*	**510 Spaces**	**Bike Racks** *150 parking spaces- 9 bike parking spaces plus 1 space for each 50 vehicle spaces provided after the first 150 spaces*	**17 Bike Parking Spaces** *Phase 1 Count: 538 Parking Spaces*	**160 Bike Parking Spaces**
Clubhouse *1 per 400 sf of building area plus 1 per 10,000 sf of outdoor space*	**29 Spaces** *Phase 1 Count: 10,900 sf Building and 11,000 sf of Outside area*	**29 Spaces**			
ADA	**20 Spaces**	**38 Spaces**			
TOTAL PARKING	**539 Spaces**	**539 Spaces**			

RESIDENTIAL UNITS	Buildings	Units	COMMON AMENITY SPACE	Required (SF)	Provided (SF)
Building Type 1	**7 Buildings**	**168 Units**	Community Center & Daycare		**20,960 sf**
Building Type 2	**3 Buildings**	**60 Units**	Community Gardens		**7,665 sf**
Building Type 3	**3 Buildings**	**72 Units**	Amenity Spaces between Buildings		**30,160 sf**
TOTAL	**13 Buildings**	**300 Units**	Trail Connections		**2,058 sf**
BUILDING HEIGHT	Required	Proposed	Dog Yard		**36,432 sf**
	40 ft. maximum	**37 ft.** *roof center line to grade*	**TOTAL**	**60,000 sf** *Required: 200 sf per unit Phase 1 Count: 300 units*	**97,275 sf**

LANDSCAPE DATA

OPEN SPACE	SQUARE FOOTAGE	TREES		SHRUBS	
		REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Upper tier - disturbed	87,483 SF	73	74	219	366
Lower tier - disturbed	79,351 SF	66	66	198	285

INTERNAL DRIVEWAY	LINEAR FEET	TREES	
		REQUIRED *(1/35 LF)*	PROVIDED
Flat Tops View Dr (Sunny Aspen)	2,071 LF	59	60
Wolf Liam Lane	1,735 LF	50	50
Adios Avenue	1,748 LF	50	50

PARKING AREAS	Total Parking Area (SF)	Landscaped Area (SF & %)	TREES		SHRUBS	
			REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Parking Lots	29,694 SF	10,485 SF *(35% of the parking area)*	25	40	74	240

TOTAL LANDSCAPED AREA	Proposed (SF & %)	OPEN SPACE	Required (SF & %)	Proposed (SF & %)
	304,510 sf *25% Lot Size*		**486,064 sf** *40% Lot Size*	**504,083 sf** *41.5% Lot Size*
TOTAL IMPERVIOUS AREA	Proposed (SF & %)			
	591,051 sf *49% Lot Size*			

SNOW STORAGE NOTE: ON-SITE SNOW STORAGE WILL BE PROVIDED IN LANDSCAPE AREAS AT THE EAST AND WEST ENDS OF THE BUILDING ROWS AND BEHIND THE CURB WHERE SIDEWALKS DO NOT EXIST. FINAL SNOW MANAGEMENT WILL BE REFINED BASED ON GEOTECHNICAL REVIEW, RECOMMENDATIONS, AND GRADING & DRAINAGE PLAN.

BASIS OF BEARING / BENCHMARK

BEARINGS ARE BASED UPON A #5 REBAR WITH ALUMINUM CAP L.S. #5933 FOUND AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S.
25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.

LEGAL DESCRIPTION

PARCEL A:
****
NOTE: THE FOLLOWING LEGAL DESCRIPTION IS PRELIMINARY AND IS SUBJECT TO CHANGE UPON COMPLIANCE WITH THE REQUIREMENTS UNDER SCHEDULE B-1, HEREIN.
****
LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
COUNTY OF GARFIELD, STATE OF COLORADO
PARCEL B:
EASEMENTS FOR UTILITIES, DRAINAGE AND ACCESS AS DESCRIBED AND DEPICTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 5, 17, 2012 UNDER RECEPTION NO. 818857 AND FIRST AMENDMENTS TO RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

FEMA FLOODPLAIN STATEMENT

PARCELS A & B ARE LOCATED WITHIN ZONE D ACCORDING TO FEMA MAP PANELS 0802051431B AND 0802051432B BOTH EFFECTIVE 01/03/1986. ACCORDING TO FEMA, NO ADDITIONAL DIGITAL DATA IS AVAILABLE IN THIS AREA.

PUBLIC IMPROVEMENTS STATEMENT

THE PUBLIC IMPROVEMENTS FOR THE ENTIRETY OF THE GLENWOOD MEADOWS SUBDIVISION HAVE BEEN SATISFIED AS MEMORIALIZED IN THE JULY 2013 MOU BETWEEN THE DEVELOPER (GLENWOOD MEADOWS, LLC) AND THE CITY OF GLENWOOD SPRINGS. THESE PUBLIC IMPROVEMENTS INCLUDED OFF-SITE TRAFFIC IMPROVEMENTS, ON- AND OFF-SITE PEDESTRIAN TRAIL IMPROVEMENTS, WATER RIGHTS CONVEYANCES, OFF-SITE RIVERTRAIL CONTRIBUTIONS, TRANSIT IMPROVEMENTS, AND PUBLIC OPEN SPACE DEDICATIONS. IN JUNE OF 2021 THE CITY OF GLENWOOD SPRINGS AND GLENWOOD MEADOWS, LLC ENTERED INTO A MOU THAT ADDED PUBLIC IMPROVEMENTS ABOVE AND BEYOND THE PREVIOUSLY SATISFIED REQUIREMENTS, INCLUDING INFRASTRUCTURE UPGRADES AND TRAFFIC IMPACT FEES. THE PROJECT PROPOSAL INCLUDES ON-SITE PUBLIC IMPROVEMENTS INCLUDING A SIDEWALK EXTENSION ALONG WULFSOHN ROAD, PUBLICLY-ACCESSIBLE TRAILHEADS TO OPEN SPACE, AND A PUBLICLY-AVAILABLE DAYCARE FACILITY.

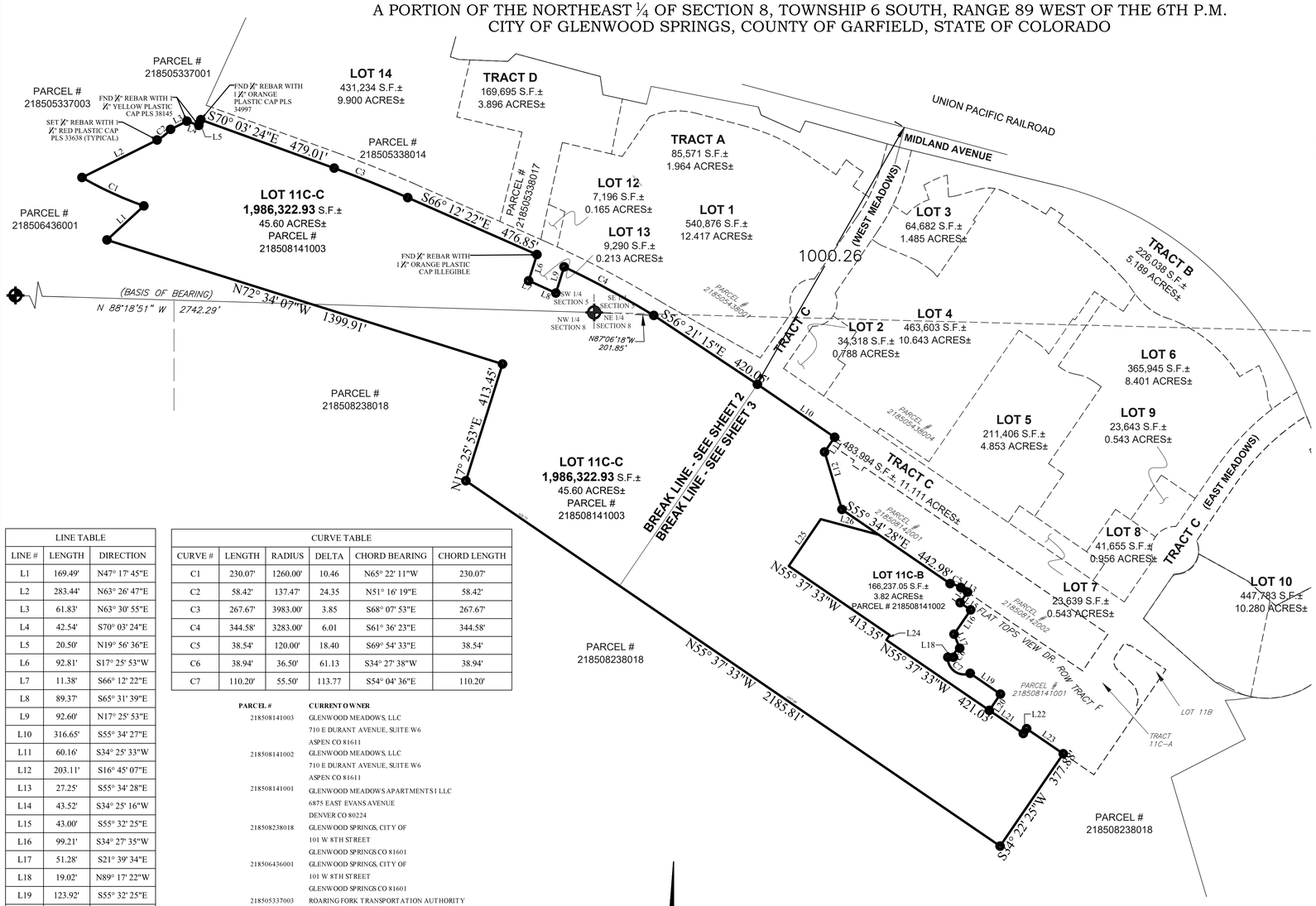
GEOLOGIC HAZARDS DISCLOSURE

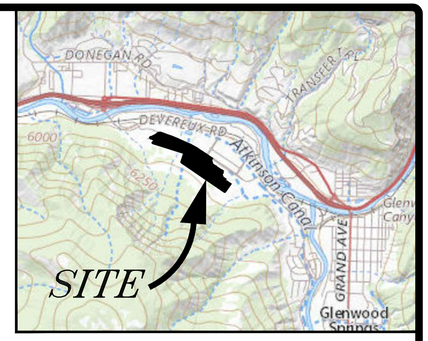
THE PROPERTY IS SUBJECT TO GEOLOGIC HAZARDS PER THE ADOPTED MAPPING BY THE CITY OF GLENWOOD SPRINGS. HAZARDS TO NOTE ARE SEVERE POTENTIAL FOR HYDROCOMPACTION, AND FOR OFF-SITE DEBRIS FLOW. A FINAL GEOLOGIC HAZARD REPORT WILL BE SUBMITTED UPON APPLICATION OF A BUILDING PERMIT.

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037

A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO





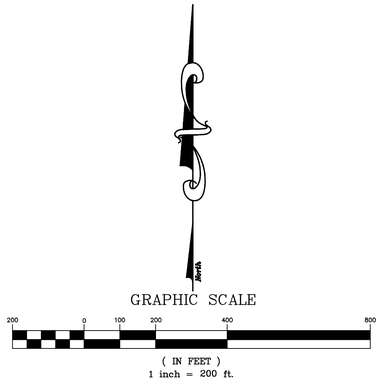
VICINITY MAP
SCALE: 1" = 3000'

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	169.49'	N47° 17' 45"E
L2	283.44'	N63° 26' 47"E
L3	61.83'	N63° 30' 55"E
L4	42.54'	S70° 03' 24"E
L5	20.50'	N19° 56' 36"E
L6	92.81'	S17° 25' 53"W
L7	11.38'	S66° 12' 22"E
L8	89.37'	S65° 31' 39"E
L9	92.60'	N17° 25' 53"E
L10	316.65'	S55° 34' 27"E
L11	60.16'	S34° 25' 33"W
L12	203.11'	S16° 45' 07"E
L13	27.25'	S55° 34' 28"E
L14	43.52'	S34° 25' 16"W
L15	43.00'	S55° 32' 25"E
L16	99.21'	S34° 27' 35"W
L17	51.28'	S21° 39' 34"E
L18	19.02'	N89° 17' 22"W
L19	123.92'	S55° 32' 25"E
L20	66.33'	S34° 22' 27"W
L21	138.97'	S55° 37' 33"E
L22	20.00'	N34° 22' 25"E
L23	150.00'	S55° 37' 33"E

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	230.07'	1260.00'	10.46	N65° 22' 11"W	230.07'
C2	58.42'	137.47'	24.35	N51° 16' 19"E	58.42'
C3	267.67'	3983.00'	3.85	S68° 07' 53"E	267.67'
C4	344.58'	3283.00'	6.01	S61° 36' 23"E	344.58'
C5	38.54'	120.00'	18.40	S69° 54' 33"E	38.54'
C6	38.94'	36.50'	61.13	S34° 27' 38"W	38.94'
C7	110.20'	55.50'	113.77	S54° 04' 36"E	110.20'

LINE TABLE		
LINE #	LENGTH	DIRECTION
L24	20.00'	N34° 22' 27"E
L25	191.73'	N34° 22' 04"E
L26	202.63'	S75° 00' 01"E

PARCEL #	CURRENT OWNER
218508141003	GLENWOOD MEADOWS, LLC 710 E DURANT AVENUE, SUITE W6 ASPEN CO 81611
218508141002	GLENWOOD MEADOWS, LLC 710 E DURANT AVENUE, SUITE W6 ASPEN CO 81611
218508141001	GLENWOOD MEADOWS APARTMENTS I LLC 6875 EAST EVANS AVENUE DENVER CO 80224
218508238018	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218506436001	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218505337003	ROARING FORK TRANSPORTATION AUTHORITY 0766 INDUSTRY WAY CARBONDALE CO 81623
218505337001	ROARING FORK TRANSPORTATION AUTHORITY 0051 SERVICE CENTER DRIVE ASPEN CO 81611
218505338014	CENTURA VENTURES LLC 9100 E MINERAL CIRCLE ENGLEWOOD CO 80112
218505338017	GLENWOOD SPRINGS, CITY OF 101 W 8TH STREET GLENWOOD SPRINGS CO 81601
218508142001	SC GLENWOOD I LLC 760 W MAIN STREET, STE 140 BARRINGTON IL 60010
218508142002	SC GLENWOOD II LLC 760 W MAIN STREET, STE 140 BARRINGTON IL 60010
218505438004	TARGET CORPORATION PO BOX 72028 PHOENIX AZ 85050
218505438001	WEINGARTEN MILLER GLENWOOD LLC 6900 EAST BELLEVIEW AVENUE SUITE 300 GREENWOOD VILLAGE CO 80111



LEGEND AND NOTES:

● - INDICATES FOUND MONUMENT AS DESCRIBED

◎ - INDICATES MONUMENT TO BE SET AS DESCRIBED

- DATE OF SURVEY: SEPTEMBER 5 - 8, 2020

- UNIT OF MEASUREMENT: US SURVEY FOOT

- ZONING DATA TO BE PROVIDED BY CLIENT

- PARCELS A & B ARE LOCATED WITHIN ZONE D ACCORDING TO FEMA MAP PANELS 0802051431B AND 0802051432B BOTH EFFECTIVE 01/03/1986. ACCORDING TO FEMA, NO ADDITIONAL DIGITAL DATA IS AVAILABLE IN THIS AREA.

- BEARINGS ARE BASED UPON A #5 REBAR WITH ALUMINUM CAP L.S. #5933 FOUND AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.

- THIS ALTA LAND TITLE SURVEY IS BASED UPON INFORMATION PROVIDED BY LAND TITLE GUARANTEE COMPANY IN ORDER NUMBER ABS63015235-4 DATED AUGUST 26, 2020. THIS PROPERTY IS SUBJECT TO THE FOLLOWING EXCEPTIONS PER SAID ORDER NUMBER ABS63015235-4:

8. EXISTING LEASES AND TENANCIES, IF ANY. **NOTHING TO PLOT.**

9. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 268. **NOTHING TO PLOT.**

10. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 269. **NOTHING TO PLOT.**

11. EASEMENTS AND RIGHTS OF WAY AS GRANTED TO THE MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY IN INSTRUMENT RECORDED JUNE 25, 1936 IN BOOK 183 AT PAGE 430. **NOTHING TO PLOT.**

12. RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES AS RESERVED IN UNITED STATES PATENT RECORDED SEPTEMBER 30, 1949, IN BOOK 245 AT PAGE 270. **NOTHING TO PLOT.**

13. (THIS ITEM WAS INTENTIONALLY DELETED) **NOTHING TO PLOT.**

14. TERMS, CONDITIONS AND PROVISIONS OF ANNEXATION AND DEVELOPMENT AGREEMENT RECORDED DECEMBER 06, 2002 IN BOOK 1414 AT PAGE 526 AND THE AMENDMENT RECORDED MAY 6, 2004 IN BOOK 1585 AT PAGE 438 AND THE AMENDED AGREEMENT RECORDED JULY 26, 2004 IN BOOK 1607 AT PAGE 895 AND THIRD AMENDMENT RECORDED DECEMBER 2, 2010 UNDER RECEPTION 795138 AND AMENDED AND RESTATED THIRD AMENDMENT RECORDED AUGUST 16, 2011 UNDER RECEPTION NO. 806719 AND RERECORDED AUGUST 18, 2011 UNDER RECEPTION NO. 806794 AND FOURTH AMENDMENT RERECORDED AUGUST 8, 2013 UNDER RECEPTION NO. 839074 AND FOURTH AMENDMENT RERECORDED APRIL 10, 2015 UNDER RECEPTION NO. 861345. **NOTHING TO PLOT.**

NOTE: INCLUSIONARY HOUSING CREDITS ASSIGNMENT IN CONNECTION WITH THE ABOVE AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION NO. 818854. MEMORANDUM OF UNDERSTANDING RECORDED JULY 18, 2013 UNDER RECEPTION NO. 838187

15. (THIS ITEM WAS INTENTIONALLY DELETED) **NOTHING TO PLOT.**

16. EASEMENTS AND NOTES AS SHOWN ON THE PLAT FOR GLENWOOD MEADOWS NO. 2, RECORDED AUGUST 9, 2004 UNDER RECEPTION NO. 657439. **PLOTTED HEREON.**

17. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 4 RECORDED OCTOBER 28, 2009 UNDER RECEPTION NO. 776958. **UNCLEAR DOCUMENTS, UNABLE TO EVALUATE.**

18. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 5 RECORDED MAY 17, 2010 UNDER RECEPTION NO. 818851. **PLOTTED HEREON.**

19. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 4 - LOT LINE ADJUSTMENT RECORDED MARCH 13, 2012 UNDER RECEPTION NO. 815777. **PLOTTED HEREON.**

20. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN AGREEMENT RECORDED JUNE 29, 2012 UNDER RECEPTION NO. 820756. **NOTHING TO PLOT.**

21. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN AGREEMENT RECORDED JUNE 29, 2012 UNDER RECEPTION NO. 820755. **NOTHING TO PLOT.**

22. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION 818857. **NOTHING TO PLOT.**

EASEMENT MODIFICATION RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

23. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN ACCESS AND MAINTENANCE AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION 818859. **PLOTTED HEREON.**

24. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN DEVELOPMENT AGREEMENT RECORDED MAY 17, 2012 UNDER RECEPTION NO. 818856 AND AMENDMENT RECORDED MAY 18, 2017 AT RECEPTION NO. 892527. **NOTHING TO PLOT.**

25. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

26. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

27. EASEMENTS AND NOTES ON THE PLAT OF GLENWOOD MEADOWS NO. 6 RECORDED SEPTEMBER 7, 2017 UNDER RECEPTION NO. 897037. **PLOTTED HEREON.**

28. (THIS ITEM WAS INTENTIONALLY DELETED). **NOTHING TO PLOT.**

LEGAL DESCRIPTION:

PARCEL A:

****
NOTE: THE FOLLOWING LEGAL DESCRIPTION IS PRELIMINARY AND IS SUBJECT TO CHANGE UPON COMPLIANCE WITH THE REQUIREMENTS UNDER SCHEDULE B-1, HEREIN.
****

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
COUNTY OF GARFIELD, STATE OF COLORADO

PARCEL B:

EASEMENTS FOR UTILITIES, DRAINAGE AND ACCESS AS DESCRIBED AND DEPICTED IN RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 5, 17, 2012 UNDER RECEPTION NO. 818857 AND FIRST AMENDMENTS TO RECIPROCAL EASEMENT AGREEMENT RECORDED MAY 18, 2017 UNDER RECEPTION NO. 892528.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6(B), 8, 11, 13, 14, 16, 17, 18, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON MARCH 28, 2020 DATE OF PLAT OR MAP: SEPTEMBER 2-8, 2020.

COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 — DATE

NOTICE: ACCORDING TO COLORADO LAW, YOU **MUST** COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

TUTTLE SURVEYING SERVICES
923 COOPER AVENUE
GLENWOOD SPRINGS, COLORADO 81601
(970) 928-9708 (FAX 947-9007)
Email- jeff@tss-us.com

TUTTLE SURVEYING SERVICES

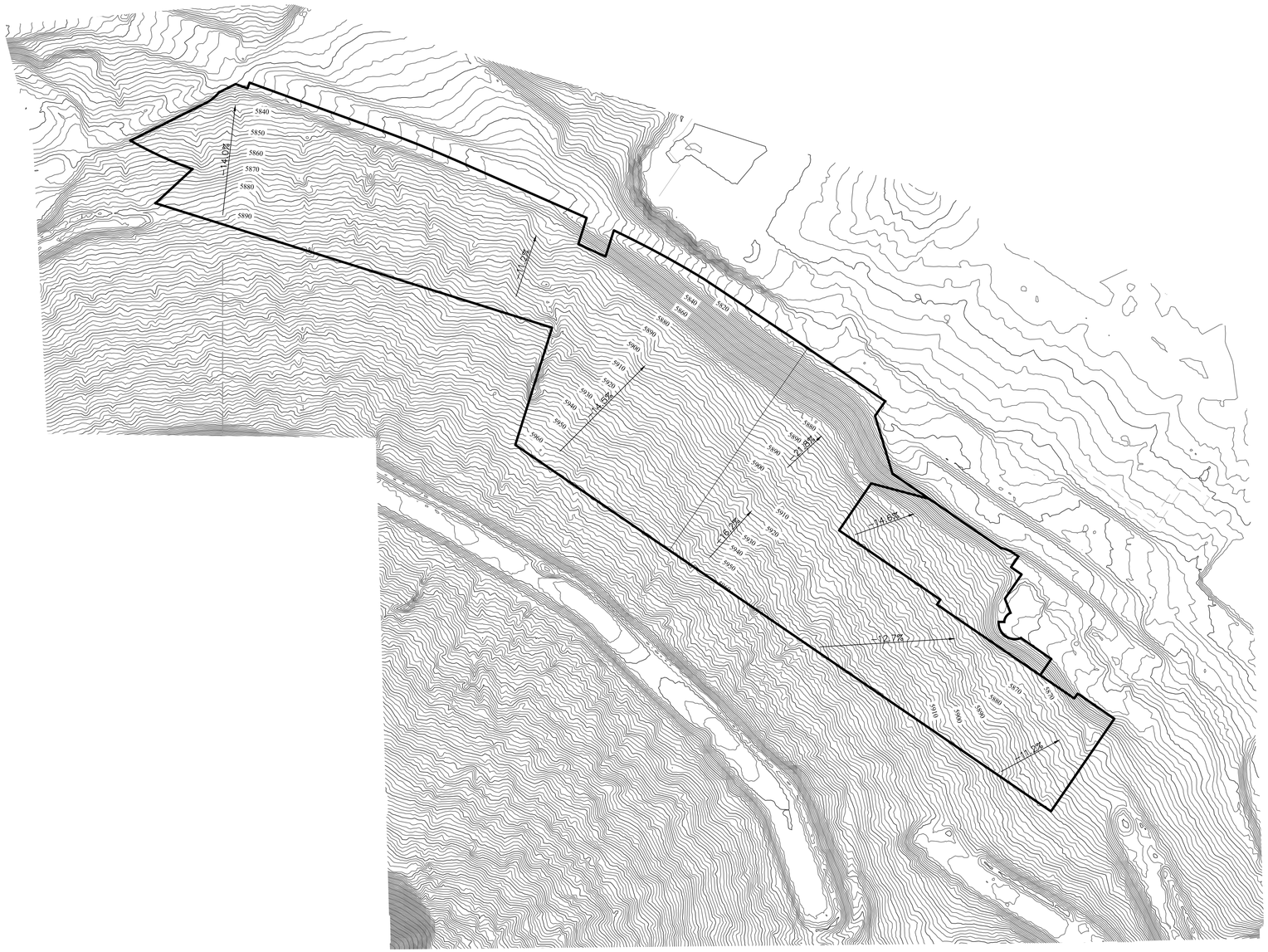
ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

NOTES:

CONTOUR DATA OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA,
STATE PLAIN NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY
IN AREAS CRITICAL TO DESIGN.

SURVEYOR'S CERTIFICATE:

TO:
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ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

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DATE OF PLAT OR MAP: SEPTEMBER 2-8, 2020.

COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 DATE

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TUTTLE SURVEYING SERVICES

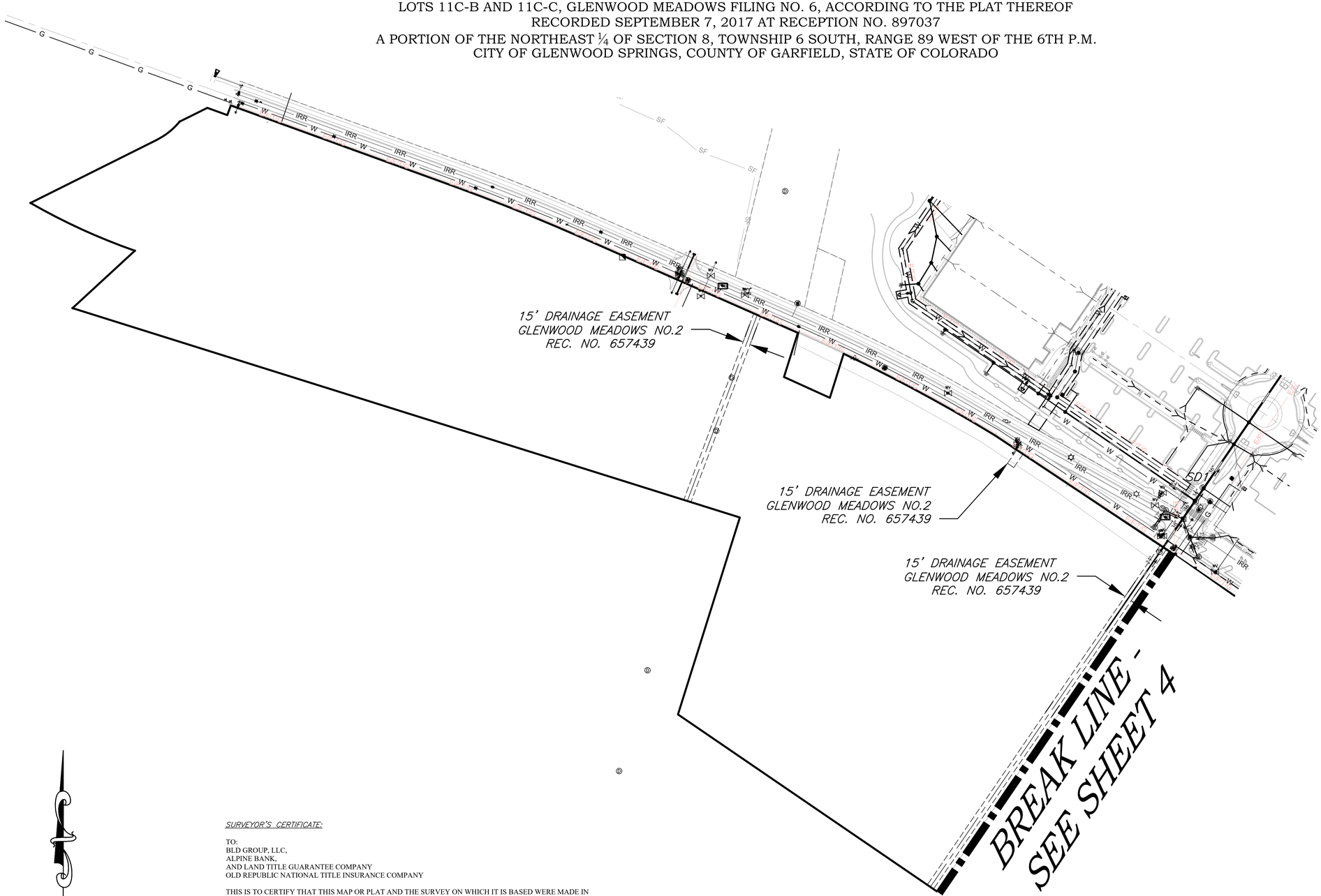
ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
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ALTA/ACSM LAND TITLE SURVEY

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CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



LEGEND

- TV PEDESTAL
- ELECTRICAL TRANS
- CLEAN–OUT
- WATER VALVE
- TELE. PEDESTAL
- ELEC. PEDESTAL
- SET #5 REBAR & CAP L.S. NO. 33638
- FOUND PROPERTY CORNER AS DESCRIBED
- UTILITY POLE/ POWER POLE
- ANCHOR
- TELE. VAULT
- ELECT. VAULT
- LIGHT POLE
- MARKER/ SIGN
- HANDICAP
- FIRE HYDRANT
- WATER SHUTOFF
- GAS VALVE
- SAN. SEWER MH
- ST. SEWER MH
- ELECT. MH
- TELEPHONE MH
- WATER MH
- WATER METER
- GAS METER
- ELECTRICAL METER
- STORM GRATE
- ELECTRIC MARKER
- GAS MARKER
- IRRIGATION VALVE BOX

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
AND LAND TITLE GUARANTEE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

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COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

09/16/2020
JEFFREY ALLEN TUTTLE L.S. 33638 — DATE

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TUTTLE SURVEYING SERVICES

ALTA/ACSM LAND TITLE SURVEY

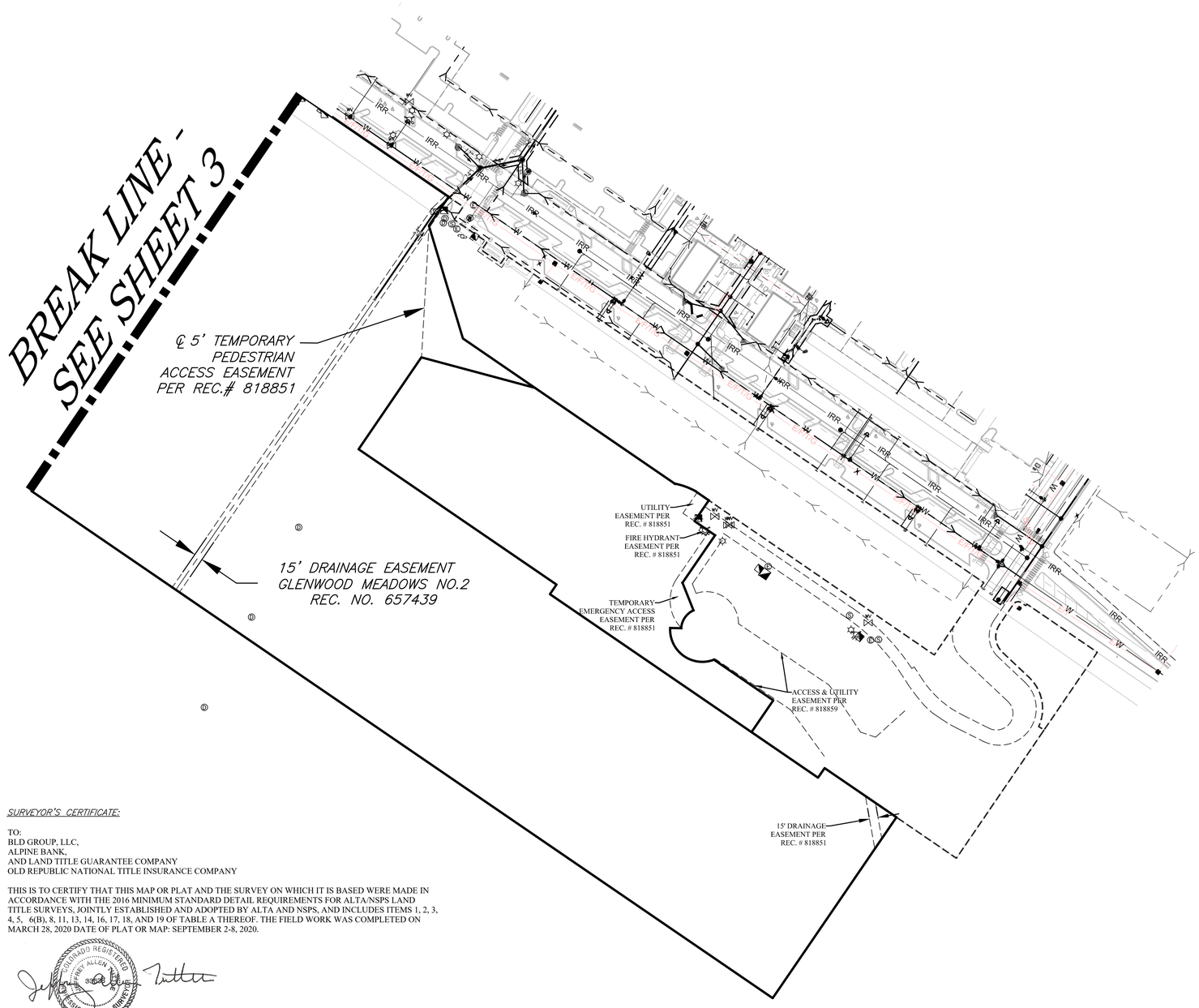
TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

3 OF 4

ALTA/ACSM LAND TITLE SURVEY

LOTS 11C-B AND 11C-C, GLENWOOD MEADOWS FILING NO. 6, ACCORDING TO THE PLAT THEREOF
RECORDED SEPTEMBER 7, 2017 AT RECEPTION NO. 897037
A PORTION OF THE NORTHEAST ¼ OF SECTION 8, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE 6TH P.M.
CITY OF GLENWOOD SPRINGS, COUNTY OF GARFIELD, STATE OF COLORADO



LEGEND

- TV PEDESTAL
- ELECTRICAL TRANS
- CLEAN–OUT
- WATER VALVE
- TELE. PEDESTAL
- ELEC. PEDESTAL
- SET #5 REBAR & CAP L.S. NO. 33638
- FOUND PROPERTY CORNER AS DESCRIBED
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- TELEPHONE MH
- WATER MH
- WATER METER
- GAS METER
- ELECTRICAL METER
- STORM GRATE
- ELECTRIC MARKER
- GAS MARKER
- IRRIGATION VALVE BOX

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE:

TO:
BLD GROUP, LLC,
ALPINE BANK,
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COLORADO REGISTERED JEFFREY ALLEN TUTTLE 33638 PROFESSIONAL LAND SURVEYOR

JEFFREY ALLEN TUTTLE L.S. 33638 — 09/16/2020 DATE

NOTICE: ACCORDING TO COLORADO LAW, YOU **MUST** COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

TUTTLE SURVEYING SERVICES
923 COOPER AVENUE
GLENWOOD SPRINGS, COLORADO 81601
(970) 928–9708 (FAX 947–9007)
Email– jeff@tss–us.com

TUTTLE SURVEYING SERVICES

ALTA/ACSM LAND TITLE SURVEY

TBD GLENWOOD MEADOWS
GLENWOOD SPRINGS, CO 81647

DRAWN BY: JG
DATE: 09/16/2020

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

WULFSOHN RD.

INSTALL NEW LOT 14 CURB CUT ACROSS FORM PROPOSED ACCESS

EXISTING CURB CUT TO BE REMOVED. INSTALL 74–LF, 24–IN STANDARD CURB & GUTTER. EXISTING UTILITY STUBS TO REMAIN

TW: 5887.68
BW: 5882.68

TW: 5893.15
BW: 5888.03

TW: 5882.68
BW: 5876.68

TW: 5886.47
BW: 5880.58

TW: 5883.94
BW: 5878.01

TW: 5881.44
BW: 5877.32

TW: 5912.01
BW: 5906.23

TW: 5919.18
BW: 5917.85

TW: 5917.85
BW: 5915.77

TW: 5923.68
BW: 5919.24

TW: 5938.20
BW: 5934.75

TW: 5938.72
BW: 5923.16

TW: 5922.03
BW: 5919.99

TW: 5940.21
BW: 5938.75

TW: 5928.46
BW: 5928.72

TW: 5945.11
BW: 5941.65

TW: 5944.65
BW: 5938.85

TW: 5938.34
BW: 5932.34

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY CLEANOUT
	UTILITY POLE	CABLE MANHOLE
	SIGN	ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALUMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.

COLORADO 811
CALL BEFORE YOU DIG
Utility Notification Center of Colorado

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3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG
4	8/13/21	MAJOR SITE / ARCH. REVIEW #4	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE: 8/13/2021
FILE:
SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

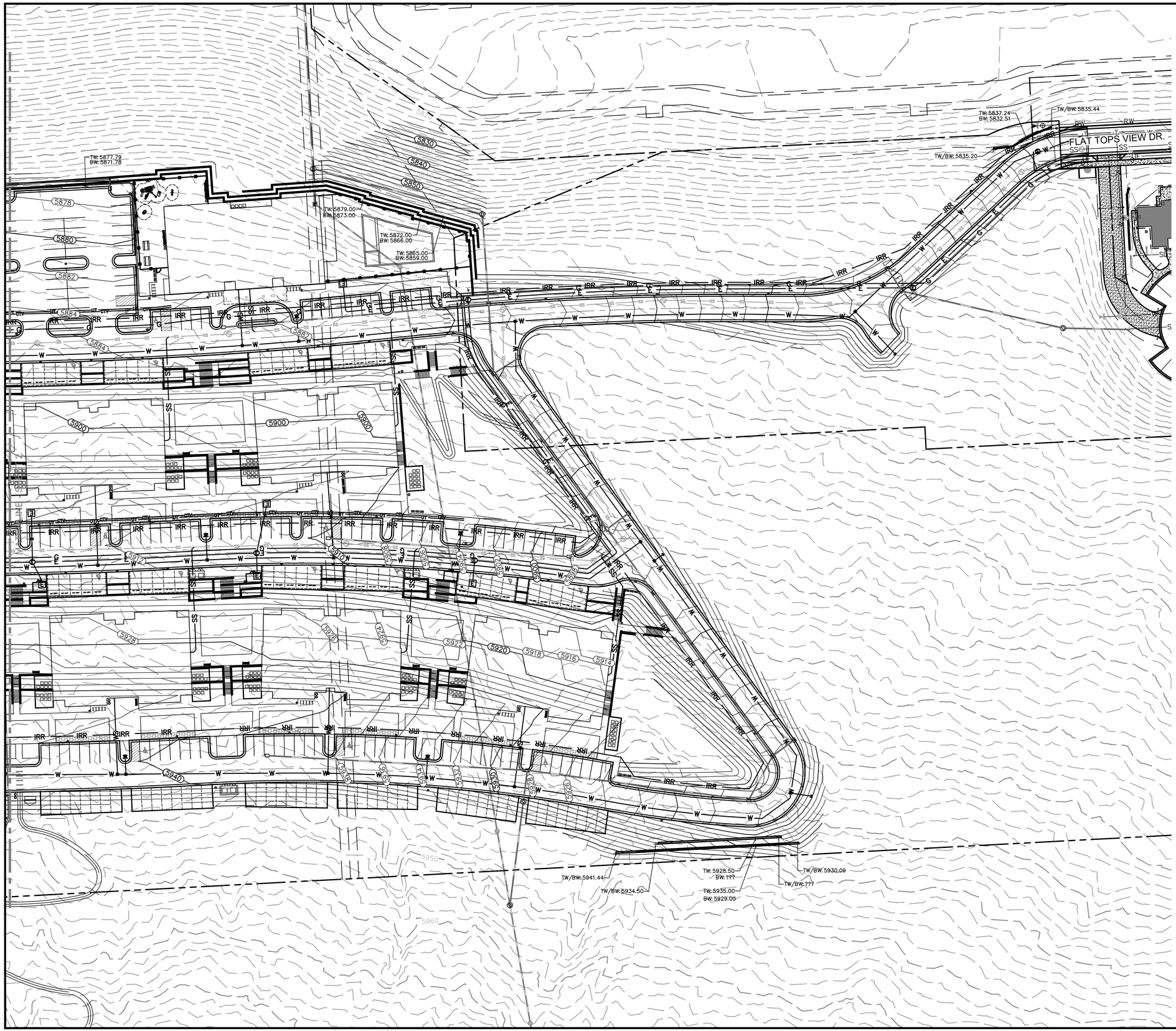
GLENWOOD MEADOWS MULTI-FAMILY

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

PRELIMINARY GRADING PLAN
SHEET 1

PROJECT NO.
2201044.00

GR1



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN-OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT-OF-WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS	SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

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WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY GRADING PLAN
SHEET 2

PROJECT NO.
2201044.00

GR2

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

WULFSOHN RD.

CONNECT TO EXISTING IRRIGATION MAIN PER CITY OF GLENWOOD SPRINGS STANDARDS

CONNECT TO EXISTING WATERMAIN PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING WATERMAIN STUBS TO BE ABANDONED PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING IRRIGATION STUBS TO BE ABANDONED PER CITY OF GLENWOOD SPRINGS STANDARDS

INSTALL NEW MANHOLE ON EXISTING STORM SEWER

249.99'–12" HDPE @ 2.31%

EXISTING CURB CUT TO BE REMOVED

24.06'–12" HDPE @ 1.00%

12.19'–15" HDPE @ 19.23%

CONNECT TO EXISTING STORM SEWER STRUCTURE

116.60'–15" HDPE @ 17.79%

14.00'–12" HDPE @ 2.00%

229.99'–12" HDPE @ 0.75%

229.98'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 2.00%

14.00'–12" HDPE @ 5.70%

EXISTING 24" STORM PIPE "1B"

INSTALL MANHOLE ON EXISTING STORM SEWER

144.48'

134.80'–12" HDPE @ 4.00%

333.20'–12" HDPE @ 1.09%

333.20'–12" HDPE @ 1.09%

400.00'–8" PVC @ 1.10%

227.44'–8" PVC @ 1.10%

8" D.I.P. WATER MAIN

SAN–MH8

SAN–MH7

63.43'–12" HDPE @ 2.24%

24.00'–12" HDPE @ 1.00%

141.58'–12" HDPE @ 6.97%

62.32'–12" HDPE @ 3.62%

24.00'–12" HDPE

95.95'–12" HDPE @ 9.05%

116.56'–12" HDPE @ 10.77%

11.0' TYP.
10. MIN.

6" PVC SANITARY SERVICE, TYP.

6" D.I.P. WATER SERVICE, TYP.

51.17'–12" HDPE @ 4.12%

260.75'–8" PVC @ 1.13%

8" D.I.P. WATER MAIN

SAN–MH14

SEE SHEET 2

358.86'–12" HDPE @ 6.00%

56.01'–12" HDPE @ 6.00%

COMBINED FIRE/DOMESTIC WATER SERVICE CONNECTIONS TO BE NFPA24 COMPLIANT, TYP.

EXISTING STORM SEWER TO BE ABANDONED/REMOVED

348.93'–12" HDPE @ 6.00%

8" D.I.P. WATER MAIN

INSTALL MANHOLE ON EXISTING STORM SEWER

LEGEND

EXISTING	PROPOSED
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SANITARY CLEAN–OUT	WATER VALVE
SANITARY MANHOLE	TEE W/THRUST BLOCK
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SIGN	ELECTRIC VAULT
	ELECTRIC TRANSFORMER

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PAVEMENT STRIPING
WATER MAIN
WATER SERVICE
SEWER MAIN
SEWER SERVICE
OVERHEAD ELECTRIC
ELECTRIC
CATV
TELEPHONE
GAS
IRRIGATION
STORM SEWER

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5. PUBLICLY DEDICATED UTILITIES SHALL HAVE UTILITY EASEMENT FOR ACCESS AND MAINTENANCE.
6. ALL FIRE HYDRANTS TO HAVE 15' EASEMENT FOR ACCESS AND MAINTENANCE.
7. ALL UTILITY EASEMENTS TO BE SHOW AN FINALIZED ON PERMIT PLANS.
8. ALL WET UTILITIES WILL REQUIRE JOINTS/BELLS WITHIN ENTIRE PROJECT AREA.
9. ALL UNUSED UTILITY STUBS SHALL BE ABANDONED PER COGS STANDARDS.

COLORADO 811 CALL BEFORE YOU DIG Utility Notification Center of Colorado

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SCALE 1" = 40'

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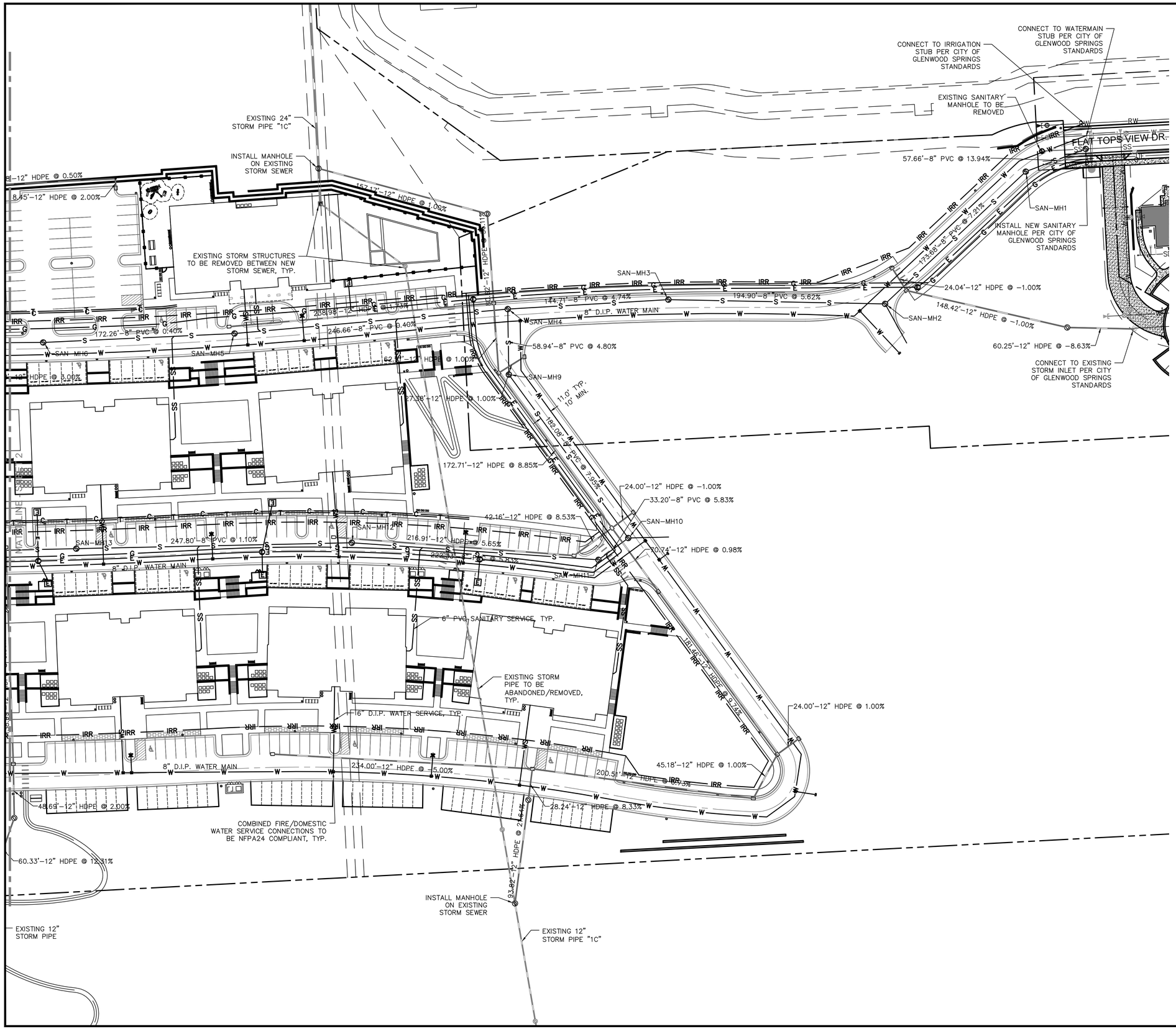
BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN
SHEET 1

PROJECT NO.
2201044.00

UT1



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
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GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
IRRIGATION		IRR
STORM SEWER		

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GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN

SHEET 2

PROJECT NO.
2201044.00

UT2

SELLER'S RESERVED PARCEL
12.213 ACRES

BUYER'S PARCEL
27.929 ACRES

REMAINDER PARCEL
9.265 ACRES

0' 75' 150' 300'
Scale: 1" = 150'

IMAGES
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P:\Corporate\GLENWOOD MEADOWS APARTMENTS-2019\10_3D Modeling\5_Renderings\20210811 Progress Set\GM_Graphics\Gr4_L1 - Photo.jpg
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XREFS
X-SITE IMPROVEMENTS [\Work\V-SITE IMPROVEMENTS_PHASE 1.dwg]
X-CIVIL PHASE 1 GRADING [\Work\V-CIVIL PHASE 1 GRADING.dwg]
X-CIVIL PHASE 1 UTILITY [\Work\V-CIVIL PHASE 1 UTILITY.dwg]
X-PROPOSED ROAD [\Work\V-PROPOSED ROAD.dwg]
X-BUILDING [\Work\V-BUILDING.dwg]
X-CIVIL [\Work\V-CIVIL.dwg]
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NAME
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Jul 13, 2021 - 8:46am

DHM DESIGN
311 Main Street
#102
Carbondale, Co. 81623
970.963.6520
www.dhmdesign.com

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NOT FOR CONSTRUCTION

GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

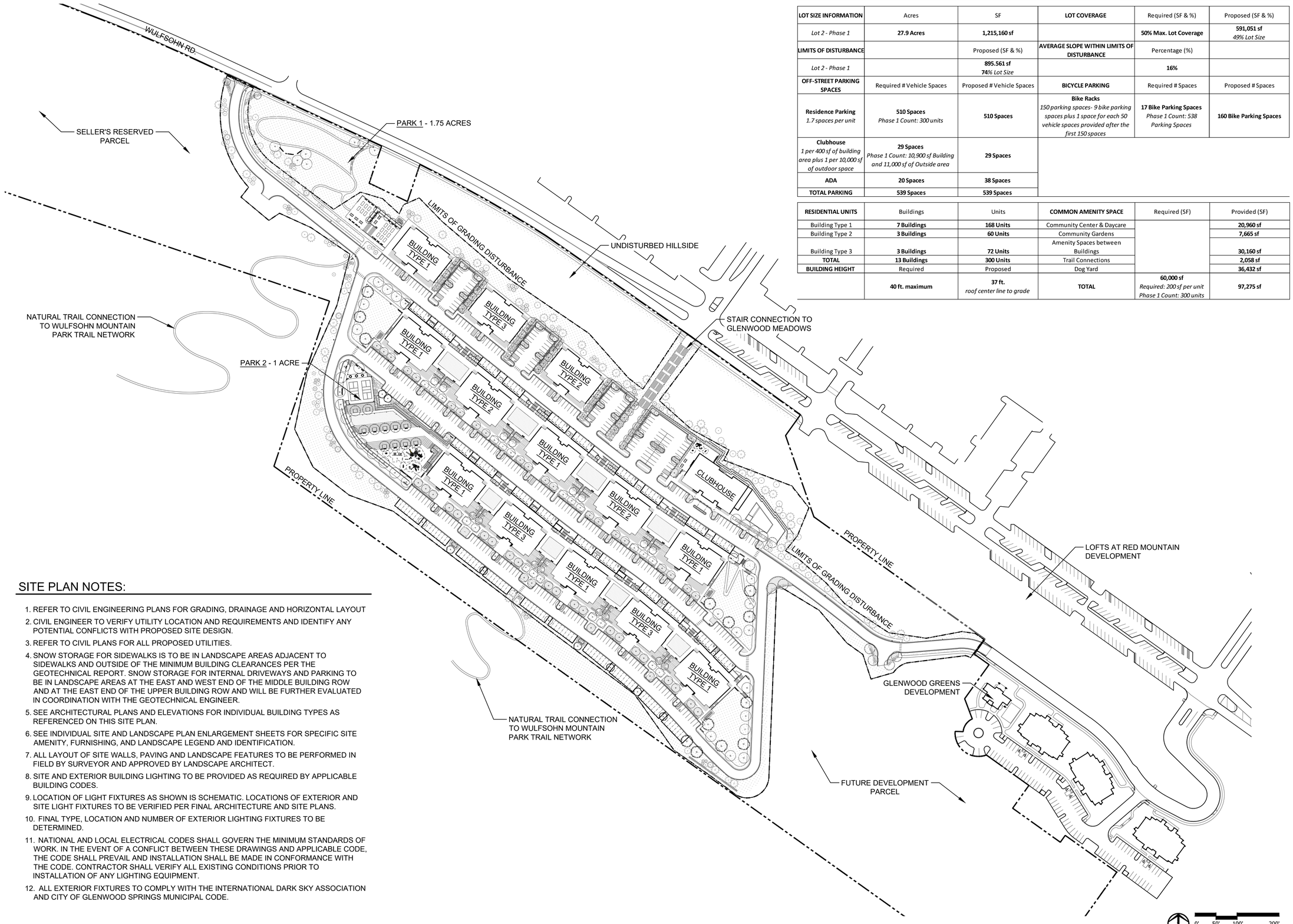
JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN

SCALE:

SHEET NUMBER:
L1.0

SHEET_____OF_____



UNIT AND SITE AMENITY DATA:

LOT SIZE INFORMATION	Acres	SF	LOT COVERAGE	Required (SF & %)	Proposed (SF & %)
Lot 2 - Phase 1	**27.9 Acres**	**1,215,160 sf**		**50% Max. Lot Coverage**	**591,051 sf** *49% Lot Size*
LIMITS OF DISTURBANCE		Proposed (SF & %)	**AVERAGE SLOPE WITHIN LIMITS OF DISTURBANCE**	Percentage (%)	
Lot 2 - Phase 1		**895.561 sf** **74**% *Lot Size*		**16%**	
OFF-STREET PARKING SPACES	Required # Vehicle Spaces	Proposed # Vehicle Spaces	**BICYCLE PARKING**	Required # Spaces	Proposed # Spaces
Residence Parking *1.7 spaces per unit*	**510 Spaces** *Phase 1 Count: 300 units*	**510 Spaces**	**Bike Racks** *150 parking spaces- 9 bike parking spaces plus 1 space for each 50 vehicle spaces provided after the first 150 spaces*	**17 Bike Parking Spaces** *Phase 1 Count: 538 Parking Spaces*	**160 Bike Parking Spaces**
Clubhouse *1 per 400 sf of building area plus 1 per 10,000 sf of outdoor space*	**29 Spaces** *Phase 1 Count: 10,900 sf Building and 11,000 sf of Outside area*	**29 Spaces**			
ADA	**20 Spaces**	**38 Spaces**			
TOTAL PARKING	**539 Spaces**	**539 Spaces**			

RESIDENTIAL UNITS	Buildings	Units	COMMON AMENITY SPACE	Required (SF)	Provided (SF)
Building Type 1	**7 Buildings**	**168 Units**	Community Center & Daycare		**20,960 sf**
Building Type 2	**3 Buildings**	**60 Units**	Community Gardens		**7,665 sf**
Building Type 3	**3 Buildings**	**72 Units**	Amenity Spaces between Buildings		**30,160 sf**
TOTAL	**13 Buildings**	**300 Units**	Trail Connections		**2,058 sf**
BUILDING HEIGHT	Required	Proposed	Dog Yard		**36,432 sf**
	40 ft. maximum	**37 ft.** *roof center line to grade*	**TOTAL**	**60,000 sf** *Required: 200 sf per unit* *Phase 1 Count: 300 units*	**97,275 sf**

SITE PLAN NOTES:

1. REFER TO CIVIL ENGINEERING PLANS FOR GRADING, DRAINAGE AND HORIZONTAL LAYOUT
2. CIVIL ENGINEER TO VERIFY UTILITY LOCATION AND REQUIREMENTS AND IDENTIFY ANY POTENTIAL CONFLICTS WITH PROPOSED SITE DESIGN.
3. REFER TO CIVIL PLANS FOR ALL PROPOSED UTILITIES.
4. SNOW STORAGE FOR SIDEWALKS IS TO BE IN LANDSCAPE AREAS ADJACENT TO SIDEWALKS AND OUTSIDE OF THE MINIMUM BUILDING CLEARANCES PER THE GEOTECHNICAL REPORT. SNOW STORAGE FOR INTERNAL DRIVEWAYS AND PARKING TO BE IN LANDSCAPE AREAS AT THE EAST AND WEST END OF THE MIDDLE BUILDING ROW AND AT THE EAST END OF THE UPPER BUILDING ROW AND WILL BE FURTHER EVALUATED IN COORDINATION WITH THE GEOTECHNICAL ENGINEER.
5. SEE ARCHITECTURAL PLANS AND ELEVATIONS FOR INDIVIDUAL BUILDING TYPES AS REFERENCED ON THIS SITE PLAN.
6. SEE INDIVIDUAL SITE AND LANDSCAPE PLAN ENLARGEMENT SHEETS FOR SPECIFIC SITE AMENITY, FURNISHING, AND LANDSCAPE LEGEND AND IDENTIFICATION.
7. ALL LAYOUT OF SITE WALLS, PAVING AND LANDSCAPE FEATURES TO BE PERFORMED IN FIELD BY SURVEYOR AND APPROVED BY LANDSCAPE ARCHITECT.
8. SITE AND EXTERIOR BUILDING LIGHTING TO BE PROVIDED AS REQUIRED BY APPLICABLE BUILDING CODES.
9. LOCATION OF LIGHT FIXTURES AS SHOWN IS SCHEMATIC. LOCATIONS OF EXTERIOR AND SITE LIGHT FIXTURES TO BE VERIFIED PER FINAL ARCHITECTURE AND SITE PLANS.
10. FINAL TYPE, LOCATION AND NUMBER OF EXTERIOR LIGHTING FIXTURES TO BE DETERMINED.
11. NATIONAL AND LOCAL ELECTRICAL CODES SHALL GOVERN THE MINIMUM STANDARDS OF WORK. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND APPLICABLE CODE, THE CODE SHALL PREVAIL AND INSTALLATION SHALL BE MADE IN CONFORMANCE WITH THE CODE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INSTALLATION OF ANY LIGHTING EQUIPMENT.
12. ALL EXTERIOR FIXTURES TO COMPLY WITH THE INTERNATIONAL DARK SKY ASSOCIATION AND CITY OF GLENWOOD SPRINGS MUNICIPAL CODE.

IMAGES
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LANDSCAPE AREA:

OPEN SPACE	SQUARE FOOTAGE	TREES		SHRUBS	
		REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Upper tier - disturbed	87,483 SF	73	74	219	366
Lower tier - disturbed	79,351 SF	66	66	198	285

INTERNAL DRIVEWAY	LINEAR FEET	TREES	
		REQUIRED *(1/35 LF)*	PROVIDED
Flat Tops View Dr (Sunny Aspen)	2,071 LF	59	60
Wolf Liam Lane	1,735 LF	50	50
Adios Avenue	1,748 LF	50	50

PARKING AREAS	Total Parking Area (SF)	Landscaped Area (SF & %)	TREES		SHRUBS	
			REQUIRED *(1/1200 SF)*	PROVIDED	REQUIRED (1/400 SF)	PROVIDED
Parking Lots	29,694 SF	10,485 SF *(35% of the parking area)*	25	40	74	240

TOTAL LANDSCAPED AREA	Proposed (SF & %)	OPEN SPACE	Required (SF & %)	Proposed (SF & %)
	304,510 sf *25% Lot Size*		**486,064 sf** *40% Lot Size*	**504,083 sf** *41.5% Lot Size*

TOTAL IMPERVIOUS AREA	Proposed (SF & %)
	591,051 sf *49% Lot Size*

L1.3

L1.4

L1.5

L1.6

L1.7

L1.8

L1.9

0' 50' 100' 200'
Scale: 1" = 100'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT KEY PLAN

SCALE:

SHEET NUMBER:
L1.2

SHEET_____OF_____

IMAGES
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XREFS
X-SITE IMPROVEMENTS [..\Work\X-SITE IMPROVEMENTS - PHASE 2.dwg]
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X-PROPOSED ROAD [..\Work\X-PROPOSED ROAD.dwg]
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[DATE: Aug 04, 2021 - 4:34pm

XERIC PERENNIALS / ORNAMENTAL GRASSES ENTRY GARDEN BED

CONNECTION TO EXISTING WULFSOHN CURB CUT

WULFSOHN RD.

PROPERTY LINE

TRASH RECEPTACLE

LOCAL ACCESS TRAILHEAD

STAIR CONNECTION

SOFT SURFACE TRAIL

NATIVE SEED

AC CONDENSING UNTIS

FENCE (6' MAX. HEIGHT)

TERRACED PLANTER

TRASH RECEPTACLES

PARK 1

XERIC PERENNIALS / ORNAMENTAL GRASSES ENTRY GARDEN BED

CRUSHER FINES SEATING AREA

COMMUNITY GARDEN WITH RAISED PLANTER BOXES

RETAINING WALL (6' MAX. HEIGHT)

PROPOSED ROAD; RE: CIVIL

CRUSHER FINES

PICNIC TABLE

PARK BENCH

ADA ACCESSIBLE COMMUNITY GARDEN

SELLER RESERVED PARCEL

STREET LIGHT TYP.

MATCHLINE: REFERENCE SHEET L1.4

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

NATIVE SHRUBS / SMALL TREES

SIGHT TRIANGLES; PER: CIVIL

CROSSWALK

TRASH RECEPTACLE

LOCAL ACCESS TRAILHEAD

NATIVE SHRUBS / SMALL TREES

DOG WASTE STATION

TRAILHEAD KIOSK

LIMITS OF GRADING DISTURBANCE

NATURAL TRAIL CONNECTION TO WULFSOHN MOUNTAIN PARK TRAIL NETWORK

0' 10' 20' 40'

Scale: 1" = 20'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.3

SHEET_____OF_____

WULFSOHN RD.

PROPERTY LINE

WULFSOHN SIDEWALK

NATIVE SEED

EXISTING LANDSCAPE TO REMAIN

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

LIMITS OF GRADING DISTURBANCE

NATIVE TREES AND SHRUBS TO SCREEN RETAINING WALLS AT PARKING

NATIVE TREES AND SHRUBS TYP.

NATIVE REVEGETATION AREA

NATIVE TREES AND SHRUBS TYP.

SIDEWALK

RETAINING WALL (6' MAX. HEIGHT)

AC CONDENSING UNITS

BUILDING TYPE 1

19'-0" TYP.

9'-0" TYP.

ROCK MULCH TYP.

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

BIKE RACK

RESIDENT PARKING LOT

SIDEWALK

STREET LIGHT TYP.

SIGHT TRIANGLES; PER: CIVIL

MAILBOXES

STREET PARKING

BUILDING TYPE 3

SIDEWALK

RETAINING WALL (6' MAX. HEIGHT)

AC CONDENSING UNITS

19'-0" TYP.

9'-0" TYP.

ROCK MULCH TYP.

BIKE RACK

RESIDENT PARKING LOT

STREETLIGHT TYP.

11'-0" TYP.

MOUNTED STREETLIGHT TYP.

ENCLOSED BICYCLE PARKING AREA

SHRUBS TO SCREEN DUMPSTERS TYP.

COVERED GARAGE / PARKING BELOW; RE: ARCH

RETAINING WALL (6' MAX. HEIGHT)

STAIRCASE

DOG WASTE STATION

SIDEWALK

BOLLARD LIGHT TYP.

PARK BENCH

DOG YARD

RETAINING WALL (6' MAX. HEIGHT)

STAIRCASE

BUILDING TYPE 1

ARTIFICIAL TURF

BUILDING TYPE 2

ROCK MULCH TYP.

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

SIDEWALK

ROCK MULCH TYP.

BUILDING TYPE 2

BIKE RACK

WALL MOUNTED STREET LIGHT TYP.

ENCLOSED BICYCLE PARKING AREA

DUMPSTER ENCLOSURE

TERRACED PLANTERS

COVERED GARAGE / PARKING BELOW; RE: ARCH

ARTIFICIAL TURF

BUILDING TYPE 1

MATCHLINE: REFERENCE SHEET L1.3

MATCHLINE: REFERENCE SHEET L1.5

MATCHLINE: REFERENCE SHEET L1.7

MATCHLINE: REFERENCE SHEET L1.8

0' 10' 20' 40'

Scale: 1" = 20'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C

GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.4

SHEET_____OF_____

WULFSOHN RD.

WULFSOHN SIDEWALK

PROPERTY LINE

LIMITS OF GRADING DISTURBANCE

ENTRY PLANTING WITH XERIC PERENNIALS AND ORNAMENTAL GRASSES

NATIVE SEED

PLANTER TYP.

BOLLARD LIGHT TYP.

STAIRCASE

XERIC PERENNIALS AND ORNAMENTAL GRASSES

EXISTING LANDSCAPE TO REMAIN

RETAINING WALL (6' MAX. HEIGHT)

CLUBHOUSE / DAYCARE PARKING LOT

RESIDENT PARKING LOT

19'-0" TYP.

9'-0" TYP.

38'-0"

39'-0"

38'-0"

11'-0" TYP.

13'-6"

DOUBLE ROW OF SHRUBS, TRIANGULAR SPACING TYP.

DAYCARE PLAYGROUND (AGES 2-5)

FENCE (6' MAX. HEIGHT)

AC CONDENSING UNITS

CLUBHOUSE

GATE

MAILBOXES

BIKE RACK

30'-4"

9'-0" TYP.

33'-6"

CLUBHOUSE AND DAYCARE COVERED DROP OFF AREA

SIGHT TRIANGLES; PER: CIVIL

RETAINING WALL (6' MAX. HEIGHT)

NATIVE TREES AND SHRUBS TYP.

POOL DECK

FENCE (6' MAX. HEIGHT)

POOL

SPA

BIKE RACK

SIGHT TRIANGLES; PER: CIVIL

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

SIDEWALK

MAILBOXES

BOLLARD LIGHT TYP.

GARAGE / PARKING BELOW; RE: ARCH

ENCLOSED BICYCLE PARKING AREA

COVERED GARAGE / PARKING BELOW; RE: ARCH

TERRACED PLANTERS

RETAINING WALL (6' MAX. HEIGHT)

DOG WASTE STATION

BUILDING TYPE 1

ARTIFICIAL TURF

ROCK MULCH TYP.

BUILDING TYPE 2

RETAINING WALL (6' MAX. HEIGHT)

MATCHLINE: REFERENCE SHEET L1.4

MATCHLINE: REFERENCE SHEET L1.6

MATCHLINE: REFERENCE SHEET L1.8

MATCHLINE: REFERENCE SHEET L1.9

0' 10' 20' 40'

Scale: 1" = 20'

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.5

SHEET____OF____

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

MATCHLINE: REFERENCE SHEET L1.5

PROPERTY LINE

EXISTING RED MOUNTAIN LOFTS DEVELOPMENT

UNDISTURBED HILLSIDE

GLENWOOD GREENS DEVELOPMENT

NATIVE TREES AND SHRUBS TYP.

SIDEWALK

STREET LIGHT TYP.

ENTRY ROAD; RE: CIVIL

SIGHT TRIANGLES; PER: CIVIL

FUTURE DEVELOPMENT PARCEL

SIGHT TRIANGLES; PER: CIVIL

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

NATIVE SEED

SIGHT TRIANGLES; PER: CIVIL

LIMITS OF GRADING DISTURBANCE

ENTRY PLANTING WITH ORNAMENTAL SHRUBS, XERIC PERENNIALS, AND ORNAMENTAL GRASSES

CONNECTION POINT FOR FUTURE DEVELOPMENT ROAD

MATCHLINE: REFERENCE SHEET L1.9

0' 10' 20' 40'
Scale: 1" = 20'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.6

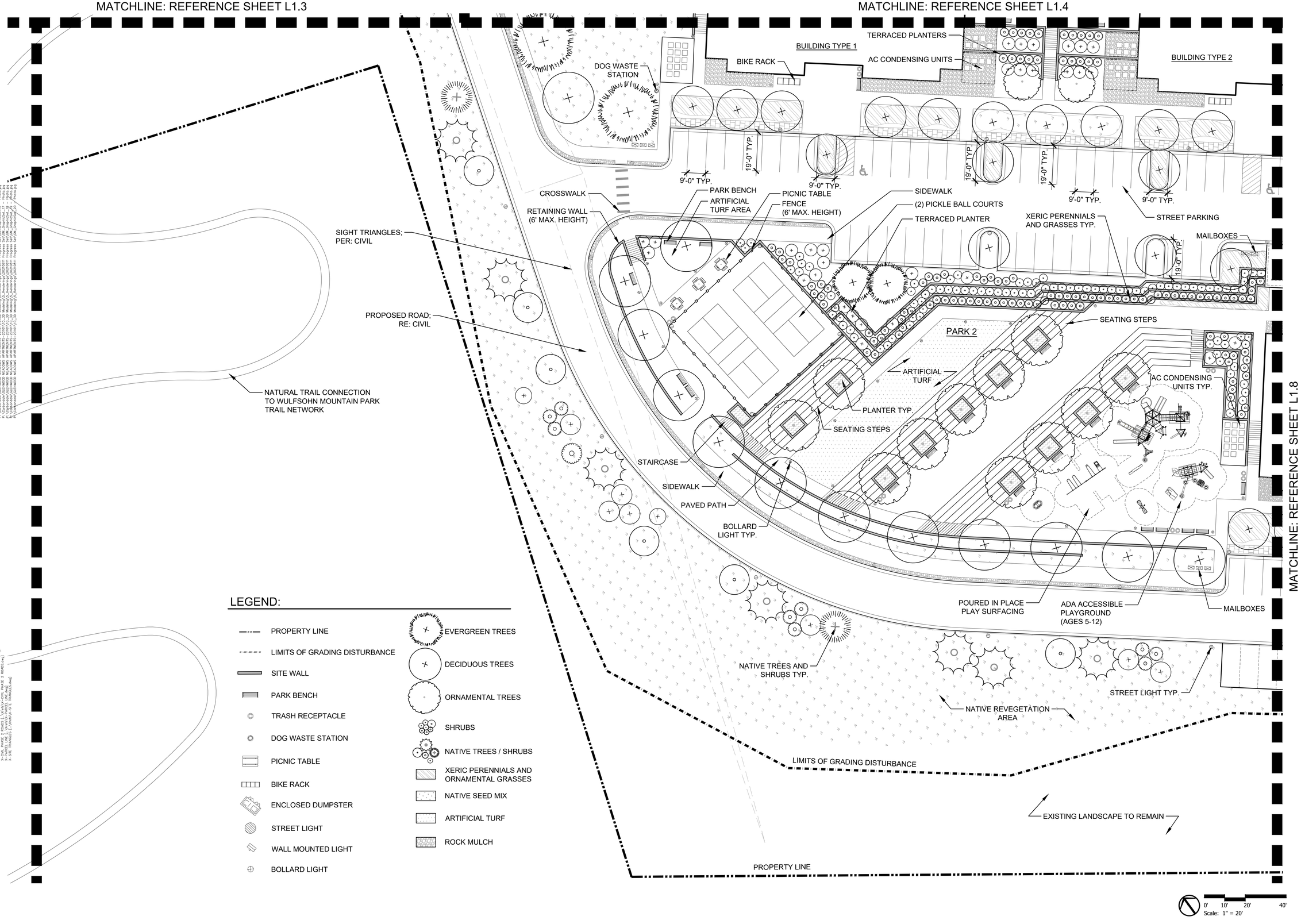
SHEET_____OF_____

IMAGES
XREFS
NAME

MATCHLINE: REFERENCE SHEET L1.3

MATCHLINE: REFERENCE SHEET L1.4

MATCHLINE: REFERENCE SHEET L1.8



LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
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- ORNAMENTAL TREES
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- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.7

SHEET____OF____

MATCHLINE: REFERENCE SHEET L1.4

MATCHLINE: REFERENCE SHEET L1.5

MATCHLINE: REFERENCE SHEET L1.7

MATCHLINE: REFERENCE SHEET L1.9

BUILDING TYPE 2

AC CONDENSING UNITS

STAIRCASE

TERRACED PLANTERS

RETAINING WALL (6' MAX. HEIGHT)

BUILDING TYPE 1

BIKE RACK

19'-0" TYP.

9'-0" TYP.

STREETLIGHT TYP.

DECORATIVE PAVERS TYP.

MOUNTED STREETLIGHT TYP.

DUMPSTER ENCLOSURE

BICYCLE PARKING AREA

FENCE (6' MAX. HEIGHT)

TRANSFORMER LOCATION; RE: CIVIL

COVERED GARAGE / PARKING BELOW; RE: ARCH

WALL MOUNTED STREET LIGHT TYP.

BUILDING TYPE 3

ROCK MULCH TYP.

ARTIFICIAL TURF

STAIRCASE
PARK BENCH

STREET LIGHT TYP.

COVERED CARPORT PARKING SPACES

TRASH RECEPTACLE

DOG WASTE STATION

LOCAL ACCESS TRAILHEAD

XERIC PERENNIALS AND GRASSES TYP.

SHRUBS TO SCREEN DUMPSTERS TYP.

LIMITS OF GRADING DISTURBANCE

TRAILHEAD KIOSK

NATIVE TREES AND SHRUBS TYP.

NATIVE SEED

NATURAL TRAIL CONNECTION TO WULFSOHN MOUNTAIN PARK TRAIL NETWORK

PROPERTY LINE

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

0' 10' 20' 40'
Scale: 1" = 20'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.8

SHEET_____OF_____

MATCHLINE: REFERENCE SHEET L1.5

MATCHLINE: REFERENCE SHEET L1.6

MATCHLINE: REFERENCE SHEET L1.8

BUILDING TYPE 1

STAIRCASE

AC CONDENSING UNITS TYP.

FENCE (6' MAX. HEIGHT)

DOG WASTE STATION

DOG YARD

MAILBOXES

19'-0" TYP.

19'-0" TYP.

9'-0" TYP.

XERIC PERENNIALS AND GRASSES TYP.

STREET LIGHT TYP.

SIGHT TRIANGLES; PER: CIVIL

DUMPSTER ENCLOSURE

BICYCLE PARKING AREA

FENCE (6' MAX. HEIGHT)

TRANSFORMER LOCATION; RE: CIVIL

COVERED GARAGE / PARKING BELOW; RE: ARCH

COVERED GARAGE / PARKING BELOW; RE: ARCH

TERRACED PLANTERS

STAIRCASE

MAILBOXES

BICYCLE PARKING AREA

ARTIFICIAL TURF

BUILDING TYPE 3

ROCK MULCH TYP.

PARK BENCH

STAIRCASE

TERRACED PLANTERS

RETAINING WALL (6' MAX. HEIGHT)

PARK BENCH

AC CONDENSING UNITS

BUILDING TYPE 1

BIKE RACK

AC CONDENSING UNITS TYP.

FENCE (6' MAX. HEIGHT)

19'-0" TYP.

19'-0" TYP.

9'-0" TYP.

9'-0"

XERIC PERENNIALS AND GRASSES TYP.

FUTURE DEVELOPMENT PARCEL

COVERED CARPORT PARKING SPACES

MAILBOXES

STREET LIGHT TYP.

RETAINING WALL; RE: CIVIL

NATIVE TREES AND SHRUBS TYP.

NATIVE SEED

PROPERTY LINE

0' 10' 20' 40'

Scale: 1" = 20'

LEGEND:

- PROPERTY LINE
- LIMITS OF GRADING DISTURBANCE
- SITE WALL
- PARK BENCH
- TRASH RECEPTACLE
- DOG WASTE STATION
- PICNIC TABLE
- BIKE RACK
- ENCLOSED DUMPSTER
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT
- EVERGREEN TREES
- DECIDUOUS TREES
- ORNAMENTAL TREES
- SHRUBS
- NATIVE TREES / SHRUBS
- XERIC PERENNIALS AND ORNAMENTAL GRASSES
- NATIVE SEED MIX
- ARTIFICIAL TURF
- ROCK MULCH

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SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.9

SHEET_____OF_____

LANDSCAPE NOTES:

1. ALL PLANTING WILL MEET THE MINIMUM SIZES AS REQUIRED BY THE CITY OF GLENWOOD SPRINGS DEVELOPMENT CODE.
2. TREE AND SHRUB QUANTITIES COMPLY WITH THE REQUIRED MINIMUM QUANTITIES IN THE GLENWOOD MEADOWS DESIGN GUIDELINES FOR RESIDENTIAL NEIGHBORHOODS.
3. PARKING LOTS EDGES HAVE BEEN SCREENED FROM PUBLIC VIEW WITH PLANT MATERIAL AS REQUIRED IN THE GLENWOOD MEADOWS DESIGN GUIDELINES.
4. ALL LANDSCAPE PLANTING TO RECEIVE IRRIGATION. IRRIGATION SYSTEM TO BE PROFESSIONALLY DESIGNED TO LIMIT WATER CONSUMPTION. DRIP IRRIGATION TO BE USED WHEREVER POSSIBLE TO MINIMIZE RUN-OFF FROM SPRINKLERS.
5. IRRIGATION SYSTEM DESIGN, OPERATION AND MAINTENANCE TO COMPLY WITH THE GLENWOOD MEADOWS GEOTECHNICAL MITIGATION REQUIREMENTS AND GEOTECHNICAL REPORT FOR THE PROPERTY.
6. ALL LANDSCAPE PLANTINGS TO BE LOCATED AT LEAST 6' FROM THE BUILDINGS TO AVOID ADDING IRRIGATION WATER TO THE SOILS BENEATH THE STRUCTURES PER THE RECOMMENDATION OF THE GEOTECHNICAL REPORT.
7. FINAL LANDSCAPE AND IRRIGATION PLANS TO BE CERTIFIED BY GEOTECHNICAL ENGINEER FOR CONFORMANCE WITH GEOTECHNICAL RECOMMENDATIONS AS DEVELOPED FOR THIS SITE.
8. PROPOSED PLANTING AND IRRIGATION SYSTEM TO BE MAINTAINED BY THE APARTMENT COMPLEX MANAGEMENT.
9. ALL LANDSCAPE PLANTINGS ARE LOCATED TO ALLOW FOR SNOW STORAGE AREAS EQUALING 20% OF THE ADJACENT PAVING AREAS.
10. ALL DISTURBED AREAS ON THE PROJECT SITE TO BE REVEGETATED. SEE LANDSCAPE PLANS FOR PROPOSED PLANTING.
11. PLANT MATERIAL IS TO BE HEALTHY SPECIMENS FREE FROM DISEASE OR DAMAGE.
12. ALL MATERIALS USED SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARDS FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
13. ALL PLANT MATERIAL TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
14. CONTRACTOR TO STAKE ALL TREE LOCATIONS PER PLAN. OBTAIN LANDSCAPE ARCHITECT'S APPROVAL OF STAKED LOCATIONS PRIOR TO PLANTING.
15. STOCKPILED PLANT MATERIAL TO BE PLACED IN THE SHADE AND HAND-WATERED UNTIL PLANTED.
16. MAINTAIN POSITIVE DRAINAGE AWAY FROM WALLS, WALKS, BUILDINGS, AND OTHER STRUCTURES AT ALL TIMES. FINE GRADING SHALL BE APPROVED PRIOR TO SEEDING.
17. DO NOT PLACE MULCH WITHIN 6" OF TREE TRUNKS
18. INSTALL LANDSCAPE EDGER AT ALL BED/ GRASS BORDERS.
19. SEE CIVIL PLANS FOR PROPOSED GRADING AND DRAINAGE.
20. THE CONTRACTOR SHALL FINE GRADE ALL AREAS TO BE PLANTED.
21. THE CONTRACTOR SHALL REMOVE REQUIRED DEPTH OF SOIL ALONG WALKWAYS TO ACCOMMODATE SEED, TOPSOIL OR MULCH DEPTH.
22. SEE GEOTECHNICAL REPORT FOR RECOMMENDATIONS WITHIN 10' OF STRUCTURES. CONTACT OWNER'S REPRESENTATIVE IMMEDIATELY SHOULD A CONFLICT ARISE BETWEEN THESE PLANS AND THE GEOTECHNICAL REPORT.

PROPOSED PLANT LIST FROM GLENWOOD MEADOWS DESIGN GUIDELINES:

DECIDIOUS TREES

Botanic Name	Common Name
Acer campestre	Hedge Maple
Acer freemanii 'Autumn Blaze'	Autumn Blaze Maple
Acer tataricum subsp. *ginnala* 'Flame'	Flame Amur Maple
Amelanchier canadenis	Serviceberry
Catalpa speciosa	Catalpa
Celtis occidentalis	Hackberry
Crataegus ambigua	Russian Hawthorn
Crataegus crus-galli	Cockspur Hawthorn
Crataegus crus-galli var. *inermis*	Thornless Cockspur Hawthorn
Crataegus viridis 'Winter King'	Winter King Hawthorne
Gleditsia triacanthos f. inermis	Thornless Honeylocust 'Shademaster'
Gleditsia triacanthos f. inermis 'Imperial'	Honey Locust, Imperial
Gleditsia triacanthos f. inermis 'Skyline'	Honey Locust, Skyline
Gleditsia triacanthos f. inermis 'Sunburst'	Honey Locust, Sunburst
Prunus virginiana 'Shubert'	Canada Red Chokecherry
Pyrus calleryana 'Chanticleer'	Callery Pear
Quercus macrocarpa	Bur Oak
Robinia pseudoacacia 'Purple Robe'	Black Locust / Purple Robe Locust
Sorbus hybrida	Oakleaf Mountain Ash
Syringa reticulata	Japanese Tree Lilac
Tilia americana	American Linden
Tilia americana 'Redmond'	Redmond Linden
Tilia cordata 'Greenspire'	Littleleaf Linden
Ulmus Americana	American Elm

EVERGREEN TREES

Botanic Name	Common Name
Abies lasiocarpa	Subalpine or Rocky Mountain Fir
Juniperus scopulorum 'Wichita Blue'	Rocky Mountain Juniper
Picea engelmannii	Engelmann Spruce
Picea glauca 'Densata'	Black Hills Spruce
Picea pungens	Colorado Spruce
Picea pungens 'Glauca'	Colorado Blue Spruce
Pinus cembroides var. edulis	Pinyon Pine
Pinus flexilis	Limber Pine
Pinus nigra	Austrian Pine
Pinus ponderosa	Ponderosa Pine
Pinus strobiformis	Southwestern White Pine
Pinus sylvestris	Scotch Pine

SHRUBS

Botanic Name	Common Name
Arctostaphylos uva-ursi	Kinnikinnick
Artemisia cana	Silver Sagebrush
Artemisia filifolia	Sand Sagebrush
Berberis thunbergil 'Burgundy Carousel'	Burgundy Carousel Japanese Barberry
Caryopteris x clandonensis 'Blue Mist'	Blue Mist Spirea
Chrysothamnus nauseosus var. *nauseosus*	Dwarf Blue Rabbitbrush
Forestiera neomexicana	New Mexico Privet
Juniperus chinensis 'Armstrong'	Armstrong Juniper
Juniperus horizontalis 'Wiltonii'	Blue Rug Juniper
Juniperus sabina 'Buffalo'	Buffalo Juniper
Juniperus scopulorum 'Cologreen'	Cologreen Juniper
Juniperus scopulorum 'Moonglow'	Moonglow Juniper
Juniperus scopulorum 'Skyrocket'	Skyrocket Juniper
Junperus squamata 'Blue Star'	Blue Star Juniper
Ligustrum vulgare 'Cheyenne'	Cheyenne Privet
Perovskia atriplicifolia	Russian Sage
Philadelphus lewisii 'Blizzard'	Blizzard Mockorange
Physocarpus opulifolius 'Diabolo'	Diabolo Ninebark
Prunus virginiana melanocarpa	Rocky Mountain/Native Chokecherry
Quercus gambelii	Gambel Oak
Rhus aromatica 'Gro-Low'	Dwarf Fragrant Sumac
Rhus glabra	Smooth Sumac
Shepherdia argentea	Silver Buffaloberry
Speraea japonica 'Little Princess'	Little Princess Spirea
Syringa vulgaris 'Charles Joly'	Double Red French Lilac
Yucca glauca	Soapweed Yucca

PERENNIALS

Botanic Name	Common Name
Achillea millefolium 'Terra Cotta'	Terra Cotta Yarrow
Achillea 'Moonshine'	Moonshine Yarrow
Artemisia 'Powis Castle'	Powis Castle Sage
Campanula glomerata 'Superba'	Clustered Bellflower
Cerastium tomentosum	Snow in Summer
Dianthus graniticus	Granite Pinks
Echinacea purpurea	Purple Coneflower
Gazania linearis 'Colorado Gold'	Hardy Gazania
Iris x germanica cultivars	Bearded Iris
Lavandula angustifolia 'Munstead'	English Lavender
Penstemon digitalis 'Huskers Red'	Huskers Red Penstemon
Penstemon pinifolius	Pineleaf Penstemon
Penstemon strictus	Rocky Mt. Penstemon
Salvia superba	Perennial Salvia
Salvia n. 'May Night'	May Night Salvia
Salvia sylvestris 'Caradonna'	Caradonna Salvia
Sedum 'Autumn Joy'	Autumn Joy Sedum
Sedum 'Matrona'	Matrona Sedum

ORNAMENTAL GRASS

Calamagrostis acutiflora 'Karl Foerster'	Feather Reed Grass
Helictotrichon sempervirens	Blue Avena Grass
Miscanthus sinensis 'Yaku Jima'	Yaku Jima Maiden Grass
Pennisetum orientale 'Karly Rose'	Pink Oriental Fountian Grass
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass

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PLANT LIST AND GENERAL NOTES

SCALE:

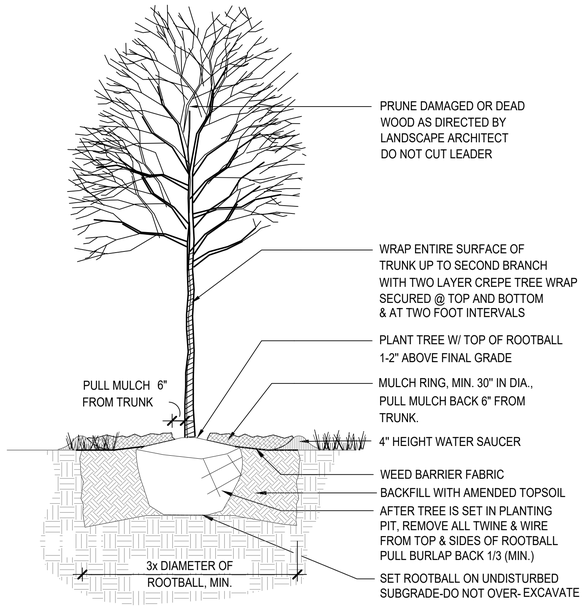
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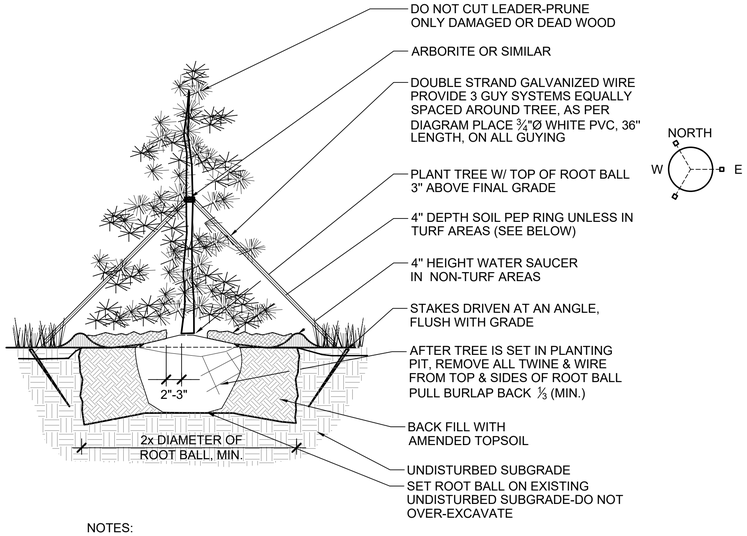
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NOTES:
1. MULCH TO BE 4" DEEP. MULCH TO BE SOIL PEP. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER PRIOR TO INSTALLATION.
2. ALL TREES 3" DIAMETER OR LARGER MAY BE STAKED FOR ONE YEAR IF PROPOSED BY LANDSCAPE CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE.

1 L2.1 DECIDUOUS TREE PLANTING

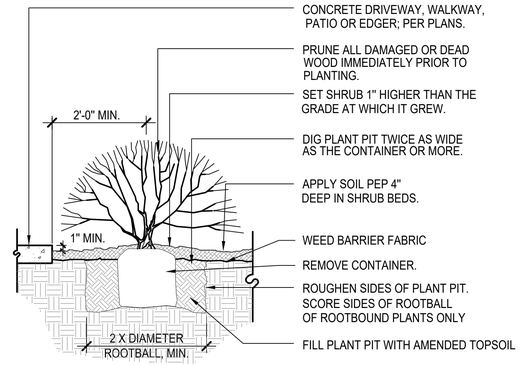
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NOTES:
1. PULL MULCH BACK 2" TO 3" FROM TRUNK OF TREE

2 L2.1 EVERGREEN TREE PLANTING

NOT TO SCALE

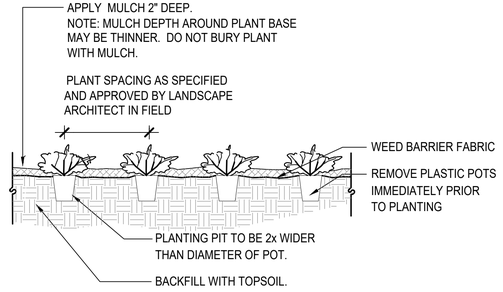


NOTES:

1. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE CONTAINERS WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALLS.
2. HOLD GRADE 1" BELOW EDGE OF WALK OR CURB
3. ALL MULCH TO BE SOIL PEP. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER PRIOR TO INSTALLATION.

3 L2.1 SHRUB PLANTING

NOT TO SCALE

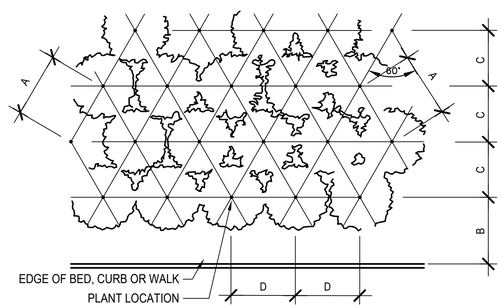


NOTE: MULCH TO BE SOIL PEP. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER PRIOR TO INSTALLATION.

4 L2.1 ORNAMENTAL GRASS AND PERENNIAL

NOT TO SCALE

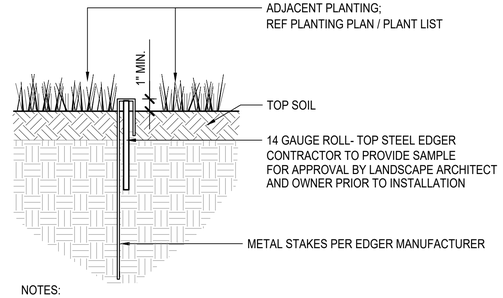
PLANT SPACING	A	B	C	D
6"	6"	6"	5"	6"
8"	8"	6"	7"	8"
12"	12"	8"	10"	12"
18"	18"	9"	15½"	18"
24"	24"	18"	21"	24"
30"	30"	15"	26"	30"
36"	36"	30"	31"	36"
48"	48"	30"	42"	48"
60"	60"	36"	52"	60"



NOTE:
ALIGN FRONT ROW PARALLEL TO BED LINE

5 L2.1 SHRUB/ ORNAMENTAL GRASS / GROUNDCOVER PLANTING LAYOUT - TRIANGULAR SPACED

NOT TO SCALE



NOTES:

1. SET ALL EDGING 1" ABOVE FINISH GRADE AS SHOWN.
2. EDGING SHALL ABUT ALL CONCRETE CURBS AND WALKS PERPENDICULAR OR AS SHOWN ON PLANS, AND FLUSH W/ GRADES OF CONCRETE.
3. ALL JOINTS TO BE SECURELY STAKED.
4. EDGING TO BE PARALLEL WITH GRADE.
5. INSTALL EDGER PER MANUFACTURERS SPECIFICATIONS USING SPLICES AND CORNERS AS DIRECTED.

6 L2.1 LANDSCAPE EDGER

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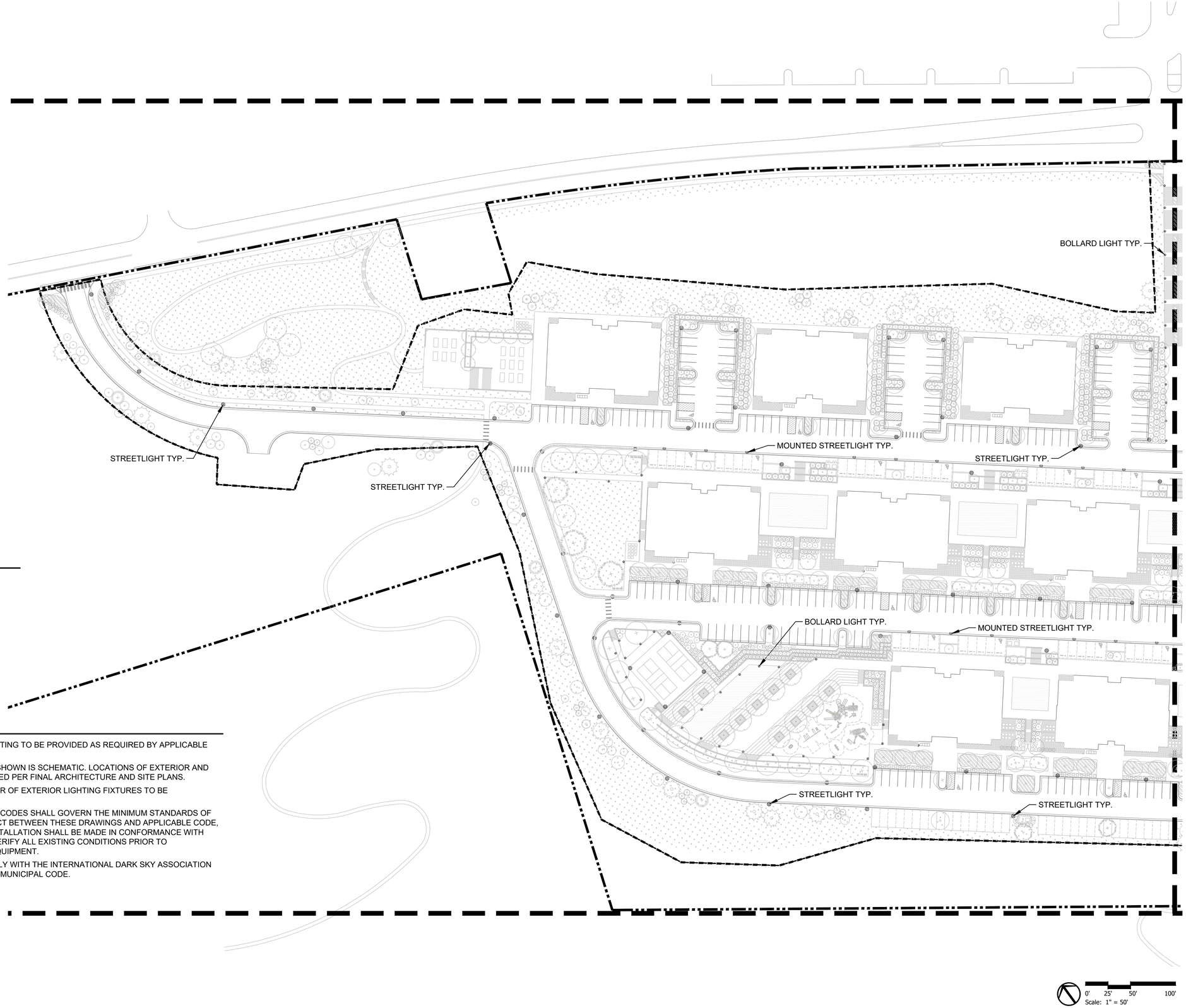
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PLANTING DETAILS

SCALE:

SHEET NUMBER:
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SHEET ____ OF ____

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LEGEND:

- PROPERTY LINE
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT

SITE LIGHTING NOTES:

1. SITE AND EXTERIOR BUILDING LIGHTING TO BE PROVIDED AS REQUIRED BY APPLICABLE BUILDING CODES.
2. LOCATION OF LIGHT FIXTURES AS SHOWN IS SCHEMATIC. LOCATIONS OF EXTERIOR AND SITE LIGHT FIXTURES TO BE VERIFIED PER FINAL ARCHITECTURE AND SITE PLANS.
3. FINAL TYPE, LOCATION AND NUMBER OF EXTERIOR LIGHTING FIXTURES TO BE DETERMINED.
4. NATIONAL AND LOCAL ELECTRICAL CODES SHALL GOVERN THE MINIMUM STANDARDS OF WORK. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND APPLICABLE CODE, THE CODE SHALL PREVAIL AND INSTALLATION SHALL BE MADE IN CONFORMANCE WITH THE CODE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INSTALLATION OF ANY LIGHTING EQUIPMENT.
5. ALL EXTERIOR FIXTURES TO COMPLY WITH THE INTERNATIONAL DARK SKY ASSOCIATION AND CITY OF GLENWOOD SPRINGS MUNICIPAL CODE.

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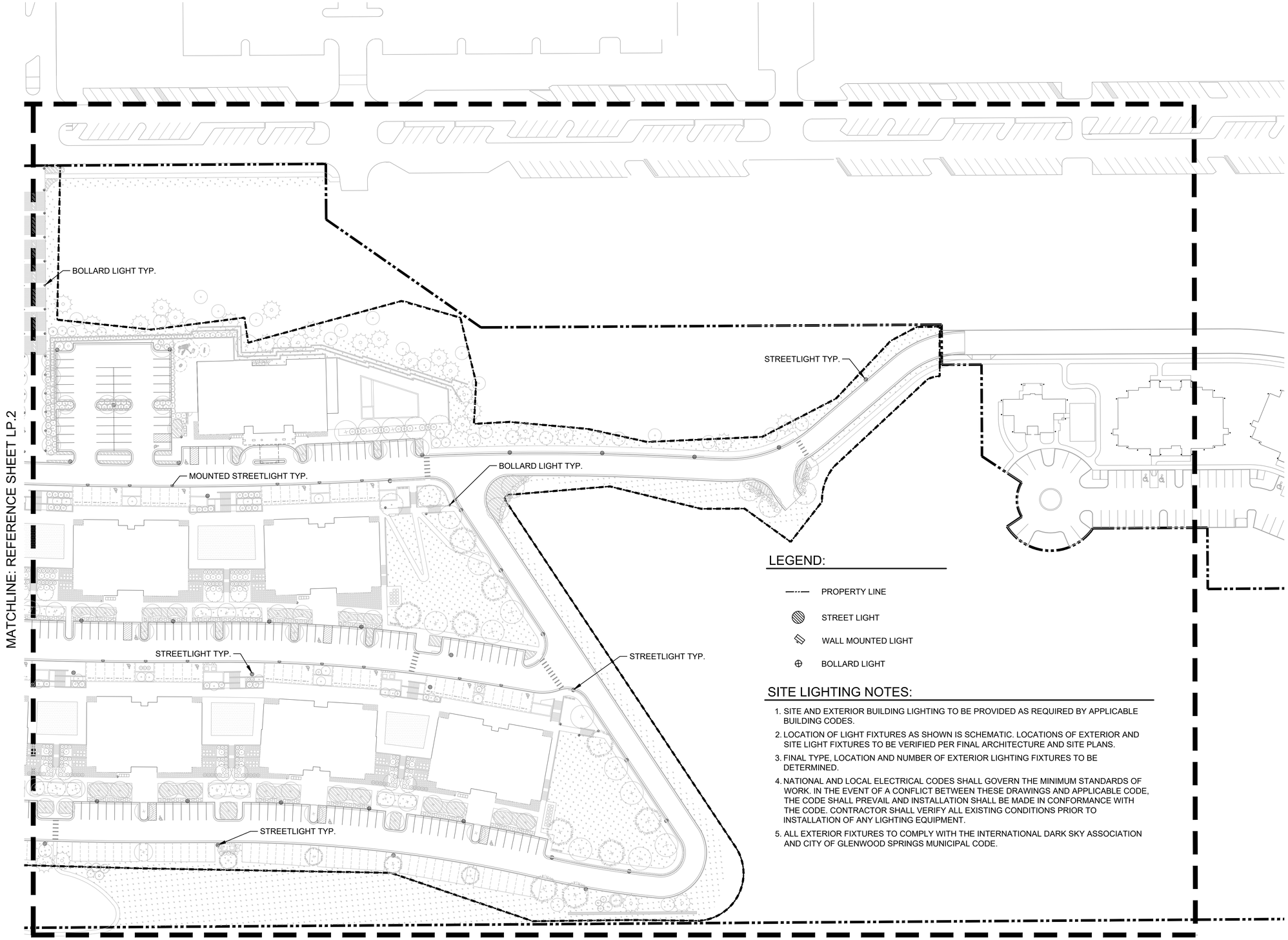
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SITE LIGHTING ENLARGEMENT

SCALE:

SHEET NUMBER:
LP.2

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LEGEND:

- PROPERTY LINE
- STREET LIGHT
- WALL MOUNTED LIGHT
- BOLLARD LIGHT

SITE LIGHTING NOTES:

1. SITE AND EXTERIOR BUILDING LIGHTING TO BE PROVIDED AS REQUIRED BY APPLICABLE BUILDING CODES.
2. LOCATION OF LIGHT FIXTURES AS SHOWN IS SCHEMATIC. LOCATIONS OF EXTERIOR AND SITE LIGHT FIXTURES TO BE VERIFIED PER FINAL ARCHITECTURE AND SITE PLANS.
3. FINAL TYPE, LOCATION AND NUMBER OF EXTERIOR LIGHTING FIXTURES TO BE DETERMINED.
4. NATIONAL AND LOCAL ELECTRICAL CODES SHALL GOVERN THE MINIMUM STANDARDS OF WORK. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND APPLICABLE CODE, THE CODE SHALL PREVAIL AND INSTALLATION SHALL BE MADE IN CONFORMANCE WITH THE CODE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INSTALLATION OF ANY LIGHTING EQUIPMENT.
5. ALL EXTERIOR FIXTURES TO COMPLY WITH THE INTERNATIONAL DARK SKY ASSOCIATION AND CITY OF GLENWOOD SPRINGS MUNICIPAL CODE.

0' 25' 50' 100'
Scale: 1" = 50'

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

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DOG YARD





Dog yards, as labeled on revised sheet set, to be located within the open space areas throughout the property. Dog waste stations will be located near open space areas and at each local access trailhead.

COMMUNITY AREA



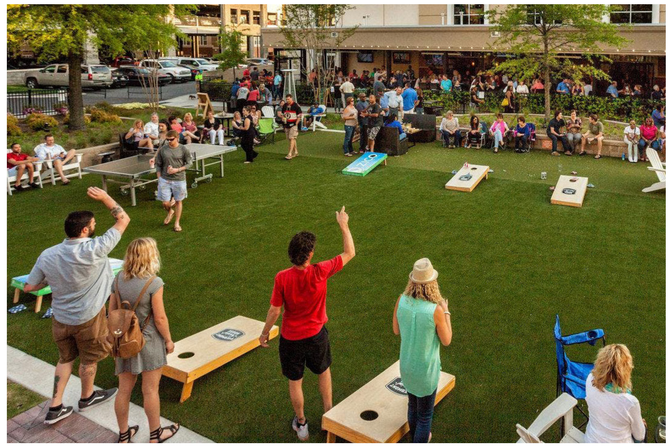




Community amenity spaces to be located between apartment buildings. ADA access shall be provided to all community/amenity spaces. Further design studies will continue to develop and finalize amenity features and materials.

AMENITIES







Potential site amenities options offered throughout the site. Currently, two pickleball courts are designed as a part of Park 2. Additionally, bench seating is located near each amenity space.

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DESIGN IMAGERY

SCALE:

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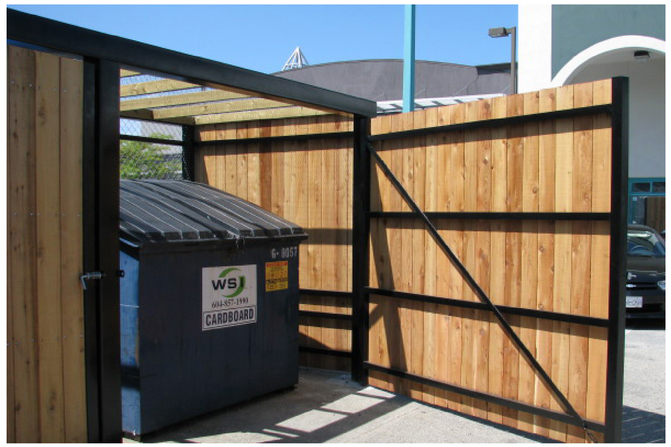
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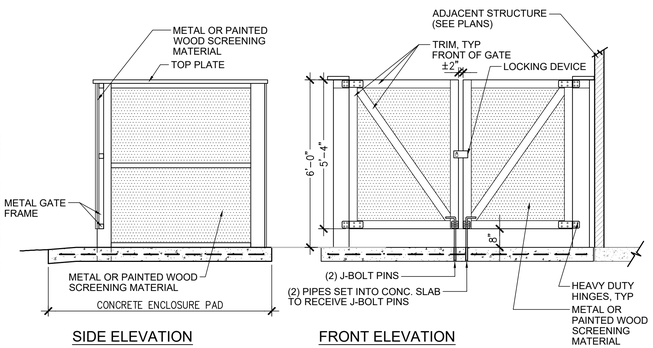
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DUMPSTER ENCLOSURE/UTILITY SCREEN

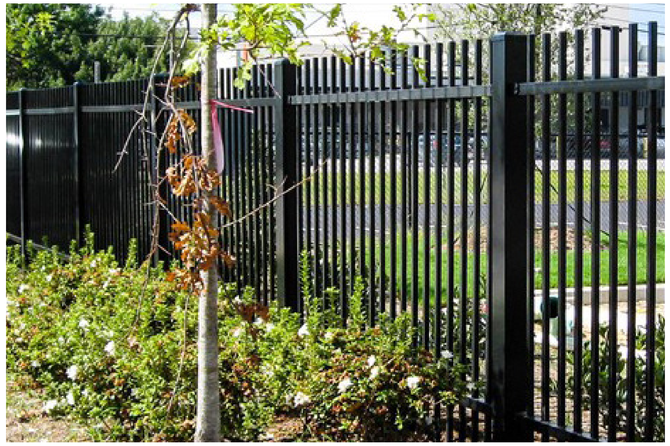






Character images and conceptual detail of proposed dumper enclosures and utility screening. Enclosures are designed to be integrated within retaining wall layouts. The dumpster enclosure screening shall be visually compatible with building materials and have planted material terraced along the hillside to soften the enclosure appearance. Dumpster enclosures will comply with the code and bear proofing requirements.

FENCE







Design recommendation for internal fencing design. Consistent style of fencing to be implemented throughout the overall site design for material cohesiveness. Fencing material shall be compatible with the overall site design and landscaping. Durable black aluminum fencing, similar to that used by DHM at Glenwood Hot Springs (as seen in the bottom image) is a recommended style.

RETAINING WALLS







Retaining walls shall be compatible with the overall site design and designed to conform to the existing natural terrain. Retaining wall heights limited to 6' max. with 3' min. planting zone between terraced walls. Anticipated materials and wall types are gravity block, precast block/MSE, or concrete. Final layout and materials to be determined after review of final geotechnical report.

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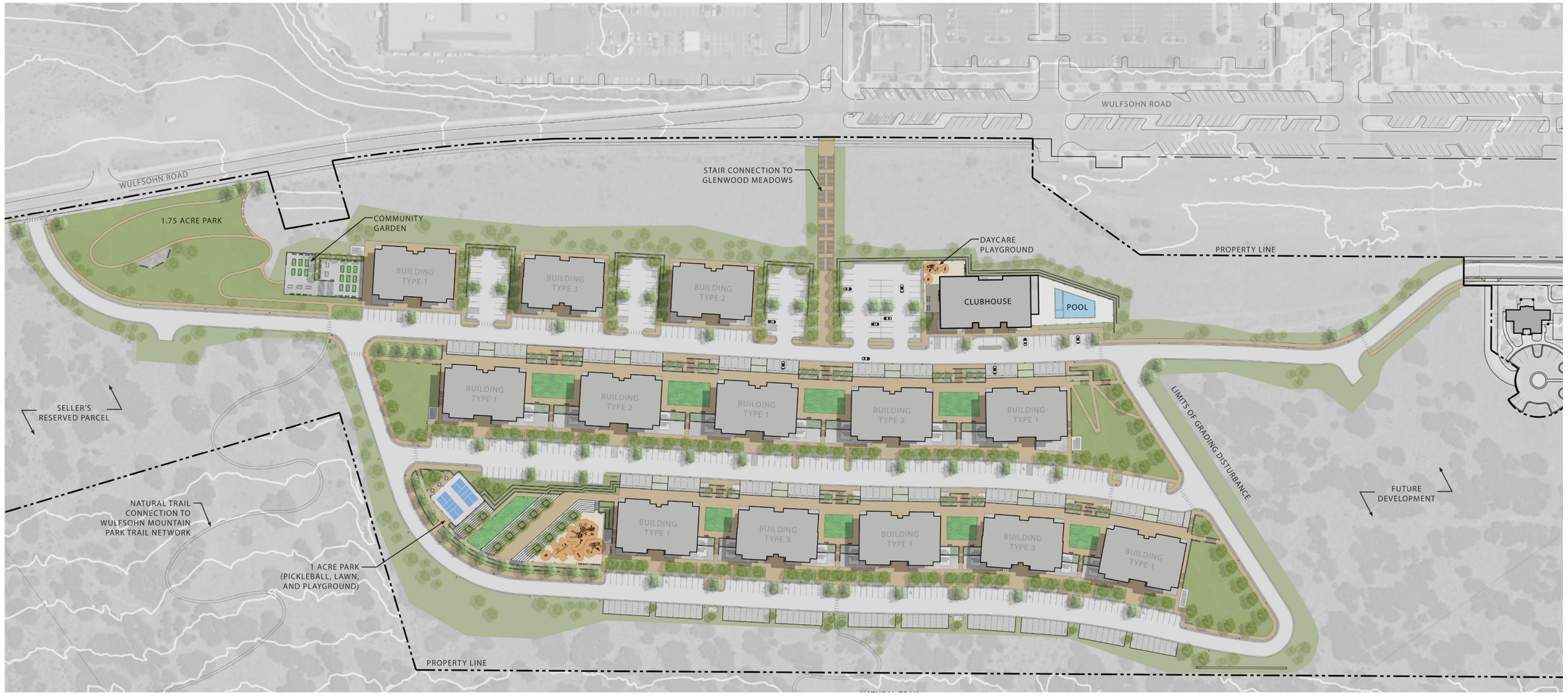
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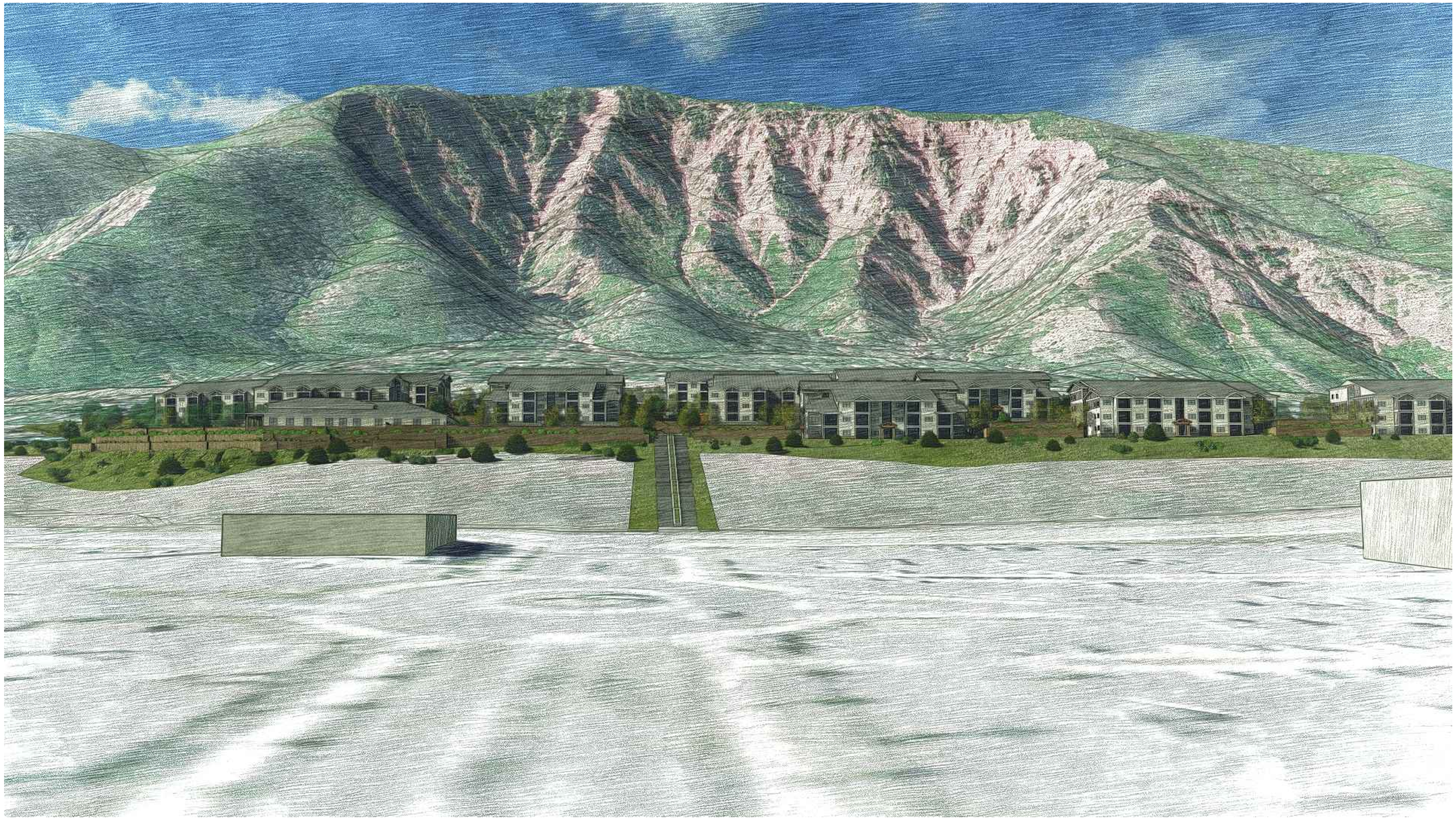
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SCALE:

SHEET NUMBER:
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PLOTTED: Aug 9, 2021 - 4:55pm

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 3

SHEET_____OF_____



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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
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2021.08.13

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SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 4

SHEET_____OF_____



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DATE Aug 13, 2021 - 2:18pm

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE /
ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE
ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 5

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IMAGES
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LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 6

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 7

SHEET_____OF_____



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SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 8

SHEET_____OF_____



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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
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SHEET_____OF_____

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

SCALE:

SHEET NUMBER:
EXBT 10

SHEET_____OF_____



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DATE
Aug 02, 2021 - 11:48am

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GLENWOOD MEADOWS MULTI FAMILY HOUSING

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE
2021.08.13

REVISIONS:
SUBMITTAL #3: 2021.07.02
SUBMITTAL #4: 2021.08.13
REVISIONS:

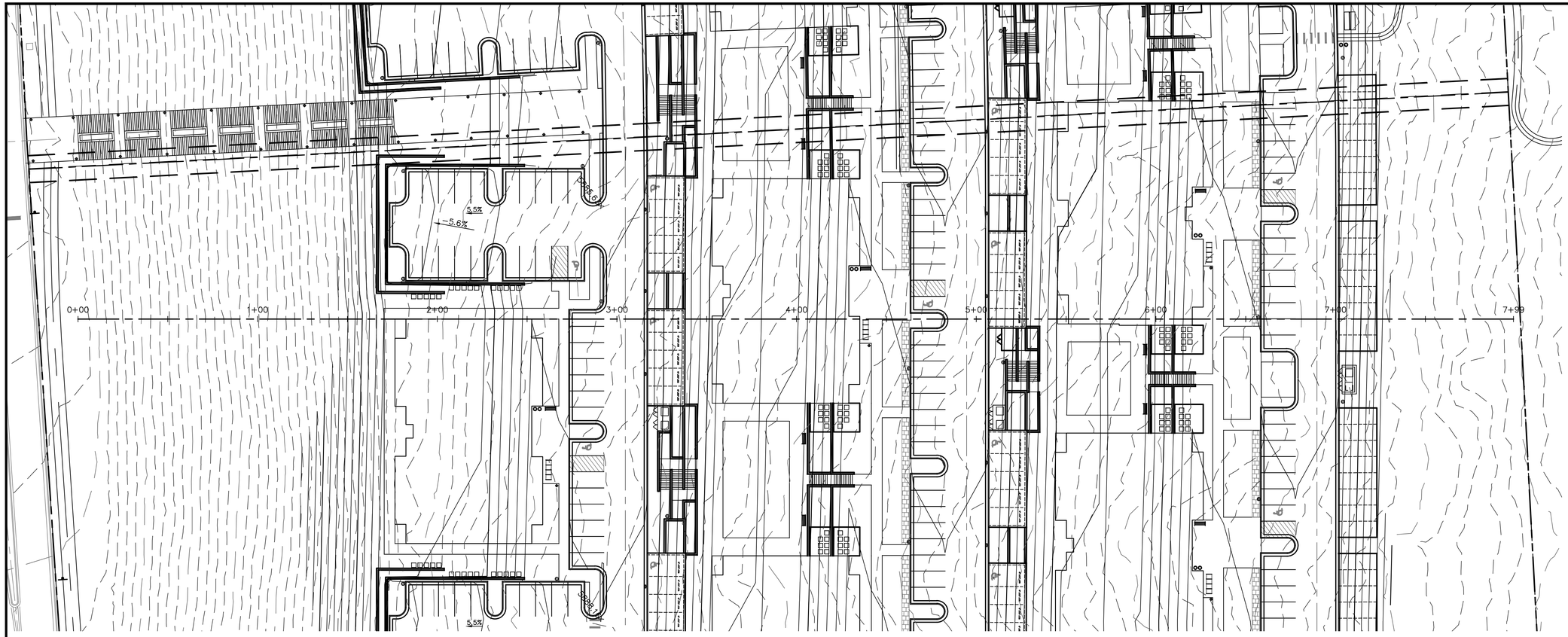
JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
PERSPECTIVE ILLUSTRATION

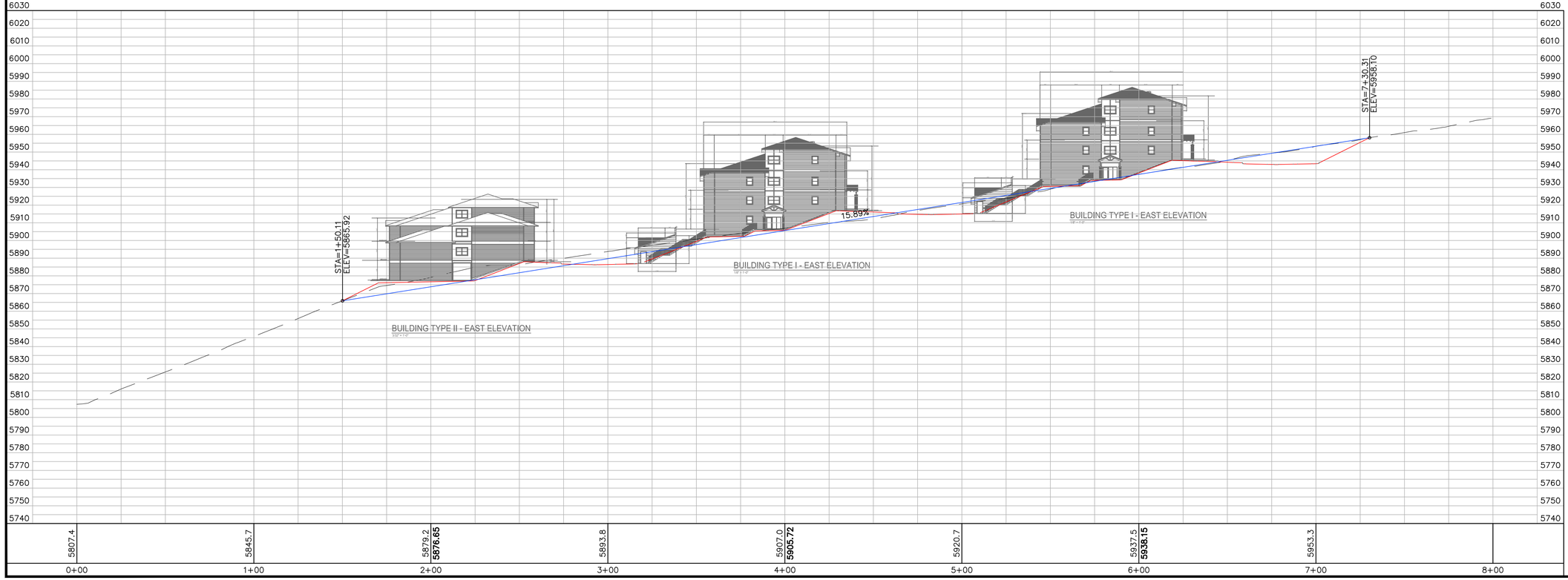
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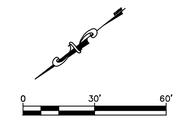
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EXBT 11

SHEET_____OF_____



SECTION PROFILE





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CONSTRUCTION

COLORADO 811
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Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE:

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC;
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

SITE SECTIONS
EXHIBIT

PROJECT NO.
2201044.00

EXBT 12,1

SECTION2 PROFILE

PRELIMINARY
NOT FOR
CONSTRUCTION

0 30' 60'

COLORADO 811
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Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
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FILE:

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GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

SITE SECTIONS
EXHIBIT

PROJECT NO.
2201044.00

EXBT 12.2

SECTION3 PROFILE

PRELIMINARY
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Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE:

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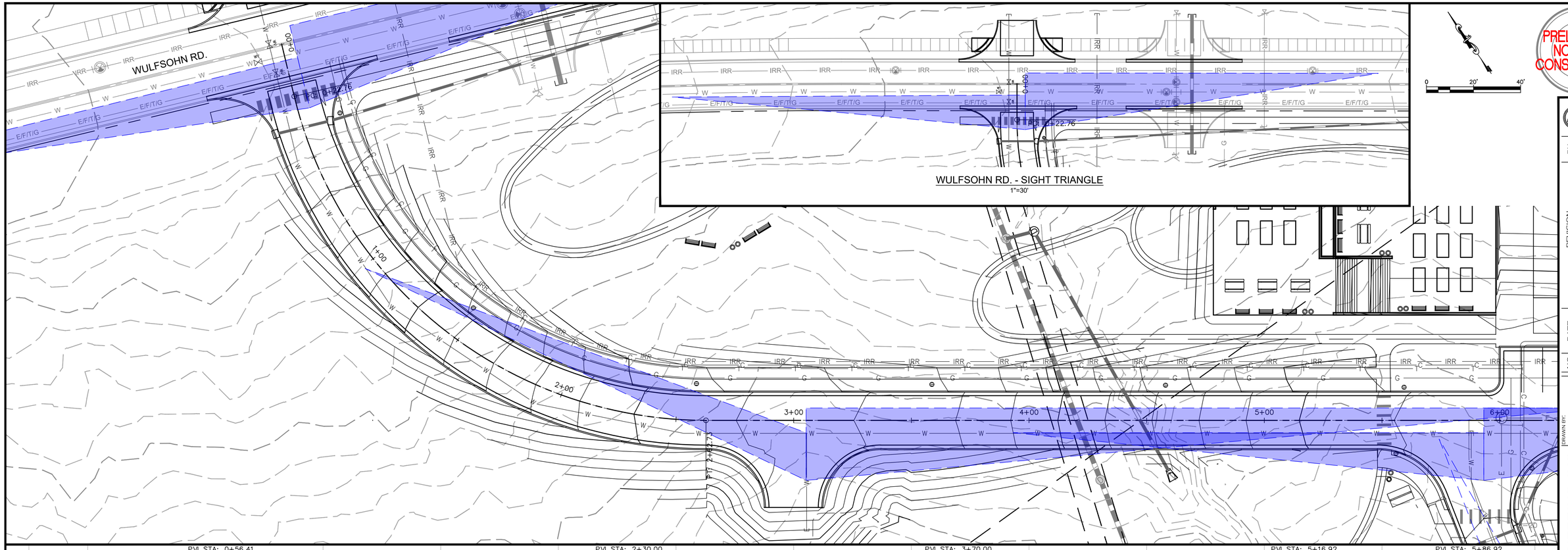
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GLENWOOD MEADOWS MULTI-FAMILY

SITE SECTIONS
EXHIBIT

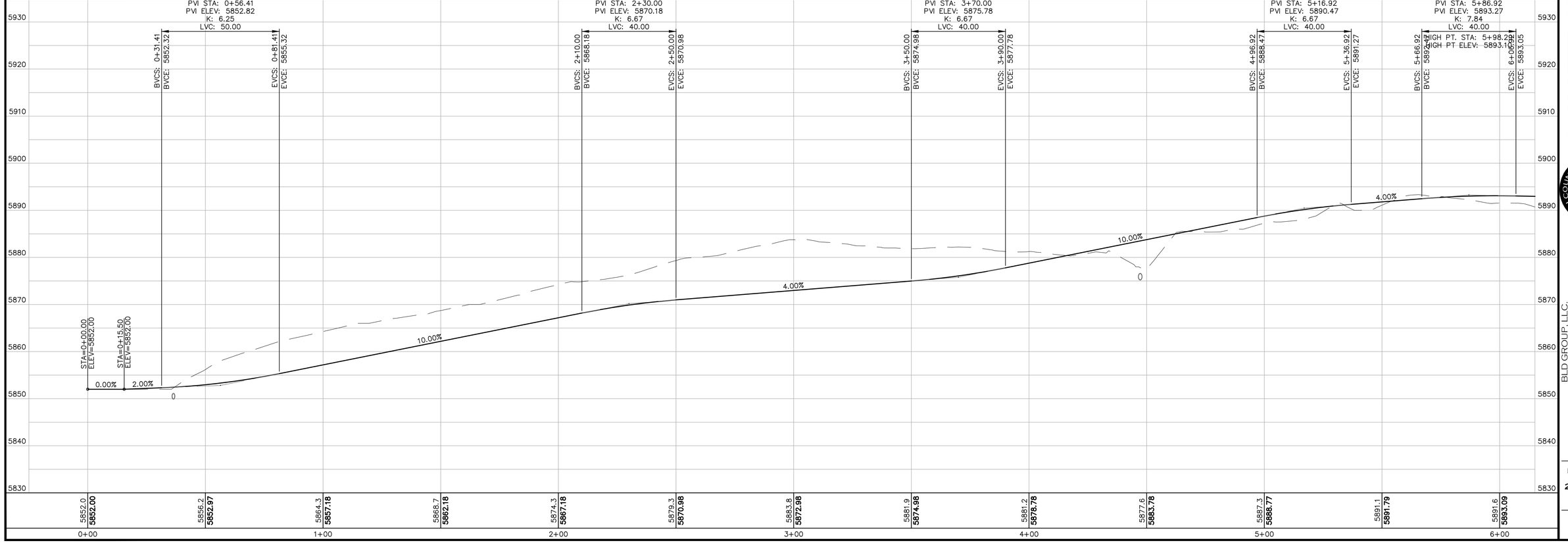
PROJECT NO.
2201044.00

EXBT 12.3



WULFSOHN RD. - SIGHT TRIANGLE
1"=30'

PRELIMINARY
NOT FOR
CONSTRUCTION



NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

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DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE:
SCALE 1" = 20'

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GLENWOOD MEADOWS MULTI-FAMILY

WEST ENTRY PLAN & PROFILE
EXHIBIT

PROJECT NO.
2201044.00

EXBT 13

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

FOR PRELIMINARY REVIEW

TW: 5865.00
BW: 5859.00
TW: 5872.00
BW: 5866.00
TW: 5879.00
BW: 5873.00

5866 5864 5862 5860 5858 5856 5854 5852 5850 5848 5846 5844 5842 5840 5838 5836 5834 5832 5830 5828 5826 5824 5822 5820 5818

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DATE: MO/DA/YEAR
FILE: FILE

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GLENWOOD MEADOWS MULTI-FAMILY

POOL WALL GRADING EXHIBIT

PROJECT NO.
2201044.00
TASK

EXHBT 14

GLENWOOD SPRINGS

COLORADO

DESCRIPTION OF DRAWINGS

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	BUILDING TYPE I	A 28	Apartment Floor Plans
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A 3	Bldg Type-I - First Floor		**CLUBHOUSE**
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A 5	Bldg Type-I - Third Floor	A 32	Clubhouse & Daycare Center Roof plan
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A 25	Bldg Type-III - North & South Elevation		
A 26	Bldg Type-III - West & East Elevation		
A 27	Bldg Type-III - Section		

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RICHARD COBA
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AR No. 10,173

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1500 Cordova Road - Suite 300
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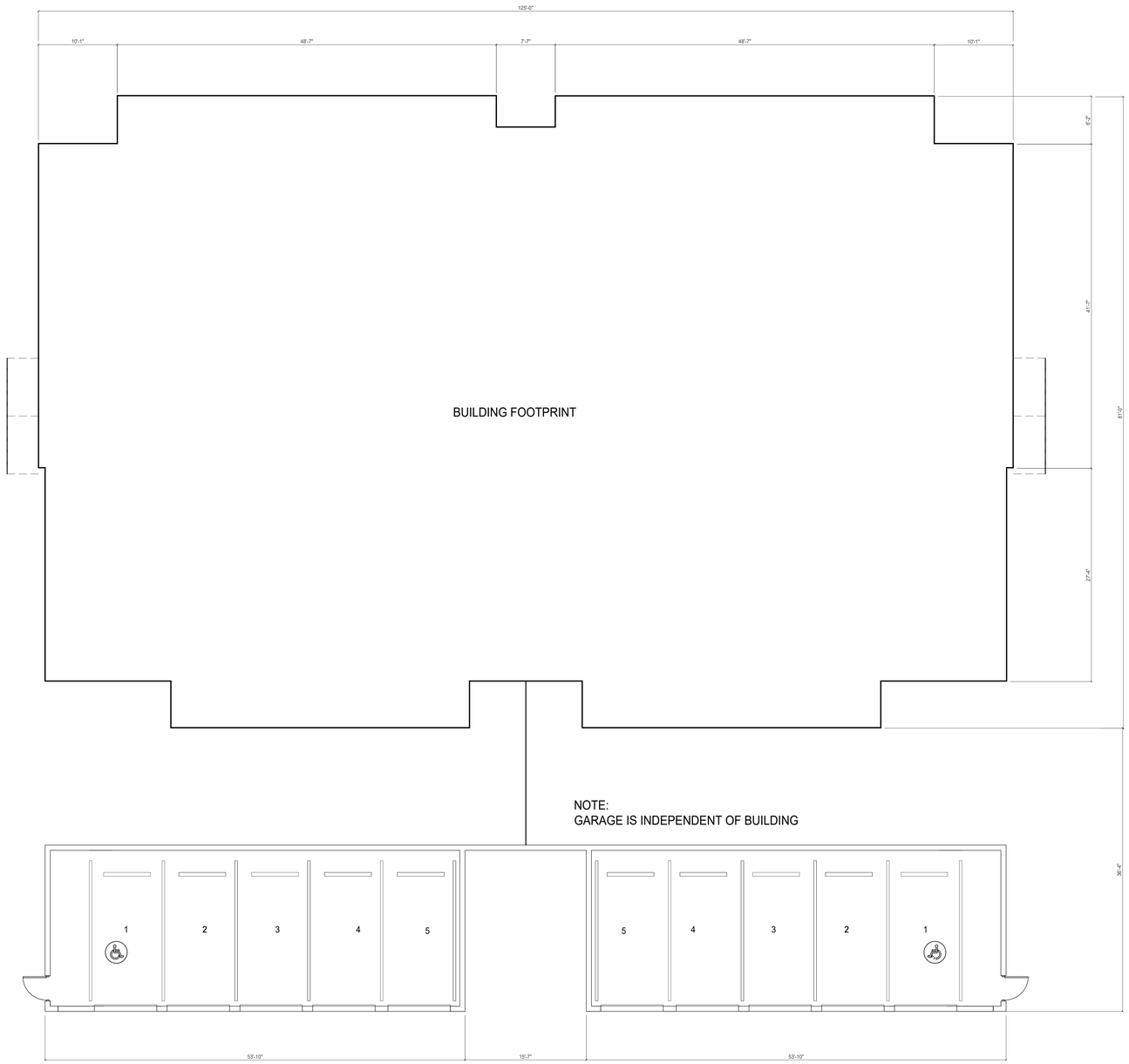
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
1	06/29/2021	
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: NTS

INDEX

A–01



BUILDING TYPE I - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE I				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	5,855	0	1824	4031
1ST LEVEL	9,623	0	1653	7970
2ND LEVEL	9,623	243	1648	7732
3RD LEVEL	5,675	243	1732	3700
TOTAL BUILDING	33,406			23,433
NO. OF BUILDINGS	7			7
TOTAL FOR BUILDING TYPE I	233,842			164,031

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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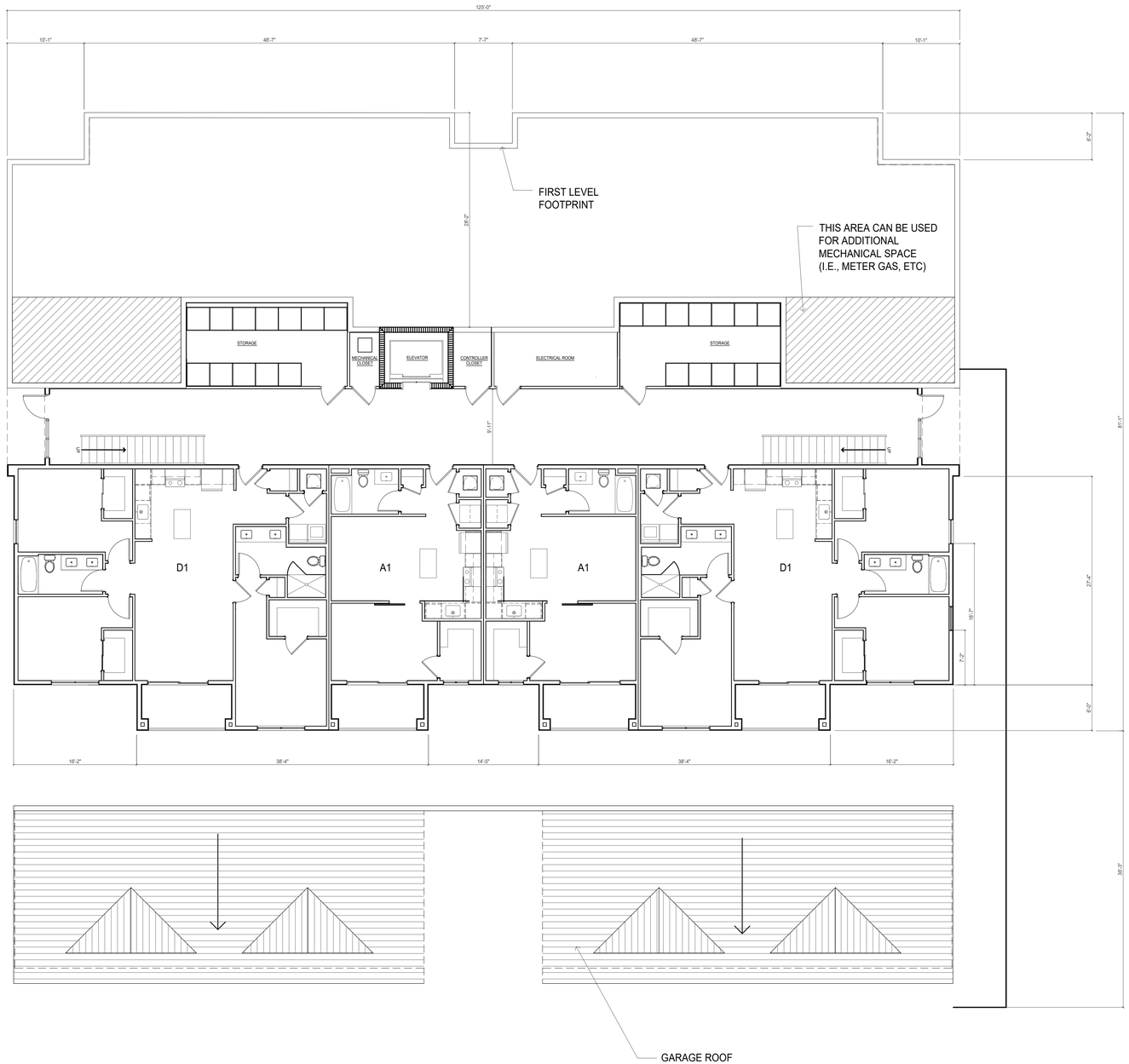
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	COMMENT
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-1



BUILDING TYPE I - LOWER LEVEL

1/8" = 1'-0"

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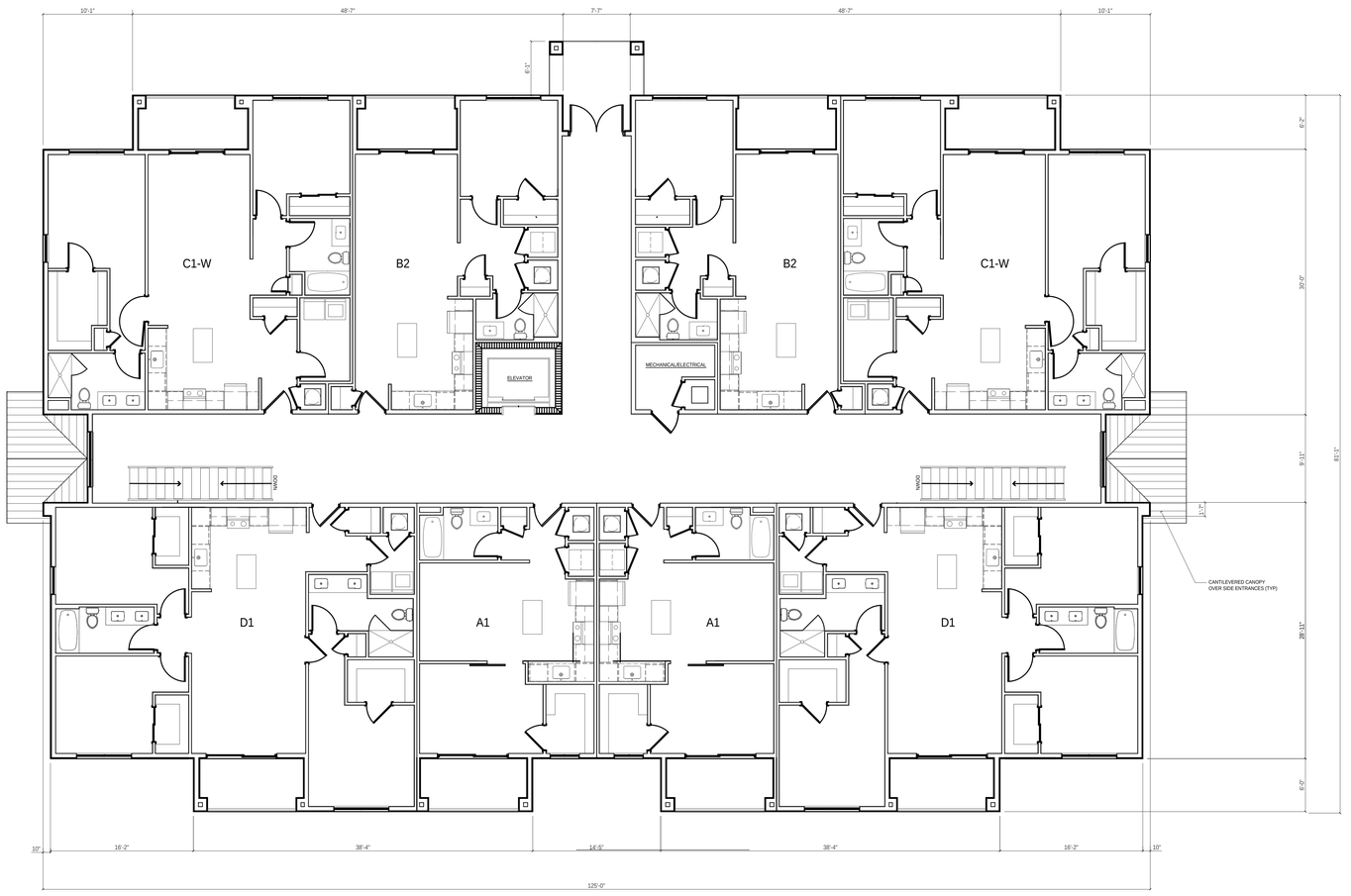
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-2



BUILDING TYPE I - FIRST FLOOR

1/8" = 1'-0"

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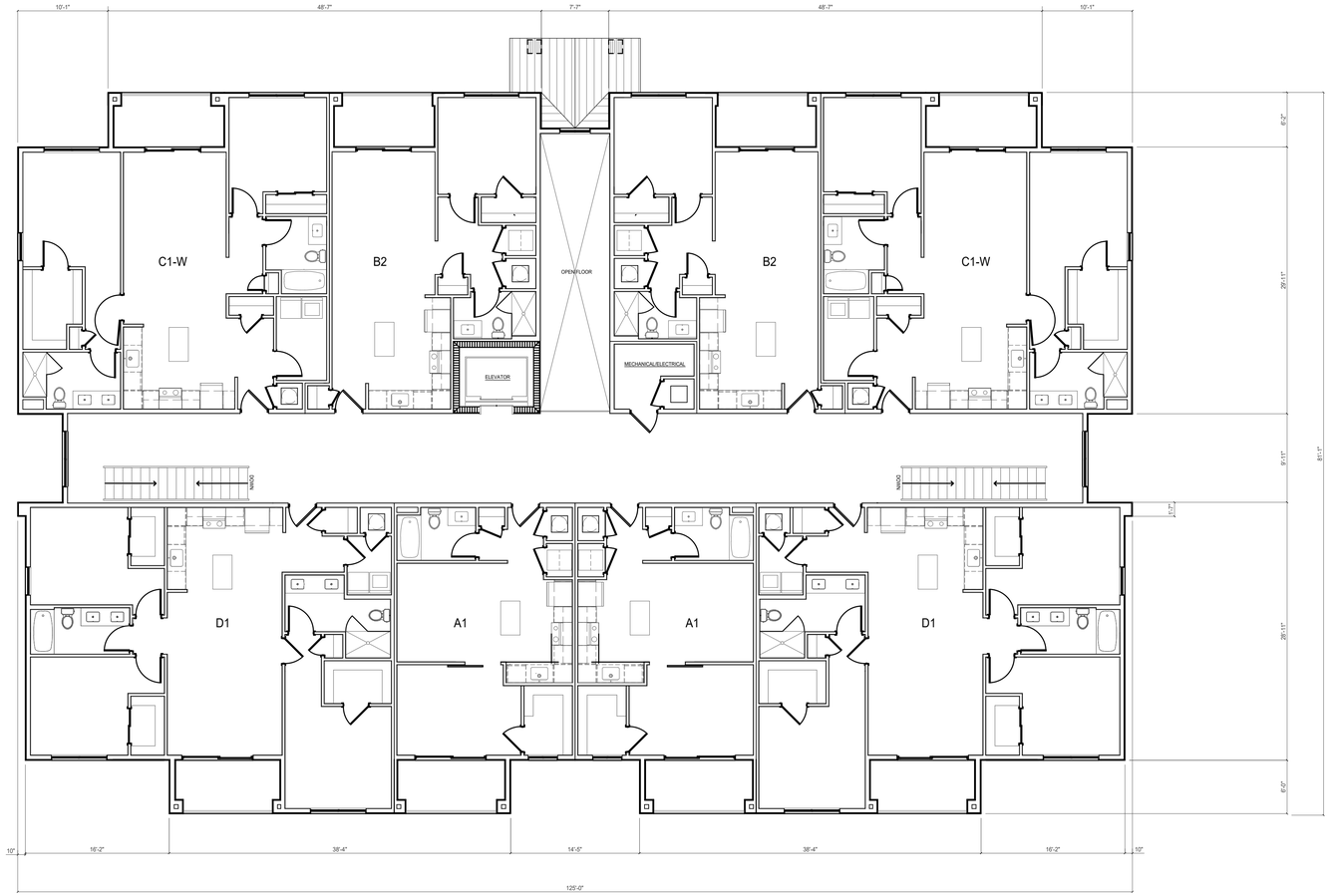
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-3



BUILDING TYPE I - SECOND FLOOR

1/8" = 1'-0"

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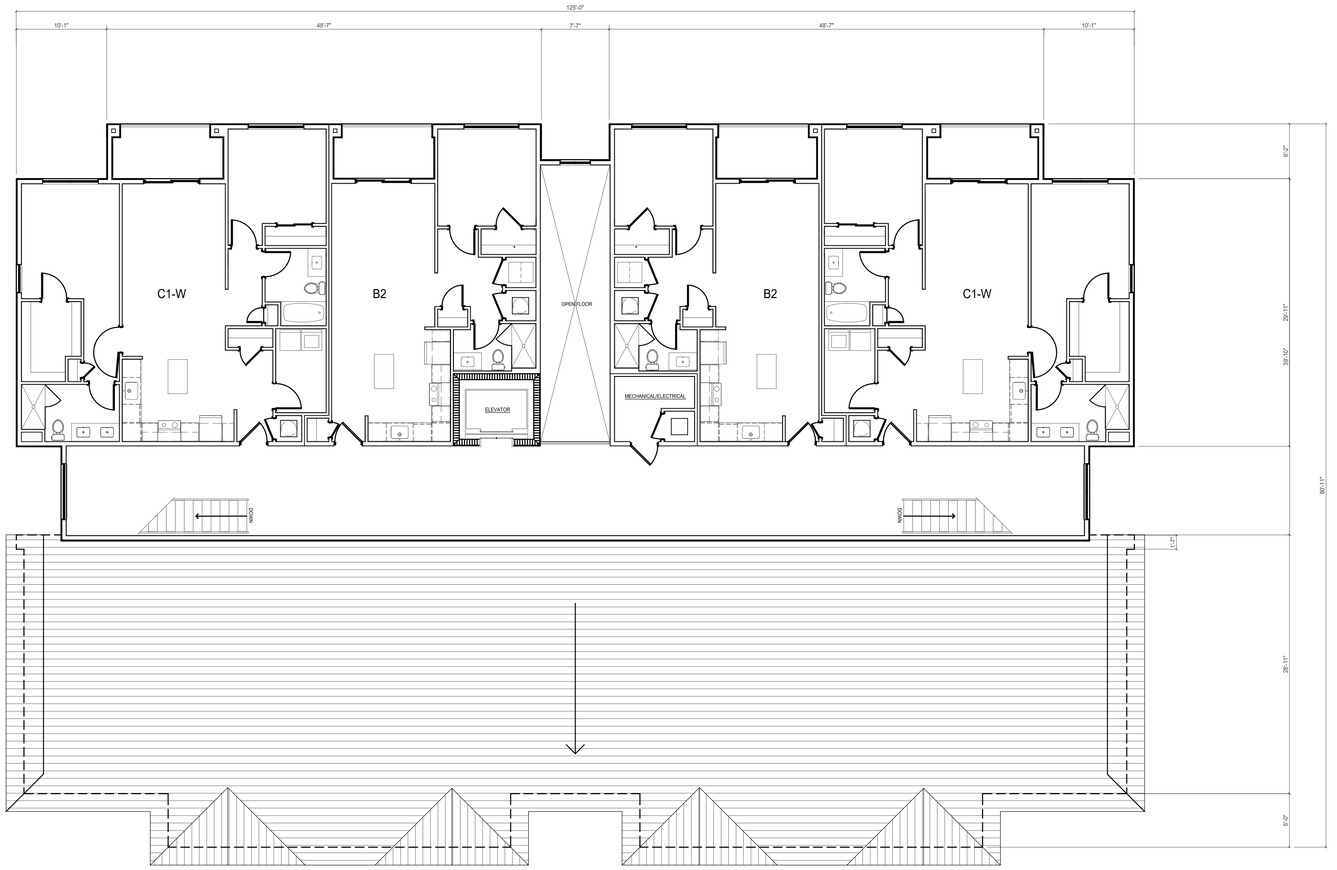
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

DRN: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-4



BUILDING TYPE I - THIRD FLOOR

1/8" = 1'-0"

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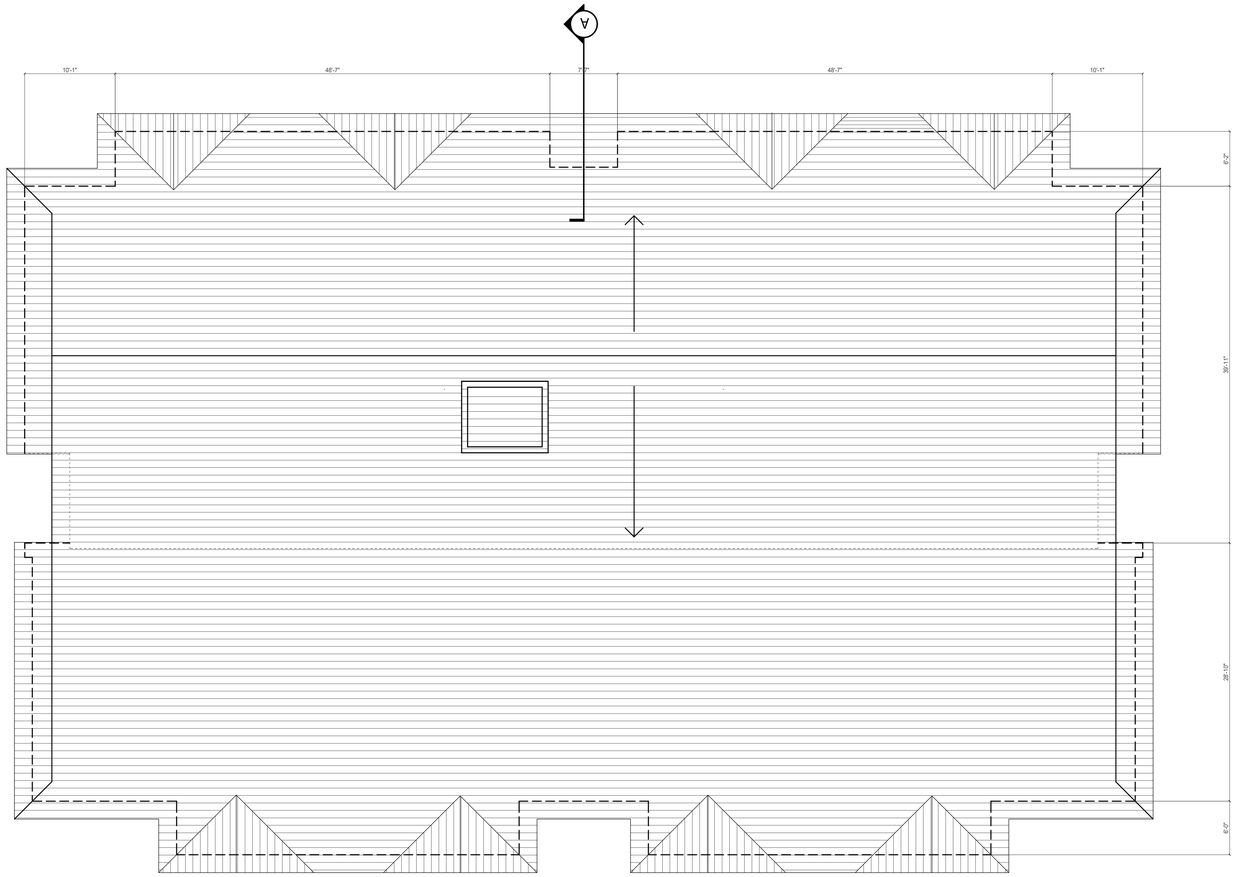
PROJECT:
GLENWOOD SPRINGS
COLORADO

BY:	DATE	COMMENT
RC	12/26/2020	
2	07/26/2021	

SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-5



BUILDING TYPE I - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

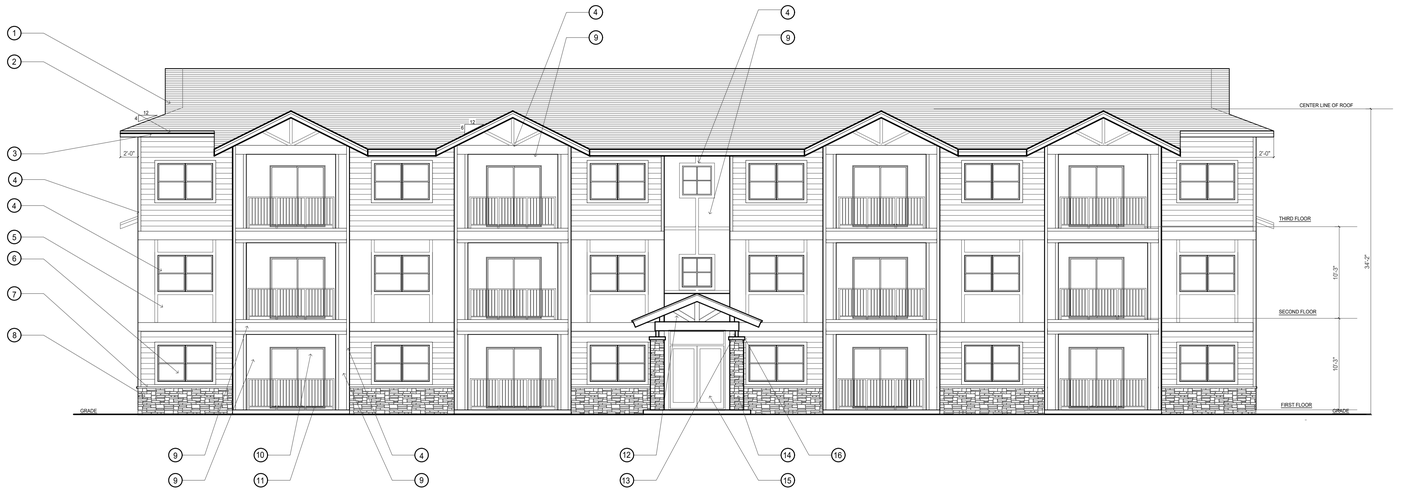
BUILDING TYPE I

A-6



BUILDING TYPE I - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE I - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	ITEM	PRODUCT	COLOR
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE I		
NORTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	4089	NA
NET STONE CLADDING	169.91	4.2%
NET SIDING	1460.59	35.7%
NET STUCCO FINISH	1584	38.7%
NET GLAZING	874.5	21.4%

SOUTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3866.00	NA
NET STONE CLADDING	187.48	4.8%
NET SIDING	1371.74	35.5%
NET STUCCO FINISH	1269.10	32.8%
NET GLAZING	1037.68	26.8%

EAST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3294	NA
NET STONE CLADDING	-	-
NET SIDING	2672.23	81.1%
NET STUCCO FINISH	451.37	13.7%
NET GLAZING	170.4	5.2%

WEST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3294	NA
NET STONE CLADDING	-	-
NET SIDING	2672.23	81.1%
NET STUCCO FINISH	451.37	13.7%
NET GLAZING	170.4	5.2%

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/28/2021	12/28/2020

BY: RC
SCALE: 1/8" = 1'-0"

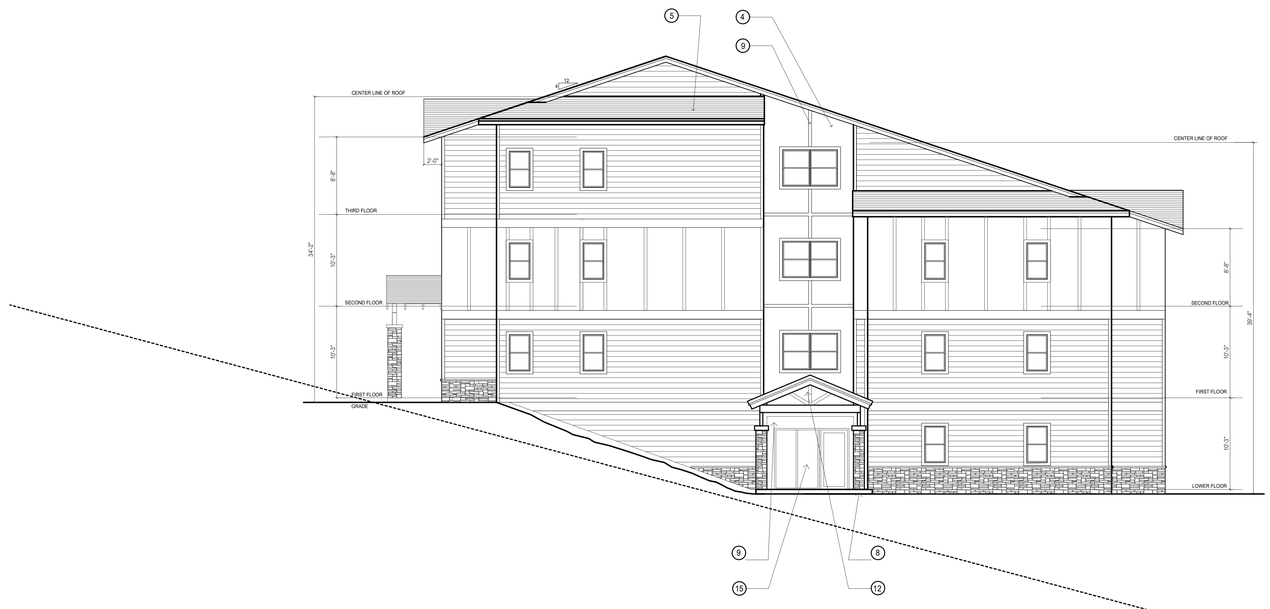
BUILDING TYPE I

A-7



BUILDING TYPE I - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE I - WEST ELEVATION

1/8" = 1'-0"

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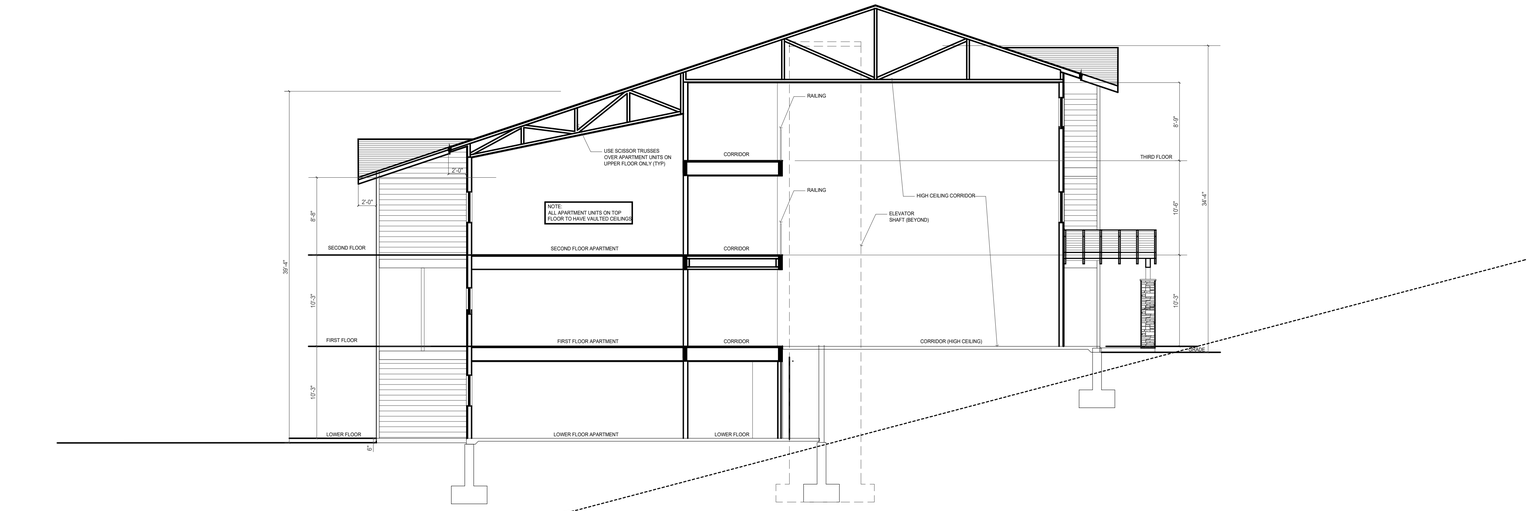
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE I

A-8



BUILDING TYPE I - SECTION A

1/8" = 1'-0"

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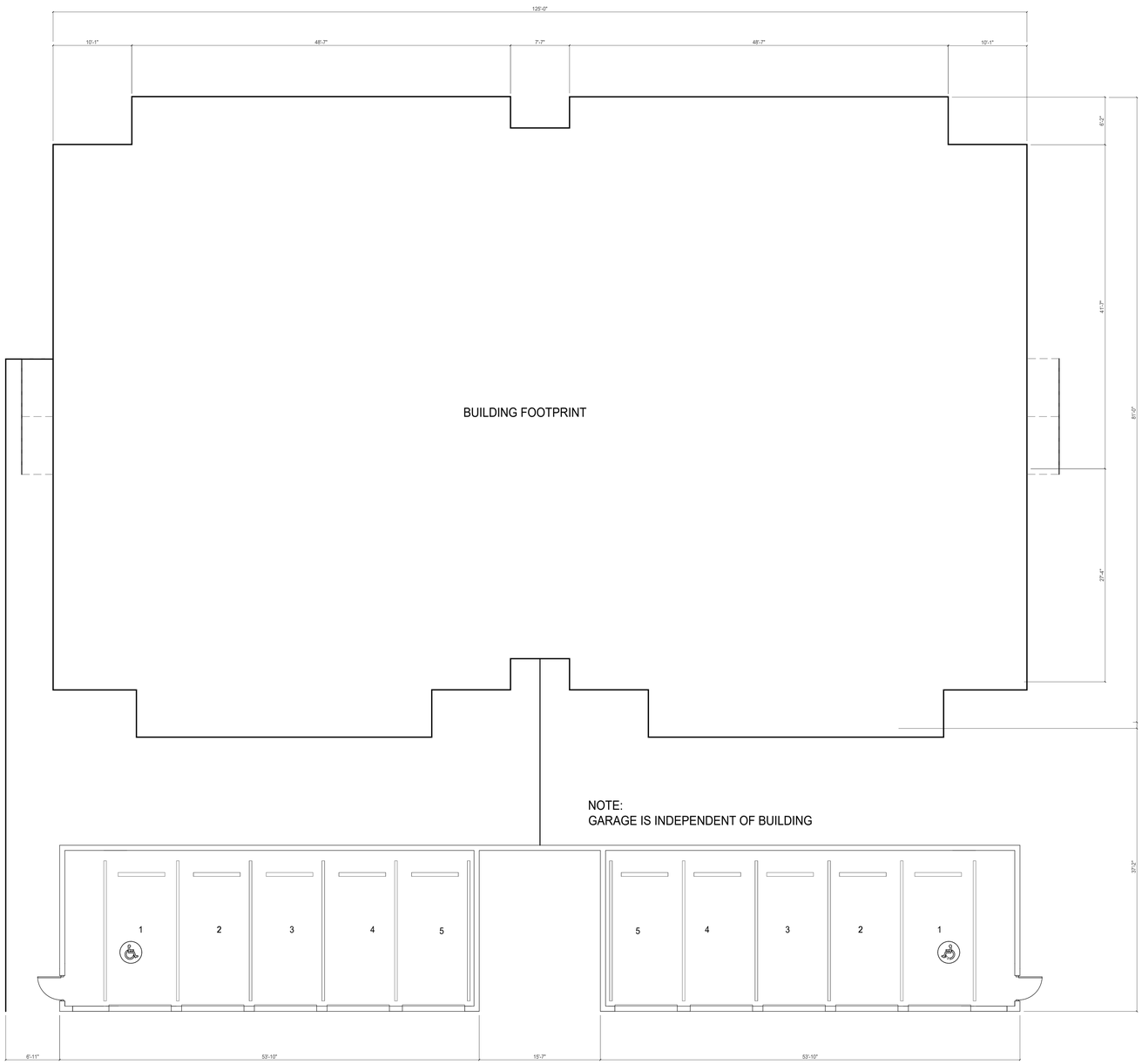
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
BY:	RC	
DATE:	12/26/2020	
SCALE:	1/8" = 1' - 0"	

BUILDING TYPE I

A-9



BUILDING TYPE II - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE II				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	6,038	0	1830	4208
1ST LEVEL	9,778	0	1653	8125
2ND LEVEL	8,245	486	1147	6612
3RD LEVEL	5,697	243	1508	3946
TOTAL BUILDING	32,388			22,891
NO. OF BUILDINGS	3			3
TOTAL FOR BUILDING TYPE II	97,164			68,673

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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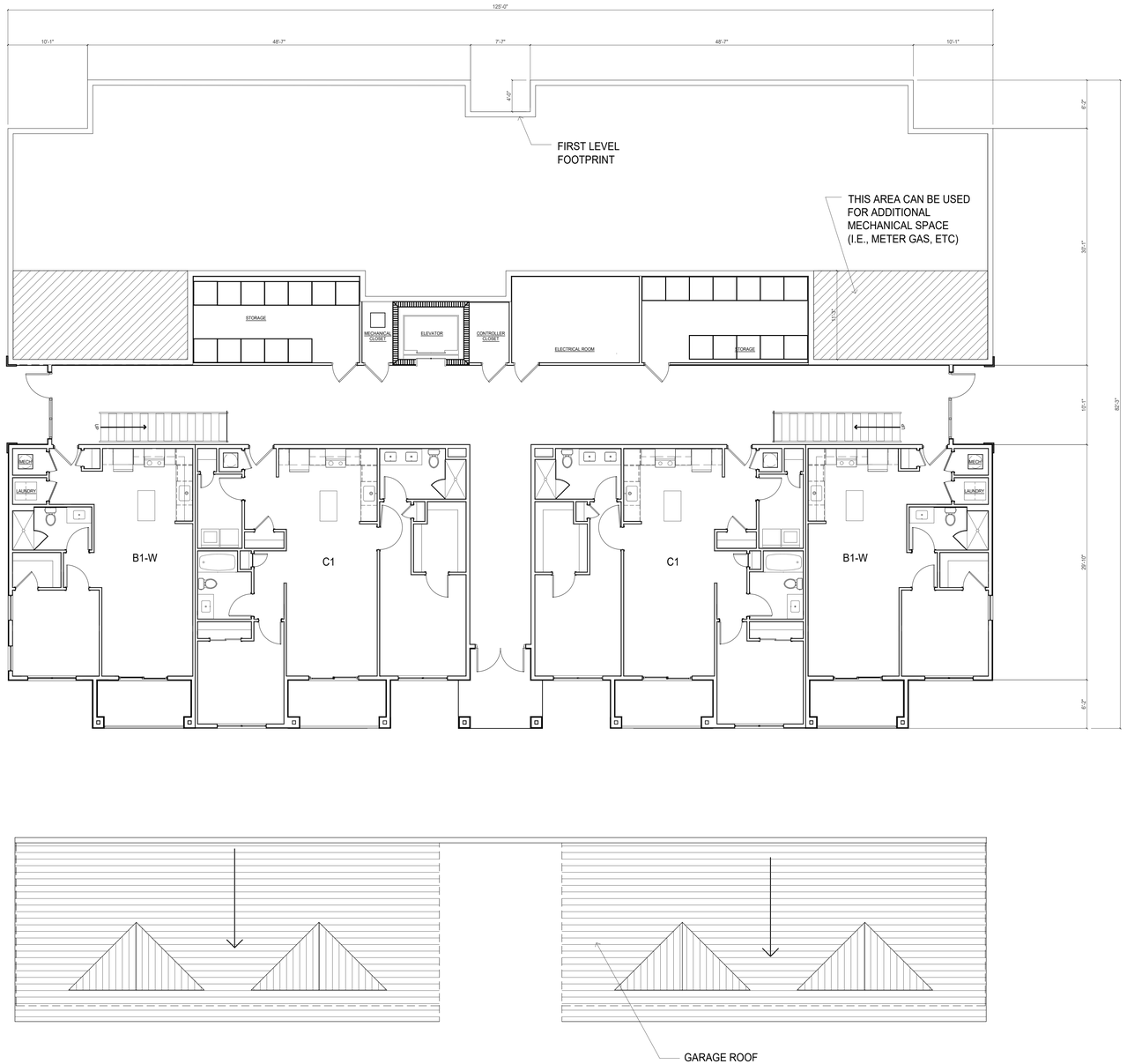
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	COMMENT
2	07/28/2021	

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-10



BUILDING TYPE II - LOWER LEVEL

1/8" = 1'-0"

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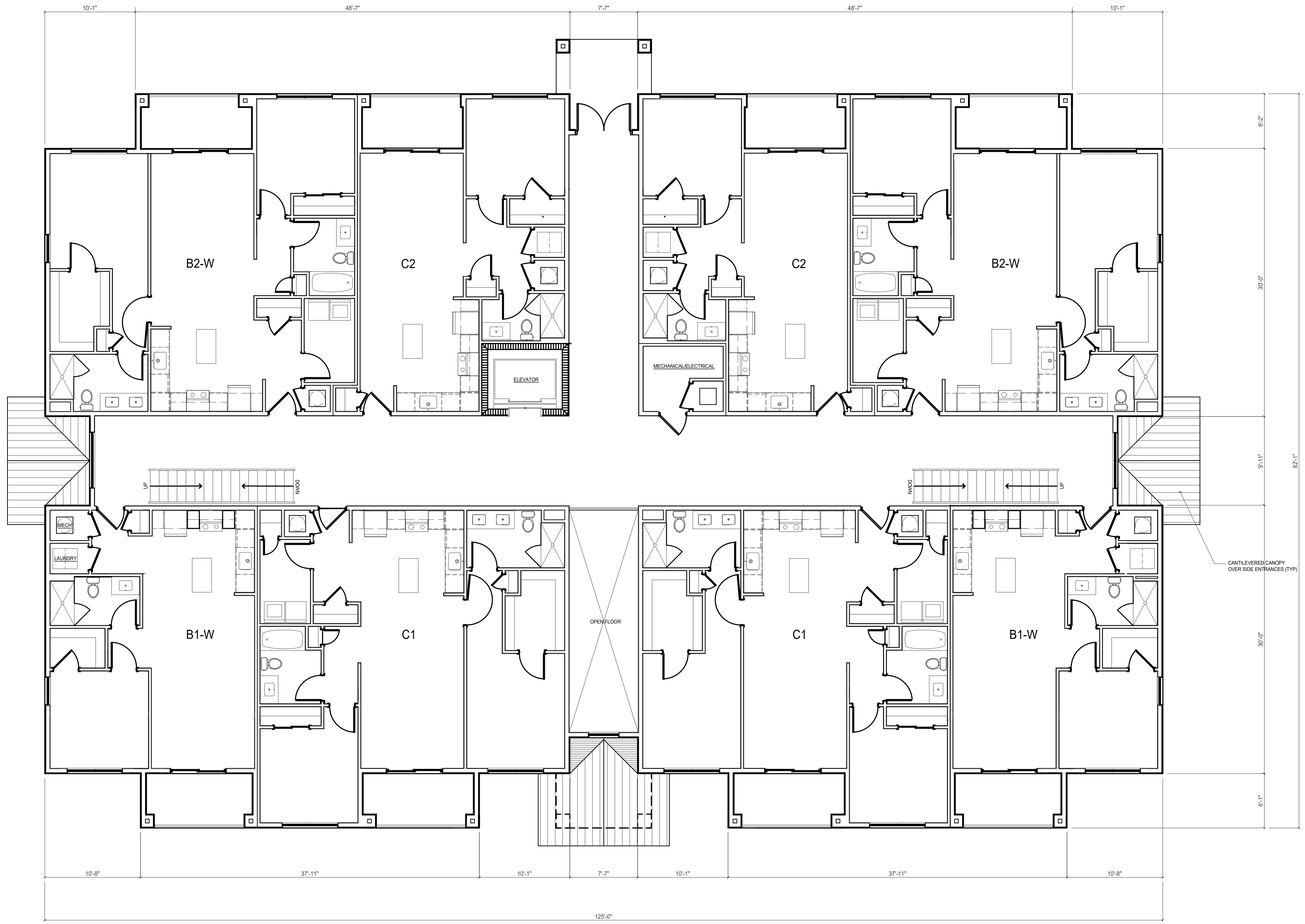
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	R/C	
DATE:	12/26/2020	
SCALE:	1/8" = 1' - 0"	

BUILDING TYPE II

A–11



BUILDING TYPE II - FIRST FLOOR

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/24/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-12



BUILDING TYPE II - SECOND FLOOR

1/8" = 1'-0"

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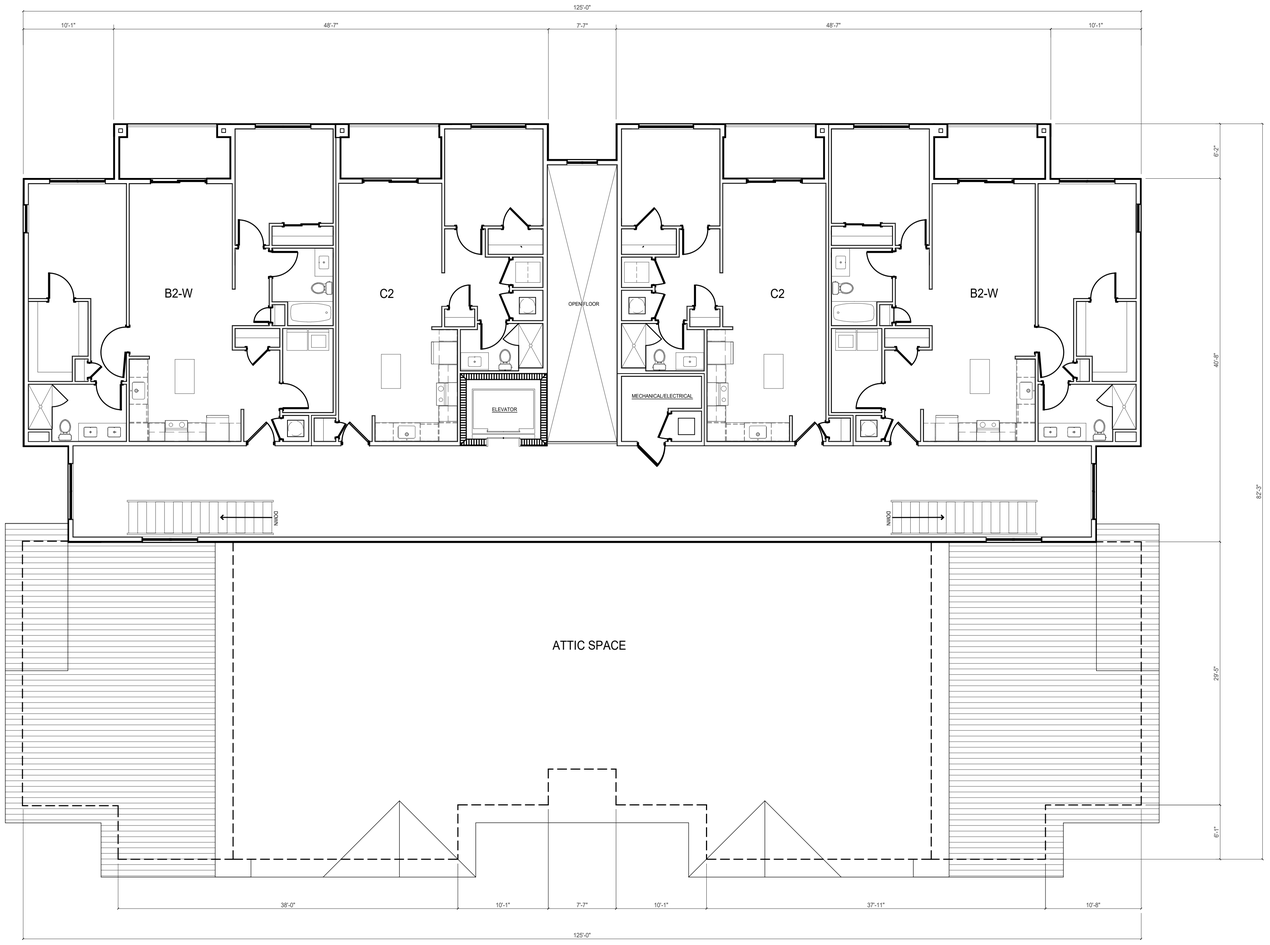
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A–13



BUILDING TYPE II - THIRD FLOOR

1/8" = 1'-0"

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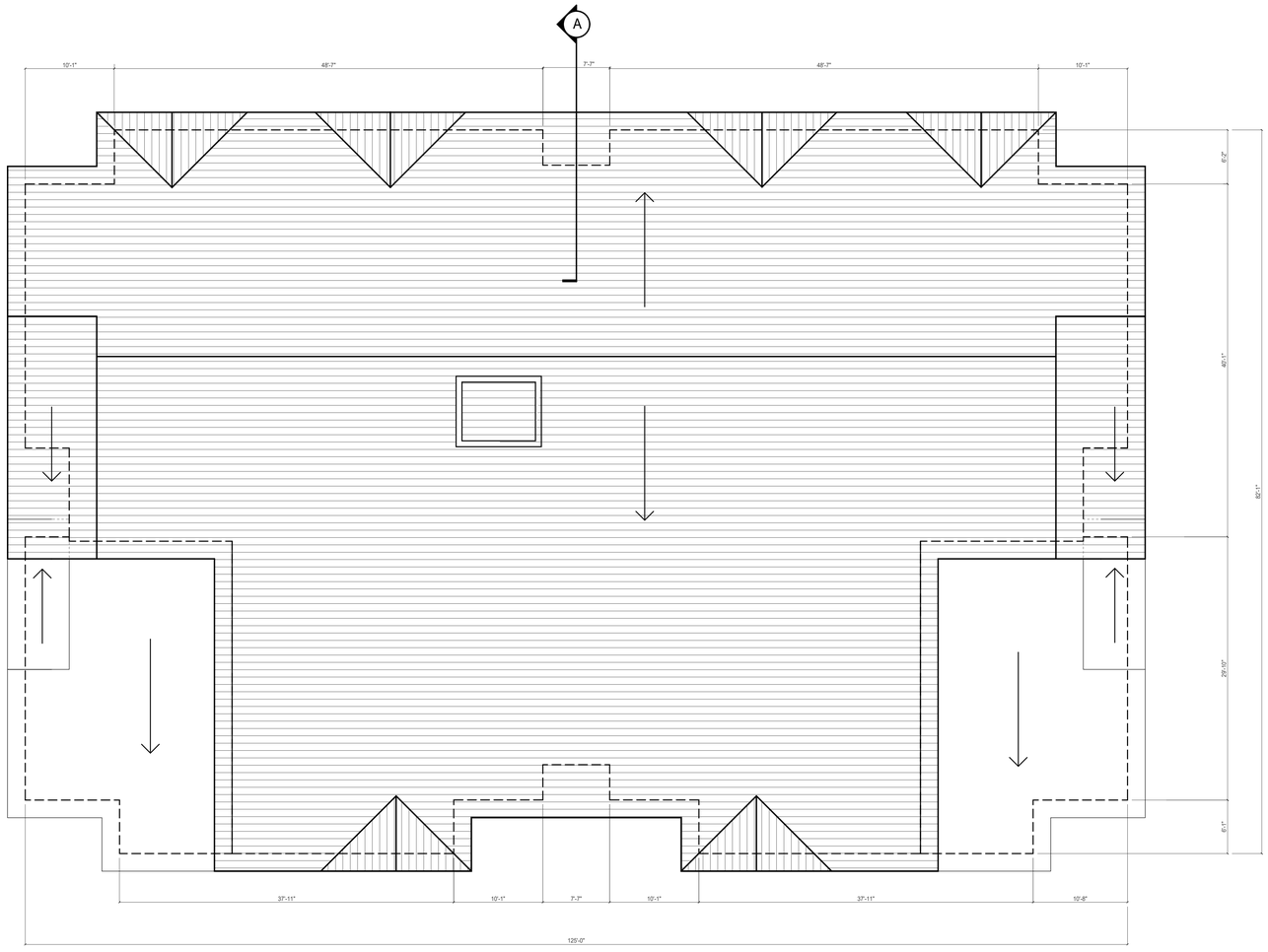
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1' - 0"

BUILDING TYPE II

A-14



BUILDING TYPE II - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1' - 0"

BUILDING TYPE II

A-15



BUILDING TYPE II - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE II - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	ITEM	PRODUCT	COLOR
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE II

NORTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	4071	NA
NET STONE CLADDING	212.56	-
NET SIDING	1720.9	42.3%
NET STUCCO FINISH	1126.73	27.7%
NET GLAZING	1010.81	24.8%

SOUTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3866.00	NA
NET STONE CLADDING	#REF!	#REF!
NET SIDING	#REF!	#REF!
NET STUCCO FINISH	1269.10	32.8%
NET GLAZING	1037.68	26.8%

EAST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3270.19	NA
NET STONE CLADDING	-	-
NET SIDING	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%
NET GLAZING	132.63	4.1%

WEST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3270.19	NA
NET STONE CLADDING	-	-
NET SIDING	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%
NET GLAZING	132.63	4.1%

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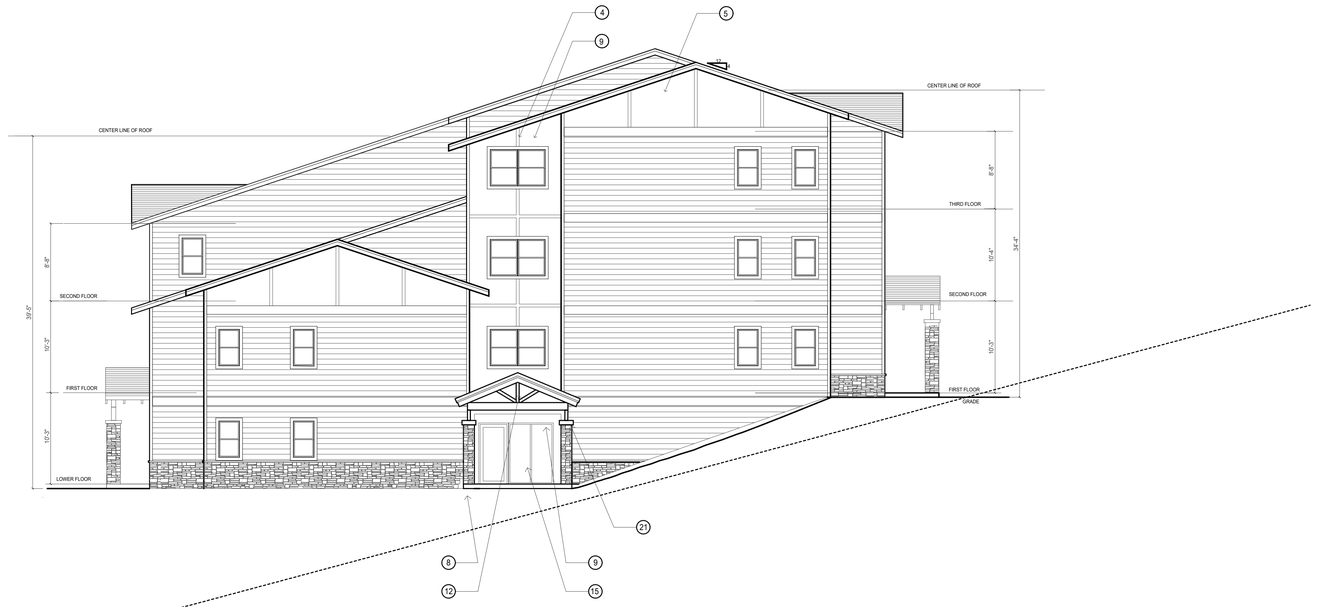
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

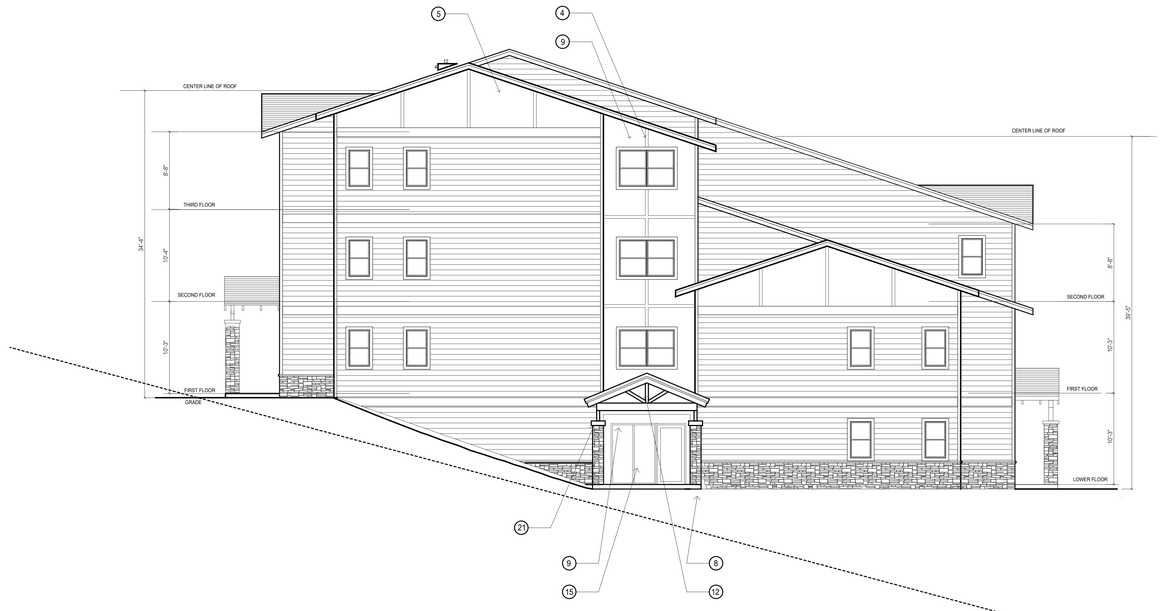
BUILDING TYPE II

A-16



BUILDING TYPE II - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE II - EAST ELEVATION

1/8" = 1'-0"

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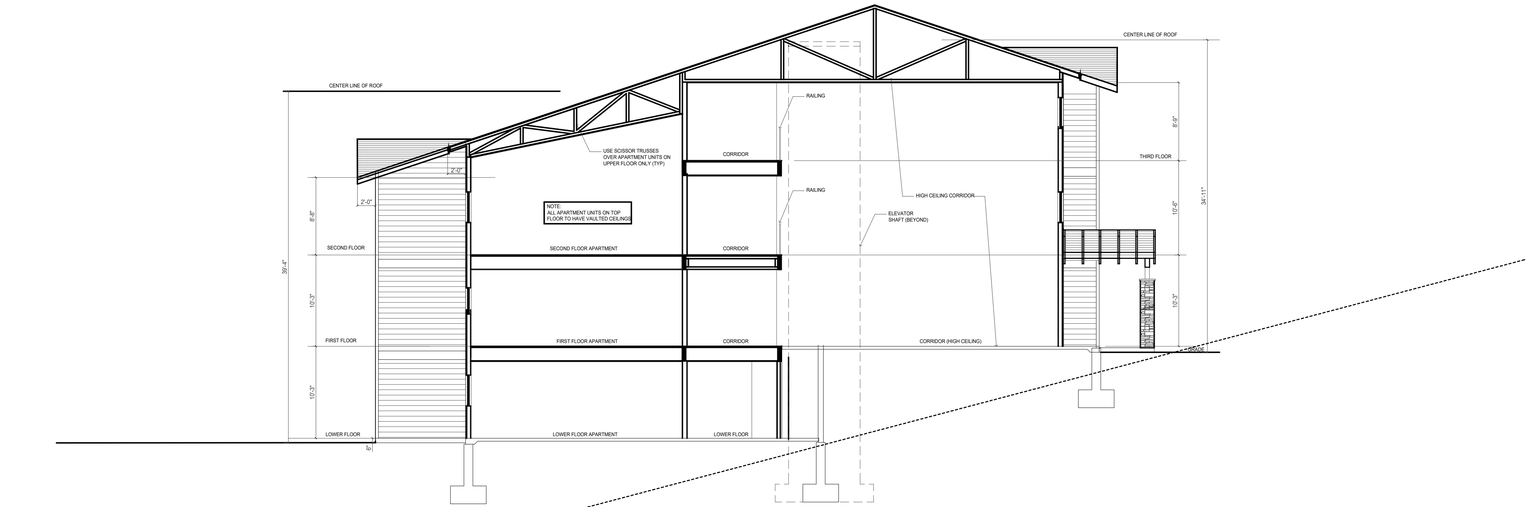
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV:	DATE	COMMENT

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-17



BUILDING TYPE II - SECTION A

1/8" = 1'-0"

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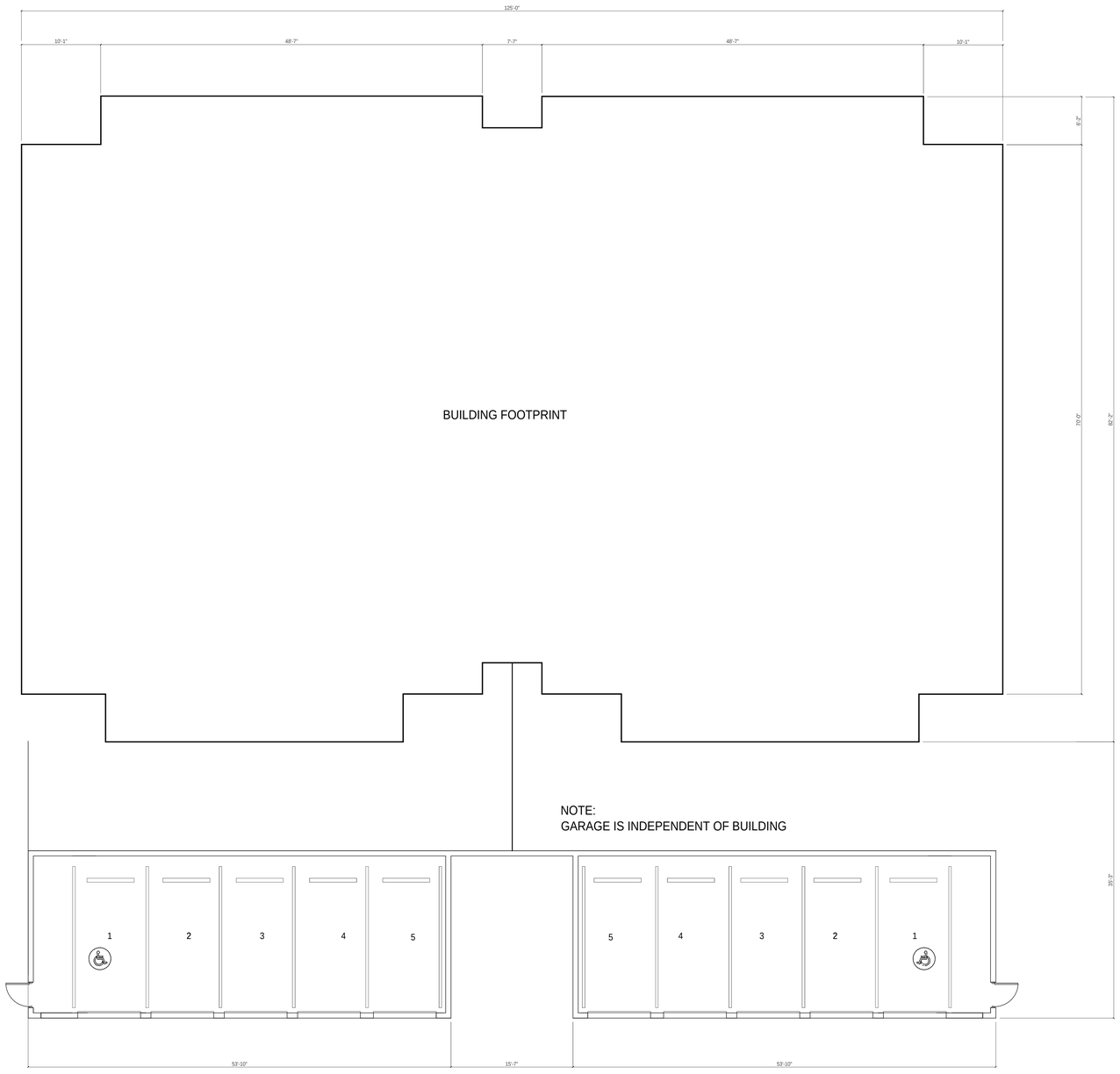
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE II

A-18



BUILDING TYPE III - GARAGE LEVEL

1/8" = 1'-0"

BUILDING TYPE III				
LEVEL	GROSS AREA	OPEN FLOOR CORRIORS	CORRIDOR, ELEVATOR AND STORAGE	NET AREA
GARAGE (10 CARS)	2,630	0	0	2630
LOWER LEVEL	6,038	0	1830	4208
1ST LEVEL	9,778	0	1653	8125
2ND LEVEL	9,778	486	1147	8145
3RD LEVEL	5,675	243	1508	3924
TOTAL BUILDING	33,899			24,402
NO. OF BUILDINGS	3			3
TOTAL FOR BUILDING TYPE III	101,697			73,206

PHASE I - 300 APARTMENTS TOTAL					
BUILDING TYPE	I	II	III	TOTAL BUILDINGS	
NO. OF BUILDINGS	7	3	3	13	
Unit Types					%
3 BEDROOM	42	-	-	42	14.00%
2 BEDROOM - UNIT C1	0	36	36	72	24.00%
2 BEDROOM - UNIT C2	42	-	-	42	14.00%
1 BEDROOM - UNIT B1	0	24	36	60	20.00%
1 BEDROOM - UNIT B2	42	-	-	42	14.00%
STUDIO	42	-	-	42	14.00%
TOTAL UNITS	168	60	72	300	100.00%

PHASE I - 300 APARTMENTS TOTAL					
APARTMENT TYPE	NUMBER OF APARTMENTS	APARTMENT AREAS (SF)			TOTAL AREA (SF)
		INTERIOR	BALCONY	INTERIOR & BALCONY	
3 BEDROOM	42	1,269	80	1,349	56,658
2 BEDROOM - UNIT C1	72	1,126	80	1,206	86,832
2 BEDROOM - UNIT C2	42	1,109	80	1,189	49,938
1 BEDROOM - UNIT B1	60	704	80	784	47,040
1 BEDROOM - UNIT B2	42	711	71	782	32,844
STUDIO	42	593	80	673	28,266
					301,578

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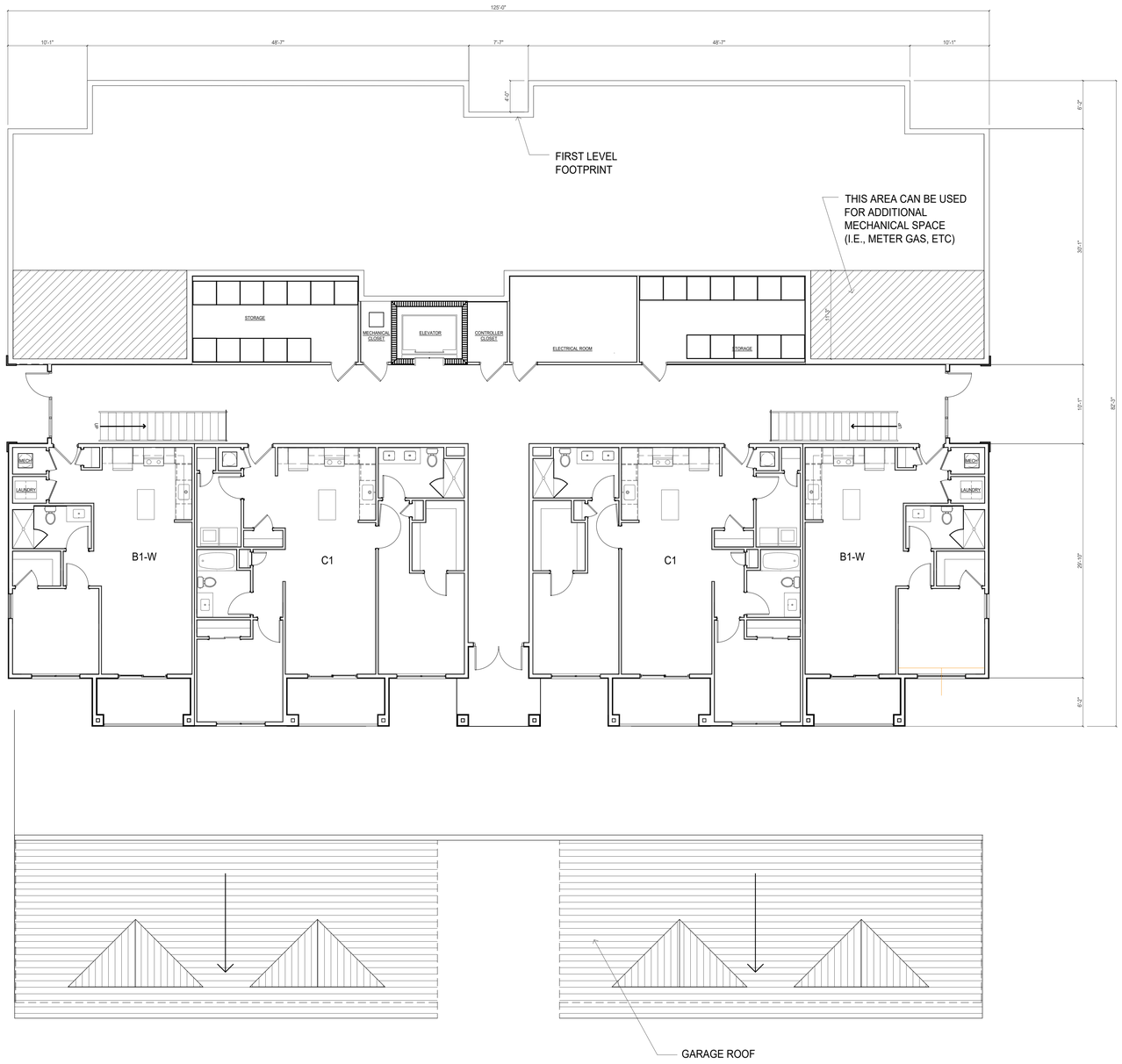
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	COMMENT
2	07/26/2021	

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BUILDING TYPE III

A-19



BUILDING TYPE III - LOWER LEVEL

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

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BUILDING
TYPE III

A-20



BUILDING TYPE III - FIRST FLOOR

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	RC	
DATE:	12/28/2020	
SCALE:	1/8" = 1'-0"	

BUILDING TYPE III

A-21



BUILDING TYPE III - SECOND FLOOR

1/8" = 1'-0"

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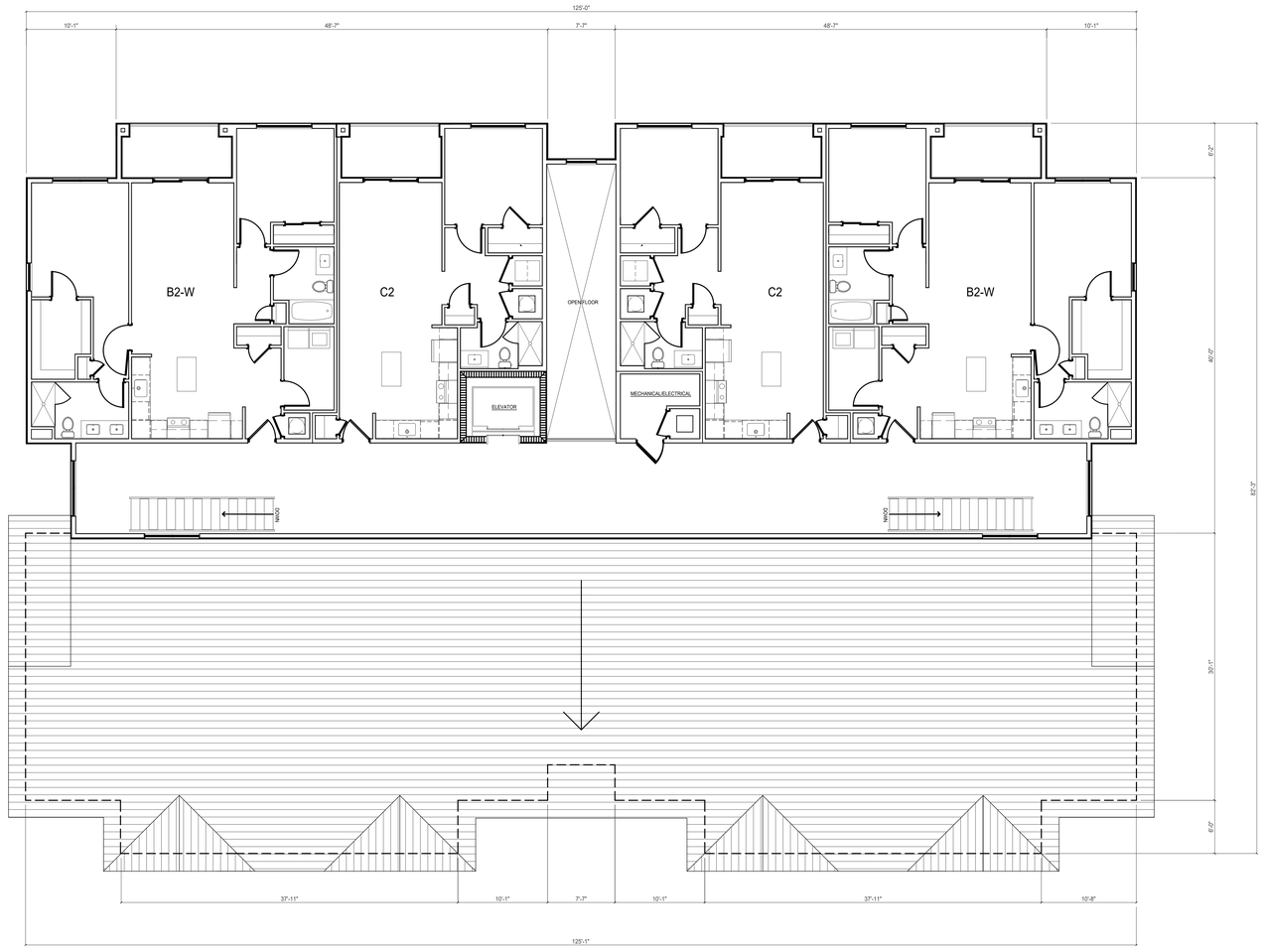
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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
BY:	R/C	
DATE:	12/26/2020	
SCALE:	1/8" = 1' - 0"	

BUILDING
TYPE III

A-22



BUILDING TYPE III - THIRD FLOOR

1/8" = 1'-0"

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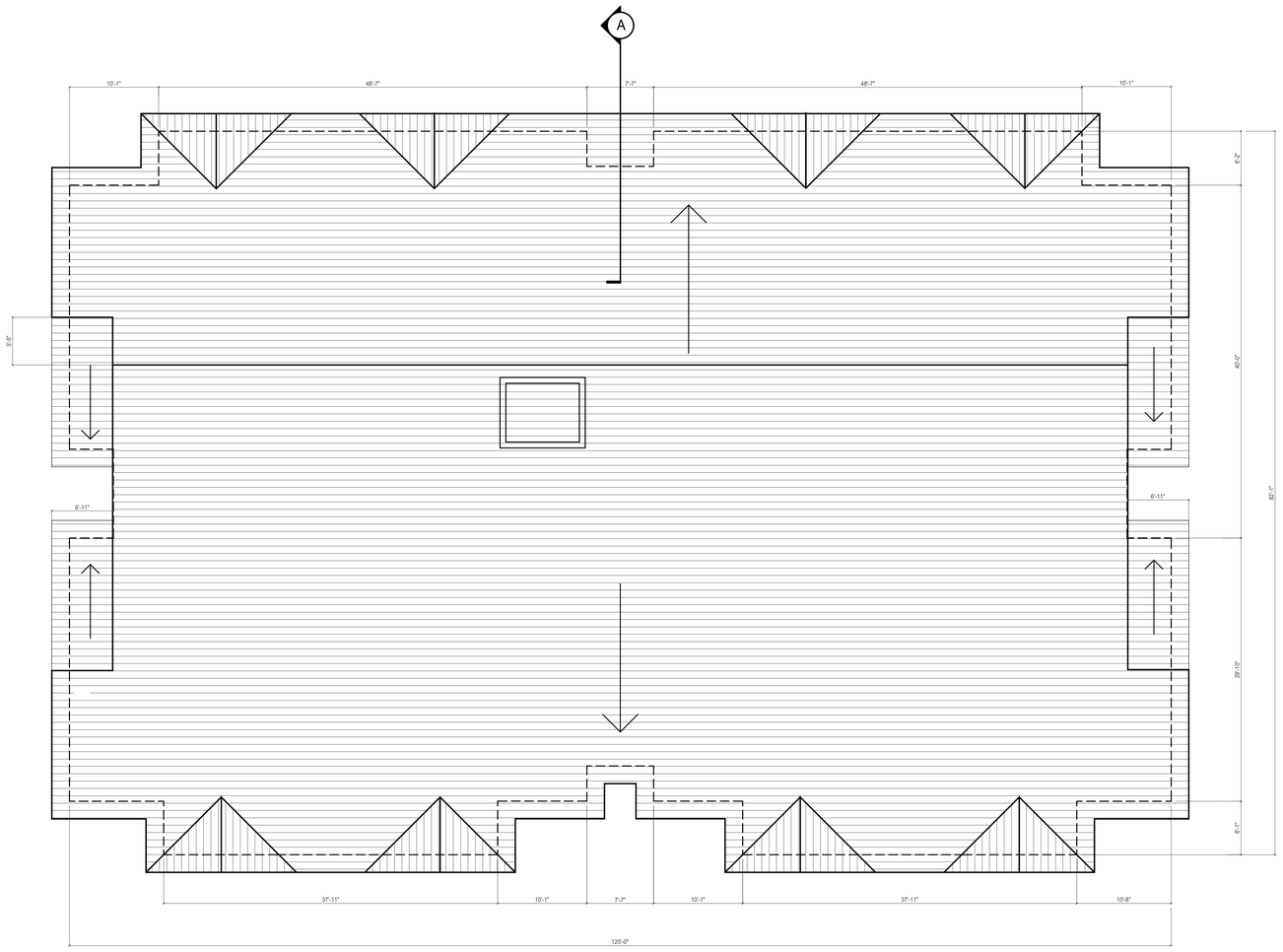
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
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BUILDING TYPE III

A-23



BUILDING TYPE III - ROOF

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	Comment	DATE
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

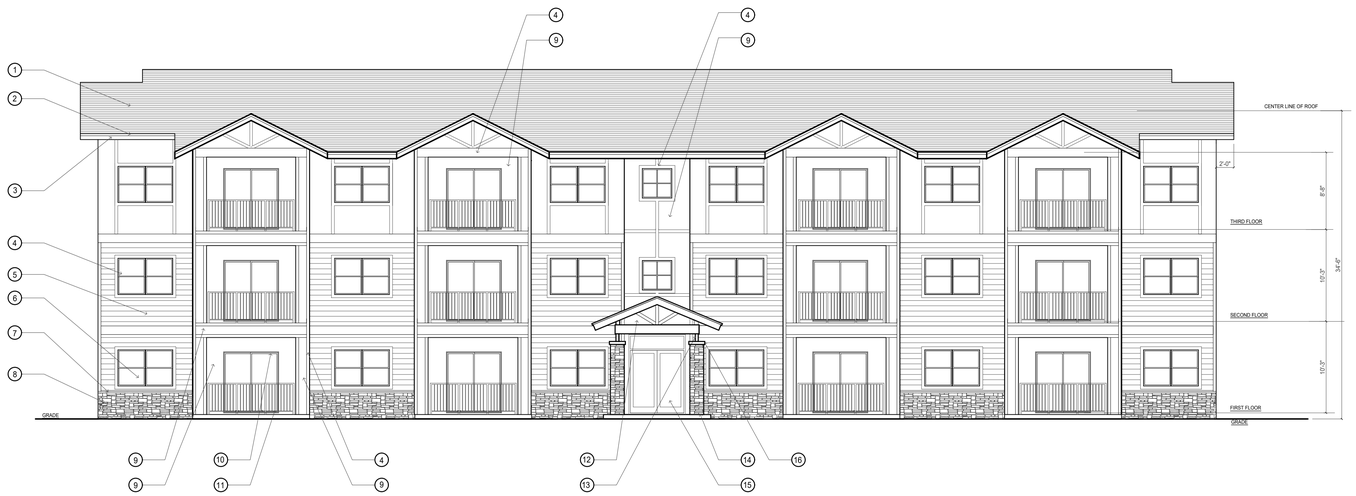
BUILDING TYPE III

A-24



BUILDING TYPE III - NORTH ELEVATION

1/8" = 1'-0"



BUILDING TYPE III - SOUTH ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE - BUILDING TYPE III			
LABEL	**ITEM**	**PRODUCT**	**COLOR**
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 4" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	NAVAJO BEIGE
6	WINDOW	ALUMINUM - SINGLE HUNG	BRONZE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	MONTEREY TAUPE
10	BALCONY DOOR	ALUMINUM SLIDING GLASS DOOR	WHITE
11	RAILING - BALCONY	ALUMINUM PICKET RAILING	WHITE
12	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
13	BUILDING ENTRY COLUMNS	STRUCTURAL STEEL	BLACK
14	STONE CLADDED COLUMN	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
15	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
16	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	POCONO AUTUMN
17	RAILING - ROOF DECK COMMON AMENITY SPACE	ALUMINUM PICKET RAILING	WHITE
18	STUCCO - RESIDENTIAL GARAGES	3 - COAT SMOOTH CEMENT STUCCO FINISH	MONTEREY TAUPE
19	GARAGE DOOR	INSULATED METAL	WHITE
20	DOOR	METAL CLAD DOOR	MONTEREY TAUPE

BUILDING TYPE III					
NORTH ELEVATION			**SOUTH ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	4112.73	NA	**GROSS WALL**	3866.00	NA
NET STONE CLADDING	205.64	5.0%	**NET STONE CLADDING**	#REF!	#REF!
NET SIDING	1590.56	38.7%	**NET SIDING**	#REF!	#REF!
NET STUCCO FINISH	1278.8	31.1%	**NET STUCCO FINISH**	1269.10	32.8%
NET GLAZING	1037.73	25.2%	**NET GLAZING**	1037.68	26.8%
EAST ELEVATION			**WEST ELEVATION**		
	SURFACE AREA	**PERCENTAGE OF NET**		**SURFACE AREA**	**PERCENTAGE OF NET**
GROSS WALL	3270.19	NA	**GROSS WALL**	3270.19	NA
NET STONE CLADDING	-	-	**NET STONE CLADDING**	-	-
NET SIDING	2759.89	84.4%	**NET SIDING**	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%	**NET STUCCO FINISH**	377.67	11.5%
NET GLAZING	132.63	4.1%	**NET GLAZING**	132.63	4.1%

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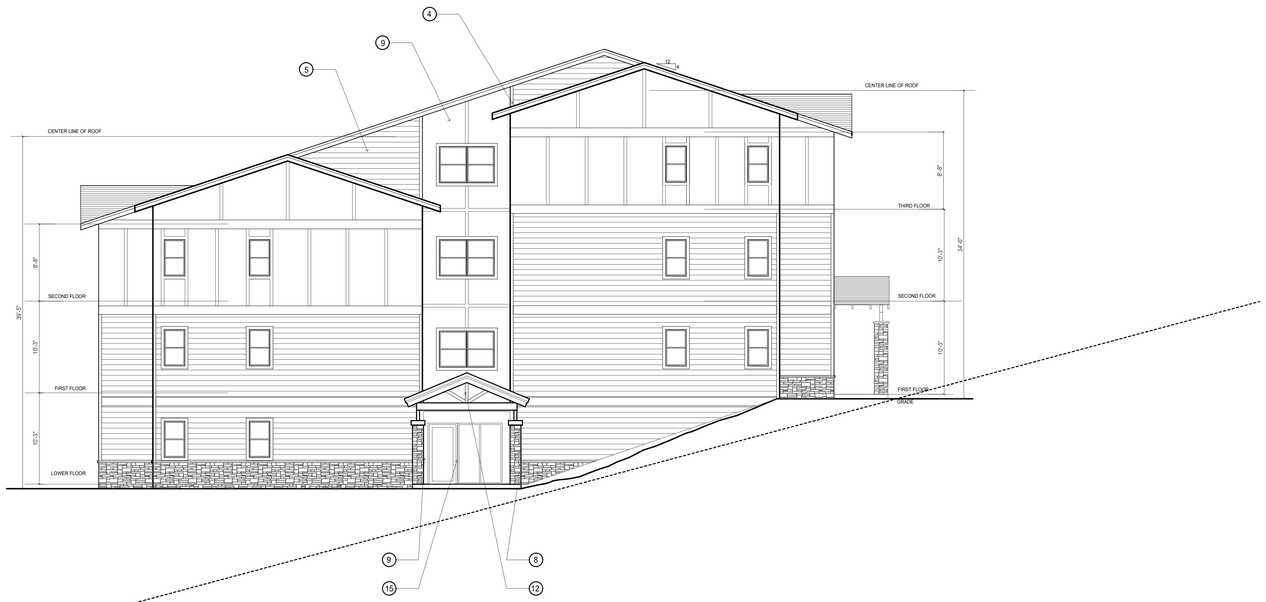
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	COMMENT
2	07/26/2021	

BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

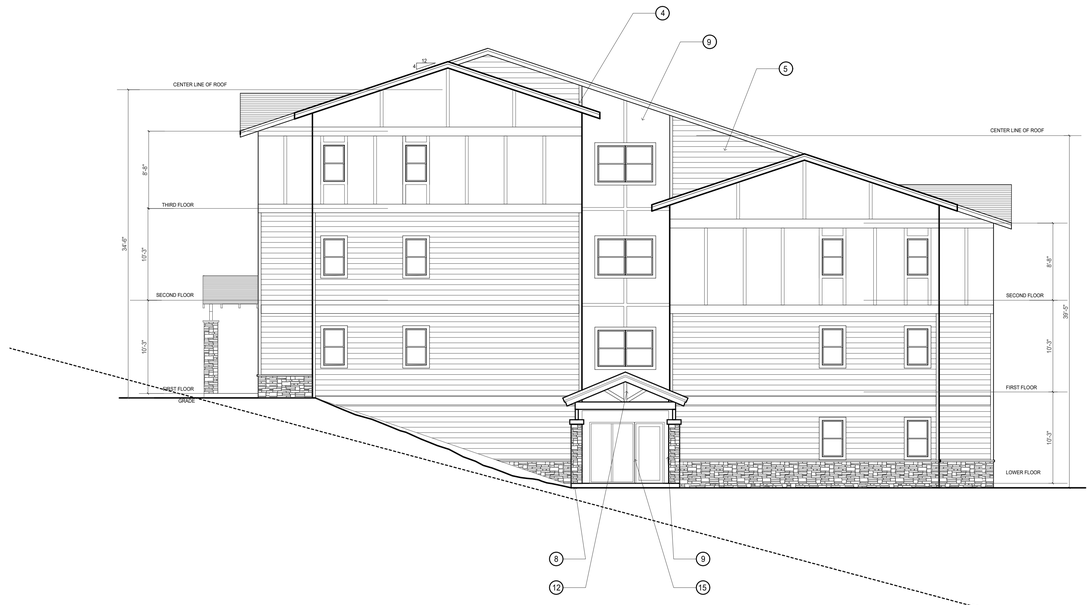
BUILDING TYPE III

A-25



BUILDING TYPE III - EAST ELEVATION

1/8" = 1'-0"



BUILDING TYPE III - WEST ELEVATION

1/8" = 1'-0"

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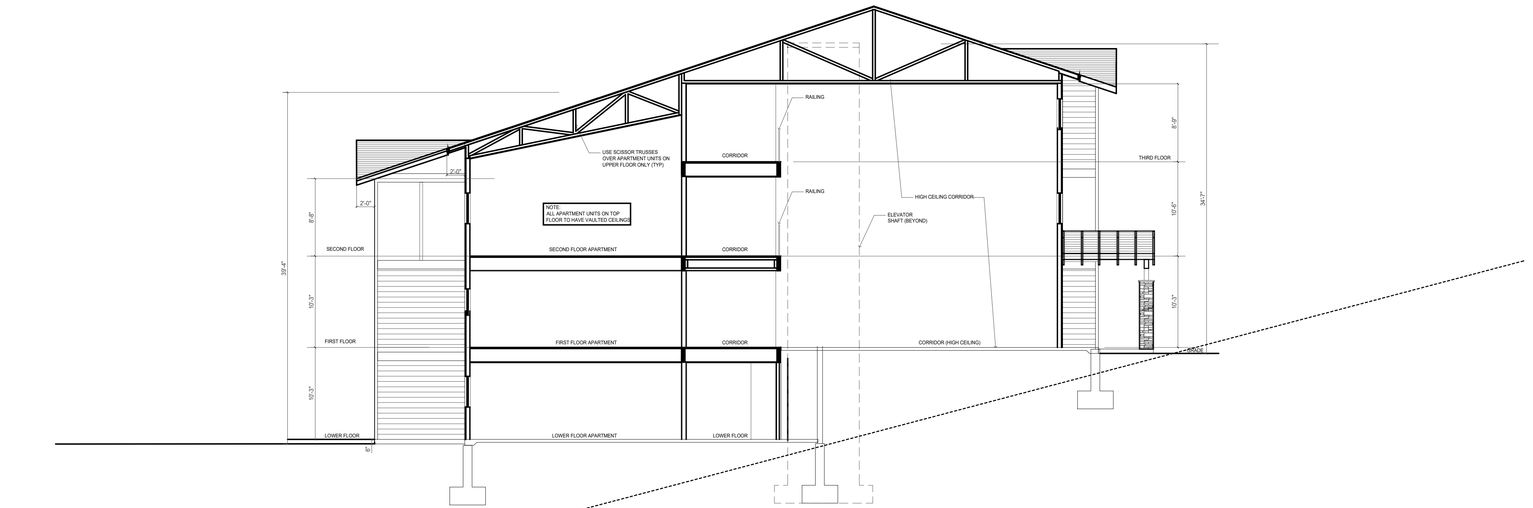
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
2	07/26/2021	

BY: RC
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SCALE: 1/8" = 1'-0"

BUILDING TYPE III

A-26



BUILDING TYPE III - SECTION A

1/8" = 1'-0"

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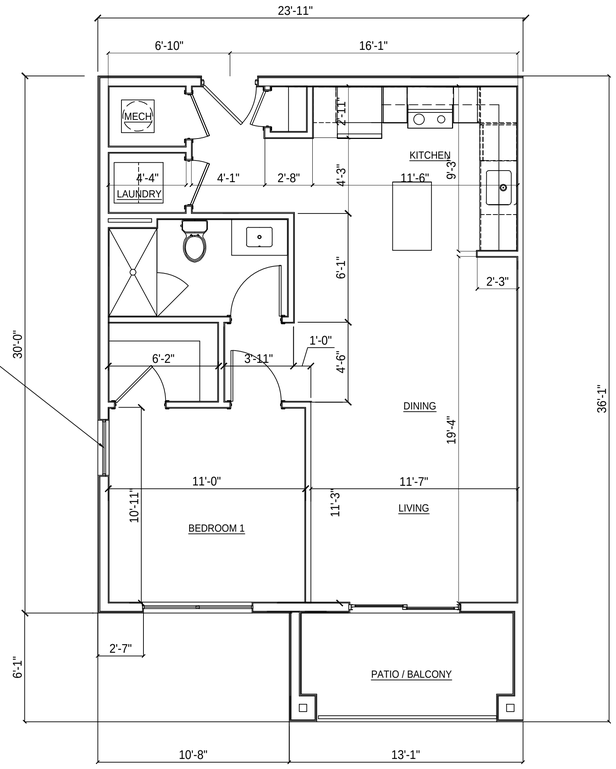
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

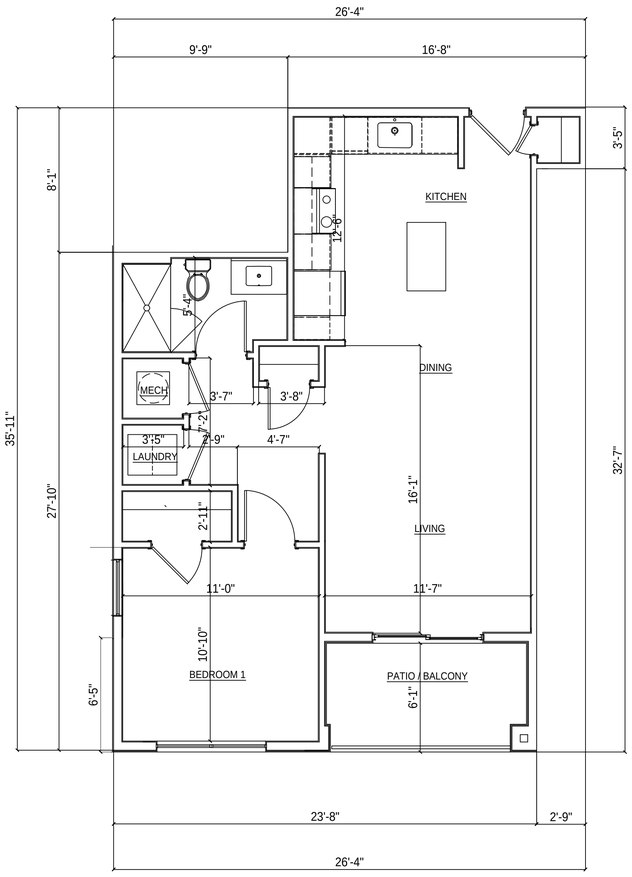
BY: RC
DATE: 12/26/2020
SCALE: 1/8" = 1'-0"

BUILDING TYPE III

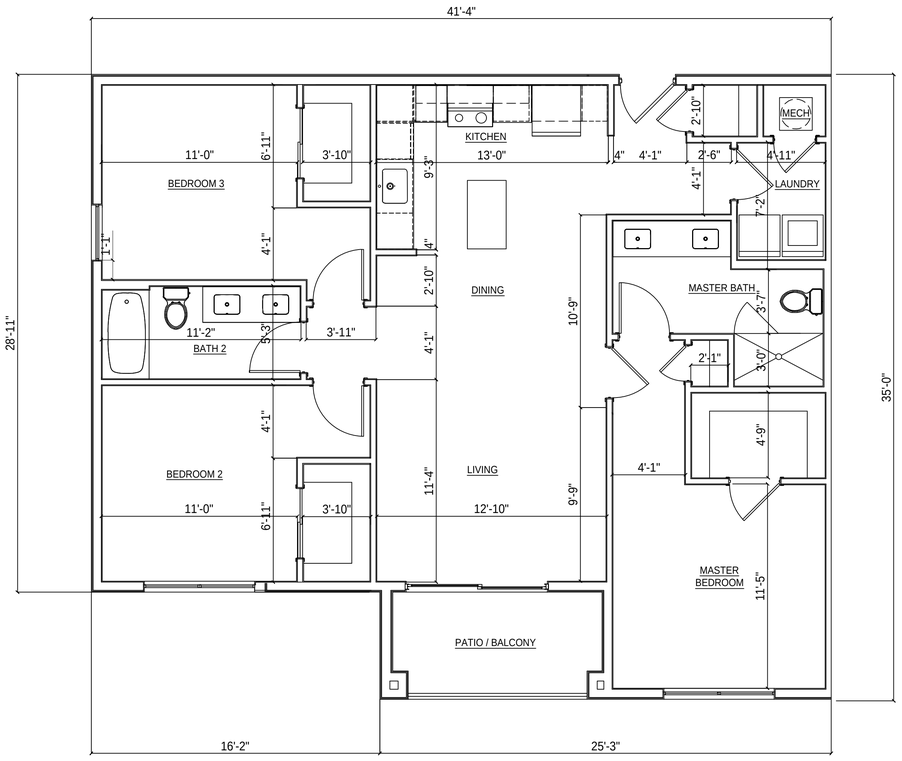
A-27



1 BEDROOM (UNIT B1)
1 BEDROOM (UNIT B1-W)
1/4" = 1'-0"



1 BEDROOM (UNIT B2)
1 BEDROOM (UNIT B2-W)
1/4" = 1'-0"



3 BEDROOM APARTMENT (UNIT D1)
1/4" = 1'-0"

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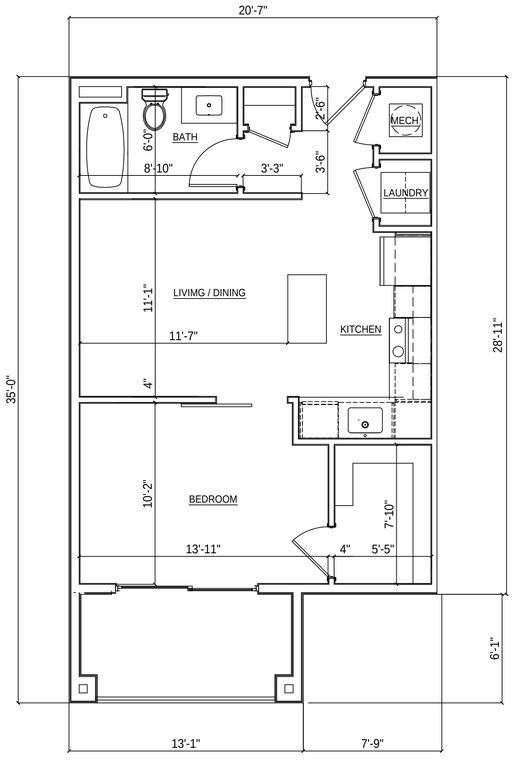
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 12/26/2020
SCALE: 1/4" = 1' - 0"

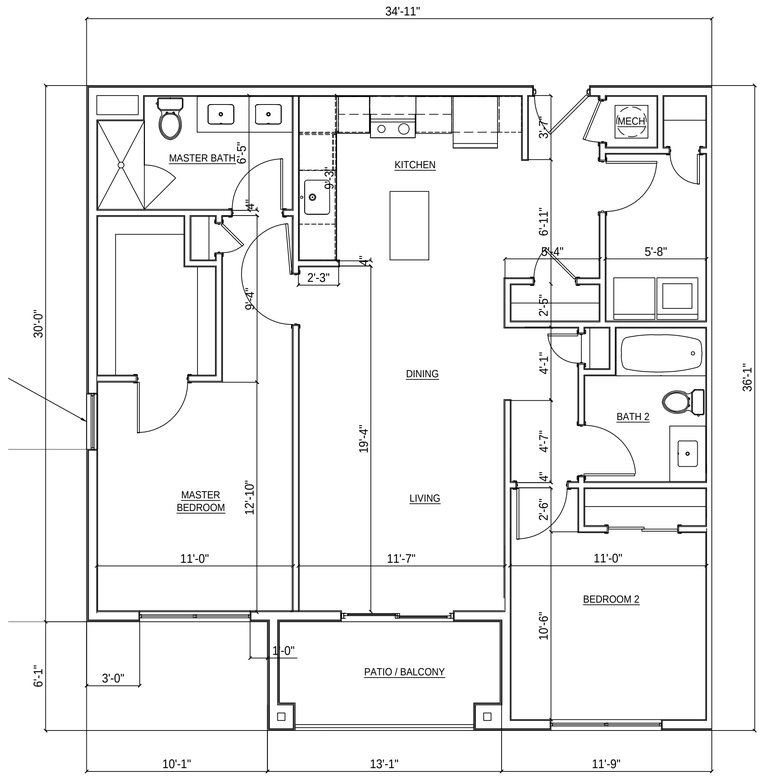
APARTMENT FLOOR PLANS

A-28



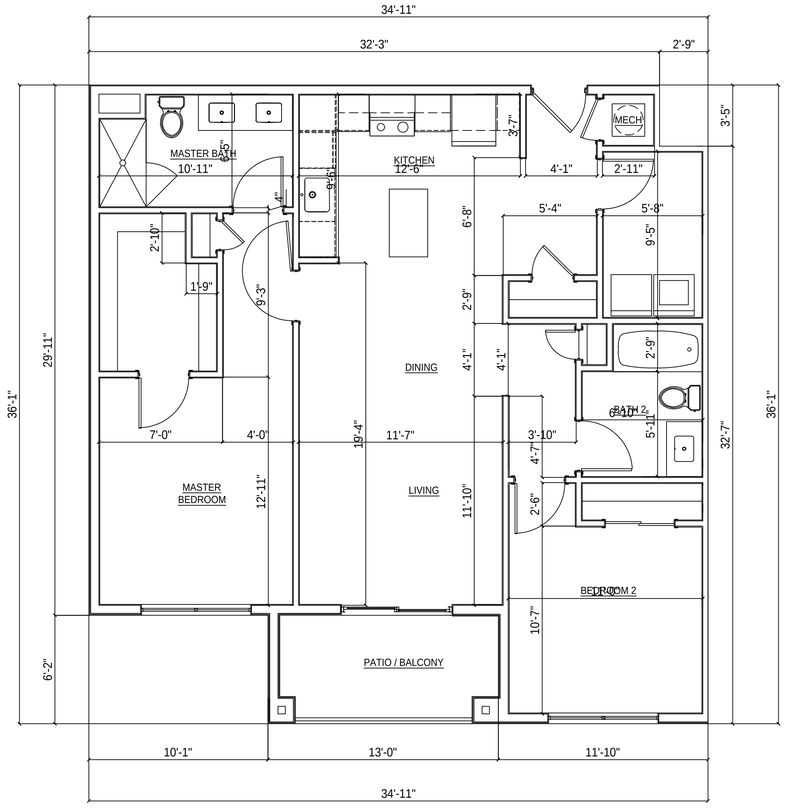
STUDIO (UNIT A1)

1/4" = 1'-0"



2 BEDROOM APARTMENT (UNIT C1)
2 BEDROOM APARTMENT (UNIT C1-W)

1/4" = 1'-0"



2 BEDROOM APARTMENT (UNIT C2)

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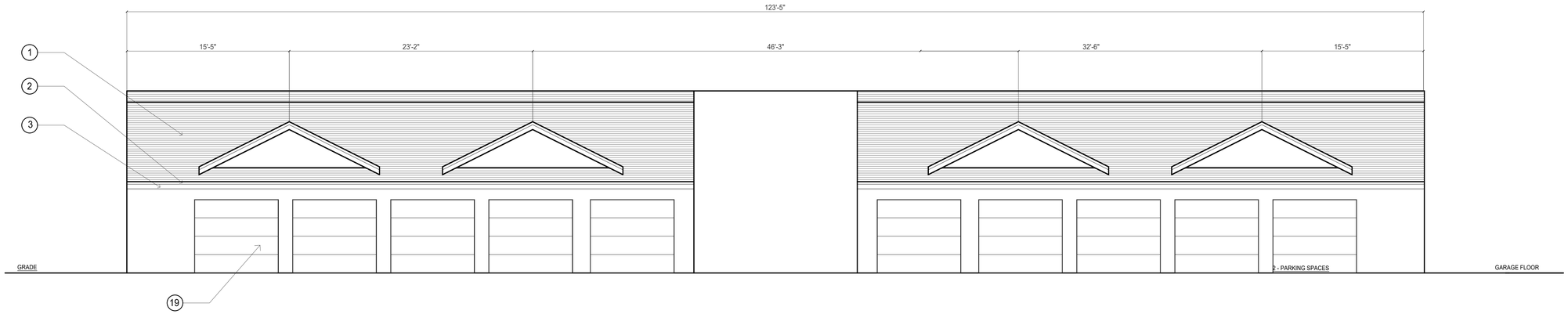
PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

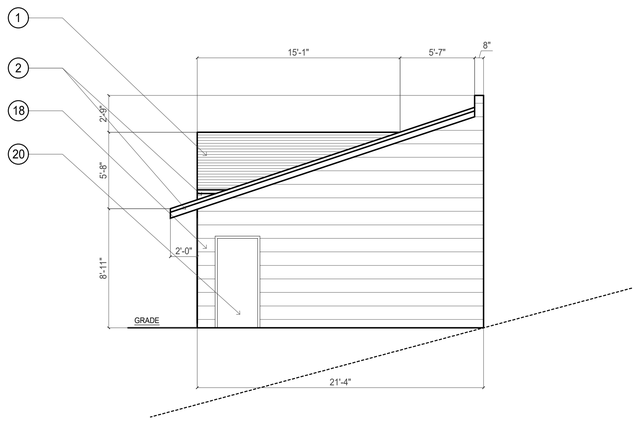
BY: RC
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SCALE: 1/4" = 1' - 0"

APARTMENT FLOOR PLANS

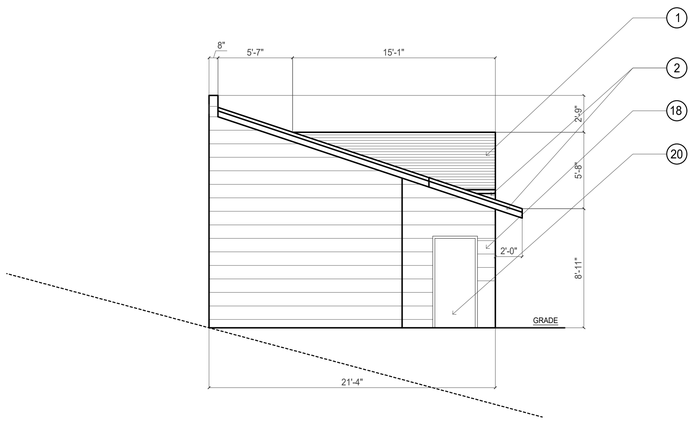
A-29



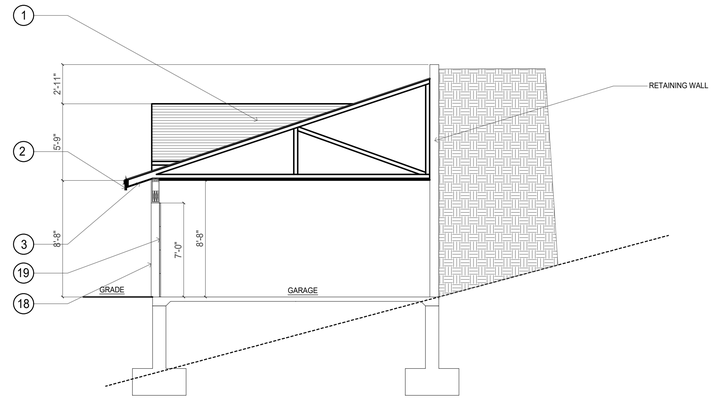
GARAGE - NORTH ELEVATION
3/16" = 1'-0"



GARAGE - EAST ELEVATION
3/16" = 1'-0"



GARAGE - WEST ELEVATION
3/16" = 1'-0"



GARAGE - SECTION
3/16" = 1'-0"

GARAGE ELEVATION FOR BUILDING TYPE I, II, III

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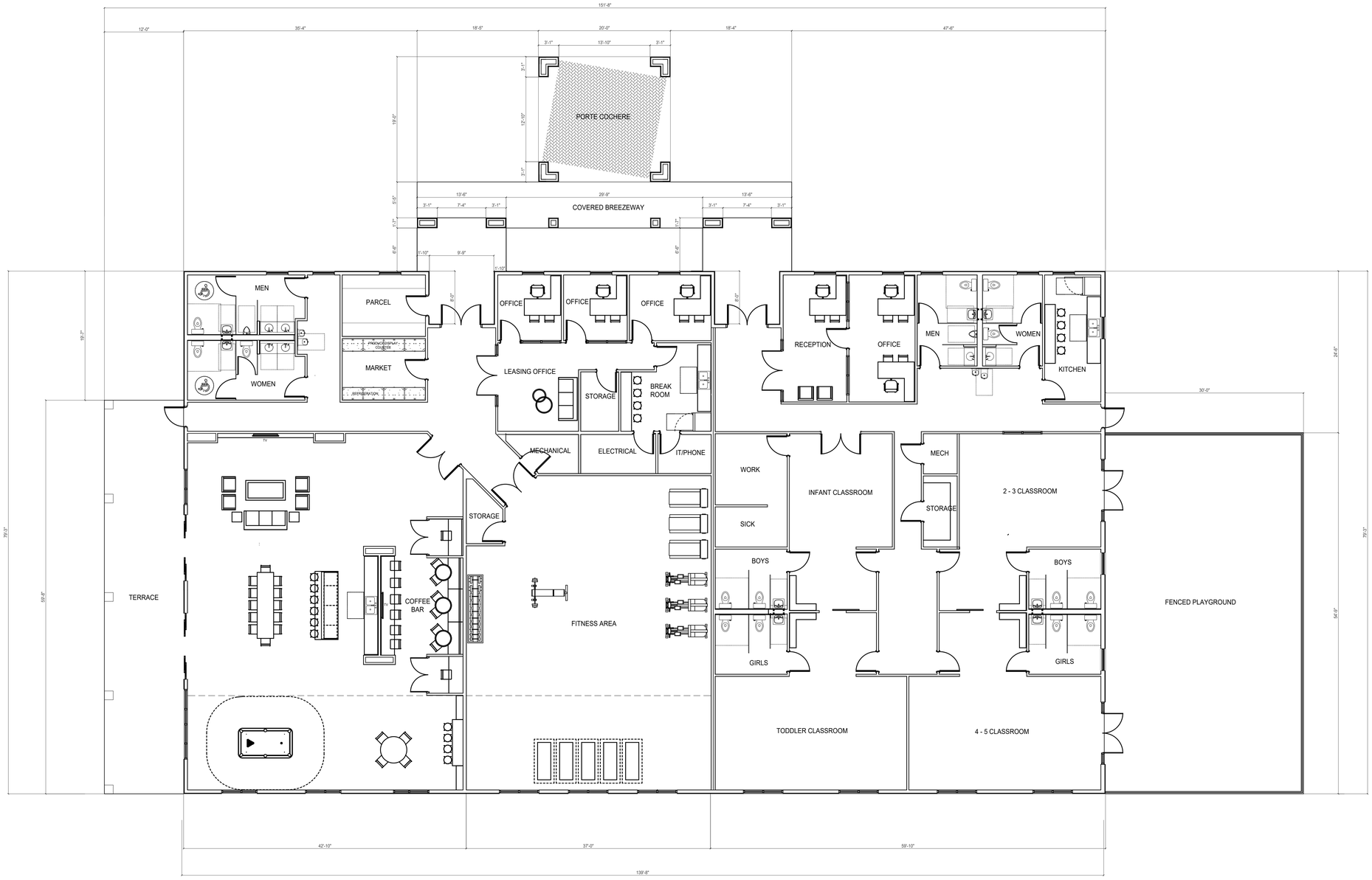
PROJECT:
GLENWOOD SPRINGS
COLORADO

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2	07/26/2021	

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DATE: 12/26/2020
SCALE: 1/4" = 1'-0"

GARAGE ELEVATIONS

A-30



CLUBHOUSE **DAYCARE CENTER**

CLUBHOUSE & DAYCARE CENTER

1/8" = 1'-0"

CLUBHOUSE & DAYCARE				
LEVEL	AREA	COVERED ENTRANCE	TERRACE	TOTAL AREA
CLUBHOUSE	6,284	187	716	7187
DAYCARE	4,629	187	-	4816
BREEZEWAY	364	-	-	364
PORTE COCHERE	380	-	-	380
TOTAL FOR CLUBHOUSE	**11,657**	**374**	**716**	**12,747**

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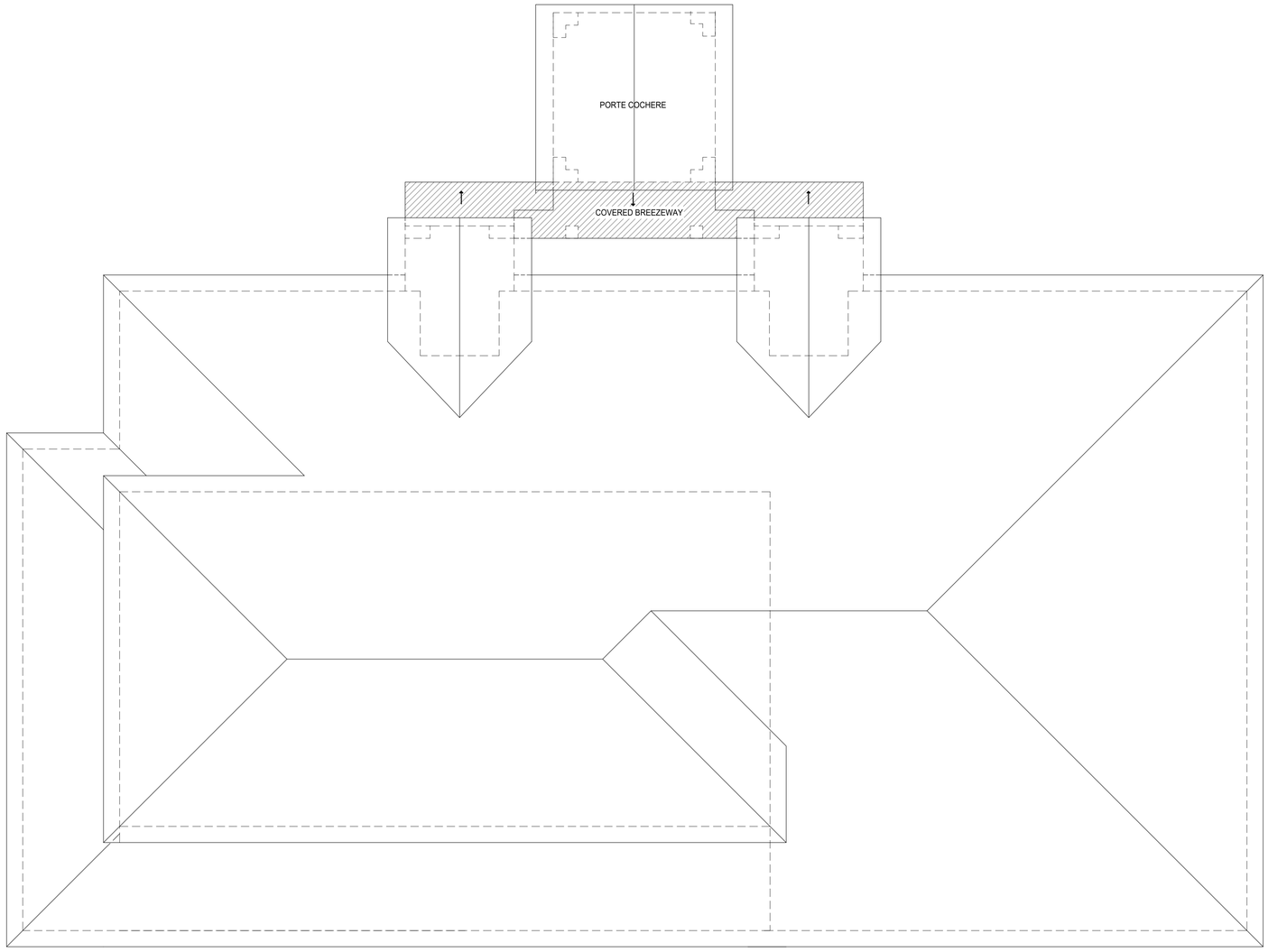
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PROJECT: GLENWOOD SPRINGS COLORADO

REV	Comment	DATE
	RC	12/26/2020
	SCALE:	1/8" = 1' - 0"

CLUBHOUSE FLOOR PLAN

A – 31



CLUBHOUSE & DAYCARE CENTER - ROOF PLAN

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

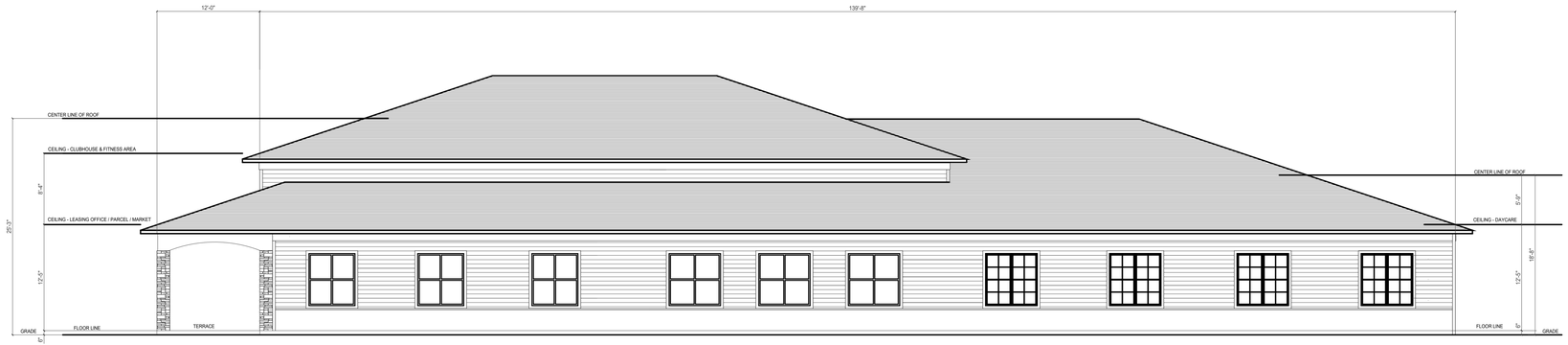
REV	COMMENT	DATE

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CLUBHOUSE
ROOF PLAN

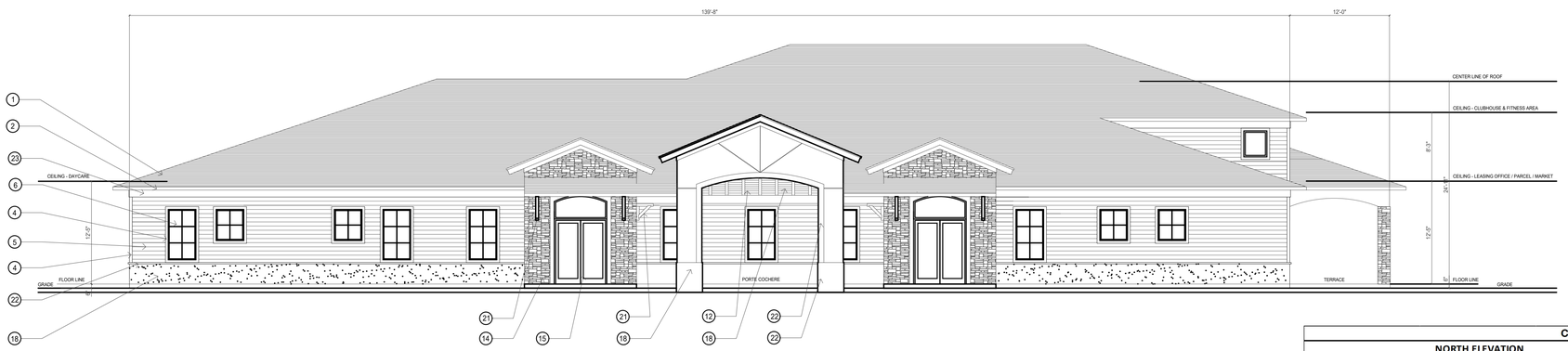
A-32

EXTERIOR FINISH SCHEDULE - CLUBHOUSE			
LABEL	ITEM	PRODUCT	COLOR
1	ROOFING	CERTAINTEED ASPHALT SHINGLES- LANDMARK PRO SOLARIS	CINDER BLACK
2	FASCIA	HARDIE BOARD - 5/4 BOARD 7.25" WIDE	ARTIC WHITE
3	SOFFIT	HARDIETRIM BOARD - 24" WIDE	ARTIC WHITE
4	TRIM	HARDIE TRIM BOARD - 6" WIDE	ARTIC WHITE
5	SIDING	HARDIE PLANK LAP SIDING - CEDAR MILL- 7" HIGH	BOOTHBAY BLUE
6	WINDOW	ALUMINUM - SINGLE HUNG	WHITE
7	STONE SILL	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
8	STONE CLADDING	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
9	STUCCO - BUILDINGS	HARDIE PANEL VERTICAL SIDING STUCCO	COBBLE STONE
10	BUIDING ENTRANCE CANOPY	HEAVY TIMER FRAMING	MINWAX JACOBEEAN #2750
11	ENTRANCE DOOR	ALUMINUM GLASS DOOR	WHITE
12	STONE COLUMN CAP	CERTAINTEED - STONE FAÇADE	APALACHIAN TWILIGHT
13	STUCCO	3 - COAT SMOOTH CEMENT STUCCO FINISH	COBBLE STONE
14	WALL BRACKET SUPPORT	HEABY TIMBER	MINWAX JACOBEEAN #2750
15	STUCCO MOLDING - CLUBHOUSE	STYROTRIM MOLDING 3.5" X 3.5"	COBBLE STONE
16	TRIM - CLUBHOUSE	HARDIE BOARD - 5/4 BOARD 9.25" WIDE	ARTIC WHITE
17	CARPORT AND BREZEWAY CEILING	T&G WOOD	BROWN TINT



CLUBHOUSE & DAYCARE - NORTH ELEVATION

1/8" = 1'-0"



CLUBHOUSE & DAYCARE - SOUTH ELEVATION

1/8" = 1'-0"

CLUBHOUSE & DAYCARE CENTER		
NORTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	2337.84	NA
NET STONE CLADDING	14	0.6%
NET SIDING	1113.7	47.6%
NET STUCCO FINISH	651.48	27.9%
NET GLAZING	558.66	23.9%

SOUTH ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	1683.19	NA
NET STONE CLADDING	263.22	15.6%
NET SIDING	751.57	44.7%
NET STUCCO FINISH	345.06	20.5%
NET GLAZING	323.34	19.2%

EAST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	2143.88	NA
NET STONE CLADDING	70	3.3%
NET SIDING	1,416.30	66.1%
NET STUCCO FINISH	321.65	15.0%
NET GLAZING	335.93	15.7%

WEST ELEVATION		
	SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	1014.67	NA
NET STONE CLADDING	32.95	3.2%
NET SIDING	600.13	59.1%
NET STUCCO FINISH	169.7	16.7%
NET GLAZING	211.89	20.9%

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(305) 596-1244 F

RICHARD COBA Architect
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Ft Lauderdale, FL 33316

PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	DATE	BY
	12/26/2020	RC

DATE:
COMMENT
SCALE: 1/8" = 1'-0"

CLUBHOUSE ELEVATIONS

A – 33



CLUBHOUSE & DAYCARE - WEST ELEVATION

1/8" = 1'-0"



CLUBHOUSE & DAYCARE - EAST ELEVATION

1/8" = 1'-0"

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV:	COMMENT	DATE

BY: RC
DATE: 12/28/2020
SCALE: 1/8" = 1'-0"

CLUBHOUSE ELEVATIONS

A-34



BUILDING TYPE I - SOUTH FACADE ELEVATION

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:		RC
DATE:		08/14/2021
SCALE:		NTS

BLDG TYPE I
ELEVATION

A-36



BUILDING TYPE II - SOUTH FACADE ELEVATION

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE
BY:	RC	
DATE:	08/14/2021	
SCALE:	NTS	

BLDG TYPE II
ELEVATION

A-39



BUILDING TYPE III - SOUTH FACADE ELEVATION

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PROJECT:
GLENWOOD SPRINGS
COLORADO

REV	COMMENT	DATE

BY: RC
DATE: 08/14/2021
SCALE: NTS

BLDG TYPE III
ELEVATION

A-42

CITY OF GLENWOOD SPRINGS

Engineering Department

Engineering Department **Jessica Bowser** **Asst. City Engineer**	**Date:** February 19, 2021 **To:** Community Development **Re:** Lot 11C-C

Please see the following engineering comments for the Lot 11C-C. Responses to these comments should be provided with the next submittal.

General comments:

1. These plans are insufficient and do not comply with CDPHS or the City of Glenwood springs Engineering Standards in many instances. See plan markup for more information.

Geotechnical Report Comments:

2. On page 20 of 30, under surface drainage the report states under bullet point 2 that landscaping of gravel adjacent to buildings should have a minimum slope of 6 inches in 5 feet (or 10%), but in bullet point 5, it states that landscaped areas within 10 feet of the foundation should be sloped at a minimum of 8%. This is inconsistent.
3. In general full-depth asphalt is not recommended in this area. As you can see from the meadows Development, it has not performed well over time and meeting subgrade requirements with the native soil is challenging. As these roadways are private and will remain private, the city does not have a requirement for the asphalt within the development, but will require any patches in City ROW to meet the requirements of the City's Engineering Standards.
    a. The report provides a recommendation for a full-depth asphalt section, but Figure 17 does not provide an exhibit of that section.

Drainage Report:

4. Include the original report referenced in the Appendix.
5. The original study was completed analyzing the development with Type C and D soils, while this analysis uses Type A soils. Please address this within the report.
6. The access road to the west is not fully considered in the analysis.

Traffic Report Comments:

7. A memo is not acceptable. A TIS will be required for this development. The original study was completed over 20 years ago and only provided a 10-year projection. Additionally, it was not stamped by a Colorado Licensed Engineer.

General Requirements:

At the time of Construction Document Submittal:

8. All final/stamped reports shall be submitted.

101 West 8th Street, Glenwood Springs, CO 81601
(970) 384-6434
jessica.bowser@cogs.us

a. Landscaping plans should include utilities and proposed contours on a background layer for verification of clearances. Often these items are completed after the civil work is completed and they fill in drainage areas or plan directly on top of utilizes.

b. Landscape plans should also include sight triangles to verify sight distances.

9. Any proposed retaining walls greater than 4' from the bottom of footer to top of wall will require engineered design and structural calculations. The City may refer these documents out for review as necessary.
10. Stormwater facilities will require a maintenance agreement and plan.
11. Plan and Profiles should be supplied for the private utility mains.
12. Provide S.U.E. plan per Colorado Law CRS 9-1.5-102 requirements or provide a stamped letter determining why this is not a Subsurface Utility Engineering-Required Project.

Before Construction:

13. Any work within the Right of Way shall require appropriate ROW permitting though the City. With the ROW permit, the following documents should be submitted:
    a. Any SUE documents necessary.
    b. A plan of work to take place in the ROW, with patching shown that meets the requirements of the jurisdiction.
    c. Traffic Control Plans, as appropriate.
14. The site will require a Grading Permit. With the grading permit, the following documents should be submitted:
    d. Any SUE documents necessary.
    e. Final Stamped Drainage Report.
    f. Final Stamped Civil Documents.
    g. Final Geotechnical Report.
    h. Disturbance over one (1) acre will require a CDPHE Construction Stormwater Discharges Permit. As this development is over one acre, this permit is required, and any State approval should be submitted prior to the issuance of a Grading Permit.

Permit Closeout and Issuance of Certificate of Occupancy Requirements:

15. Before engineering completes a walk-though of the subject property
    a. Draft As-Built plans should be submitted.

    a. Applicable Stamped Certification Letters:
        i. Any engineered retaining walls. Letter certifying that the walls were constructed per plan or that address any changes to the design during construction, stamped by a Colorado Licensed Professional Engineer.
        i. Drainage improvements. Letter certifying that the drainage was constructed per plan or that addresses any site changed, stamped by a Colorado Licensed Professional Engineer.

    b. Test results for all improvements in the ROW shall be submitted. These should include all testing/backfill associated with any walls that support public facilities.

16. Engineering Approval to release the CO will not be provided until the final documents/files are supplied.
    b. Final As-builts with and Improvement Survey Plat (ISP) should be provided in an AutoCAD, PDF, and Mylar form.

c. Certification Letters can be supplied electronically (PDF).

d. All easement dedications shall be completed.

e. Maintenance Agreement for any water quality and detention facilities.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY
NOT FOR
CONSTRUCTION

WULFSOHN RD.

EXISTING CURB CUT TO BE REMOVED.
INSTALL 74–LF, 24–IN STANDARD
CURB & GUTTER.
EXISTING UTILITY STUBS TO REMAIN

Where will this drainage go?

Appears that the legend doesn't match the plans (typ all sheets)

Technically no grading through bldg (typ)

Is this curve practical w/ allowable pipe material deflection?

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALUMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.

COLORADO 811
CALL BEFORE
YOU DIG
Utility Notification
Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE: 1/21/2021
FILE:
SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-8555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY GRADING PLAN
SHEET 1

PROJECT NO.
2201044.00

GR1

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

Curve is fairly sharp.

Grading not practical thrugh parking

Intersections should be T, how will they be controlled

FLAT TOPS VIEW DR.

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		
CONTOUR	6158	6158

NOTES

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3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.

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FILE:
SCALE 1" = 40'

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BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY GRADING PLAN

SHEET 2

PROJECT NO.
2201044.00

GR2

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY
NOT FOR
CONSTRUCTION

Gas + electric should have appropriate separation.

Storm/irrigation/sanitary considered the same + should maintain appropriate separation from potable water

WULFSOHN RD.

EXISTING CURB CUT TO BE REMOVED

CONNECT TO EXISTING WATERMAIN STUB PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING 24" STORM PIPE "1B"

INSTALL MANHOLE ON EXISTING STORM SEWER

144.48

14.00'–12" HDPE @ 2.00%

229.99'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 2.00%

229.98'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 5.70%

134.80'–12" HDPE @ 11.27%

333.20'–12" HDPE @ 1.00%

8" D.I.P. WATER MAIN

399.94'–8" PVC @ 1.09%

227.80'–8" PVC @ 1.09%

SAN–MH7

SAN–MH6

63.43'–12" HDPE @ 2.24%

57.58

6" PVC SANITARY SERVICE, TYP.

24.00'–12" HDPE @ 1.00%

141.55'–12" HDPE @ 5.37%

6" D.I.P. WATER SERVICE, TYP.

8" D.I.P. WATER MAIN

52.92'–12" HDPE @ 4.13%

316.86'–8" PVC @ 1.63%

SAN–MH13

62.32'–12" HDPE @ 3.62%

135.95'–12" HDPE @ 9.03%

24.00'–12" HDPE

118.56'–12" HDPE @ 10.77%

EXISTING STORM SEWER TO BE ABANDONED/REMOVED

8" D.I.P. WATER MAIN

INSTALL MANHOLE ON EXISTING STORM SEWER

LEGEND

EXISTING	PROPOSED
STORM MANHOLE	WATER SHUTOFF VALVE
SANITARY CLEAN–OUT	WATER VALVE
SANITARY MANHOLE	TEE W/THRUST BLOCK
FIRE HYDRANT	BEND W/THRUST BLOCK
WATER VALVE	FIRE HYDRANT
WATER MANHOLE	INLET
GAS METER	CURB INLET
TELEPHONE PEDESTAL	STORM MANHOLE
LIGHT POLE	SANITARY MANHOLE
UTILITY POLE	SANITARY CLEANOUT
SIGN	CABLE MANHOLE
	ELECTRIC MANHOLE
	ELECTRIC TRANSFORMER

BOUNDARY
RIGHT–OF–WAY
EASEMENT
STRUCTURE
ASPHALT
GRAVEL
CONCRETE
RETAINING WALL
CENTERLINE ROAD
CURB AND GUTTER
FLOWLINE
PAVEMENT STRIPING
WATER MAIN
WATER SERVICE
SEWER MAIN
SEWER SERVICE
OVERHEAD ELECTRIC
ELECTRIC
CATV
TELEPHONE
GAS
STORM SEWER

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALUMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
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FILE:
SCALE 1" = 40'

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GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN
SHEET 1

PROJECT NO.
2201044.00

UT1

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

CONNECT TO WATERMAIN STUB PER CITY OF GLENWOOD SPRINGS STANDARDS

EXISTING 24" STORM PIPE "1C"

INSTALL MANHOLE ON EXISTING STORM SEWER

8.45'–12" HDPE @ 2.00%

157.17'–12" HDPE @ 1.00%

38.12'–12" HDPE @ 1.00%

8" D.I.P. WATER MAIN

258.95'–12" HDPE @ 1.73%

172.95'–8" PVC @ 1.09%

258.22'–8" PVC @ 1.09%

52.91'–12" HDPE @ 1.00%

SAN–MH5

SAN–MH4

Does this connection work?

67.50'–8" PVC @ 1.00%

194.55'–8" PVC @ 9.45%

CONNECT TO EXISTING SANITARY MANHOLE PER CITY OF GLENWOOD SPRINGS STANDARDS

SAN–MH1

SAN–MH2

266.85'–8" PVC @ 6.50%

24.00'–12" HDPE @ –1.00%

60.25'–12" HDPE @ –8.63%

CONNECT TO EXISTING STORM INLET PER CITY OF GLENWOOD SPRINGS STANDARDS

SAN–MH3

42.51'–8" PVC @ 6.65%

SAN–MH8

Do these X's work in the inlet?

38.38'–12" HDPE @ 1.00%

187.37'–8" PVC @ 7.70%

24.00'–12" HDPE @ –1.00%

60.44'–8" PVC @ 4.50%

SAN–MH9

216.16'–12" HDPE @ 8.53%

70.74'–12" HDPE @ 0.98%

Cleanout?

8" D.I.P. WATER MAIN

216.91'–12" HDPE @ 5.65%

258.60'–8" PVC @ 1.63%

214.10'–8" PVC @ 6.10%

SAN–MH12

SAN–MH11

SAN–MH10

6" PVC SANITARY SERVICE, TYP.

181.46'–12" HDPE @ 9.74%

24.00'–12" HDPE @ 1.00%

EXISTING STORM PIPE TO BE ABANDONED/REMOVED

6" D.I.P. WATER SERVICE, TYP.

45.18'–12" HDPE @ 1.00%

8" D.I.P. WATER MAIN

24.00'–12" HDPE @ –4.25%

200.51'–12" HDPE @ 9.10%

48.69'–12" HDPE @ 2.00%

28.24'–12" HDPE @ 2.00%

60.33'–12" HDPE @ 12.31%

93.82'–12" HDPE @ 14.88%

Will this slope be prone to sediment separation?

recommend Conc pan

INSTALL MANHOLE ON EXISTING STORM SEWER

EXISTING 12" STORM PIPE

EXISTING 12" STORM PIPE "1C"

Storm should maintain same separation requirements as Sanitary

Easements around hydrants & transformers

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN–OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC MANHOLE
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		

NOTES

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COLORADO 811 CALL BEFORE YOU DIG Utility Notification Center of Colorado

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2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE: SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 • FAX (970) 945-2555
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BLD GROUP, LLC
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN
SHEET 2

PROJECT NO.
2201044.00

UT2

From:	Dan Roper
To:	Trent Hyatt; Brian Smith
Cc:	Nathan Mohrmann; Lisa DiNardo; Adrian J. Brown
Subject:	Glenwood Meadows Development Review Comments
Date:	Friday, February 19, 2021 1:33:53 PM
Attachments:	L1.3 sheet.JPG L1.8 sheet.JPG image001.png

Trent,
Our comments for the Glenwood Meadows Development are below and the attached documents supports those. If you have any questions please let me know. Thanks.
Dan

Landscaping and Irrigation

~ Please provide an updated plant list with species, locations and quantities.
~ Please provide a detailed permanent irrigation plan.

Plant species not suited to our semi-arid climate or unsuitable selection.
~ Red Maple *Acer rubrum* - Colorado soils are alkaline (7.0 to 8.3) and the Red Maple prefers soils with a soil Ph of 7.4 and less. It also does not grow well in hot/dry locations.

~ Thinleaf Alder *Alnus tenuifolia* - prefers moist and wet sies. Ideal for wetland and riparian areas however, not suitable to upland landscapes.

~ Water Birch *Betula occidentalis* - Requires acidic and moist soils, not suitable for upland landscapes.

~ Many communities are not planting Ash trees (Fraxinus spp.) due to an exotic pest, the Emerald Ash Borer. This invasive insect has killed hundreds of millions of ash trees in North America and cost municipalities, property owners, nursery operators and forest products industries hundreds of millions of dollars. Let's substitute with a Linden, Expresso Kentucky Coffeetree, or an Elm variety or other suitable species.
~ Narrowleaf Cottonwood *Populus angustifolia* - Not appropriate for residential or commercial landscapes. This suckering Colorado native is found along streambanks and wet areas. It's profuse suckering (to hold riverbanks) causes havoc to water and sewer lines and building foundations.
~ Pagoda Dogwood *Cornus alternifolia* - prefers an acidic and organically rich with consistent soil moisture whose best performance occurs in cool summer climates. Substitute with Eastern Redbud *Cercis canadensis*, Wasatch maple *Acer grandidentatum,* 'Autumn Brilliance' Serviceberry *Amelanchier x grandiflora.*

Playground and Recreation Facilities:
With the close proximity of the Community Center we would recommend not building tennis courts.
We strongly recommend inclusion of appropriate outdoor spaces to support the residential needs of the proposed density level. Evaluation of formal complaints to the City demonstrates a necessity for a smaller park with a dog run area, playground, small turf and picnic area.
For any playground installations we would recommend separate playgrounds that are suited to specific age ranges. (Ages 2-5, 5-12)
Fenced dog runs with appropriate bear proof trash cans and dog waste bags.

Stairway Connection to Glenwood Meadows:
Due to the north facing aspect of the stairs they should be heated for safe winter maintenance.

Trails & Open Space:

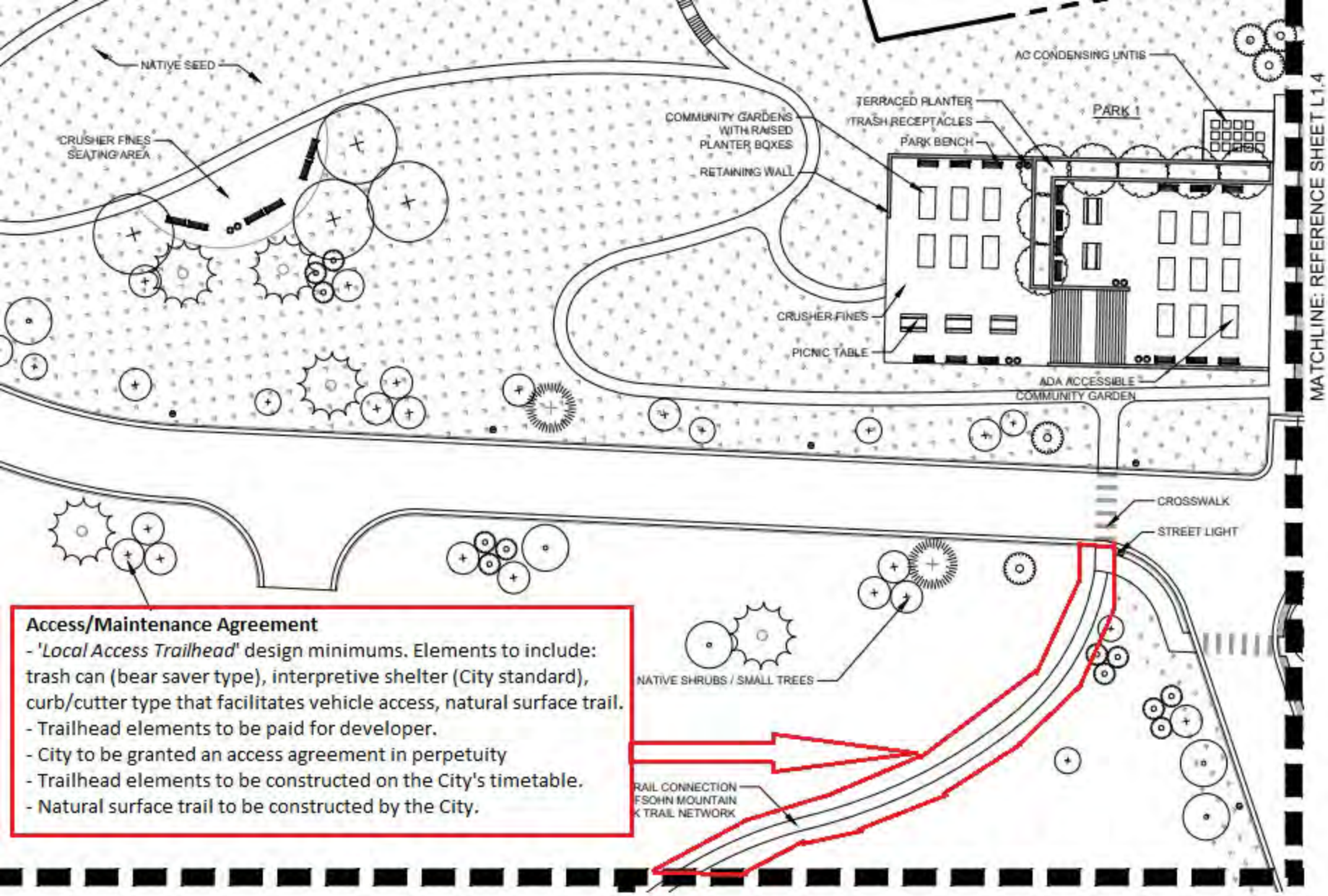
The attached documents reference the Trials & Open Space aspect of the plans.

Access/Maintenance Agreement.

"Local Access Trailhead" design minimums. Elements to include" trash can (bear saver type), interpretive shelter (City standard), cur/gutters that facilitates vehicle access, natural surface trail.
Trailhead elements to be paid for by the developer
City to be granted an access agreement in perpetuity
Trailhead elements to be constructed on the City's timetable.
Natural surface trail to be constructed by the City.

Daniel Roper
Parks Superintendent
Office: 970-384-6366
Cell: 970-471-6394

CITY OF GLENWOOD SPRINGS PARKS AND RECREATION



Access/Maintenance Agreement

- '*Local Access Trailhead*' design minimums. Elements to include: trash can (bear saver type), interpretive shelter (City standard), curb/cutter type that facilitates vehicle access, natural surface trail.
- Trailhead elements to be paid for developer.
- City to be granted an access agreement in perpetuity
- Trailhead elements to be constructed on the City's timetable.
- Natural surface trail to be constructed by the City.

GLENWOOD MEADOWS MULTI FAMILY HO

LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER:
DATE: 2020.12.28

REVISIONS:
SUBMITTAL #2: 2021.01.22

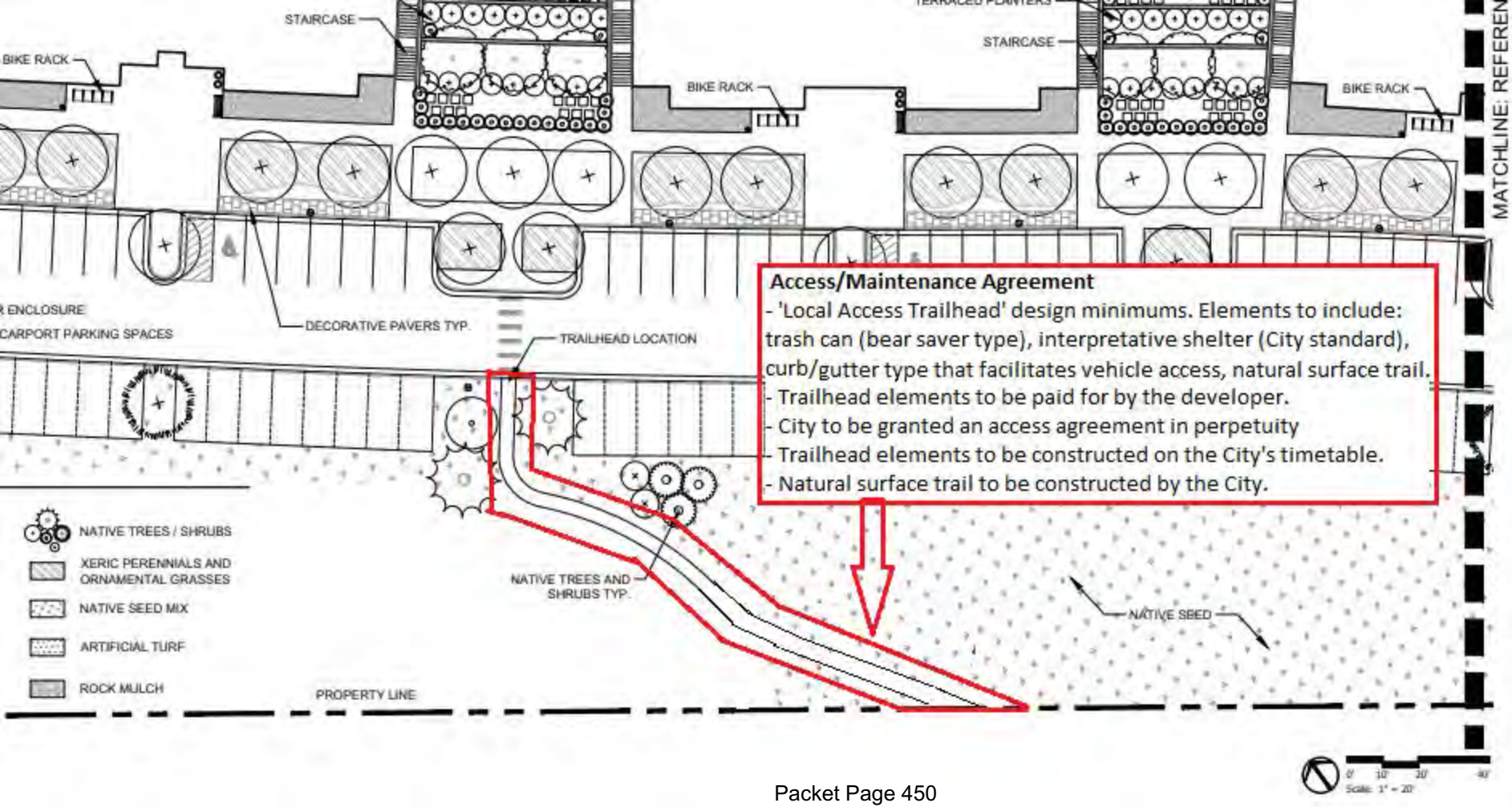
JOB DESCRIPTION:
MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE:
SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER:
L1.3

SHEET OF



GLENWOOD MEADOWS
LOT 11C-B & LOT 11C-C
GLENWOOD SPRINGS, COLORADO

PROJECT NUMBER: DATE: 2020.12.28

REVISIONS: SUBMITTAL #2: 2021.01.22

JOB DESCRIPTION: MAJOR SITE / ARCHITECTURE REVIEW

SHEET TITLE: SITE PLAN ENLARGEMENT

SCALE:

SHEET NUMBER: L1.8

SHEET OF

Matthew Langhorst DPW
(970) 384-6438 (o)

CITY OF GLENWOOD SPRINGS PUBLIC WORKS

101 West 8th Street
Glenwood Springs, CO 81601

Planning Item:	**60-20 BLD Major Site/Architectural Plan Review and Minor Subdivision**
Applicant:	**BLD Group**
Owner:	**Glenwood Meadows, LLC**
Location:	**Lot 11C-B and 11 C-C, Glenwood Meadows Sub. No. 6**
Parcel:	**2185-081-41-002 and 2185-081-41-003**
Date of Comments:	**02/19/2021**

The following are W/WW Department comments based on the application package dated 1-21-2021.

W/WW Department Comments

- All water and wastewater utilities proposed for this project outside of public ROWs will be considered private and not maintained by the City. Water valves, manhole connections and sewer wyes will be considered private/public delineation points.
- All sanitary sewer, sewer laterals, water mains and water services shall have a tracer wire installed.
- The water, sewer and electric details need to follow city standards details at the City of Glenwood Springs Engineering Department website, Engineering Standards.
- There is no irrigation detail. The Glenwood Meadows area is irrigated by a raw water system. Please show how this development proposes to incorporate that system for its use. There is a raw water main stub out located next to the proposed water and sewer main connection points on flat tops drive. There is also smaller service location on Wulfsohn Rd.
- All Fire hydrants must have a 15' easement centered on the hydrant. Leads, valves and access to the hydrant will also need to have an easement for access and maintenance. The City will own and maintain all fire hydrants, leads and valves. The City will require access easements to each 15' hydrant easement if they are not adjacent to a public ROW.
- All services that are to be used for combined Fire/Domestic water must be designed and constructed to NFPA24 requirements and will be considered private. Needs to be shown in detail…thrust block calculations, restrains.
- Provide riser room details for the fire/domestic water services and how the proposed buildings are intended to be metered.
- All wet utilities will require restrained joints/bells within the entire project area.
- Water and Sanitary/Storm Sewer Crossings will need to be shown in future plans in a profile plan. All water and sewer crossings must have 10' horizontal separation or 18" vertical. If these distances can't be maintained encasement or sleeving will be required.

- Water and storm crossings may require insulation if proper bury depth can't be maintained.

W/WW Department Contact Information:

- Mike Hoffman – 384-6343 (W/WW Information)
- Utility Billing – 384-6400 (Account setup; Water Meter Purchase)
- Community Development Department – 384-6411 (Improvements Fees)

The following are Electric Department comments based on the application package dated 1-21-2021.

Electric Department Comments

- Owner will be responsible for cost associated with the line extension and or relocation through the ROW/property and all infrastructure for the new development.
- Owner will be responsible for all work involving new construction, final service layout and site planning will need to be coordinated with the City of Glenwood Springs Electric Department.
- A new switch gear will need to be set at the new intersection with Wulfsohn Road to supply electric back to the development. A connection from the switch gear vault at the lofts will need to be made back to the electric vault on Flat Top Roads, this line could be run with the 24" storm sewer that is being proposed to tie into Lofts system. Internal transformer locations and line looping to be coordinate with GWSE.
- Owners GC/excavation company will be responsible for all trenching, including the line extension trenches to new transformer locations, electric primary and secondary conduit installation, electric pull vaults and transformer vaults.
- The Costing Proposal will be paid in full prior to any work commencing. Any additions to the proposal will be due at time of completion of work or any saving will be refunded at time of completion of work.
- Contractor to install a 2" electrical conduit adjacent to the main electrical run to be slept up at pedestal locations for Broadband installation. Fiber to be brought to builds at service locations shown on plans.
- Developer to supply a Load Calculation form to the City of Glenwood Springs Electric Department for review and planning.
- Any work done outside of the owners needs for this property will be the responsibility of the City of Glenwood Springs Electric Department. City will coordinate with the GC with any city needs.
- Any street lightings outside of a Public ROW will need to be a part of the HOA electric system and power paid for be the HOA.
- Xcel is not the power or gas supplier in this location per the Utility Report, City of Glenwood Springs Electric and Black Hills Energy are the correct contacts.

- The Electric design, details and clearances need to follow City Engineering Standards details located at the City of Glenwood Springs Engineering Department website, Engineering Standards.
- If the developer has any information on the additional 175 units noted on within the reports, it would be advisable to plan for electric layouts/conduits for the possible expansion at this time.

Electric Department Contact Information:

- Doug Hazzard – 384-6353 (Electric Information)
- Utility Billing – 384-6400 (Account setup; Water Meter Purchase)

The following are Public Works Department comments based on the application package dated 1-25-2021.

PW Department Comments

- The storm sewer system within the Glenwood Meadows development is owned and operated by the Metro District. The district should be a review agency for these plan sets.
- The City's broadband department can add another communications option to the residents of this development if the developer would like to work with CBN to plan for high-speed fiber connections to the buildings.
- The City would like to have a discussion with the developer on Public ROWs and what the developer's intentions are for dedications. The City can see a small benefit to taking ROW along the main Flat Top View Drive roadway alignment from the connection with existing Flat Top View Drive all the way back to its new connection at Wulfsohn Road. The City would not maintain the parking areas along this roadway nor shovel sidewalks along this segment of road. The City would be looking at ROW that encompasses the area from Top back of roadway curb to top back of roadway curb, not parking area curb. It would be desirable to have snow storage locations at either end of the building areas and possibly down the center of the roadway for easy of plowing and snow removal.
- The City would suggest some form of velocity reducing manhole at the debris pond storm sewer connection.
- After review of the soils report it seems that there are risks associated with the site that the report did not review in detail due to those risks not being part of the consultant's scope of services. See comments in the inherent risks section that are labelled "outside scope of services" and owner is completely responsible for taking all risks associated with any future potential for instability at the site or in the site vicinity area type comments.
- No topographic slopes were labeled thus these comments are generic. Geotech report calls for no structures within 25' of a crest of a slope that is 2.5:1. The lower row of structures appears to be within 25' of a crest of a slope, but the slopes below are not labeled for verification of the report note.
- The slopes to the south of the development that lead to the proposed roadway appear to be quite steep and will be an erosion and revegeation issue for the development. These

roadways lead directly to storm water intake structures and piping that could be clogged with excess material flowing them, thus causing downstream issues.

- The Geotech report notes that the soils are highly susceptible to water erosion and moderately susceptible to wind erosion. During construction dust mitigation will be a significant issue with the site as the City has learned with other projects in this area. Excessive dust from the working face will not be acceptable and must be properly mitigated.
- The Geotech report notes that plantings around the structures should eb either Xeriscaping, landscaping gravel or plants with low moisture requirements.
- The Geotech report notes that slopes away from the buildings should be a minimum of 6' in 5' for landscaping areas or 2% for hardscape areas. This cannot be verified on the current drawing set, engineer of record to confirm slopes away from structures.
- Contractor should confirm the trenching backfill material that is acceptable in this area, previous potions of the development have utilized gravel materials, which has caused underground water to use the trenches as river passages and flood manhole locations during certain times of the year.
- Full depth pavement will not be accepted in any areas that are deemed public ROW and possibly maintained by the City. Full depth asphalt is not recommended, it has shown not to be successful in other areas of the Glenwood Meadows Development.
- 4.5 " of asphalt over 6" of ABC for heavy traffic areas is not recommended, it has sown not to be successful in other areas of the Glenwood Meadows Development. Thicker asphalt and base course sections have shown promise in stability and longevity.
- The Geotech report notes that asphalt overlays should be completed every 5-6 years on asphalt sections of pavement. What does the Geotech considered an appropriate overlay material and thickness being that overlay is a generic term.

Public Works Contact Information:

- Matthew Langhorst – 384-6438 (PW Director)

Development Review Comments

Linda DuPriest, AICP

02/21/2021

60-20 BLD; Glenwood Meadows

My review of this application concerns access to transit, accessible pedestrian routes and sidewalk requirements, and bicycling.

Access to transit – With the project proposing hundreds of multifamily units situated along a primary transit route for not just Glenwood Springs but for our entire Colorado and Roaring Fork valleys, this development has an opportunity to do it right by making it easy for residents to get to bus stops, not just for able bodied folks but for mobility impaired, too. Plus, with the potential housing located close to shopping at the Meadows plus Downtown, this development needs a roadway or a street, with direct sidewalks from one end to the other (not the proposed meandering walkways among the buildings) and ultimately some bike route signage and markings.

RFTA and Ride Glenwood stops at west end of Lofts development – This stop serves the RFTA Valley Local, VelociRFTA BRT and Ride Glenwood, yet there is no reasonably direct ADA compliant pedestrian route from the majority of the proposed housing development. There are no sidewalks along Wulfsohn included, no sidewalk along the access road at the far west end of the site and no hard-surface sidewalk or path from either of the two levels of buildings. The switchback soft surface path through the small park at the west end is the only pedestrian facility from this entire development that does not include multiple levels of stairs, and as is it soft surface does not comply with ADA.

The middle and east section are similarly cut off from access to the Bus Stop, unless people walked all the way past the Glenwood Greens housing development to East Meadows Drive, then doubled back in front of the Lofts to the bus stop.

While this is a very hilly site, it seems that the designers could come up with better access to the key transit stops already provided by the Meadows, to help Glenwood's goals toward reducing traffic and maintaining quality of life.

Comments:

- Require sidewalk along Wulfsohn from the west end of the property to existing sidewalk at Meadows/Lofts (access to transit stop)
- Require sidewalk along access road at west end of the site
- Provide direct sidewalk along the entire length of both sections if roadways are not to be built; in other words, make it possible to walk the length of this property without having to meander behind all the head-in parking bays
- Provide ADA compliant elevators within this property to get mobility impaired residents from up the hills down to Wulfsohn Rd and the transit stops.

July 2, 2021

Trent L. Hyatt
Senior Planner
City of Glenwood Springs
101 W. Eighth Street
Glenwood Springs, CO 81601
trent.hyatt@cogs.us

RE: Glenwood Meadows Multifamily Housing, Response to City Comments

Trent,

The following letter is submitted on behalf of the applicant, BLD Group, in response comments received from City staff and referral departments related to the current Major Architectural Review application as submitted to the City of Glenwood Springs Community Development Department. Comments and the applicant's responses are compiled by department, presented in the order received, and each comment received is addressed herein. We believe that these items have been adequately addressed with this additional information.

We have also refined an important component of the programming related to the clubhouse operations and access to and from the child care operation (on-site) and the RFTA transit station on Wulfsohn Road, west of the project. The child care operation will be available for the general public to access and reserve available classroom spaces. A shuttle, operated by the owner, will circulate from the clubhouse to the Wulfsohn Road RFTA park and ride, providing convenient access between the project to the public transit system.

Community Development, General

1. Additional information regarding anticipated traffic impacts and necessary mitigation is needed as outlined in various comments from other departments.

   Response: *Please review the letter from Balcomb & Green to Trent Hyatt dated January 8, 2021, which discussed that the ADA and associated documents accounted for all traffic-related impacts at the time of annexation, and that only a traffic impact statement is necessary. Nonetheless, recently Applicant voluntarily agreed to contribute a traffic impact fee to further offset any impacts of Applicant's development. This fee was memorialized in the May 2021 Memorandum of Understanding with the City.*

2. The City may wish to accept the Flat Tops View Drive extension into our road system. Further conversations with Public Works are necessary to determine feasibility. Doing so may encourage compliance with the "hierarchy of streets" intended by Section V.F of the *Glenwood Meadows Zoning and Development Plan* (GMZDP). Currently, it seems that only one access type is provided which serves mainly as a parking lot for the specific development. Please provide a typical cross section for proposed roads/driveways.

***Response**: At this time the applicant's intent, as coordinated with City staff, is to maintain the internal driveway network in private ownership and provide easements as necessary for access to publicly-owner infrastructure. Should the Applicant and City agree to a dedication of public right-of-way, a variance for specific dimensional standards may be necessary given the current roadway configuration within the property.*

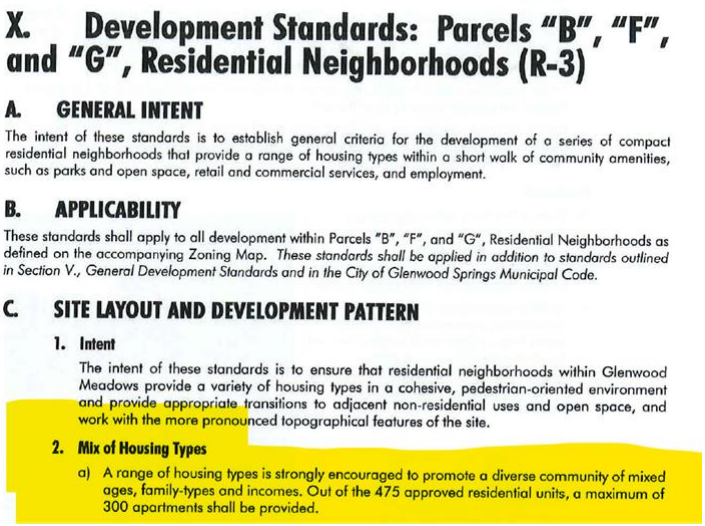
3. Sidewalks are required along internal and external project streets (i.e. Flat Tops View Drive extension and Wulfsohn Road.) Please clarify.

   ***Response:** Sidewalks have been added along Flat Tops View Drive extension and Wulfsohn Road. See revised sheet set.*

4. Please clarify if the project is to be completed in multiple phases and provide related information, if applicable.

   ***Response**: The applicant's intent is to complete construction of the proposed improvements in a single phase, with individual buildings or groups of buildings occupied as they are completed.*

5. The GMZDP outlines the following regarding multiple housing types.



X. Development Standards: Parcels "B", "F", and "G", Residential Neighborhoods (R-3)

A. GENERAL INTENT

The intent of these standards is to establish general criteria for the development of a series of compact residential neighborhoods that provide a range of housing types within a short walk of community amenities, such as parks and open space, retail and commercial services, and employment.

B. APPLICABILITY

These standards shall apply to all development within Parcels "B", "F", and "G", Residential Neighborhoods as defined on the accompanying Zoning Map. *These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.*

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to ensure that residential neighborhoods within Glenwood Meadows provide a variety of housing types in a cohesive, pedestrian-oriented environment and provide appropriate transitions to adjacent non-residential uses and open space, and work with the more pronounced topographical features of the site.

2. Mix of Housing Types

a) A range of housing types is strongly encouraged to promote a diverse community of mixed ages, family-types and incomes. Out of the 475 approved residential units, a maximum of 300 apartments shall be provided.

***Response:** Applicant understands the ADA encourages a diversity of housing types within the Meadows Development. The ADA also expressly allows up to 300 commercial apartment units. Diversity in housing types proposed for this specific application includes a range of unit types from studio to 3 bedrooms. In addition, three different building types are proposed in this application. Diversity in income levels is provided in aggregate between the Red Mountain Lofts (market rate) and the Glenwood Green Apartments (40/60/80% AMI units). The approvals provide for another 115 units to be developed on the fathering parcel(s); these units are envisioned as free market units of a zero-lot line or townhome format, further increasing the diversity of housing in the Meadows.*

Community Development, Cover Sheet

6. Please call out the project basis of bearings & benchmarks.

   Response: *ALTA/ACSM Land Title Survey contains this information and has been added to the submittal. See revised sheet set.*

7. Please add a FEMA floodplain statement outlining the applicable community map number and date and the designated flood zone.

   Response: *ALTA/ACSM Land Title Survey contains this information and has been added to the submittal. The applicable FEMA FIRM maps are: 0802051432B, effective on 01/03/1986 (Zone D); and 0802051431B, effective on 01/03/1986 (Zone D). See revised sheet set.*

8. Please add a geologic hazards disclosure similar to the following: "This property is subject to geologic hazards per the adopted mapping by the City of Glenwood Springs. Hazards to note are _____. A final Geologic Hazard Report will be submitted upon application of a building permit.

   Response: *Off-site geological hazards have been mitigated in accordance with the Glenwood Meadows Debris Flow Mitigation Plan. As an entitled property within the Glenwood Meadows Metropolitan District(s), the subject parcel will participate in the maintenance of the debris flow and drainage structures designed and built to mitigate the off-site geologic hazards. The debris mitigation structure was built by the Glenwood Meadows Metropolitan Districts on land donated to the City and Glenwood Meadows Metropolitan District No. 1. The metro district is responsible for maintenance. Expenses are paid by all properties protected by the structure. This assessment also applies to certain City of Glenwood Springs and Roaring Fork Transportation District sites. The subject parcel is in Glenwood Meadows Metropolitan District No. 2 and subject to this assessment. On site geological conditions are identified, with preliminary recommendations, in the current preliminary geotechnical report. These recommendations will be finalized for permit submittal.*

9. Please add a note outlining proposed public facilities or contributions related to the development.

   Response: Please review Applicant's prior letters to staff detailing the extensive public contributions related to the Glenwood Meadows development at the time of annexation, including off site traffic improvements, and extensive public dedications of open space. The ADA was clear that no further exactions were allowed as a result of future development applications. Nonetheless, Applicant collaborated with the City to voluntarily enter into the May 2021 MOU, which contributes additional funds toward water and sewer infrastructure, in addition to traffic impact fees.

10. Please project a project summary table similar to that depicted below. Please call out required (as opposed to existing)/provided numbers, where applicable. It does not appear that 40% of the site is proposed as open space. Please clarify. Please call out the area/percentage (which is a portion of the overall open

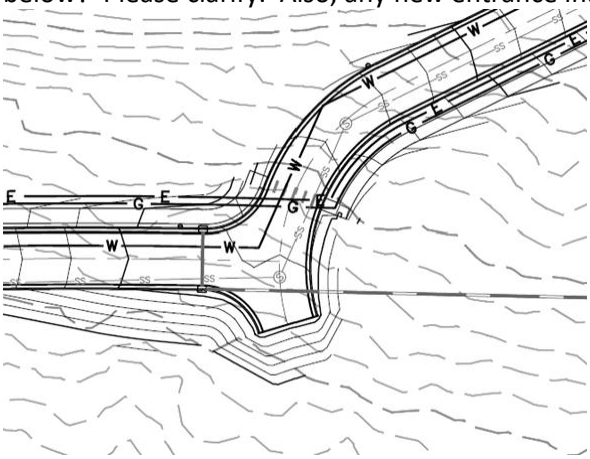
space) proposed as common open space per Section V.J.4.a of the *Glenwood Meadows Zoning and Development Plan*. Sheet L1.1 provides details relative to site amenities. Please expand this information to include a list of amenities and the areas associated with each.

Project Description					
Lot Size Information	Acres	Square feet	**Lot Coverage**	Existing (Sq Ft & %)	Proposed (Sq. Ft. & %)
Limits of Disturbance	Existing (Sq & %)	Proposed (Sq. Ft. & %)	**Average Slope within Limits of Disturbance**	Percentage %	
Off-street Parking Spaces	Existing # Vehicle Spaces	Proposed # Vehicle Spaces	**Bicycle Parking**	Existing # Spaces	Proposed # Spaces
Residential Units	# Existing Units	# Proposed Units	**Non-residential Uses**	Type of Use(s)	Gross Floor Area (Sq. Ft.)
Open Space	Existing (Sq ft & %)	Proposed (Sq Ft & %)	**Total Landscaped area**	Existing (Sq Ft & %)	Proposed (Sq Ft & %)
Building Height	Existing	Proposed	**Total Impervious Area**	Existing (Sq Ft & %)	Proposed (Sq Ft & %)
Snow Storage	Required (sq ft)	Proposed (sq ft)	**Other**		

Response: *Please see project summary table provided in the revised planset.*

Community Development, Site Plan (Sheet L1.0)

11. Can a smaller, gentler curve be provided along the extension of Flat Tops View Drive depicted below? Please clarify. Also, any new entrance into the adjacent property shall occur at a 90 degree angle.



Response: The layout of the extension of Flat Tops View has been modified to eliminate the three-way intersection and to accommodate the future access to Lot 3 via a perpendicular intersection. See plan set for modified alignment and grading.

12. Sidewalks are required along internal and external project streets (i.e. Flat Tops View Drive extension and Wulfsohn Road.) Please clarify.

Response: *Sidewalks have been added along Flat Tops View Drive extension and Wulfsohn Road. See revised sheet set.*

13. Section X.C.3 of the GMZDP outlines the need for blocks within the residential parcels having a maximum length of 500 feet or 800 feet with midblock pedestrian crossings. Please clarify.

    Response: *The arrangement of the site plan is responsive to the intent of section X.C, with the neighborhood arranged "in a pattern of blocks and interconnecting streets…defined by buildings, streetscape, sidewalks and trails." The site plan provides for clear pedestrian circulation along streets, between buildings, and to trails and adjacent pedestrian network. The site plan is also directly responsive to the challenges presented by the existing topography of the site.*

14. Section X.C.7.a of the GMZDP states that each residential parcel shall be considered its own neighborhood that includes a mix of housing types. Please clarify.

    Response: *This project is located on a portion of what was originally Parcel K, which was 17 acres, and also includes the Glenwood Green Apartments. The ADA also expressly permits up to 300 commercial apartment units on this parcel. The project encompasses a portion of one development parcel. Diversity in housing types proposed for this application includes a range of unit types from studio to 3 bedrooms. In addition, three different building types are proposed in this application. Diversity in income levels is provided in aggregate between the Red Mountain Lofts (market rate) and the Glenwood Green Apartments (40/60/80% AMI units). The approvals provide for another 115 units to be developed on the fathering parcel(s); these units are envisioned as free market units of a zero-lot line or townhome format, further increasing the diversity of housing in the Meadows.*

15. Section X.D.2.b of the GMZDP requires that a maximum of 50 percent of the street frontage is occupied by parking. Please clarify.

    Response: *The internal vehicle network will not be dedicated road right-of-way, but will be private driveways. Because of the topographic constraints of the site, there are limited areas where parking can be located. In order for the plans to comply with the minimum parking requirements, parking must occupy the driveway frontage in the level areas between the buildings. The site plan locates parking away from Wulfsohn Road, the nearest public right-of-way, and the topography of the site further conceals parking from view from adjacent public streets.*

Community Development, Architectural Elevations

16. It is difficult to gain an understanding of the mass, bulk, and scale of the total project via the drawings submitted. Please provide colored 3D perspective drawings of the proposal from all cardinal directions. Additionally, please provide typical cross sections for the entirety of the project.

    Response: *3D perspective drawings are not required for a major architectural site plan review and are not included in the formal submittal package. The project team is developing perspective drawings to be included*

in the Planning Commission packet; these will be available for review during Planning Commission and Council hearings.

17. Please provide and call out both the existing and proposed grade on each elevation.

    ***Response**: This information has been added to the elevations. See revised sheet set.*

18. Please call out the maximum height of each side of the proposed buildings from the lowest proposed grade to the midpoint of the highest roof midpoint at the proposed adjacent grade. Please see examples below and call out the greatest heights in the example with multiple lines.

    ***Response**: This information has been added to the elevations. See revised sheet set.*



19. Please provide an elevation that explains typical materials and colors proposed for the various building types.

Response: *This information has been added to the elevations. See revised sheet set.*

20. In addition to the dimensions provided, please call out the dimensions of various wall and roof sections along each elevation per the example below.



Response: *This information has been added to the elevations. See revised sheet set.*

21. Wall material coverage details are provided for all building elevations on one sheet as shown below. Please provide the applicable information on each sheet accordingly. Similarly, please provide a materials schedule on each sheet.

BUILDING TYPE II					
	NORTH ELEVATION			SOUTH ELEVATION	
	SURFACE AREA	PERCENTAGE OF NET		SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	4071	NA	GROSS WALL	3856.00	NA
NET STONE CLADDING	212.56	-	NET STONE CLADDING	#REF!	#REF!
NET SIDING	1720.9	42.3%	NET SIDING	#REF!	#REF!
NET STUCCO FINISH	1126.73	27.7%	NET STUCCO FINISH	1259.10	32.8%
NET GLAZING	1010.81	24.8%	NET GLAZING	1037.68	26.8%
	EAST ELEVATION			WEST ELEVATION	
	SURFACE AREA	PERCENTAGE OF NET		SURFACE AREA	PERCENTAGE OF NET
GROSS WALL	3270.19	NA	GROSS WALL	3270.19	NA
NET STONE CLADDING	-	-	NET STONE CLADDING	-	-
NET SIDING	2759.89	84.4%	NET SIDING	2759.89	84.4%
NET STUCCO FINISH	377.67	11.5%	NET STUCCO FINISH	377.67	11.5%
NET GLAZING	132.63	4.1%	NET GLAZING	132.63	4.1%

Response: *This information has been added to the drawing package. See revised sheet set.*

22. Please provide the following note on each elevation sheet: “These elevations are conceptual in nature. Individual building elevations may vary but will be evaluated for compliance with design standards contained within the Glenwood Meadows Zoning and Development Plan or Title 070 of the Glenwood Springs Municipal Code, where applicable, at the time of submitting a building permit application.”

Response: *This information has been added to the elevations. See revised sheet set.*

23. Each multi-family building shall provide a minimum wall offset of five feet every 50 linear feet per Section V.D.3.b of the GMZDP. It does not appear the east nor west elevations of any of the proposed buildings meet this requirement. Please clarify. Additionally, said sides severely lack glazing. Please provide additional windows.

Response: *The east and west elevations have been modified to comply with this requirement. See revised sheet set.*

24. As per Section V.D.3.c of the GMZDP, no multi-family building shall exceed 125 feet in length. It appears the clubhouse building exceeds the maximum length permitted. Please clarify.

    Response: *This code section applies to multifamily residential buildings. The clubhouse is not a multifamily residential building; it is a non-residential building.*

25. Section V.E.3.a of the GMZDP requires inclusion of one of the materials outlined below. Please clarify.

    3. Residential

    a) One or more of the following building materials shall be incorporated into a structure's design:

    (1) Split shakes;
    (2) Rough-sawn wood; or
    (3) Board and batten wood.

    Response: *This information has been added to the drawing package. See revised sheet set.*

26. Are the proposed shingles for each building high profile? Please clarify.

    Response: *Asphalt roofing shingles are identified in the materials schedules as "Certainteed Landmark Pro Solaris", a 30-year rated architectural shingle and are defined as a "dimensional" shingle..*

27. Please provide details for the dumpster enclosures.

    Response: *Representative imagery has been added to illustrate the intent for the dumpster enclosures. See revised sheet set.*

28. Please clarify the surface materials and/or amenities proposed atop the parking garages for building type 1.

    Response: *The garage designs have been modified to include a sloping roof and no longer have amenity spaces on the roof. Amenity spaces are provided between the buildings, at the clubhouse, and within the park areas.*

29. Assuming that the adjacent residual residential parcels will include lower density residential, you will likely need to consider of the transitional development standards outlined in Section X.C.8 of the GMZDP.

    Response: *Plans for the remaining development have not been developed and the density for this remainder of the parcel has not been studied in detail. This request cannot be addressed with specificity based on a theoretical future development. However, the Applicant has created conceptual layout and program studies for Lot 3 which does comply with the intent of X.C.8. Regardless of the future arrangement and format of the future development, the open space areas, pedestrian walkways, and vehicular circulation will provide buffering between housing types to meet the intent of section X.C.8.*

30. Section X.E.3.b of the GMZDP outlines the need to emphasize building entrances by extending the front façade and with materials and detailing. Please clarify.

    Response: *Additional articulation and detailing of materials is included to emphasize building entrances. See revised sheet set.*

31. Section X.E.3.c of the GMZDP states that garages shall not be a prominent streetscape element. Please clarify.

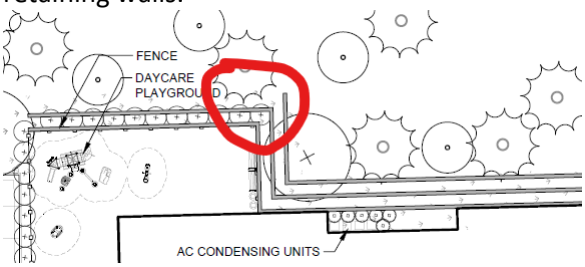
    Response: *The Garages are located at the back of the buildings and do not face any public street or right-of-way. They are built into the slope of the site and serve to retain grade between building levels.*

Community Development, Landscaping

32. I recommend providing a colorized landscaping sheet (or one of the existing representative sheets in color) to the plan set. Also, it may be helpful to see some landscaping typical sections for various areas within the project.

    Response: *Our understanding is that we have provided all of the required plans for a major architectural site plan review. The project team is developing additional illustrative drawings to be included in the Planning Commission packet; these will be available for review during Planning Commission and Council hearings.*

33. Please call out the lines features circled below as shown on sheet L1.5 (and other applicable grading sheets). If these are retaining walls, please call out the maximum height at various locations. Please note, Section V.H.6 of the GMZDP limits wall heights to a maximum of six feet, 50 feet in length without a 12 inch offset, and to three in any given area. Please clarify. Please provide design typical/details for proposed retaining walls.



    Response: *This information has been added to the site grading plans, and images depicting the materials envisioned for these walls. Final material selection and assembly details will be provided at permit submittal. See revised sheet set.*

34. Please call out proposed maximum fence heights and provide a design typical/details.

    Response: *Representative imagery has been added to illustrate the intent for internal fences. See revised sheet set.*

35. Please call out the width of parking spaces and islands or provide a typical call outs in various locations.

    Response: *This information has been added to the site plans. See revised sheet set.*

36. Is any existing landscaping proposed for preservation. Please clarify.

    Response: *Notes regarding existing landscape have been added to the sheet set.*

37. Please depict the limits of disturbance on all applicable landscaping plan sheets.

    Response: *This information has been added to the sheet set.*

38. Please depict and call out sight distance triangles for each and every intersection on various sheets.

    Response: *This information has been added to the sheet set.*

39. Please provide a chart (Sheet L1.2 may be the best location) which details/calls out the total amount of landscape and hardscape areas expressed in square feet and as a percentage of the total lot area. For parking areas, please note square footage of landscaped area and as a percentage of the parking area; include total number of required and provided trees, shrubs, and perennials. Landscaping shall be provided at the minimum rates required for the residential neighborhood district by Section V.H.9 of the GMZDP outlined below.

Use	Residential Neighborhood	A
Required Open Space	40%	
Open Space Planting	▪ 1 tree/1200 s.f. ▪ 4-shrubs/1200 s.f.	▪ ▪
Setbacks Buffers Screens	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f	▪ ▪ ▪
Midland Avenue ROW	N/A	▪ ▪
Wulfson Road ROW	▪ 1tree/35 l.f. ▪ Irregular spacing	▪ ▪
Internal Neighborhood Streets	1 deciduous tree/35 l.f. Evenly spaced	▪

    Response: *This information has been added to the sheet set.*

<u>Public Works, Water/Wastewater</u>

40. All water and wastewater utilities proposed for this project outside of public ROWs will be considered private and not maintained by the City. Water valves, manhole connections and sewer wyes will be

considered private/public delineation points.

Response: *Noted.*

41. The water, sewer and electric details need to follow city standards details at the City of Glenwood Springs Engineering Department website, Engineering Standards.

    Response: *Noted; details will comply and will be reflected in permit submittal.*

42. There is no irrigation detail. The Glenwood Meadows area is irrigated by a raw water system. Please show how this development proposes to incorporate that system for its use. There is a raw water main stub out located next to the proposed water and sewer main connection points on flat tops drive. There is also smaller service location on Wulfsohn Rd.

    Response: *Noted; connection to raw water system has been identified in the sheet set. The point of connection will be at the west end of Flat Tops View right-of-way.*

43. All Fire hydrants must have a 15' easement centered on the hydrant. Leads, valves and access to the hydrant will also need to have an easement for access and maintenance. The City will own and maintain all fire hydrants, leads and valves. The City will require access easements to each 15' hydrant easement if they are not adjacent to a public ROW.

    Response: *Noted.*

44. All services that are to be used for combined Fire/Domestic water must be designed and constructed to NFPA24 requirements and will be considered private. Needs to be shown in detail…thrust block calculations, restrains.

    Response: *Noted. Details complying with NFPA24 will be provided as required for permit submittal. The project team has developed preliminary riser room allocations within each building with the flexibility to adjust the square footage of these rooms without affecting overall building design.*

45. Provide riser room details for the fire/domestic water services and how the proposed buildings are intended to be metered.

    Response: *Noted. Details for fire/domestic service and metering will be provided as required for permit submittal. The riser room location in the lower level of the building provides flexibility to adjust non-bearing wall layout to accommodate changes in riser room dimensional requirements*

46. All wet utilities will require restrained joints/bells within the entire project area.

    Response: *Noted. This will be reflected in the permit submittal.*

47. Water and Sanitary/Storm Sewer Crossings will need to be shown in future plans in a profile plan. All water and sewer crossings must have 10' horizontal separation or 18" vertical. If these distances can't be maintained encasement or sleeving will be required.

    Response: *Noted. This will be reflected in the permit submittal.*

48. Water and storm crossings may require insulation if proper bury depth can't be maintained.

    Response: *Noted. This will be reflected in the permit submittal.*

Public Works, Electric

49. Owner will be responsible for cost associated with the line extension and or relocation through the ROW/property and all infrastructure for the new development.

    Response: *Noted; applicant assumes the division of responsibility will be memorialized in the ordinance/development agreement following project approval.*

50. Owner will be responsible for all work involving new construction, final service layout and site planning will need to be coordinated with the City of Glenwood Springs Electric Department.

    Response: *Noted; applicant assumes the division of responsibility will be memorialized in the ordinance/development agreement following project approval.*

51. A new switch gear will need to be set at the new intersection with Wulfsohn Road to supply electric back to the development. A connection from the switch gear vault at the lofts will need to be made back to the electric vault on Flat Top Roads, this line could be run with the 24" storm sewer that is being proposed to tie into Lofts system. Internal transformer locations and line looping to be coordinate with GWSE.

    Response: *This has been added to the utility plan; see revised sheet set.*

52. Owners GC/excavation company will be responsible for all trenching, including the line extension trenches to new transformer locations, electric primary and secondary conduit installation, electric pull vaults and transformer vaults.

    Response: *Noted; applicant assumes the division of responsibility will be memorialized in the ordinance/development agreement following project approval.*

53. The Costing Proposal will be paid in full prior to any work commencing. Any additions to the proposal will be due at time of completion of work or any saving will be refunded at time of completion of work

    Response: *Noted; applicant assumes the timing of financial instruments due for utility improvements will be memorialized in the ordinance/development agreement following project approval.*

54. Contractor to install a 2" electrical conduit adjacent to the main electrical run to be swept up at pedestal locations for Broadband installation. Fiber to be brought to builds at service locations shown on plans.

    Response: *Noted; applicant assumes the division of responsibility will be memorialized in the ordinance/development agreement following project approval.*

55. Developer to supply a Load Calculation form to the City of Glenwood Springs Electric Department for review and planning.

    Response: *The applicant has provided preliminary load calculations and coordinated preliminary transformer locations with City staff for planning purposes. Final load calculations will be developed by the project's MEP Engineer for permit submittal.*

56. Any work done outside of the owners needs for this property will be the responsibility of the City of Glenwood Springs Electric Department. City will coordinate with the GC with any city needs.

    Response: *Noted.*

57. Any street lightings outside of a Public ROW will need to be a part of the HOA electric system and power paid for be the HOA.

    Response: *Noted.*

58. Xcel is not the power or gas supplier in this location per the Utility Report, City of Glenwood Springs Electric and Black Hills Energy are the correct contacts.

    Response: *Noted.*

59. The Electric design, details and clearances need to follow City Engineering Standards details located at the City of Glenwood Springs Engineering Department website, Engineering Standards.

    Response: *Noted. Standards will be reflected in the permit submittal.*

60. If the developer has any information on the additional 175 units noted on within the reports, it would be advisable to plan for electric layouts/conduits for the possible expansion at this time.

    Response: *Noted.*

Public Works, General

61. The storm sewer system within the Glenwood Meadows development is owned and operated by the Metro District. The district should be a review agency for these plan sets.

Response: *Noted.*

62. The City's broadband department can add another communications option to the residents of this development if the developer would like to work with CBN to plan for high-speed fiber connections to the buildings.

    Response: *Noted. The applicant will review options as the project advances.*

63. The City would like to have a discussion with the developer on Public ROWs and what the developer's intentions are for dedications. The City can see a small benefit to taking ROW along the main Flat Top View Drive roadway alignment from the connection with existing Flat Top View Drive all the way back to its new connection at Wulfsohn Road. The City would not maintain the parking areas along this roadway nor shovel sidewalks along this segment of road. The City would be looking at ROW that encompasses the area from Top back of roadway curb to top back of roadway curb, not parking area curb. It would be desirable to have snow storage locations at either end of the building areas and possibly down the center of the roadway for easy of plowing and snow removal.

    Response: *See item #2 of this document.*

64. The City would suggest some form of velocity reducing manhole at the debris pond storm sewer connection.

    Response: *The drainage plans have been modified in response to this suggestion. See revised sheet set.*

65. After review of the soils report it seems that there are risks associated with the site that the report did not review in detail due to those risks not being part of the consultant's scope of services. See comments in the inherent risks section that are labelled "outside scope of services" and owner is completely responsible for taking all risks associated with any future potential for instability at the site or in the site vicinity area type comments.

    Response: *This item will be addressed fully in a revised geotechnical report. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021.*

66. No topographic slopes were labeled thus these comments are generic. Geotech report calls for no structures within 25' of a crest of a slope that is 2.5:1. The lower row of structures appears to be within 25' of a crest of a slope, but the slopes below are not labeled for verification of the report note.

    Response: *The project geotechnical engineer has confirmed that the current plans comply with this recommendation. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021.*

67. The slopes to the south of the development that lead to the proposed roadway appear to be quite steep and will be an erosion and revegetation issue for the development. These roadways lead directly to storm water intake structures and piping that could be clogged with excess material flowing them, thus causing

downstream issues.

Response: *Noted. Project team will evaluate the temporary erosion control needs and provide specific plans as required for permit submittal.*

68. The Geotech report notes that the soils are highly susceptible to water erosion and moderately susceptible to wind erosion. During construction dust mitigation will be a significant issue with the site as the City has learned with other projects in this area. Excessive dust from the working face will not be acceptable and must be properly mitigated.

    Response: *Noted. Project team will evaluate the construction management planning related to dust mitigation needs, as well as geotechnical recommendations related to wetting of soils, and provide specific plans as required for permit submittal.*

69. The Geotech report notes that plantings around the structures should be either Xeriscaping, landscaping gravel or plants with low moisture requirements.

    Response: *Noted. The landscape plans include notes requiring compliance with geotechnical recommendations.*

70. The Geotech report notes that slopes away from the buildings should be a minimum of 6' in 5' for landscaping areas or 2% for hardscape areas. This cannot be verified on the current drawing set, engineer of record to confirm slopes away from structures.

    Response: *The design team will follow the recommendations of the geotech report; detailed grading (including slopes away from buildings) will be developed for permit submittal and construction drawings.*

71. Contractor should confirm the trenching backfill material that is acceptable in this area, previous portions of the development have utilized gravel materials, which has caused underground water to use the trenches as river passages and flood manhole locations during certain times of the year.

    Response: *The applicant is willing to coordinate with City staff to evaluate specifications that are acceptable to the City and meet the recommendations of the project's geotechnical engineer. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments, including backfill and bedding recommendations. This memo will be provided to staff by July 9, 2021. Revised trenching backfill recommendations will be included in an updated geotechnical report.*

72. Full depth pavement will not be accepted in any areas that are deemed public ROW and possibly maintained by the City. Full depth asphalt is not recommended, it has shown not to be successful in other areas of the Glenwood Meadows Development.

    Response: *The geotechnical engineer is in agreement that full depth asphalt is not recommended, and is developing updating paving recommendations. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9,*

2021, and will include updated paving section recommendations.

73. 4.5 " of asphalt over 6" of ABC for heavy traffic areas is not recommended, it has sown not to be successful in other areas of the Glenwood Meadows Development. Thicker asphalt and base course sections have shown promise in stability and longevity.

    Response: *The project team's geotechnical engineer is reviewing this recommendation. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021, and will include full response to paving section comments and refined paving section recommendations.*

74. The Geotech report notes that asphalt overlays should be completed every 5-6 years on asphalt sections of pavement. What does the Geotech considered an appropriate overlay material and thickness being that overlay is a generic term.

    Response: *The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021, and will include full response to paving comments.*

Transportation

75. Require sidewalk along Wulfsohn from the west end of the property to existing sidewalk at Meadows/Lofts (access to transit stop)

    Response: *Sidewalks have been added along Flat Tops View Drive extension and Wulfsohn Road. See revised sheet set.*

76. Require sidewalk along access road at west end of the site

    Response: *Sidewalks have been added along Flat Tops View Drive extension and Wulfsohn Road. See revised sheet set.*

77. Provide direct sidewalk along the entire length of both sections if roadways are not to be built; in other words, make it possible to walk the length of this property without having to meander behind all the head-in parking bays

    Response: *Sidewalks are provided along streets and internal driveways to allow pedestrian circulation to and throughout the site. The project will be built in on phase, with complete infrastructure (including sidewalks) sequenced with the implementation of the buildings.*

78. Provide ADA compliant elevators within this property to get mobility impaired residents from up the hills down to Wulfsohn Rd and the transit stops.

    Response: *(*Note: In this case ADA relates to the Americans with Disabilities Act, not the Amended*

Development Agreement.) The plans as originally submitted comply with the requirements of the ADA related to accessible routes. The original elements supporting accessibility included accessible routes from designated accessible parking into all buildings and elevators within buildings. Additional modifications have been made to the site plans to enhance accessibility beyond the requirements of the ADA, including an accessible route from the development to Wulfsohn Road and a publicly-available shuttle that will circulate from the development to transit. The shuttle will also be available to non-resident users of the child care facility (and other guests) who may use transit and require a last-mile connection from RFTA to the child care facility.

Parks, Trails & Open Space

79. "Local Access Trailhead" design minimums. Elements to include: trash can (bear saver type, interpretive shelter (City standard), curb/gutter type that facilitates vehicle access, natural surface trail.

Response*: Trash can, dog waste station, and interpretive shelter have been added in two locations of public access to the Wulfsohn Trail network. Vehicle access has not been provided beyond the trail access point as the trail system is singletrack/natural soil surface.*

80. Trailhead elements to be paid for by the developer

Response: *Though not legally required, Applicant is will to work with this City in this regard.*

81. City to be granted an access agreement in perpetuity

Response: *Noted. The applicant will work with Parks and Community Development staff to provide the appropriate public pedestrian access easement to the adjacent open space.*

82. Trailhead elements to be construction on the City's timetable

Response: *Noted. The applicant will work with Parks staff to identify the appropriate time to implement trailhead elements related to overall construction schedule, project closeout, and overall public safety related to active construction operations.*

83. Natural surface trail to be constructed by the City

Response: *Noted.*

Parks, Landscaping and Irrigation

84. Please provide an updated plant list with species, locations and quantities

Response: *A fully annotated planting plan will be provided at permit. The applicant has updated the suggested plant list based on information provided by the Parks Department related to species known to be successful in this development. See revised sheet set.*

85. Please provide a detailed permanent irrigation plan.

    Response: *A detailed irrigation plan will be provided at permit submittal.*

86. Plant species not suited to our semi-arid climate or unsuitable selection

    Response: *The suggested species list included in the original submittal is as provided in the GMZDP. The applicant will work with Parks staff to refine the species list based on staff's experience with streetscape and landscape in the overall Meadows development.*

87. With the close proximity of the Community Center we would recommend not building tennis courts

    Response: *The two pickleball courts are included as an amenity for the residents of this complex, and complement the publicly-available facilities at the Community Center.*

88. We strongly recommend inclusion of appropriate outdoor spaces to support the residential needs of the proposed density level. Evaluation of formal complaints to the City demonstrates a necessity for a smaller park with a dog run area, playground, small turf and picnic area.

    Response: *As required by the GMZDP two one acre 1 acre parks have been provided. The parks have been designed to the required standards. The project is also adjacent to a large amount of open space, and is in close proximity to recreation center amenities. The applicant's project team is evaluating opportunities to include a dedicated dog run zone, and additional amenity areas between the buildings will provide a variety of picnic, small turf, and other gathering spaces for the residents of the complex.*

89. For any playground installations we would recommend separate playgrounds that are suited to specific age ranges. (Ages 2-5, 5-12)

    Response: *Noted; the applicant will consider the division of age-appropriate playgrounds as the amenity spaces are designed in greater detail moving forward.*

Parks, Stairway Connections to Glenwood Meadows

90. Due to the north facing aspect of the stairs they should be heated for safe winter maintenance

    Response: *The applicant wishes to avoid the energy input and long-term maintenance of heated stairs, and is studying other methods to accomplish the intent of safe and maintainable stairway (e.g. steel stairs with treads that do not allow for accumulation of snow and ice).*

Engineering, Civil Sheet Set

91. Appears that the legend doesn't match the plans

Response: *Noted and corrected in the updated sheet set.*

92. Question of where drainage will be located (Note: relates to existing swale along the west edge of the project)

    Response: *Drainage plan has been modified to capture the swale. See revised sheet set.*

93. Question if curve is practical with allowable pipe material deflection.

    Response: *Pipe deflection as designed is within specified tolerances from manufacturer; information has been added to utility sheets to illustrate compliance.*

94. Grading not practical through parking

    Response: *Grading as shown is conceptual in nature, with critical slopes along driveways, at the edges of the site, and between building levels identified and evaluated, but with contour information developed at an 'overlot grading' level. Detailed grading will be developed as the project advances.*

95. Curve is sharp (Note: relates to tie-in at Flat Tops View Drive).

    Response: *This intersection has been reconfigured to increase the centerline radius. The tie-in point to Flat Tops View is constrained by the existing storm inlet (on Glenwood Greens), the existing soil nail wall (on Lofts at Red Mountain), and the subject property topography. See revised sheet set. Related: see note 11, this memo.*

96. Question on how intersections should be controlled

    Response: *This intersection has been reconfigured. See note 11, this memo, and revised sheet set.*

97. Gas and electric should have appropriate separation

    Response: *Utility layout has been reconfigured to provide the appropriate separations.*

98. Storm/irrigation/sanitary considered the same and should maintain appropriate separation from potable water

    Response: *Utility layout has been reconfigured to provide the appropriate separations.*

99. Storm should maintain same separation requirements as sanitary. Easements around hydrants and transformers

    Response: *Utility layout has been reconfigured to provide the appropriate separations.*

100. These plans are insufficient and do not comply with CDPHS or the City of Glenwood springs Engineering Standards in many instances. See plan markup for more information

Response: *Plans have been modified to respond to markups; additional detail as required to illustrate compliance with standards will be provided at permit.*

Engineering, Geotechnical Report

101. On page 20 of 30, under surface drainage the report states under bullet point 2 that landscaping of gravel adjacent to buildings should have a minimum slope of 6 inches in 5 feet (or 10%), but in bullet point 5, it states that landscaped areas within 10 feet of the foundation should be sloped at a minimum of 8%. This is inconsistent.

Response: *The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021, and will include a clarification of the slope recommendations.*

102. In general full-depth asphalt is not recommended in this area. As you can see from the meadows Development, it has not performed well over time and meeting subgrade requirements with the native soil is challenging. As these roadways are private and will remain private, the city does not have a requirement for the asphalt within the development, but will require any patches in City ROW to meet the requirements of the City's Engineering Standards. a. The report provides a recommendation for a full-depth asphalt section, but Figure 17 does not provide an exhibit of that section.

Response: *The geotechnical engineer is in agreement that full depth asphalt is not recommended, and is developing updating paving recommendations. The project team's geotechnical engineer is preparing a summary memorandum addressing all geotechnical comments. This memo will be provided to staff by July 9, 2021, and will include updated paving section recommendations.*

Engineering, Drainage

103. Include the original report referenced in the Appendix.

Response: *The original drainage report has been appended to the application materials.*

104. The original study was completed analyzing the development with Type C and D soils, while this analysis uses Type A soils. Please address this within the report.

Response: *This has been addressed in the updated drainage report.*

105. The access road to the west is not fully considered in the analysis.

Response: *The analysis has been updated to include the access road to the west.*

Engineering, Traffic

106. A memo is not acceptable. A TIS will be required for this development. The original study was completed over 20 years ago and only provided a 10-year projection. Additionally, it was not stamped by a Colorado Licensed Engineer.

Response: *The ADA expressly states that a TIS is all that is required of this development application. Please also see our response to comment 1.*

107. **(5/17 Departmental meeting)** CDOT access control plan 8th Street/SH82 and/or Midland/I-70 at exit 114. May exceed capacity of access control permit.

Response: *The City is the holder of the CDOT access control permit. All obligations of the developer were satisfied at the time of annexation.*

December 28, 2020

RE: Glenwood Meadows Multi Family Housing Development

Response to ADA Site Related Design Standards:

1. **Site Layout and development pattern works creatively within the site's natural constraints such as slope, geologic hazards and significant vegetation.**
    - *The primary approach to site layout and grading was to work with the existing natural slope and grading conditions to the greatest extent possible. Several adjustments were made during the design process to ensure that the site grading (cut and fill) was as balanced as possible.*
    - *The existing steep slope from Wulfsohn Rd. up to the project site will be undisturbed.*
    - *Grades around the perimeter of the property, adjacent to the Wulfsohn Mountain Park open space meet existing grade at or before the property line and areas of disturbance will be re-vegetated with native plant material to blend with the open space.*

2. **Parking- counts to be no less than the city of Glenwood Springs standard.**
    - *The development includes a total of 538 parking spaces. 537 spaces are required based on City of Glenwood Springs standards.*
    - *See table on sheet L 1.1 for a more detailed breakdown of the parking requirements and counts.*

3. **Landscaping and Screening: ADA standards meet or exceed City standards. Use ADA standards.**
    - **Required open space 40%**
        - *The total phase 1 area is 27 acres. The total area of the site that will be developed (buildings, roads, parking) is 8.43 Acres. This leaves 18.57 acres of open space on the site equating to 69% open space.*
    - **Open Space Planting**
        - **1 Tree/1200 SF**
        - **4 Shrubs/ 1200 SF**
            - *These calculations have been applied to all disturbed areas of open space in the development and are reflected in the landscape plans.*
    - **Setbacks, Buffers, Screens**
        - **1 tree/ 25LF**
        - **1/3 deciduous**
        - **2/3 evergreen**
        - **10 shrubs/ 25 LF**

            - *These calculations have been applied to relevant areas in the development and are reflected in the landscape plans.*

- **Internal Neighborhood Streets**
    - **1 deciduous tree/ 35 LF evenly spaced.**
    - *The minimum planting standards have been applied to all internal neighborhood streets as you enter the neighborhood. The areas adjacent to open space are designed to meet the natural character and blend with the native vegetation. A formal row of street trees would look out of character and create a contrast with the natural landscape, therefore rows of street trees have not been added in these areas.*
    - *Street trees have also been omitted from areas that are adjacent to the phase 2 property. It is anticipated that this area will be disturbed and developed in the future and that landscaping will be added as a part of the phase 2 development.*
    - *The character of the planting in the native areas for the hillside above Wulfsohn Rd. will be similar to planting found in other parts of the Glenwood Meadows development, in particular the native hillside zone in between Midland Ave and the Glenwood Meadows Shopping center.*

- **Building foundations shall be planted with ornamental plant materials such as ornamental trees, flowering shrubs and perennials, a ground covers and provide variety and year round interest.**
    - *The geotechnical report advises against irrigated plant material within 10' of the building foundations. The landscape plans reflect a "dry zone" at the foundation of the buildings to comply with this recommendation. Flowering shrubs, perennials and ground covers have been located in areas adjacent to the buildings outside of the 10' zone and will be drip irrigated to comply with the geotechnical recommendations.*
- **Development entryways shall be planted with ornamental plant material such as ornamental trees, flowering shrub and perennials and ground covers.**
    - *Planting beds with ornamental plant material have been included at both of the main entries to the development.*
- **Turf areas shall be established by sodding. Un-manicured natural areas may be seeded when adjacent to open space.**
    - *The geotechnical report advises against turf grass due to the higher watering needs. Artificial turf grass is being proposed as an alternative in select areas in the development along with a native seed mix for other areas which has a lower water requirement.*
- **Use xeriscape principles.**
    - *The intent of the planting design is to use xeriscape principles and to use low water plant material to reduce the amount of irrigation needed for the site. The proposed plant list was taken from the Glenwood Meadows ADA design guidelines and will be refined during the design development and construction document phases. The Irrigation plan will be designed by a professional irrigation designer with the intent of creating the most efficient system possible to reduce the amount of watering across the site. The geotechnical engineers will also be asked to review, make recommendations and sign off*

on each iteration of the proposed landscape design to ensure that the planting and irrigation complies with the geotechnical requirements.

4. **No areas for outdoor storage, trash collection or compaction, loading, or other such uses shall be located within 20' of any public street, public sidewalk, or internal walkway.**
    - *A total of 7 trash storage/ collection areas have been provided in the plans. The dumpsters will be enclosed and screened with planting and will not be visible from view. They will be located between parking areas within a reasonable walking distance from the residential buildings. Locations for trash storage and collection areas are limited due to the natural topography and slope of the site.*

5. **Mechanical/ Utility Screening required. – shall be an integral part of the building, not tacked on.**
    - *Condensing units for the buildings will be located within landscape areas and screened from view with shrubs and /or fencing to match the architecture, depending on location.*
6. **Open Space- desire to create an interconnected network of open spaces and parks within residential areas of Glenwood Meadows and provide visual interest and access to a variety of recreational and leisure opportunities.**
    - *An interconnected network of parks and open spaces has been provided throughout the neighborhood.*
    - *There is an internal network of sidewalks connecting the streets and buildings that provides circulation throughout the residential areas.*
    - *Park 1 creates a direct soft surface trail connection to the Wulfsohn Mountain park trails and a second connection to this public trail network is located at the south end of the property.*
    - *A pedestrian/ stair connection has been provided adjacent to W. Meadows drive leading up to the development.*
    - *Walking access from the residential units to the two parks and the open space areas is a primary component of the design.*
7. **Each 1 acre park shall contain at least 1 or more of the following features:**
    - **Multi- use areas**
    - **Community gardens**
    - **Walking paths**
    - **Plazas**
    - **Picnic tables**
    - **Benches**
        - *The plans include (2) one acre parks as required by the Glenwood Meadows ADA*
        - *Park 1 includes walking paths, benches, picnic tables, a community garden and multi-use areas*
        - *Park 2 includes two pickle ball courts, picnic tables, benches, a multi-use area and a children's play area with play equipment.*
8. **Site layout – Residential Specific**
    - *20' setback from front property line*

- *The buildings are set back more than 20' from the property lines.*

- ***Layout shall respect and follow the natural topography of the site to the extent possible.***
  - *The neighborhood has been designed to work with the existing topography of the site to the greatest extent possible.*
  - *The design intent was to meet existing grade at the south end of the site to avoid the need for large areas of cut and associated site retaining walls and to connect the development to the Wulfsohn Mountain Park Open Space.*

- **To the maximum extent practicable, multi- family buildings shall be oriented or arranged in a manner to enclose common open space.**
  - *Common open space is located throughout the neighborhood with common amenity and gathering space area adjacent to the buildings.*
- **Common open space should include**
  - **Gardens**
  - **Courtyards**
  - **Recreation or play areas and at least 3 of the following**
    - **Seasonal planting areas**
    - **Large flowering trees**
    - **Seating**
    - **Pedestrian scaled lighting**
    - **Gazebos or other decorative shelters**
    - **Play structures for children or**
    - **Natural features or areas**
  - *The common open space in the proposed development includes gardens, courtyard areas between buildings, recreation and play areas, seasonal planting areas, seating, pedestrian scaled bollard lighting, play structures for children and natural areas.*

- **Residential neighborhoods adjacent to open space shall incorporate one of more of the following techniques to create a visual transition between development and surrounding open space:**
  - **Staggering building setbacks to create a softer development edge**
  - **Establishing a landscape buffer along the rear or visible edge(s) of the property to create a soft visual edge of the development**
  - **Utilizing a variety of native plant species and planting forms similar to those found on the adjoining open space to create the appearance of a natural transition in the landscape.**
  - *The development includes a native buffer around the perimeter with native plant species to soften the visual edge of the development and transition to the existing native landscape beyond the property line.*

- **The area between the curb an adjacent property line shall be landscaped**

- *The area between the curb and the adjacent property line has been landscaped to match the character of the adjacent property to create a natural transition.*

9. Community Amenities:

- **Minimum ratio of 200 sf/ dwelling unit of internal open space/ outdoor leisure space.**
- **These open spaces/ outdoor leisure spaces shall be improved with a variety of community amenities including, but not limited to the following:**
  - **Community garden**
  - **Grove of trees**
  - **Village green**
  - **Pocket park**
  - **Swimming pool**
  - **Resident clubhouse**
  - **Tots lots**
  - **Basketball, volleyball or sports courts**
  - **Picnic areas**
  - *60,000 sf of common amenity space is required for this 300 unit development. A total of 119,400 sf common amenity space has been provided.*
  - *Common amenities for this development include a community garden, swimming pool, resident club house with fitness center and daycare, a play ground and two pickleball courts.*

10. Parking (location and layout – page 40 of ADA)

- **Parking areas and freestanding parking structures (detached garages and carports) shall not occupy more than 50% of each perimeter street.**
  - *Due to the natural sloping topography of the site, level areas for parking are limited. The proposed parking for this development are located in the available level areas in between buildings and along the perimeter of the streets and exceeds the 50% threshold due to the limitations of the site.*
- **Carports shall be limited to 72' in length, with a maximum of 8 spaces per car port structure.**
  - *A total of 20 garage structures are proposed for this development.*
  - *The 10 garage structures located along the upper road at the south of the development are 72' in length with a maximum of 8 parking spaces.*
  - *The 10 garage structures at the middle and lower roads relate directly to the architecture and are 125' in length with 10 parking space and two bicycle storage areas each. These structures are built into the slope of the hillside with the roof functioning as an outdoor patio and common amenity space for the adjacent residential buildings.*

- **No more than 2 detached garage structures or carport structures shall be located adjacent to each other end to end.**

- *Due to the natural sloping topography of the site, level areas for garages are limited. The proposed garage structures align with the layout of the residential buildings and streets and are located adjacent to each other with a minimum of 10' spacing between structures.*

- **The minimum separation between these structures shall be 10' and the separation area shall be landscaped with at least 1 deciduous tree and ground cover or sod**
  - *The garage structures are separated at least 10' from each other and the separation area is landscaped with at least one tree and ground cover.*

City Site Related Code Standards:

Parking requirements:

- **Clubhouse Building – 1/ 400 square feet for the clubhouse/building area, plus 1 /10,000 square feet site/pool/outdoor area.**
  - *27 spaces are required for the Clubhouse and 28 have been provided.*
- **Residential Units- 1.5 spaces for multi-family, plus 1 guest space per each 5 dwelling units (essentially 1.7 total but confirm count)**
  - *510 spaces are required for the residences and 510 have been provided.*
- **Required number of ADA spaces (National Standards)**
  - *The total number of proposed ADA spaces meets the national standards.*

Bike parking requirements:

- **For developments with more than 150 parking spaces- 9 bike parking spaces plus 1 space for each 50 vehicle spaces provided after the first 150 spaces.**
  - *17 bike parking space are required based on these calculations. 160 bike parking spaces have been provided in the plans for the development.*
- **Distribute evenly among buildings**
  - *Bike parking has been distributed evenly among the buildings.*
- **Must have adequate lighting**
  - *Bike parking is located adjacent to the main entry to the buildings and will be adequately lit.*
- **Bicycle parking spaces shall maintain an access aisle of at least 5 feet and clear of all obstructions.**
  - *Bike parking spaces maintain an access aisle of at least 5' and are clear of obstructions.*

Residential Architecture:

1. **A buildings special architectural features and treatments shall not be restricted to a single façade. All sides of a multi-family building open to view by the public, whether viewed from public or private property, shall display a similar level of quality and architectural interest.**

- *All sides of the multi-family residential buildings include special architectural features and treatment. The buildings are visible from all four sides and each façade displays a similar level of quality and interest.*
- *Three building types have been provided to create variety and interest.*

2. **All multi-family buildings shall be designed to provide complex massing configurations with a variety of different wall planes and roof planes. Plain, monolithic structures with long, monotonous, unbroken wall and roof plane surfaces are prohibited. At least every 50 linear feet, wall planes shall contain offsets or setbacks with a differential in horizontal plane of at least 5 feet.**
    - *A variety of different wall and roof planes have been provided in the design of the buildings.*
    - *Bike parking is located adjacent to the main entry to the buildings and will be adequately lit.*
    - *Wall planes have a setback or offset of at least 5' for every 50 linear feet.*

3. **The maximum length of a multi-family building is 125'**
    - *The building design meets this criteria*

4. **All elevations on multi-family buildings shall contain windows. An eave or an overhang of at least 12" shall be provided on the perimeter of all residential buildings, except gable roof ends, where an 8" overhang shall be required.**

    - *The roof design meets this criteria*

Architectural Detail:

1. **The incorporation of porches, balconies and patio's shall be strongly encouraged for all residential types.**
    - *Balconies and patios have been incorporated into the design of the residential buildings.*
2. **Building entries shall be called out as a prominent streetscape feature for all residential types by extending the front of the main façade and emphasizing with materials and detailing**
    - *The building entries are prominent features in the building design, they extend from the front of the main facades and are emphasized with materials and detailing.*

3. **Garages shall not be a prominent streetscape element. They shall be recessed and/ or oriented towards the rear of the lot.**
    - *The garage structures are located at the rear of the buildings and are not a prominent streetscape element.*

4. **Fronts of buildings shall be articulated through the use of bays, insets, balconies, porches or stoops related to entrances and windows.**
    - *The front of the proposed buildings are articulated though the use of insets, bays, balconies and front stoops related to the entrances.*

MEMORANDUM

To: City of Glenwood Springs Planning Staff

From: Michael Grzesiak, PE

CC: Mike Fellner – BLD Group

Date: 12/2/20

Subject: Glenwood Meadows Multi-Family – Phase 1 – Traffic Impact Statement

This memo shall address the estimated daily traffic trips for the proposed Glenwood Meadows Multi-Family Phase 1 project located in Glenwood Meadows development.

The proposed Glenwood Meadows Multi-Family project is located within Lot 11C-C of the Glenwood Meadows development on the south side of Wulfsohn Road. Proposed construction for phase 1 includes 300 apartment dwelling units and a club house. Access to the development is provided by a proposed extension of Flat Tops View Drive, and an existing curb cut provided on the south side of Wulfsohn Road approximately 1,120 feet northwest of the West Meadows Drive intersection.

Earlier traffic studies for both the Glenwood Meadows PUD project and the Glenwood Meadows Transportation Improvements Plan were completed by The Mobility Group, dated July 27, 2000 and September 14, 2001 respectively. The Glenwood Meadows PUD project traffic study included detailed analysis of existing traffic conditions along with proposed traffic conditions with for the overall PUD development.

The September 2001 Transportation Improvements Plan traffic study focused on a revised, smaller development scope than was originally proposed in the PUD traffic study. The reduced size and number of land uses for the Glenwood Meadows project was analyzed for trip generation and both on-site and off-site transportation improvements. The revised project scope from the original traffic study reduced daily trips by approximately 25% and would have less traffic impacts on the roadway system.

The September 2001 Transportation Improvements Plan traffic study included an apartment land use that accounted for 300 dwelling units and produced a trip generation of 1,546 net external daily trips. The dwelling unit count assumed under that traffic study is concurrent with the proposed 300 dwelling units for the Glenwood Meadows Multi-Family development.

A trip generation analysis was performed using standard rates from Trip Generation, 10th Edition, Institute of Transportation Engineers, 2017 (ITE) and produced approximately 1,306 daily trips. The trip generation analysis can be referenced in the attached Exhibit A.

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The discrepancy of 240 daily trips between the 2001 traffic study and this analysis is due to the average rate used. The 2001 traffic study used an average rate of 6.44 versus 5.44 for this study. The difference in average rates reflects the difference from the older Trip Generation edition and the 2017 10th Edition used for this analysis, specifically updates to the land use data.

Additionally as a check, the other Glenwood Meadows land uses from the 2001 traffic study were analyzed under the 2017 10th Edition. The total weekday daily trips generated by the development total 14,848. This is a net reduction of 769 daily trips. This discrepancy is also attributed to the updated data in the ITE Trip Generation 10th Edition.

An Annexation and Development Agreement (ADA) was drafted and recorded in 2002 which outlined the terms and conditions of the annexation, zoning and development of the Glenwood Meadows development to the City.

Section 3.a. of the ADA: "Non-Specific Assessments/Credits/Fees-in-Lieu of School Land Dedication; Non-Specific Assessments/Credit" states that "Glenwood Meadows, its successor and assigns, shall not be required to pay any future Traffic/Transportation Impact Fee established by the City subsequent to the execution and recordation of this Agreement."

Section 12 of the ADA: "Off-Site Traffic Improvements Obligations" details the required on-site and off-site traffic/transportation improvements and financial contribution obligations of Glenwood Meadows which are listed in subsections 12.(a)-(f).

A Memorandum of Understanding (MOU) for the Glenwood Meadows project was recorded in 2013 that outlined and memorialized the acknowledgements, understandings and agreements between the Glenwood Meadows Owner and City to address the status of provisions of the original ADA.

Section 2 of the MOU identifies that: "At the time of re-subdivision and/or development application with respect to future developments, Owner, or its assignee, shall, as the sole remaining and ongoing obligation under said Section 12 of the ADA, remain responsible for providing to City site-specific development proposal calculations of estimated daily traffic trips for such development, as set forth by sub-section (a) of Section 12. Of the ADA."

This traffic impact statement addresses the site-specific estimated daily traffic trips for the Glenwood Meadows Multi-Family development as detailed above and in the attached Exhibit A. The proposed 300 apartment dwelling units for this project pairs with the approved 300 units under the original 2001 Transportation Improvements Plan traffic study and ADA.

Please feel free to contact us with any questions or comments you may have.

Sincerely,

Michael G. Grzesiak, P.E.

Enc.
Exhibit A –Trip Generation Analysis

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Land Use	ITE Code	Proposed Size	Average Vehicle Trip Ends vs:	Weekday Avg Rate	Weekday Daily	Trip Rate	AM Peak In	AM Peak Out	AM Peak Total	Trip Rate	PM Peak In	PM Peak Out	PM Peak Total
Multifamily Housing (Mid-Rise) (Apartments)	221	300	Dwelling Units	5.44	1632	0.36	28	80	108	0.44	81	51	132
Multifamily Housing (Mid-Rise) (Townhomes)	221	175	Dwelling Units	5.44	952	0.36	16	47	63	0.44	47	30	77
Office	710	90	1000 SF/GLA	9.74	877	1.16	90	15	104	1.14	16	86	103
Shopping Center	820	400	1000 SF/GLA	37.75	15100	0.94	233	143	376	0.44	84	92	176
Total Trips					18561		367	284	651		228	259	132
Minus Linked Trips		20%			-3712		-73	-57	-130		-46	-52	-26
Total Driveway Trips					14848		294	227	521		183	207	106
Minus Pass-by Trips		0%			0		0	0	0		0	0	0
Total New Trips					**14848**		**294**	**227**	**521**		**183**	**207**	**106**

Notes
Data from ITE Trip Generation Manual 10th Edition

AMERICAN GEOSERVICES

Initial Geotechnical Evaluation Report

Glenwood Meadows No.6 Housing, Wulfsohn Rd and West Meadows, Glenwood Springs, CO

Date: July 22, 2020; Project No: 0280-WS2020



AMERICAN GEOSERVICES

GEOTECHNICAL & MATERIALS
ENVIRONMENTAL
STRUCTURAL
CIVIL
ENGINEERING AND SCIENCE

888-276-4027

July 22, 2020

PROJECT NO: 0280-WS20

Client: Mr. Gregg Baumann
BLDGROUP
1500 Cordova Road Suite 300
Ft. Lauderdale, FL 33316

Ref: Initial Geotechnical Evaluation Report, Glenwood Meadows No.6 Housing, Wulfsohn Rd and West Meadows, Glenwood Springs, CO

Dear Mr. Baumann,

At your request, we have completed the initial geotechnical evaluation for the referenced project. Results of our evaluation and design recommendations are summarized below.

PROJECT INFORMATION

The subject property consists of parcels as shown in attached figures. The property is gently to moderately sloping downwards to the north-northeast (NNE) with elevations in the range of approximately 5840-5980 feet above mean sea level (MSL). General vicinity area has a gentle northerly downward slope. Access to the site is via Wulfsohn Rd and the property is located south of it. See attached Figure 1 and Figure 2, aerial photographs, and site photographs for illustrations and visual information on existing site conditions.

The site is currently vacant, undeveloped, and without any residential, commercial, or industrial structures. The adjacent and surrounding area consists of a low density commercial/residential structures. We understand, the proposed development may consist of building multistory residential structures, most likely less than ten stories high. Considering the site topography, we anticipate significant site grading for this project. As discussed below in this report, the site is located in the moderate soil hazard zone and landslide hazard zone or in proximity of geologic

hazards. Therefore, it is imperative that the project team works closely with AGS to assure site stability especially during construction as well as after construction. We anticipate proposed structures will be constructed with moderate foundation loads. High foundation loads (>5000 psf bearing pressures) are not anticipated. If these proposed conditions change, we should be contacted to modify our report.

SCOPE OF WORK

During May through July 2020, several site visits were made, as well as, a total of eleven (11) Standard Penetration Test (SPT) equivalent borings (B1 through B11) were drilled at locations shown in Figure 2. Borehole locations and depths were chosen based on soil conditions, the presence or absence of boulders, accessibility, proposed construction, and the results of our desk study.

Using Standard Penetration Test (SPT) drill rigs, SPT borings were extended to the maximum exploration depth of approximately 50 feet below the existing ground surface where refusal to drilling was noted. The drill rig was equipped with solid-stem and/or hollow-stem continuous-flight augers. The augers were used to advance the boreholes and samples were obtained using standard split-spoon sampler and a California ring sampler. The sampler was driven using an automatic hammer weighing 140 pounds falling a distance of 30 inches. The sampler was first seated into the bottom of the borehole, and then driven 12 inches. The number of blows required driving the sampler 12 inches, or a fraction thereof, constitutes a penetration test and is similar to the SPT testing standards as per American Society for Testing and Materials ASTM D1586. The penetration tests, when evaluated, provide an index to the soil strength and density of the material tested. The penetration test results are shown on the individual borehole log included in an appendix. The Legend and Notes necessary to interpret our borehole logs are also included in an appendix.

After the completion of drilling, boreholes were backfilled with soil cuttings. Samples of subsurface soil materials were collected at regular intervals during drilling. The samples were visually inspected, logged, placed in a sealed container, and transported to testing laboratory for further visual evaluation. Groundwater level measurements were taken during drilling and after the completion of drilling. Data obtained from site observations, subsurface exploration, laboratory evaluation, and previous experience in the area was used to perform engineering analyses. Results of engineering analyses were then used to reach conclusions and recommendations presented in this report.

In addition, Williamson Drive Probe (WDP) apparatus along with soil augers were used to perform soil explorations in some areas based on accessibility issues. The WDP is a “relative density”

exploration device which is used to determine the distribution and to estimate strength of the subsurface soil and decomposed rock units. The resistance to penetration is measured in blows-per-1/2 foot of an 11-pound hammer which free falls roughly 3.5 feet driving the ½ inch diameter pipe into the ground. This measure of resistance to penetration can be used to estimate relative density of soils. For a more detailed description of this geotechnical exploration method, please refer to the Slope Stability Reference Guide for National Forests in the United States, Volume I, EM-7170-13, August 1994, p. 317-321. A representative schematic of WDP is included in appendix along with the published data on correlation between WDP and SPT. The penetration test results are shown on the individual Borehole Log included in the appendix. The Legend and Notes necessary to interpret our Borehole Logs are also included in the appendix.

SUBSURFACE SOIL/BEDROCK CONDITIONS

Subsurface conditions encountered in our boreholes are described in detail in the Borehole Logs provided in an Appendix. Soil classification and identification is based on commonly accepted methods employed in the practice of geotechnical engineering. In some cases, the stratigraphic boundaries shown on Borehole Logs represent transitions between soil types rather than distinct lithological boundaries. It should be recognized that subsurface conditions often vary both with depth and laterally between individual borehole locations. The following is a summary of the subsurface conditions encountered at the site:

Topsoil: Site is underlain by roughly up to 6 inches of topsoil.

Native Debris Fan Deposit: Below topsoil, the site is primarily underlain by generally medium dense to dense mixtures of sands, silt, gravel, cobble, and occasional boulders (ML/GM, GM-ML GM), extending to the maximum depth of exploration. Based on the results of our explorations, our review of available geologic literature, water well logs, and available geotechnical data from past projects in the site vicinity, and our local experience, in our opinion, the debris fan deposit extends to depths of 100-125 feet. These soils exhibit extremely low plasticity or considered non-plastic with minimal expansive/heave potential.

Based on the results of our lab testing and our local experience, these soils have a low to moderate potential for collapse and may results in excessive differential foundation settlements, if proper mitigation and foundation design are not performed as per the geotechnical engineer's recommendations.

Completely to Partially Weathered Eagle Valley Formation: Below the upper debris fan deposit, the site is underlain by completely weathered evaporite sequences interbedded with mudstone, sandstone, and shale extending to several tens of feet. This bedrock material is not

known to cause any sinkholes in the site vicinity area. At the time of our site visits, there was no visual evidence of sinkholes. The site and the immediate vicinity area is not known or mapped as having evaporite-related sinkhole hazards.

GROUNDWATER

Groundwater was not encountered below the ground surface during or after exploration. Based on our experience in the project vicinity area, the stable groundwater table is not expected to be encountered within the anticipated project excavation depths. Groundwater table is not a concern for the proposed development.

These observations may not be indicative of other times or at locations other than the site. Some variations in the groundwater level may be experienced in the future. The magnitude of the variation will largely depend upon the duration and intensity of precipitation, temperature, and the surface and subsurface drainage characteristics of the surrounding area.

LABORATORY EVALUATION

During drilling, SPT soil samples and California Ring samples were collected at strategic depths, sealed in air-tight containers, and transported to the laboratory for visual evaluation and testing. Laboratory tests included the following.

Soil Index Properties: Soil index properties including in-situ moisture content and natural dry density, Atterberg Limits, and the percent of soil passing the U.S. No. 200 sieve or gradations were performed. These results were used for classifying soils into categories of similar engineering properties in general accordance with the Unified Soil Classification System (USCS).

Moisture content tests were performed in general accordance with ASTM D 2216. Test procedure included weighing before and after over-drying, and calculation of water content. Dry density was determined from the select California Ring samples in general accordance with ASTM D2937 procedure. Sample dimensions were determined to calculate volume, the sample was weighed, and moist unit weight was calculated. Dry density was then estimated based on moist unit weight and moisture content. Atterberg Limits were determined in general accordance with ASTM D4318. Tests included the determination of Liquid Limit, Plastic Limit, and the estimation of Plasticity Index.

Swell-Consolidation Tests: One-dimensional swell-consolidation tests were performed in general accordance with ASTM D 4546 Method B. California Ring samples were extruded and loaded in a fixed ring consolidometer which measures vertical change in volume for different

loading conditions. Pore water was allowed to drain from the top and bottom of the sample. Samples were inundated with water at a particular loading condition and then allowed to swell. The swelled sample was loaded down to reach the original volume. Each sample was prepared and placed in a confining ring between porous discs, then subjected to a surcharge pressure of up to 1,000 psf and allowed to consolidate before being submerged. The sample height was monitored until sample deformation was minimal under the given load increment. Results of the swell-consolidation tests are plotted as a curve of the final strain at each increment of pressure against the log of the pressure. The results of all the laboratory tests are mentioned on the borehole logs.

LANDSLIDE HAZARDS CONSIDERATIONS

Based on the results of our site reconnaissance, geologic literature review, and limited subsurface exploration, we have performed a preliminary geologic hazards evaluation for the site. The site should be developed considering the geologic hazards discussed below, and a final detailed geologic hazards evaluation should be performed after the project design is made available for review.

Landslides: Our review of available geologic maps and landslide hazard maps did not indicate that landslides had occurred at the site or in the site vicinity area, and the site is not located within the existing known landslide area. During our site reconnaissance and in the available geologic and geologic hazards maps, landslide features were not mapped within the site boundary area. Our site reconnaissance did not reveal any significant potential for slope failures at the site. At present, there are no visual signs of slope failures such as tension cracks, several bent trees, unusual drainage patterns and vegetation, deep ground cracks, headscarp areas, leaning retaining walls, or significant settlements or movements in any existing structures, etc.

However, in general, the site vicinity area to the south of the subject site is close to or within the zone designated as having landslide potential. The site itself has not been subjected to the deep-seated landslides or slope failures. However, the closest landslide hazard area of concern is located just a few hundred feet to the south and uphill of the site boundaries as shown in Figure 6.

Evaluation of ancient landslide analysis was beyond our scope of services. In general, any ancient landslide mass (If present) or landslide deposit (if present) or mapped geologic hazard areas are more likely to become unstable, relatively, compared to the areas that are not mapped as geologically hazardous. It is possible that there have been historic landslides, deep-seated landslides, or recently developed landslides (however inactive) present within or in the immediate vicinity of the site boundaries, or in the site vicinity area. Historically, for sites located within such

critical slope areas next to lakes on steep slopes, there is an inherent higher risk associated with future ground movement and associated structural distress. The owner/client should be aware of this inherent risk and should assume the entire risk.

Inherent Risk: Considering the site topography, site geologic conditions, and current surface and subsurface conditions, it is our opinion that the immediate site and the vicinity area have some 'inherent' risk associated with slope instability and structural impact from local slope movements. Moreover, historically, with construction in such areas, there is always an inherent risk associated with ground movement and/or settlements and related structural damage. The owner should understand these inherent risks. If the owner wants to better understand the risks and to eliminate the site-specific landslide hazard risks, then a detailed and comprehensive geotechnical evaluation including deep drilling, inclinometer installations, detailed slope stability modeling, and a detailed geologic hazards assessment (including global landslide hazards evaluation) should be performed to quantify the abovementioned risks and to provide detailed geotechnical design recommendations for comprehensive mitigation measures. Unless these recommended studies are performed, the owner is completely responsible for taking all risks associated with any future potential for instability at the site or in the site vicinity.

Life Safety Risk: We evaluated available historic aerial photographs and published maps including geologic maps, USGS quadrangles and topographic maps, and City/County GIS data. The landslide terrain and the vicinity area are such that, under normal conditions, there exists some potential for a future shallow slope failure, based on the slopes, distance to the fault zones, local geology, and especially if excessive cuts or grading or roads or extensively modifications of the terrain by anthropogenic activity, and forest loss occurs. However, in our opinion, the life safety risk to the occupants from such a shallow slide is extremely low provided all our recommendations given in this report are strictly followed.

There is a likelihood of the occurrence of an event of a size and in a location that would cause casualties, damage, or disruption to an existing standard of safety at the site, especially during a seismic event; although a detailed slope stability analyses under seismic conditions was beyond our scope of services. The project site vicinity conditions are landslide-prone area during seismic event, and thus the expected location and extent of the effects of the activation of any slides within site vicinity area exists under poor construction practices and especially under the absence of geotechnical oversight. The anticipated severity of the landslide activation effects on the on-site structures and future structures can be determined only by performing extensive subsurface explorations and detailed slope stability analyses under static and seismic conditions for the site vicinity area including the site area.

Historically, with construction in such areas, there is always an inherent high risk associated with ground movement and/or settlements and related structural damage. Again, it is important that the owner understands these inherent high risks. The owner is completely responsible for taking all risks associated with any future potential for instability at the site or in the site vicinity.

Limitation of Liability: There has been a certain amount of variability in legal interpretations of liability of geotechnical engineers and geologists in regard to landslide-related losses; but the conclusions reached are general in nature and not necessarily valid in any specific court. Liability of geotechnical engineers and engineering geologists for landslide damages to home sites is based most often on the theory of negligence and occasionally on negligent misrepresentation. Although allegations seeking to recover damages from geotechnical engineers and geologists on the basis of strict liability, breach of warranty, or intentional misrepresentation are often included in a complaint, they are not usually applicable or valid under normal circumstances. All private property owners should make a note of this.

The conclusions and recommendations given in this report are valid only if AGS services are retained to provide a detailed landslide and rockfall hazard evaluation and detailed geotechnical design report, and only if AGS performs construction observations and testing services during construction. It is our assumption that the current client will retain this project for at least 10 years. If the project and/or property ownership changes, AGS must be contacted to evaluate the limitations of liability and project consulting limitations. It should also be noted that a detailed rockfall hazard evaluation or 'global' landslide hazard evaluation was not part of the current scope of work. Moreover, **AGS has not reviewed or approved any landslide hazard or rockfall hazard mitigation or drainage improvements completed for the uphill properties to the south. We understand these improvements were completed in the recent past (<50 years) after rockfall and/or landslides had occurred in steep slope area present to the south of the site as shown in Figure 6. The stability of the subject property depends upon the stability of the uphill properties. At your request, AGS can perform an extensive review, evaluation, and approval of all the improvements made uphill of this subject property and confirm whether additional mitigation is required or not to protect the subject property from landslide hazards and rockfall hazards.**

ROCKFALL HAZARD CONSIDERATIONS

Site is not located within high rockfall hazard zone, however, the area immediately adjacent to the southern site boundaries, there is a high rockfall hazard potential. **At the time of our site visit, we noted several erratic boulders, up to 5 feet in diameter in areas adjacent to the southern site boundary but not within the subject property. Some of these boulders might have crossed the earthen berm that was constructed in the recent past (<50 years) to**

mitigate the landslide and rockfall hazards present in the steep to extremely steep slopes present adjacent to the south of the property boundary. Therefore, unless a detailed rockfall hazard evaluation is performed for the subject property in consideration of the presence of extremely steep slopes and erratic bounders, in our opinion, a low to moderate potential for rockfall hazard exists. For planning purposes, a rockfall hazard mitigation fence/barrier wall may be considered along the southern property boundary.

A detailed rockfall hazard assessment was not performed; therefore, in order to completely eliminate the rockfall hazards, we should be contacted to perform a detailed rockfall hazard study of the site and the adjacent steep to extremely steep slope areas. Following procedures will be used by AGS to assess rockfall hazards at the site.

- Climbing techniques will be utilized to scale the rock faces and to evaluate problem areas through field observations which will include:

    a. Identifying source areas for rock falls,

    b. Recording the degree of weathering, jointing, faulting, dipping, folding, and deformations of rockmass in source areas,

    c. Noting the freshness of talus deposits, and

    d. Identifying visual indications of recent rockfalls (tree scars, roadway damage, etc).

- Digital pictures of potential problem areas will be taken and evaluated by AGS for potential rockfall hazards.
- Available geologic literature and rockfall hazard literature will be reviewed.
- Relative rock-fall susceptibility will be evaluated using an engineering rock-classification scheme known as Rock-Mass Quality. This scheme is based on the characteristics of rock discontinuities such as joints, fractures, and bedding planes.
- Preliminary digital simulations will be conducted using the Colorado Rockfall Simulation Program (CSRP-3D) to understand the mechanics of potential rockfalls.

Preliminary Slope Stability: Using the results of limited subsurface exploration, laboratory evaluation, and site reconnaissance data, we analyzed on-site slopes by performing preliminary slope stability analyses. We used the software SLOPE/W to model on-site slopes, subsurface soil conditions, and the impact of proposed construction on the stability of the site. Based on the results of our preliminary evaluation, we make following recommendations.

- There is a low potential for shallow slumps or slope failures provided proper geotechnical design and well-monitored construction activities are used to develop the site. Provided proper geotechnical design is done, and all our recommendations are strictly followed, the site will remain stable after proposed construction. Although the potential is low, minor localized and shallow slumps may occur in areas steeper than 2.5H(Horizontal):1V(Vertical); however, their occurrence will not impact the stability of the proposed structures provided they are properly located and designed in accordance with our recommendations given in the following paragraphs.
- All proposed structures should be located **at least 25 feet** from the crest of any slope areas steeper than 2.5H:1V. At the time of construction, AGS should inspect the foundation location and confirm the presence of adequate slope setback.
- Storm water disposal regulations of the local county and the city, and general drainage recommendations given in following sections should be strictly followed.
- In general, areas with moderate to steep slopes present greater construction difficulties. These areas can easily become unstable as the result of poorly planned or non-engineered construction activities such as cuts and fill. Therefore, these areas should not be considered for development or disturbed without a detailed review of site grading plans and house plans by the project geotechnical engineer, and slope stability analysis and foundation design as required once the site grading plans and house plans are completed.

Results of our preliminary slope stability analyses are included in the appendix. However, these results must be confirmed by performing a detailed geotechnical evaluation, extensive laboratory testing program, soil strength parameter determination and confirmation, and risk analysis. The given slope stability results are meant to be used only for planning purposes and not for the project design purposes.

Earthquakes: Based on site geology, topography, and our preliminary evaluation, in our opinion, the site is generally not considered to be located within highly active seismic area. Therefore, anticipated ground motions in the region due to seismic activity are relatively low and do not pose a significant hazard. Ground accelerations more than 0.1g to -0.2g are not anticipated to occur at the site.

Based on the results of our subsurface explorations and review of available literature (Current international Building Code), in our opinion, a site classification “D” may be used for this project. However, this site classification may be revised by performing a site-specific shear wave velocity study.

Subsurface soil conditions at the site are not susceptible to liquefaction. Seismically induced slope instability may occur on a localized scale in the steep slope areas; however, such an evaluation was beyond our scope of services. A detailed seismic hazards evaluation of the site was beyond our scope of services

Expansive Soils and Bedrock: The site is not underlain by expansive clayey soils or clayey sedimentary bedrock materials. In any case, if expansive soil pockets are encountered, mitigation of expansive soils will require over-excavation and replacement with non-expansive soils placed and compacted at a minimum of 95% of its maximum Standard Proctor Dry Density, ASTM D-698. As an option, the use of drilled pier foundation may be considered. Floor slabs on expansive soils should be expected to experience movement. Over-excavation and replacement has been successful in minimizing slab movements. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be determined after an open-hole inspection is performed by AGS during construction.

Collapsible Soils: The site is most likely underlain by collapsible soils at random locations. In any case, if collapsible soil pockets are encountered, they will require surficial densification or over-excavation and replacement with non-collapsible soils placed and compacted a minimum of 95% of its maximum Standard Proctor Dry Density, ASTM D-698. Refer to geotechnical discussion given in this report regarding collapsible soil potential and recommended mitigation options.

Man-made soils or Artificial Fill: These consist of man-made fill deposits associated with erosion berms and earthen dams. These areas were not present at the time of site reconnaissance. Any earthen dam should be avoided during development unless significant grading is required in the drainage areas. Mitigation of drainage areas is discussed in the following paragraphs.

Seasonal & Potentially Seasonal Shallow Groundwater Areas: These areas have periodically high subsurface moisture conditions and frost-heave potential. In general, these areas lie within the drainages and low-lying areas. These areas are not present at the site. The site is not located within any mapped floodplain zones according to the FEMA Maps. A detailed flood hazard evaluation, or the determination of exact locations of floodplain and specific drainage studies were beyond our scope of services. In any case, as a minimum, finished floor elevations must be at least one foot above the 100-year floodplain elevations. If seasonal shallow groundwater areas are noted during construction, following mitigation measures should be implemented.

Foundations should be placed at least 36 inches below the finished exterior grade for frost protection. In areas where high subsurface moisture conditions are anticipated periodically,

subsurface perimeter drains should be installed to mitigate water intrusion into areas below grade. Proper grading (minimum 2%) should be done to direct surface water run-off around construction to avoid soil saturation or ponding.

Any organic material (including topsoil) should be completely removed from the construction area prior to the placement of fill.

Any potentially seasonal shallow groundwater areas may experience high subsurface moisture conditions and frost-heave potential. These lie within the drainages and low-lying areas and should be avoided using proper development methods or properly mitigated as discussed above. At the site, the potential does not exist for high groundwater during high moisture periods.

Flooding: Our review of available flood hazards map and literature did not indicate that the site is susceptible to flooding due to river, or due to any perennial and intermittent tributaries across the project area. Notwithstanding, a detailed flood hazard evaluation was beyond our scope of services.

Erosion & Gullying: The areas that are undergoing severe erosion by water and sheetwash producing gullies and rill erosion were noted during reconnaissance. Only minor areas of erosion were observed on site at random isolated locations such as the debris flow or drainage fans or gullies. Notwithstanding, due to the nature of on-site soils, majority of the site is subject to erosion by wind and water, unless proper geotechnical measures are implemented during construction. The presence of vegetation generally reduces the potential for erosion. Prior to or during construction, if eroding areas are identified, they should be mitigated using check dams, regrading, and revegetation using channel lining mats and erosion mats to anchor vegetation and promote vegetation. Specific recommendations pertaining to revegetation should be provided by a qualified landscape architect and/or the Natural Resource Conservation Service (previously Soil Conservation Service) officials.

Erosion Control: On-site soils are mildly to moderately susceptible to wind erosion, and moderately to highly susceptible to water erosion. During and immediately after construction, minor wind erosion and dust may occur. This minor hazard may be mitigated by watering exposed and cut areas or the use of a chemical palliative may be considered to control dust. In our opinion, after the completion of construction and re-vegetation at the site, the wind erosion hazard will be significantly reduced.

Any exposed or loosely compacted soils will be the most susceptible to water erosion. In general, residually weathered soils and weathered bedrock materials are significantly less susceptible to water erosion than alluvial soils. For on-site alluvial soils, water erosion hazard can be minimized

by limiting velocities for unvegetated and unlined earth channels to 3 to 4 feet/second, depending upon the sediment load carried by water. Allowable velocities can be increased to 4 to 7 feet/second provided adequate vegetation is used; final numbers depending upon the type of vegetation established. If anticipated velocities exceed these values, channel lining material or conventional riprap may be used to reduce erosion potential. In areas where ditch-lining materials are inadequate to control erosion, small check dams or sediment traps may be used. Check dams generally reduce flow velocities as well as provide small traps for containing sediment. A drainage engineer or civil engineer should determine the amount and location for the placement of ditch linings, check dams, and any special erosion control features.

We anticipate sheetwash and rill erosion in the proposed cut and fill slope areas unless these areas are properly re-vegetated. It should be noted that the unchecked rill erosion eventually leads to concentrated flows of water, which result in gully erosion. Therefore, adequate re-vegetation of cut and fill slope area is important. Cut and fill slope areas steeper than 3H:1V are increasingly more difficult to revegetate. Such areas should be revegetated based on the specific recommendations given by a qualified landscape architect and/or the Soil Conservation Service official.

SEISMIC CONSIDERATIONS

Based on the results of our subsurface explorations and review of available literature (current International Building Code), in our opinion, a site classification “D” may be used for this project. However, this site classification may be revised by performing a site-specific shear wave velocity study. We do not anticipate seismically induced significant liquefaction potential at the site. However, seismically induced slope stability and rockfall hazards may be present and can be fully evaluated only by performing a detailed site-specific seismic hazards evaluation.

GEOTECHNICAL CONSIDERATIONS

Following site conditions pose geotechnical concerns for the proposed construction.

- The presence of potentially collapsible soils in the upper 10-15 feet which are not suitable for foundation support without soil modifications.
- The need for soil modifications, the presence of moderate slopes, and the presence of debris fan deposit, requiring extensive geotechnical oversight during project civil and structural design and during earthwork/construction.
- The presence of erratic boulders north of the existing and recently built rockfall barrier/berm, suggesting that there is a possibility of some boulders to reach the southern site boundary.

These site conditions can lead to significant differential movements (geotechnical risk) or structural distress unless proper geotechnical design and construction methods are implemented. In order to address the geotechnical risk, following geotechnical considerations must be considered.

Basement or Below-Grade Construction: Due to the presence of unsuitable potentially collapsible soils in upper 10-15 feet, basement or below-grade construction will facilitate the automatic removal of unsuitable soils and optimize the foundation costs. If below-grade construction is not proposed, then following ground improvements should be considered for site development. Without value engineering and significant involvement of a geotechnical engineer during the design and construction process, below-grade construction is not recommended.

Ground Improvements: If basement or below-grade construction is not proposed, then ground improvement would be necessary for soils present in the upper 10-15 feet. We suggest following options for ground improvement.

a. No over-excavation option: Use rammed aggregate piers, stone columns, geopiers, or similar methods which compact the soils during installation. We do not anticipate or recommend the depth of these special foundation systems to exceed 50 feet without a detailed value engineering analysis.

b. Shallow over-excavation and backfilling option: Over-excavation of unsuitable soils in upper 5-10 feet (depending upon the building location) and backfilling with geogrid-reinforced structural fill prism. The use of geogrid reinforced structural fill prism is recommended to minimize differential settlements and to significantly improve bearing capacity, while reducing the depth of over-excavation.

c. Deep over-excavation and backfilling option (no geogrid): Over-excavation of unsuitable soils in upper 15 feet and backfilling with compacted structural fill is another viable option, however it may prove to be costly, due to required shoring and excavation related costs. The depth of over-excavation can be reduced after the completion of additional analyses and the review of project plans, including grading plans.

d. Geopolymer (such as **URETEK** or equivalent) injection option: This option may be used in conjunction with shallow over-excavation to further improve bearing capacity and reduce differential settlement potential.

Once a particular ground improvement method or a combination of methods is chosen, and the project plans are made available for review, at your request, we can provide detail design and construction recommendations for ground improvements. A specialty contractor must evaluate the applicability of their ground improvement technology for subsurface soil conditions described earlier.

Conventional Shallow Footings or Post-tensioned Mat Foundation Considerations: After ground improvement, proposed building can be supported on conventional shallow footings or post-tensioned mat foundation. Provided ground improvements are made as stated above, a post-tensioned mat foundation (instead of a conventional mat foundation) is a preferred option. Designer should pay attention to possible settlements in areas adjacent to the site due to mat foundation. It should be noted that the bearing capacity value and all other design values for the mat foundation design will depend upon the location of the mat foundation and the type of ground improvement chosen.

Deep Foundation Considerations: We do not recommend the use of deep foundations such as drilled piers or driven piles or augercast piles for the following reasons:

- Due to the presence of collapsible soils, there will be significant negative skin friction, as well as the use of casing may become necessary, thus increasing the costs significantly.
- Due to the possibility of the presence of boulders at random depths, drilling or driving the piles will be difficult and very costly.
- The end bearing strata for conventional deep foundation systems is expected to be at least 100 feet below the ground surface, thus making the use of conventional deep foundations not only the costliest but also the least effective foundation choice.

Geotechnical Design Parameters: AGS will provide various geotechnical design parameters after the review of proposed civil drawings during the design phase of the project.

CONVENTIONAL SHALLOW SPREAD FOOTINGS

This option can be used provided the owner is willing to take low risk of future differential movement related structural damage due to the presence of potential collapsible soils. In order to manage the risk to some level, following recommendations may be used for construction:

- Foundation subgrades should be prepared as follows assuming favorable weather conditions:
    a. Over-excavate the foundation areas to a depth determined by AGS for each building during the design phase of the project. AGS will provide detailed recommendations on slopes of over-excavation, depth of over-excavation, and backfilling with structural fill using on-site soils to reduce earthwork costs. As a minimum, all the structural fill should be compacted to at least 95% and up to 100 of ASTM D698 maximum dry density as discussed in the fill compaction section of this report. Any non-soil materials encountered in the foundation subgrade level should be removed and backfilled with structural fill.
    b. AGS will perform detailed geogrid-reinforced soil prism analysis and make specific recommendations on the type and number of geogrid layers to be placed within the

structural backfill to minimize the collapsible soils hazards and to improve soil bearing capacity at the same time.

c. Over-excavation recommendation may be modified based on the results of an open-hole inspection to be performed by AGS during construction to evaluate subgrade soil moisture conditions, soil consistency, and soil uniformity.

d. If specific soil conditions are encountered at the foundation level throughout the site during an open hole inspection, AGS may be able to eliminate the above over-excavation requirement and recommend other procedures such as uniformly wetting the subgrade to obtain certain soil moisture content range and surficial compaction/kneading with a kneading compactor. In any case, if recommended, subject to open hole inspection, all subgrade wetting work should be done in the presence of AGS in order to avoid over-saturation of soils and foundation subgrades.

- Foundations bearing upon properly prepared and approved subgrade may be designed for a maximum allowable bearing pressure of **3,000 - 5,000 pounds per square foot (psf)** based on the geotechnical design during the design phase of the project.
- Estimated final structural loads will dictate the final form and size of foundations to be constructed. However, as a minimum, we recommend bearing walls be supported by continuous footings of at least 16 inches in width. Isolated columns should be supported on pads with minimum dimensions of 24 inches square.
- Continuous foundation walls should be reinforced in the top and bottom to span an unsupported length of at least 8 feet to further aid in resisting differential movement. As a minimum, additional reinforcement as shown in Figure 13 should be placed.
- Exterior footings and footings in unheated areas should extend below design frost depth of 36 inches.
- Foundation/basement walls (if used) should be adequately designed as retaining walls and adequate drainage measures as illustrated in Figure 14.

We estimate total movement/heave for foundations designed and constructed as discussed in this section will be 1.0 inch – 1.5 inch, with differential settlements on the order of one-half to three-fourths of the total settlement.

POST-TENSIONED MAT FOUNDATION

Provided ground improvements are made as stated above, a post-tensioned mat foundation may be used to further reduce to potential for differential movement.

Allowable Bearing Capacity and Settlements: It should be noted that the allowable bearing capacity value for the mat foundation design will depend upon the location of the mat foundation and ground improvement techniques. Following bearing capacity values may be considered for preliminary design:

Case 1(Preferred): Post-tensioned mat underlain by 5-foot thick geogrid reinforced fill prism (base layer), which in turn, is underlain by recompacted on-site structural fill…… …..**Up to 5,000 psf***

Case 2: After ground improvement is completed using rammed aggregate piers, stone columns, or geopiers; no over-excavation……..…..**Up to 3,250 psf***

Case 3: Basement or below grade construction; no ground improvements, allowable bearing capacity at 10-15 feet below existing grade……..……**4,000-5,000 psf**

*Ground improvement design to be done by AGS or reviewed and approved by AGS.

The above recommended allowable bearing pressures may be increased by 1/3rd for transient loads. Provided these recommendations are followed, we have estimated total settlements may be in the range of 0.75-1.25 inches for an assumed rigid mat of 150 FT X 250 FT plan dimensions for the given maximum bearing pressures resulting from symmetrically distributed column loads. Differential settlements between the center of the mat and edges and corner of the mat are estimated to be approximately 1/2 to 3/4th of the maximum total settlements. Given estimates must be confirmed after the review of foundation plans including project loading data.

The above settlements are based on elastic theory and the assumption that the mat will be rigid for all practical purposes. The rigidity of mat foundation is a function of soil-structure interaction. It depends upon the modulus of subgrade reaction of soil, mat dimensions, column spacing, and the rigidity of the superstructure. Therefore, AGS should perform settlement analyses after the review of foundation plan and structural design data, to confirm given settlement estimates. If the mat cannot be considered rigid, AGS will compute the soil pressure distribution using soil-structure interaction model such as 'the beam on an elastic foundation' and evaluate the settlement pattern of the proposed foundation using an iterative process.

For preliminary settlement analyses by others, a modulus of vertical subgrade reaction value (K) of 300 pci may be used for structural fill to be placed underneath the mat. This modulus value is based on a 1-Foot square plate, therefore, it must be corrected for the mat shape and size as per the project plans. In addition, the K value may be modified by AGS depending upon the chosen soil modification technique.

The bottom of mat foundation should be placed at least 3 feet below the finished exterior grade. Prepared mat foundation subgrades should be inspected and approved by AGS prior to the placement of concrete.

At your request, AGS will provide detailed design parameters and recommendations for a post-tensioned mat foundation.

SLAB-ON-GRADE

As per the CAGE (Colorado Association of Geotechnical Engineers) guidelines, the "Slab Performance Risk" associated with heaving of native soils is "Low" due to the absence of expansive soils near the surface. Slab-on-grade is a viable option; however, the owner should be aware that there is always some potential risk associated with slab movement, especially if the site is underlain by fill and/or if site modifications as described earlier are not completed. In order to minimize the risk of slab movement, we recommend over-excavation of existing potentially collapsible soils to a depth of at least 5 feet and backfilling with structural fill reinforced with geogrid. Depth of over excavation will depend upon site grading and slab loading. The use of geogrid reinforcement may also become necessary due to the possibility of the presence of variable fill depths. AGS should review the final project plans including slab loading and confirm that excessive settlements will not occur.

A slab-on-grade supported on subgrades after the completion of ground improvements as described earlier, a structural slab, or a post-tensioned slab (PTS) slab is always a more reliable option, especially if the owner is not willing to assume any risk associated with excessive differential slab movement.

For design of floor slabs, a modulus of subgrade reaction of 300 pounds per cubic inch (pci) may be used provided slab-on-grade is placed on properly prepared subgrades. This value can be modified after the project plans are finalized.

We recommend that the construction measures outlined in the following paragraphs be followed to reduce potential damage to floor slabs, should wetting of the subsurface soils occur:

- Prior to the placement of any structural fill, scarify the slab subgrade to a depth of 8 inches, surficially compact it to 95% of the Standard Proctor (ASTM D698) maximum dry density at moisture content within 2% of the optimum, and then proof-roll the subgrade in the presence of AGS representative. Place the structural fill as per the fill placement recommendations given in this report, after the subgrade is approved by AGS representative. Proof-rolling may be performed using a full water truck or a front-end loader with a loaded large bucket.

- Separate floor slab from all bearing walls and columns with expansion joints to allow unrestrained vertical movement. Under any circumstances, floor slab should not extend beneath exterior doors or over foundation grade beams without saw cutting the slab at the beam after construction.

- Frequent control joints should be provided at appropriate spacing to reduce problems with shrinkage and cracking according to ACI specifications. Control joint spacing is a function of slab thickness, aggregate size, slump and curing conditions. The requirements for concrete slab thickness, joint spacing, and reinforcement should be established by the project designer, based on experience, recognized design guidelines and the intended slab use. Placement and curing conditions will have a strong impact on the final concrete slab integrity.

- Floor slabs should be adequately reinforced for given loading and to control cracking.

- The need for a vapor barrier will depend on the sensitivity of floor coverings to moisture. If moisture sensitive floor coverings are proposed for portions of the proposed structure, a capillary break material, typically consisting of a "clean" gravel, should be considered. We can provide additional recommendations if this is the case.

- Provided gravel is desired below the slab, a layer of 4 to 6 inches can be used. Plumbing passing through slabs should be isolated from the slabs and provided with flexible connections to allow for movement. A positive bond break should be provided where plumbing lines enter through the slab. Under slab, plumbing should be avoided if possible and should be brought above the slab as soon as possible. Any drain lines and plumbing lines should be tested before operations.

- Where mechanical equipment and HVAC equipment are supported on slabs, we recommend provision of a flexible connection between the furnace and ductwork with a minimum of 1.5 inches of vertical movement.

- Sidewalks and other exterior flatwork should be separated from the slab and the slab should be designed as an independent unit.

RETAINING WALLS

Foundation walls and basement walls (if used) should be designed to be rigid (unyielding), and not free to rotate. Retaining walls such as elevator pit walls or other similar structures extending below ground floor level that are not supposed to have deflection should be designed for at-rest conditions in accordance with soil design parameters to be provided by AGS during the design phase of the project. If needed, only imported granular backfill meeting CDOT Class 1 structural backfill may be used. Attached Figure 15 and Figure 16 may be used to assist in estimating for

lateral pressure calculations. We should be contacted to provide additional recommendations for any specific site retaining conditions. In addition, we highly recommend AGS reviews retaining structure designs performed by others to facilitate design optimization and value engineering.

Retaining wall backfill should be placed in strict accordance with our earthwork recommendations given below. Backfill should not be over-compacted in order to minimize excessive lateral pressures on the walls. As a precautionary measure, a drainage collection system (drains or geosynthetic drains) should be included in the wall design in order to minimize hydrostatic pressures. A prefabricated drainage composite or drain board such as the MiraDrain 2000 or an engineer-approved equivalent may be installed along the backfilled side of the basement foundation wall.

For preliminary design, foundation walls and basement walls, if used, should be designed to be rigid (unyielding), and not free to rotate. Retaining walls for at-rest conditions can be designed to resist an equivalent fluid density of 55 pcf for on-site materials. Retaining walls for unrestrained conditions (free lateral movement) can be designed to resist an equivalent fluid density of 45 pcf for on-site fill materials and 35 pcf for imported granular backfill or CDOT Class 1 structural backfill. For passive resistance of unrestrained walls, we recommend passive resistance of 300 psf per foot of wall height. A coefficient of friction value of 0.35 may be used for contact between the prepared soil surface and concrete base.

The above recommended values do not include a factor of safety or allowances for surcharge loads such as adjacent foundations, sloping backfill, vehicle traffic, or hydrostatic pressure. The above recommended values do not include hydrostatic pressures as they are based on drained conditions. We should be contacted to provide additional recommendations for any specific site retaining conditions.

SUBSURFACE DRAINAGE

High groundwater table was not encountered during or after the completion of drilling. Nonetheless, proper subsurface drainage is important for long-term performance of the proposed structures.

- A perimeter drain/dewatering system should be installed to reduce the potential for groundwater entering into foundation and slab areas. The lot-specific perimeter dewatering systems should be meticulously designed and connected to the suitable discharge from the lot.

- The subgrade beneath a structural floor system (if any) should be graded so that water does not pond. In addition, drain laterals that span the crawl space are recommended to prevent ponding of water within the crawlspace.
- As a minimum, the subsurface drainage system should consist typically of 4-inch minimum diameter perforated rigid PVC pipe surrounded by at least one pipe diameter of free draining gravel. The pipe should be wrapped in a geosynthetic to prevent fine soils from clogging the system in the future. The pipe should drain by gravity to a suitable all-weather outlet or to a meticulously designed area underdrain system. If an outlet or area underdrain is not available, the subsurface drainage system should be sloped to sump pits with sump pumps having standby capacity in the event of pump failure.
- Surface cleanouts of the perimeter drain should be installed at minimum serviceability distances around the addition. A properly constructed drain system can result in a reduction of moisture infiltration of the subsurface soils. Drains which are improperly installed can introduce settlement or heave of the subsurface soils and could result in improper surface grading only compounding the potential issues.
- The entire design and construction team should evaluate, within their respective field of expertise, the current and potential sources of water throughout the life of the structure and provide any design/construction criteria to alleviate the potential for moisture changes. If recommended drain systems are used, the actual design/layout, outlets, and location should be designed by AGS. The construction means and methods should be observed by a representative of AGS.

SURFACE DRAINAGE

Proper surface drainage should be maintained at the site during and after completion of construction operations. Based on the intended use of the proposed facility, all drainage recommendations provided local, state, and federal regulatory agencies should be strictly followed.

- It is important to follow these recommendations to minimize wetting or drying of the foundation elements throughout the life of the facility. Construction means and methods should also be utilized which minimize improper increases/decreases in the moisture contents of the soils during construction.
- The ground surface adjacent to buildings should be sloped to promote rapid run-off of surface water. We recommend a minimum slope of six inches in the first five horizontal feet for landscaped or graveled areas. These slopes should be maintained during the service life of buildings.

- Landscaping should be limited around building areas to either xeri-scaping, landscaping gravel, or plants with low moisture requirements. Irrigation should be minimal and limited to maintain plants. Roof downspouts should discharge on splash-blocks or other impervious surfaces and directed away from the building. Ponding of water should not be allowed immediately adjacent to the building.
- Upper 2 feet of exterior grading or landscaping fill placed immediately adjacent to the building (within 10ft) should be relatively impervious to minimize water infiltration adjacent to the building. Do not use plastic membrane in lieu of impervious fill to cover the ground surface.
- Again, positive drainage away from the new structures is essential to the successful performance of foundations and flatwork and should be provided during the life of the structure. Paved areas within 10 feet of structures should slope at a minimum of 2 percent away from foundations, and landscape areas within 10 feet of structures should slope away at a minimum of 8 percent.
- Downspouts from all roof drains, if any, should cross all backfilled areas such that they discharge all water away from the backfill zones and structures. Drainage should be created such that water is diverted away from building sites and away from backfill areas of adjacent buildings.

See Figure 14 for typical drainage details for shallow footings, which may be used wherever applicable. At your request, we can provide specific drainage recommendations after the review of detailed project plans, including civil engineering drawings. For any underground retention/detention structures, we should be contacted to review and approve the civil drawings and to evaluate leakage criteria, if any.

GENERAL EARTHWORK

At the time of report preparation, grading plans were not available. If cuts and fills will exceed 4 feet of depth, we must be contacted for specific earthwork recommendations, especially stability of adjacent structures, shoring requirements, cut slopes, oversite site slope stability, and construction dewatering. In any case, site grading should be carefully planned so that positive drainage away from all structures is achieved. Following earthwork recommendations should be followed for all aspects of the project.

Shoring and/or slope stability may become an important element of project planning for this site, if below-grade construction is planned. In general, proper shoring design and slope/cut stabilization should be performed and a shoring system or retaining walls installed in order to maintain on-site and off-site stability during construction.

EXCAVATIONS

Materials encountered at this site may be excavated with conventional mechanical excavating equipment including some specialized equipment for boulder removal. Although our borings did not encounter "buried" foundation elements or other structures or debris, these materials will most likely be encountered during excavation activities. In older urban areas, it is highly likely to have miscellaneous underground structures, facilities, and debris materials such as brick, wood, concrete, abandoned utility lines, cisterns, buried fuel tanks. If encountered, these non-soil materials should be removed from the site and all cavities and voids should be backfilled with compacted structural fill.

Temporary excavations should comply with OSHA and other applicable federal, state, and local safety regulations. In our opinion, OSHA Type B/C soils will be encountered at this site during excavations. We recommend maximum allowable unbraced temporary excavation slopes of 1.25:1(H:V) for Type B/C soils for excavations up to 15 feet deep, only after cut stability analyses are performed. The cut stability analyses are recommended due to the presence of upslopes and debris fan deposit which may become unstable if they are not properly excavated or supported. Permanent cut slopes are anticipated to be stable at slope ratios as steep as 2H:1V (horizontal to vertical) under dry conditions. New slopes should be revegetated as soon as possible after completion to minimize erosion.

We recommend a minimum of 10 feet of clearance between the top of excavation slopes and soil stockpiles or heavy equipment or adjacent structures (subject to approval of AGS). If braced excavations are to be used, they should be reviewed and designed by AGS. It should be noted that near-surface soils encountered at the site will be susceptible to some sloughing and excavations should be periodically monitored by AGS.

If excavation is performed under water table, or excavation is made steeper than OSHA recommendations, proper shoring should be provided. It is contractor's responsibility to assure safety during excavation and earthwork operations.

CONSTRUCTION DEWATERING

Due to the absence of high-water table, construction dewatering may not be critical for this project, as long as excavations do not exceed 15 feet below existing site grades. As a minimum, an

interceptor drain outside the entire uphill perimeter of proposed buildings may be considered with proper discharge and proper maintenance during construction.

During construction in wet or cold weather, grade the site such that surface water can drain readily away from the building areas. Promptly pump out or otherwise remove any water that may accumulate in excavations or on subgrade surfaces and allow these areas to dry before resuming construction. Berms, ditches, and similar means may be used to prevent storm water from entering the work area and to convey any water off-site efficiently.

FILL MATERIAL SPECIFICATIONS AND PLACEMENT

Following fill material specifications may be used, however, AGS should evaluate the suitability of all proposed fill materials prior to placement. In general, fill material should be a non- expansive soil free of vegetation, brush, sod, trash and debris, and other deleterious substances, and should not contain rocks or lumps having a diameter of more than 5 inches. A fill material should be considered non-expansive if the swell potential under a 200 psf surcharge pressure does not exceed 0.5%. Swell potential should be confirmed by performing a swell test on a remolded sample (95% ASTM D698 maximum dry density at optimum moisture content). We anticipate on-site soils, including existing fill will generally meet the requirements for non-expansive fill.

On-site fill materials: Excavated on-site fill materials may be reused in the non-foundation areas such as slabs, pavements, and landscape areas, provided they are free from organics and any non-soil materials. Highly plastic clays or weathered sandstone/claystone bedrock should not be re-used on-site except in landscaped areas.

Structural fill materials: Structural fill under the foundations should be non-expansive and free from organics and non-soil materials. Imported structural fill should consist of sand or gravel material with a maximum particle size of 2 inches or less. In addition, this material shall have a liquid limit less than 35 and a plasticity index of 10 or less. Structural fill should also have a percent fine less than 20 percent passing the No. 200 sieve. Colorado Department of Transportation (CDOT) Class 1 structure backfill meets these requirements.

Subslab Fill materials: Structural fill placed beneath floor slabs, pavements, and exterior flatwork areas may consist of moisture-conditioned on-site granular soils or non-expansive imported soil materials. Imported non-expansive fill materials should have a maximum of 30% passing the No. 200 sieve, a maximum Liquid Limit of 35, and a maximum Plasticity Index of 15.

Utility Trench Backfill: Materials excavated from the utility trenches may be used for trench backfill above the pipe zone fill provided they do not contain unsuitable material or particles larger than 4 inches and are outside of areas requiring structural fill or subslab fill.

Pipe Bedding Material: Pipe bedding material should be a free-draining, coarse-grained sand and/or fine gravel. Some of the on-site sand and gravel mixtures may be suitable as pipe bedding fill materials.

Fill Compaction Criteria: In general, we recommend the following fill compaction criteria, which may be modified as deemed necessary after the review of project plans and project team discussions.

Fill Location	Minimum % of ASTM D698 Standard Proctor Maximum Dry Density	Moisture Content
All areas sensitive to differential settlement	100	Within 2% of OMC
Underneath mat foundation	98	Within 2% of OMC
Area within 10ft of the edges of mat foundation	98	Within 2% of OMC
Floor slabs, garage slabs, and pavements	95	Within 2% of OMC
Retaining wall foundations	95	Within 2% of OMC
Retaining wall backfill	90	Within 2% of OMC
Landscape and other non-structural areas	85	Within 2% of OMC

Fill Placement: All fill subgrades should be prepared uniformly and scarified to a depth of at least 8 inches and recompacted to at least 95% of the standard Proctor (ASTM D698) maximum dry density at moisture contents recommended above. Fill material should then be placed under proper moisture control, in uniform horizontal layers (lifts) not exceeding 8 inches, before compacting to the required density and before successive layers are placed. If the contractor's equipment is not capable of properly moisture conditioning and compacting 8-inch lifts, then the lift thickness shall be reduced until satisfactory results are achieved.

Permanent fill slopes are anticipated to be stable at slope ratios as steep as 2H:1V (horizontal to vertical) under dry conditions. New slopes should be revegetated as soon as possible after completion to minimize erosion.

AGA representative should observe prepared fill subgrades and fill placement on a full-time basis.

PAVEMENT DESIGN & CONSTRUCTION

Pavement design assumes pavement structure as a layered system that is used to adequately distribute concentrated vehicular traffic loading to subgrade soils. Therefore, the performance of the pavement structure is related to proper characterization of the physical properties of subgrade soils as well as traffic loading.

Subgrade Soil Improvement: Unless the owner is willing to assume a low to moderate risk for differential movement associated with collapsible soils, subgrade soils may be over-excavated and backfilled with structural fill as per the recommendations given for the proposed foundations. The use of geogrids may also be considered to minimize the over-excavation depths. Once the project is finalized and traffic data is made available to us, we can provide specific subgrade improvement recommendations including geogrid specifications and depth of over-excavation for different areas.

Subgrade Soil Characterization: Based on the results of our subsurface exploration, we anticipate sandy-silty soil subgrades for pavements, which is equivalent to soil classification A-2, in accordance with American Association of State Highway and Transportation Officials (AASHTO). All pavement subgrades should be proof-rolled and approved by a registered geotechnical engineer from our office prior to the placement of base rock or pavement materials.

Based on the results of our laboratory testing and the engineering evaluation, we have estimated a Hveem Stabilometer “R’ value of 10 for the subgrade soils.

Pavement Section: We used the modified AASHTO pavement design method for the preliminary design of pavements and assumed standard Equivalent Daily Load Application (EDLA) or Equivalent Single Axle Load (ESAL) values for automobile parking, access driveways, and fire lanes for a typical 6-7 multistory residential project with 15-20 buildings and a design life of 20 years. Results of our design are summarized below and illustrated in Figure 17.

Pavement Area	Full-depth AC (Inches)	AC + ABC (Inches)	PCC (Inches)
Parking	5.0	3.5 AC + 6.0 ABC	5.5
Driveways, Fire Lanes, and Heavy Traffic / Loading Areas	6.5	4.5 AC + 6.0 ABC	6.0
AC: Asphaltic Concrete; ABC: Aggregate Base Course; PCC: Portland Cement Concrete			

If specific pavement loading is planned or if some of our recommendations given here cannot be followed, we should be contacted immediately. We recommend the use of PCC (instead of AC) in areas of loading/unloading, concentrated loading, and turning movements by heavy vehicles. These areas typically include delivery zones, entrances, and trash collection/dumpster locations.

Pavement Construction: Pavement areas should be over-excavated as per the recommendations given for the soil modifications. A minimum of 4 feet of over-excavation and the placement of geogrid is anticipated for the pavement area; however, final over-excavation depths will be determined during the geotechnical design phase of the project. Over-excavated and re-compacted subgrade should be inspected and approved by AGS, prior to the placement of structural fill. This recommendation can be modified based on the chosen ground modification method and final grading plans.

All pavement subgrades should be proof-rolled with a full water truck or a heavily loaded pneumatic-tired vehicle. All pumping areas and heavily deformed subgrades should be removed and replaced with structural fill. AGS representative should inspect and approve the final pavement subgrades prior to the placement of base layer.

All PCC pavement should have adequate construction joints, including longitudinal and transverse joints. All joints should be formed during construction or sawed into freshly setting concrete prior to uncontrolled cracking. All formed joints should be properly sealed. Proper curing procedures should be used to protect PCC pavements from moisture loss, freezing, rapid temperature change, and mechanical injury. Traffic should not be allowed during the first week after pavement construction.

Pavement areas should be properly graded, and adequate drainage provided to assure quick removal of water or surface run-off from pavement areas. Ponding of water should not be allowed. All joints and curb areas should be properly sealed to minimize water infiltration. Proper and routine maintenance including annual crack repair and 5-6 year overlays should be performed to assure long-term performance of AC pavements. Similarly, regular maintenance and sealing of concrete joints should be done for PCC pavements. Deicing salts should not be used during the first year after pavement construction.

All pavement materials and placement methods should conform to the requirements given in the most current Colorado Department of Transportation's (CDOT) "Standard Specifications for Road and Bridge Construction." In addition, all applicable specifications and requirements of the local City should be followed. Pavement materials should be submitted for our review and tested for conformance with CDOT and local City specifications.

COLD WEATHER CONSTRUCTION

If earthwork is performed during the winter months when freezing is a factor, no grading fill, structural fill, or other fill should be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. A good practice is to cover the compacted fill with a "blanket" of loose fill to help prevent the compacted fill from freezing overnight. The "blanket" of loose fill should be removed the next morning prior to resuming fill placement.

During cold weather, foundations, concrete slabs-on-grade, or other concrete elements should not be constructed on frozen soil. Frozen soil should be completely removed from beneath the concrete elements, or thawed, scarified and re-compacted. The amount of time passing between excavation or subgrade preparation and placing concrete should be minimized during freezing conditions to prevent the prepared soils from freezing. Blankets, soil cover or heating as required may be utilized to prevent the subgrade from freezing.

CONCRETE & STEEL CONSTRUCTION

Concrete sidewalks and any other exterior concrete flatwork around the proposed structure may experience some differential movement and cracking. While it is not likely that the exterior flatworks can be economically protected from distress, we recommend following techniques to reduce the potential long-term movement:

- Scarify and re-compact at least 8 inches of subgrade material located immediately beneath structures.
- Avoid landscape irrigation and moisture holding plants adjacent to structures.
- Thicken or structurally reinforce the structures.

Based on our experience, for this site, we anticipate Class 0 severity exposure to sulphate attach on concrete as per ACI 201 standards for all concrete in contact with the soil on this site. Calcium chloride should not be added. Concrete should not be placed on frost or frozen soil. Concrete must be protected from low temperatures and properly cured.

We anticipate corrosive potential for on-site soils. A qualified corrosion professional should evaluate site conditions and provide proper recommendations for buried metal structures.

ADDITIONAL SERVICES

We recommend retaining AGS services to provide value engineering for ground modifications, retaining structures and foundation structural design review due to soil-structure interaction complexities and ground modification requirements involved due to the presence of collapsible soils.

We recommend that AGS services are retained to provide a detailed geotechnical design report after the project design data is available, and construction observation/testing services to document and confirm that our recommendations are properly followed. This will facilitate easy modifications of recommendations provided in this report, in case variations and unknown soil/geotechnical conditions are encountered during construction. AGS will not be responsible for the implementation of all the recommendations provided in this report if these services are not performed by AGS.

It should also be noted that a detailed rockfall hazard evaluation and/or 'global' landslide hazard evaluation was not part of the current scope of work. Moreover, AGS has not reviewed or approved any rockfall hazard or drainage improvements completed in the recent past for the uphill properties located to the south of the subject site. The stability of the subject site depends upon the stability of the adjacent uphill properties. At your request, AGS can perform a detailed rockfall hazards evaluation of the uphill properties and the subject property, as well as an extensive review, evaluation, and approval of all the improvements made on the uphill properties located to the south of the subject site. This evaluation is critical to confirm whether additional mitigation is required or not to protect the subject site from future rockfall or global landslide events occurring on the adjacent southern properties located in proximity of the site.

PROJECT ASSUMPTIONS and LIMITATIONS

The recommendations given in this report are valid only if AGS services are retained to provide a detailed geotechnical design report and if AGS performs construction observations and testing services during construction. It is our assumption that the current client will retain this project for at least 10 years. If the project and/or property ownership changes, AGS must be contacted to evaluate the limitations of liability and project consulting limitations. It should also be noted that a detailed rockfall hazard evaluation or 'global' landslide hazard evaluation was not part of the current scope of work. Moreover, AGS has not reviewed or approved any rockfall hazard or drainage improvements completed for the uphill properties to the south. The stability of the subject property depends upon the stability of the uphill properties. At your request, AGS can perform an extensive review, evaluation, and approval of all the improvement made uphill of the subject site and confirm whether additional mitigation is required or not.

Evaluation of any kind of existing structures was beyond our scope of services. Recommendations contained in this report are based on our field observations and subsurface explorations, limited laboratory evaluation, and our present knowledge of the proposed construction. It is possible that soil conditions could vary between or beyond the points explored. If soil conditions are encountered during construction that differ from those described herein, we should be notified so that we can review and make any supplemental recommendations necessary. If the scope of the proposed construction, including the proposed loads or structural locations, changes from that described in this report, our recommendations should also be reviewed and revised by AGS.

Our Scope of Work for this project did not include research, testing, or assessment relative to past or present contamination of the site by any source. If such contamination were present, it is highly likely that the exploration and testing conducted for this report would not reveal its existence. If the Owner is concerned about the potential for such contamination, additional studies should be undertaken. We are available to discuss the scope of such studies with you. No tests were performed to detect the existence of mold or other environmental hazards as it was beyond Scope of Work.

Local regulations regarding land or facility use, on and off-site conditions, or other factors may change over time, and additional work may be required with the passage of time. Based on the intended use of the report within one year from the date of report preparation, AGS may recommend additional work and report updates. Non-compliance with any of these requirements by the client or anyone else will release AGS from any liability resulting from the use of this report by any unauthorized party. Client agrees to defend, indemnify, and hold harmless AGS from any claim or liability associated with such unauthorized use or non-compliance.

In this report, we have presented judgments based partly on our understanding of the proposed construction and partly on the data we have obtained. This report meets professional standards expected for reports of this type in this area. Our company is not responsible for the conclusions, opinions or recommendations made by others based on the data we have presented. Refer to American Society of Foundation Engineers (ASFE) general conditions included in an appendix. This report has been prepared exclusively for the client, its' engineers, and subcontractors for the purpose of design and construction of the proposed structure. No other engineer, consultant, or contractor shall be entitled to rely on information, conclusions or recommendations presented in this document without the prior written approval of AGS.

We appreciate the opportunity to be of service to you on this project. If we can provide additional assistance or observation and testing services during design and construction phases, please call us at 1 888 276 4027.

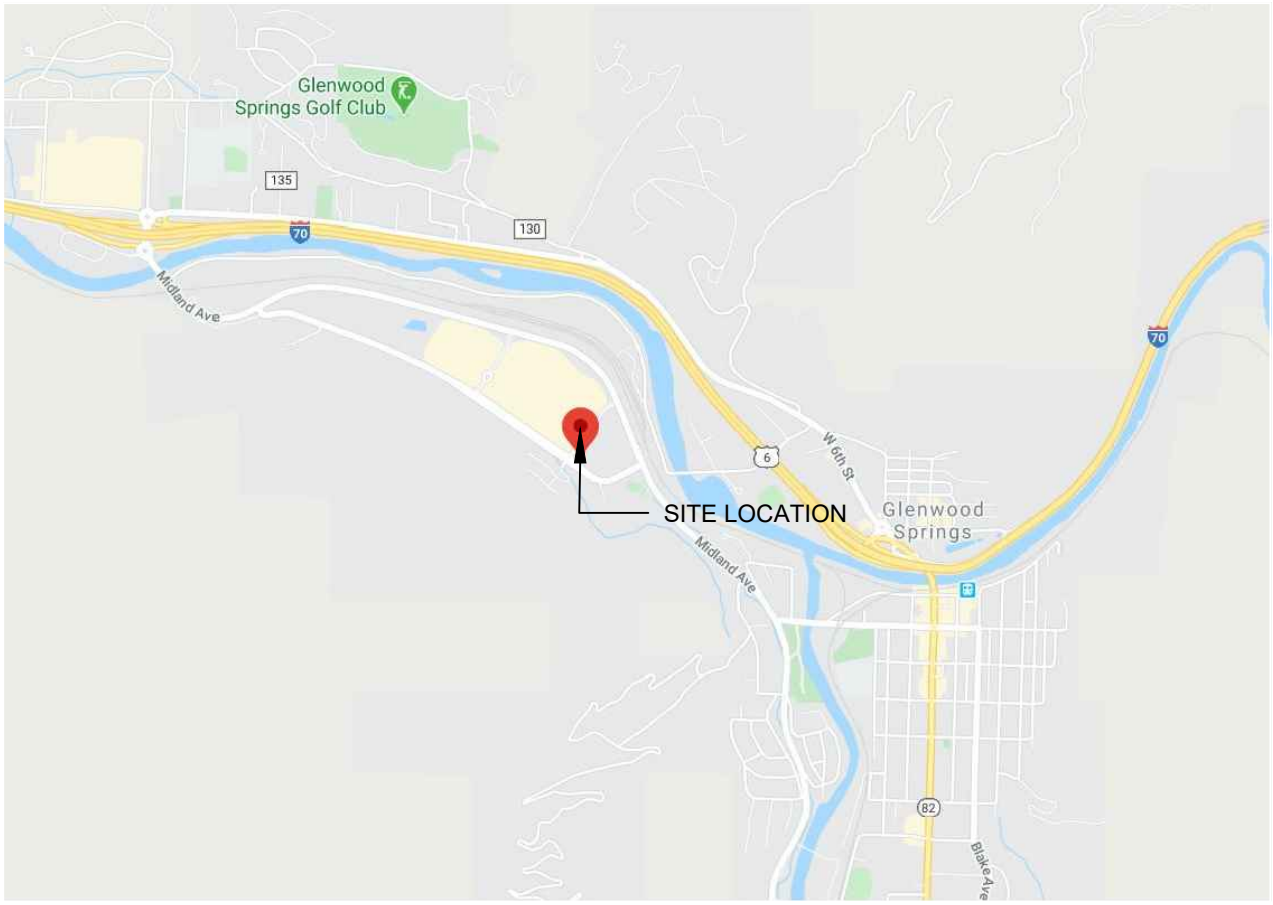
Sincerely,

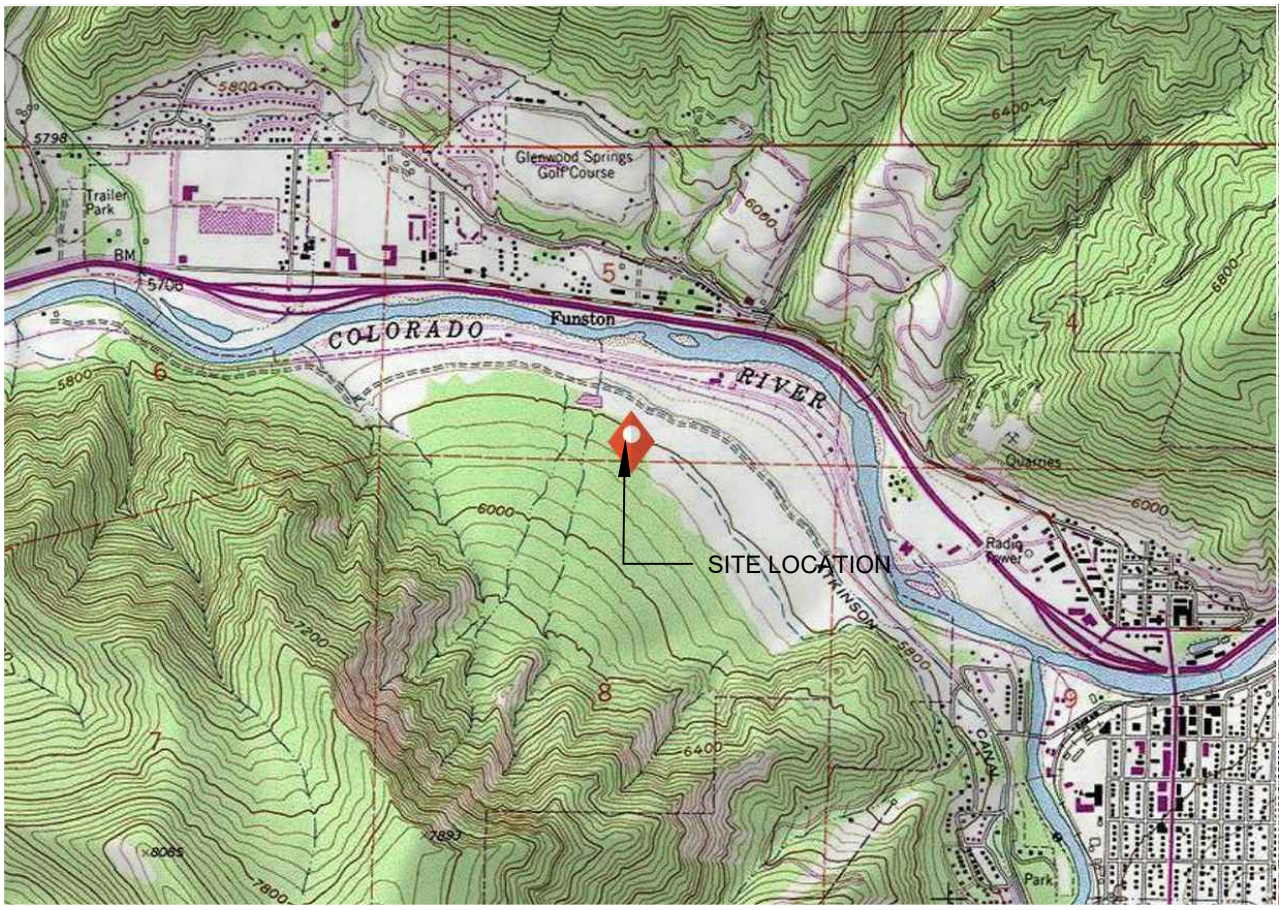


Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE
Senior Engineer

Attachments

FIGURES



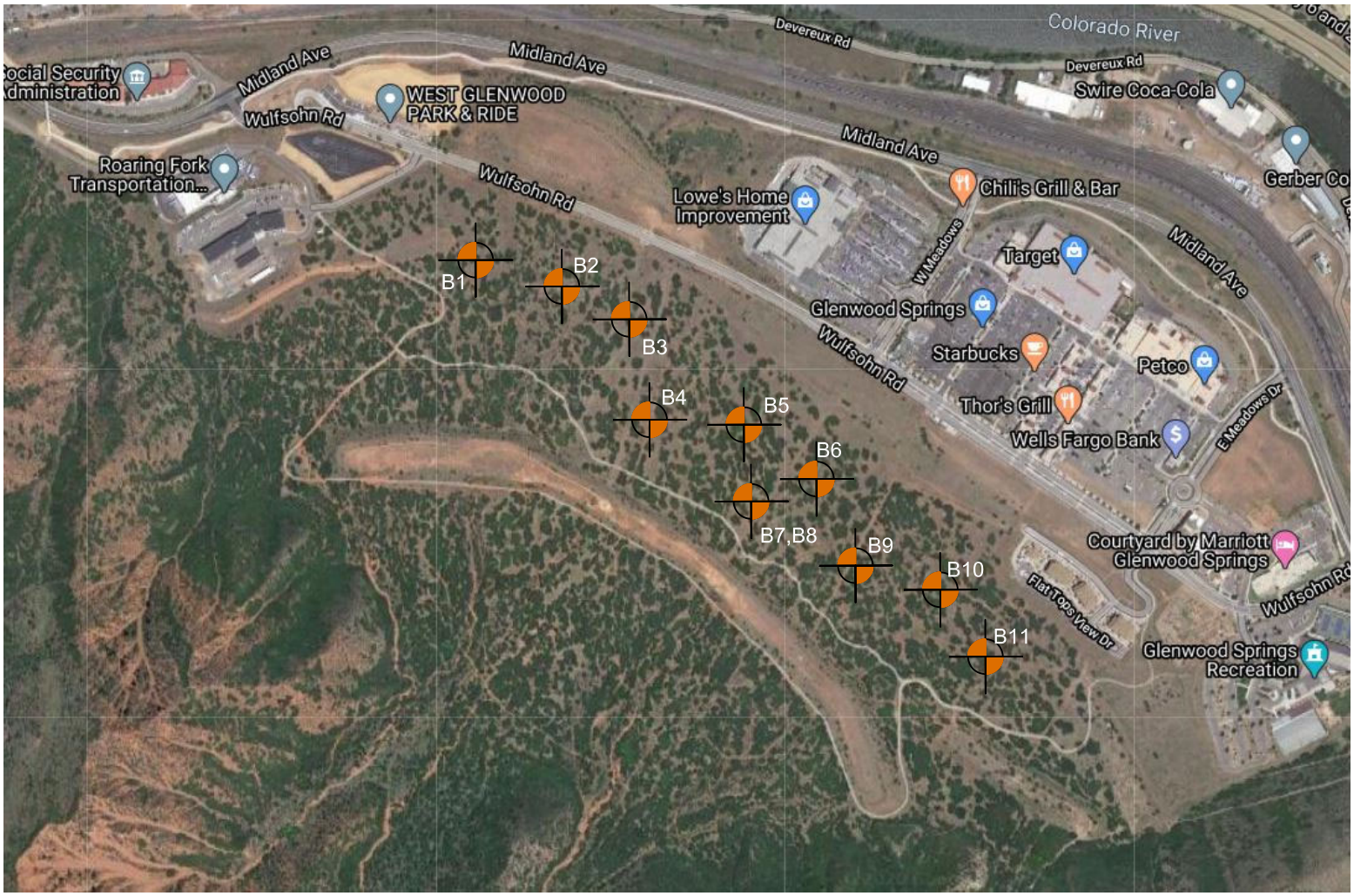


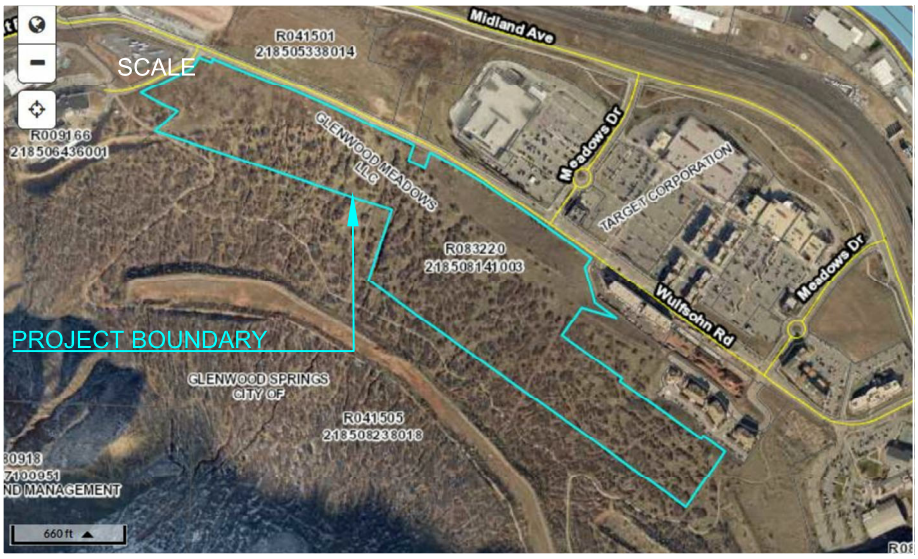
REFERENCE:
GOOGLE MAPS
USGS TOPOGRAPHIC MAPS

N

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FIGURE 1: SITE LOCATION MAP





NOTE:
SCHEMATIC PLAN TO SHOW APPROXIMATE SUBSURFACE EXPLORATION LOCATION ONLY; NOT SURVEYED.

N

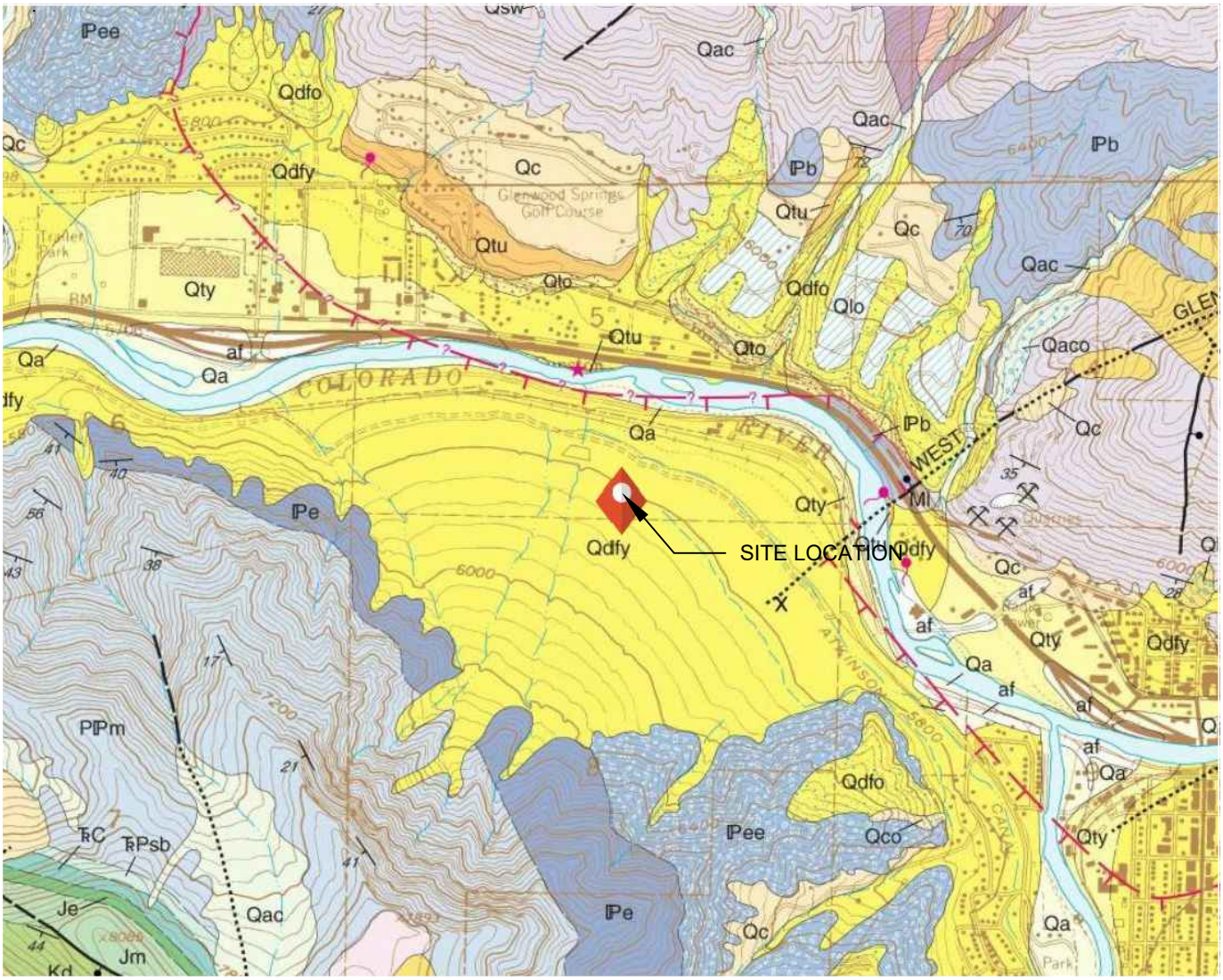
LEGEND:

DESIGNATES SUBSURFACE EXPLORATION LOCATION, BY AMERICAN GEOSERVICES, LLC. ,JUNE 2020 SEE EXPLORATION LOG IN APPENDIX FOR FURTHER DETAILS.

REFERENCE:
GARFIELD COUNTY
COLORADO GIS

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FIGURE 2: SCHEMATIC SITE PLAN



LEGEND

ALLUVIAL AND MASS-WASTING DEPOSITS

Qdfy — **Younger debris-flow deposits (Holocene)**—Poorly sorted to moderately well-sorted matrix- and clast-supported, pebble, boulder, and cobble gravel in a sandy silt or silty sand matrix. Distal fan areas are finer grained. Deposited on active fans

PPm — **Maroon Formation (Permian and Pennsylvanian)**—Mainly reddish-brown sandstone, conglomerate, mudstone, siltstone, and claystone with minor, thin beds of gray limestone. Includes Schoolhouse Member at top of formation

Pe — **Eagle Valley Formation (Middle Pennsylvanian)**—Intertonguing sequence of Maroon Formation and Eagle Valley Evaporite

Pee — **Eagle Valley Evaporite (Middle Pennsylvanian)**—Evaporitic sequence of gypsum, halite, and anhydrite interbedded with mudstone, fine-grained sandstone, thin carbonate beds, and black shale. Commonly intensely folded, faulted, and plastically deformed

N

REFERENCE:
U.S. GEOLOGICAL MAPS

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FIGURE 3: GEOLOGIC MAP



LEGEND

Rifle Area, Colorado, Parts of Garfield and Mesa Counties (CO683)

Rifle Area, Colorado, Parts of Garfield and Mesa Counties (CO683)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Arle-Ansari-Rock outcrop complex, 12 to 65 percent slopes	200.0	15.5%
7	Ascalon-Pena complex, 6 to 25 percent slopes	40.9	3.2%
8	Atencio-Azeltine complex, 1 to 3 percent slopes	202.7	15.7%
9	Badland	60.1	4.7%
11	Begay sandy loam, 6 to 12 percent slopes	204.8	15.9%
15	Chilton channery loam, 12 to 25 percent slopes	220.4	17.1%
26	Farlow-Rock outcrop association, steep	0.8	0.1%
34	Ildefonso stony loam, 25 to 45 percent slopes	68.4	5.3%
39	Jerry loam, 12 to 50 percent slopes	10.7	0.8%
42	Lamphier loam, 15 to 50 percent slopes	15.7	1.2%
58	Potts-Ildefonso complex, 12 to 25 percent slopes	71.9	5.6%
59	Potts-Ildefonso complex, 25 to 45 percent slopes	19.3	1.5%
66	Torriorthents-Camborthids-Rock outcrop complex, steep	62.0	4.8%
67	Torriorthents-Rock outcrop complex, steep	61.3	4.7%
73	Water	52.5	4.1%
Totals for Area of Interest		**1,291.5**	**100.0%**

N

REFERENCE:

WEB SOIL SURVEY

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FIGURE 4: SOIL SURVEY MAP



Legend

Collapsable_Soils_withMeeker

EG-14 Eolian (wind-blown) deposits

EG-14 Dune and sheet sand deposits

EG-14 Cretaceous and Tertiary Formations

EG-14 Evaporite Formations

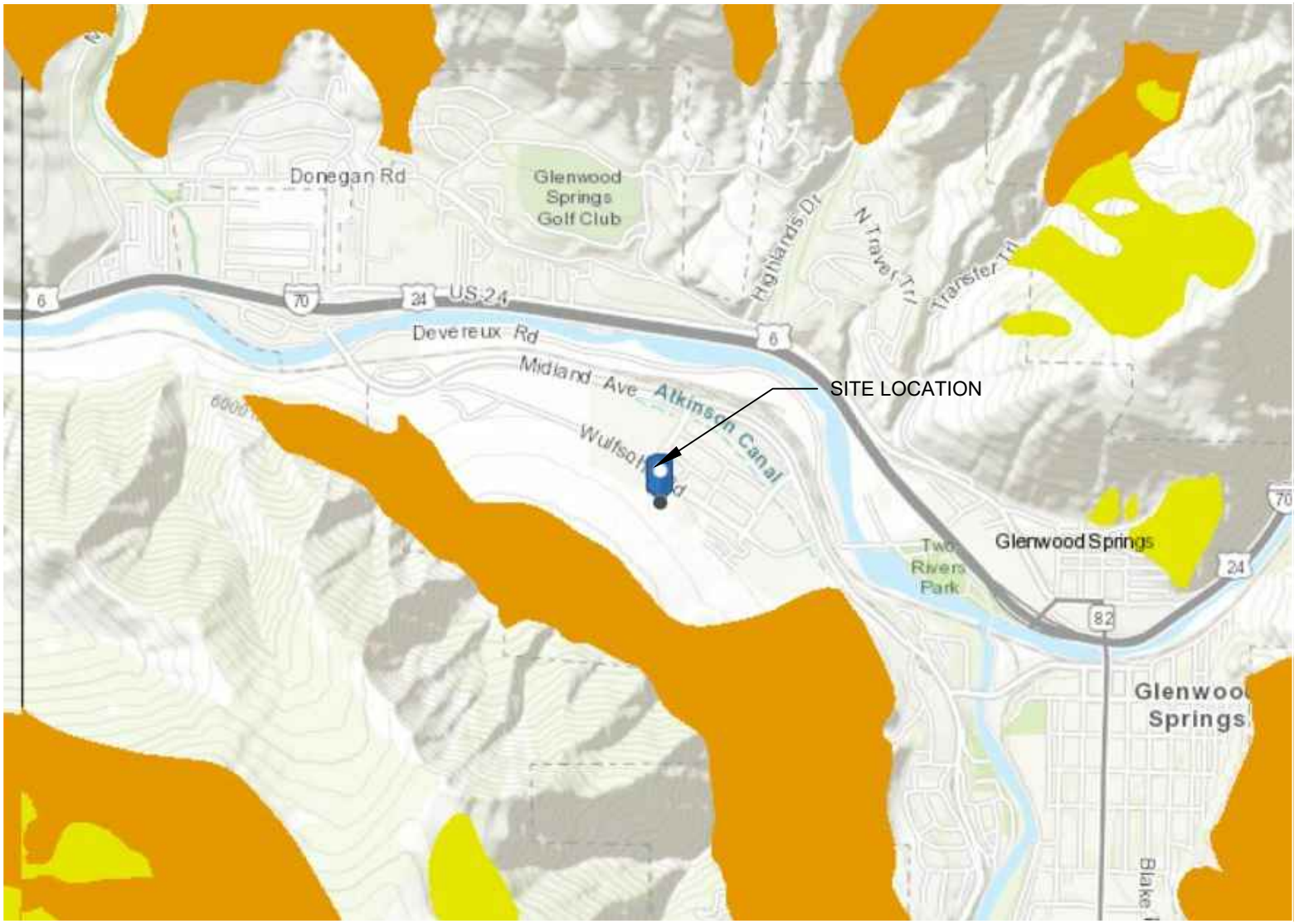
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REFERENCE:

COLORADO GEOLOGICAL SURVEY

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FIGURE 5: COLLAPSIBLE SOILS MAP



Colorado_landslide_inventory_new

compiled_landslides_from_24K_maps

compiled_landslides_from_48-100K_maps

compiled_landslides_from_HB1041_maps

GeologicQuadsIndex

N

REFERENCE:

COLORADO LANDSLIDES INVENTORY

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FIGURE 6: LANDSLIDES HAZARD



Slope Hazard

Major

Moderate

N

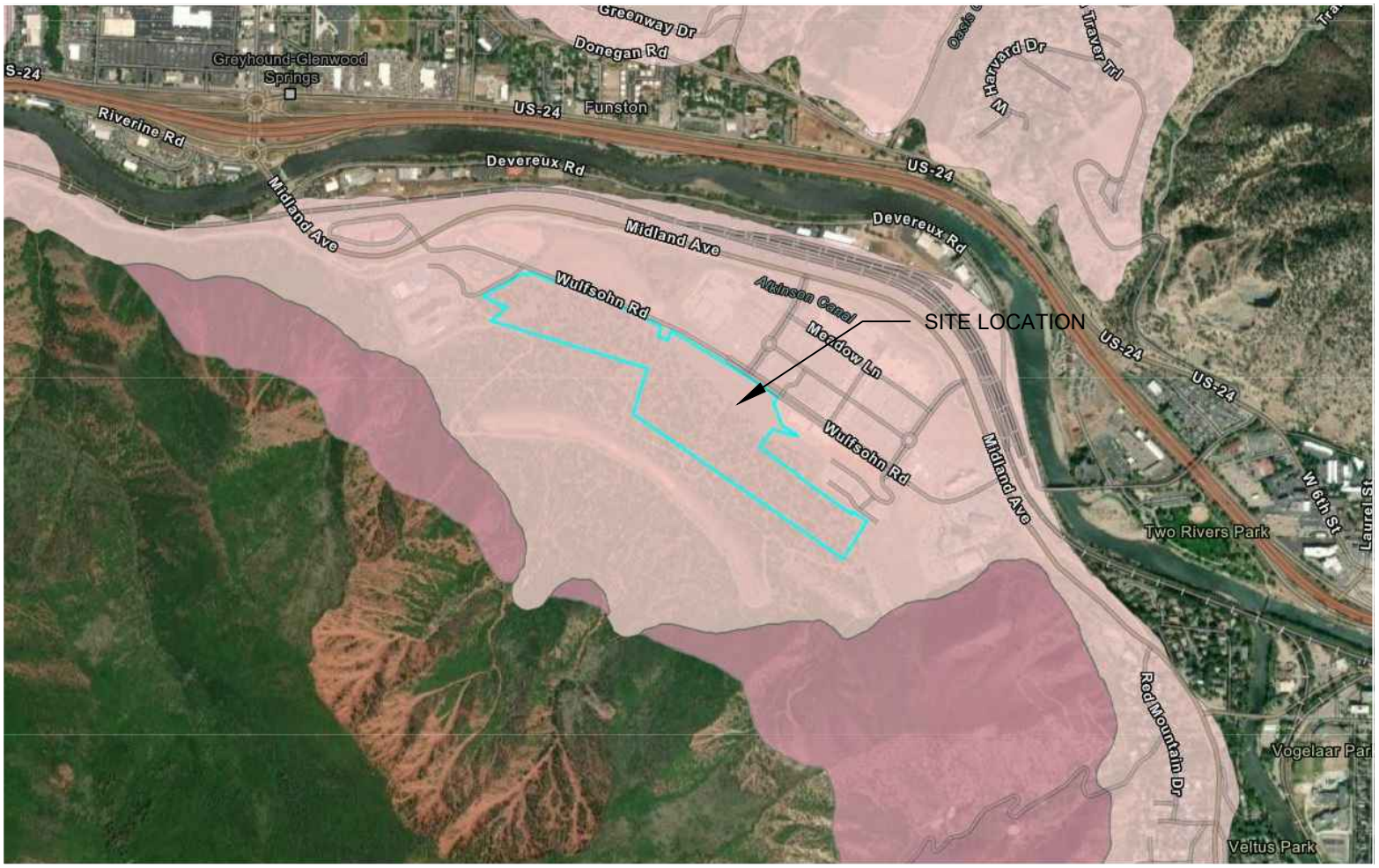
REFERENCE:

GLENWOOD GIS

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FIGURE 7: SLOPES HAZARD



Soil Hazard

- Coal Mine
- Moderate
- Major

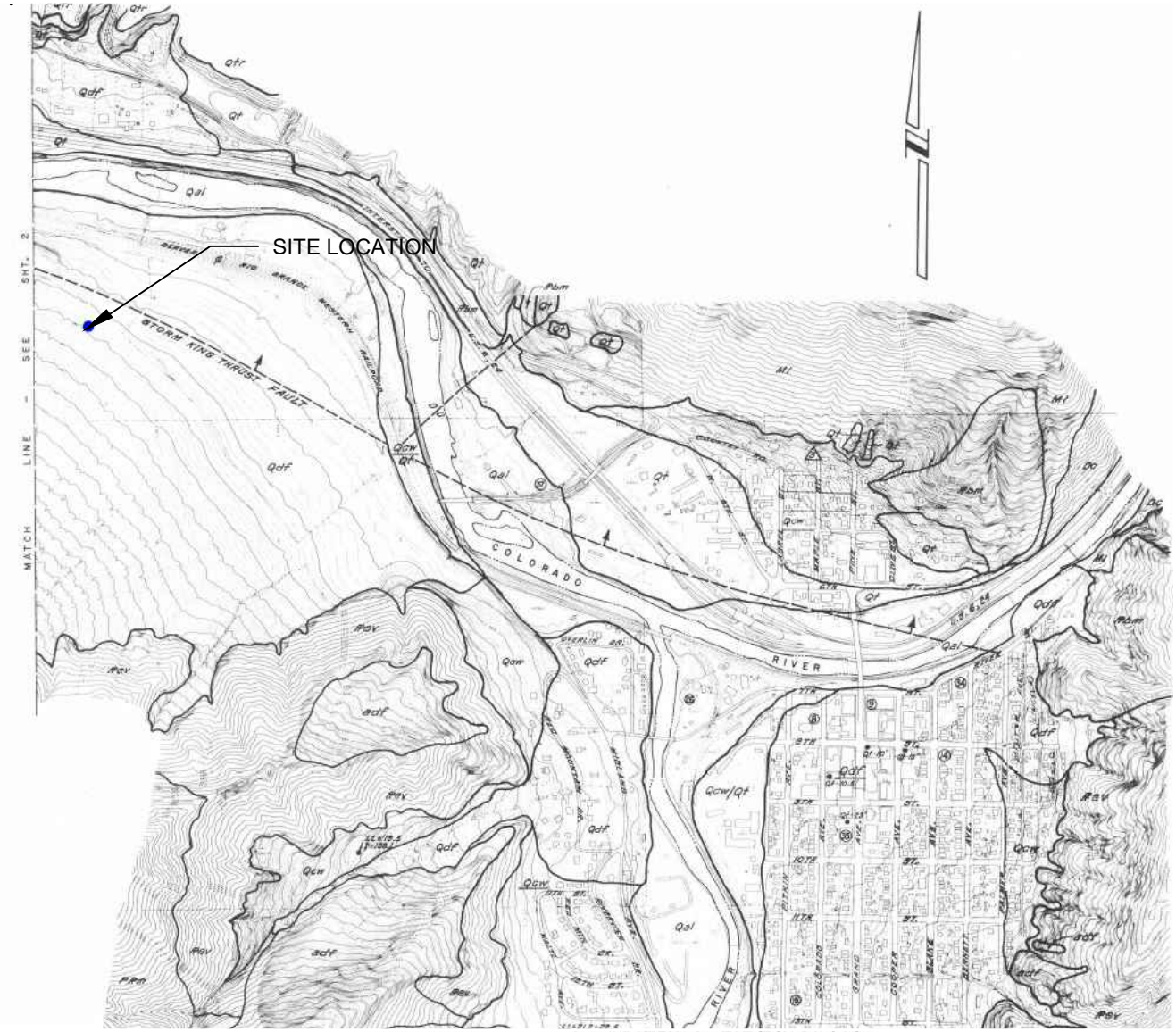
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REFERENCE:

GLENWOOD GIS

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FIGURE 8: SOILS HAZARD

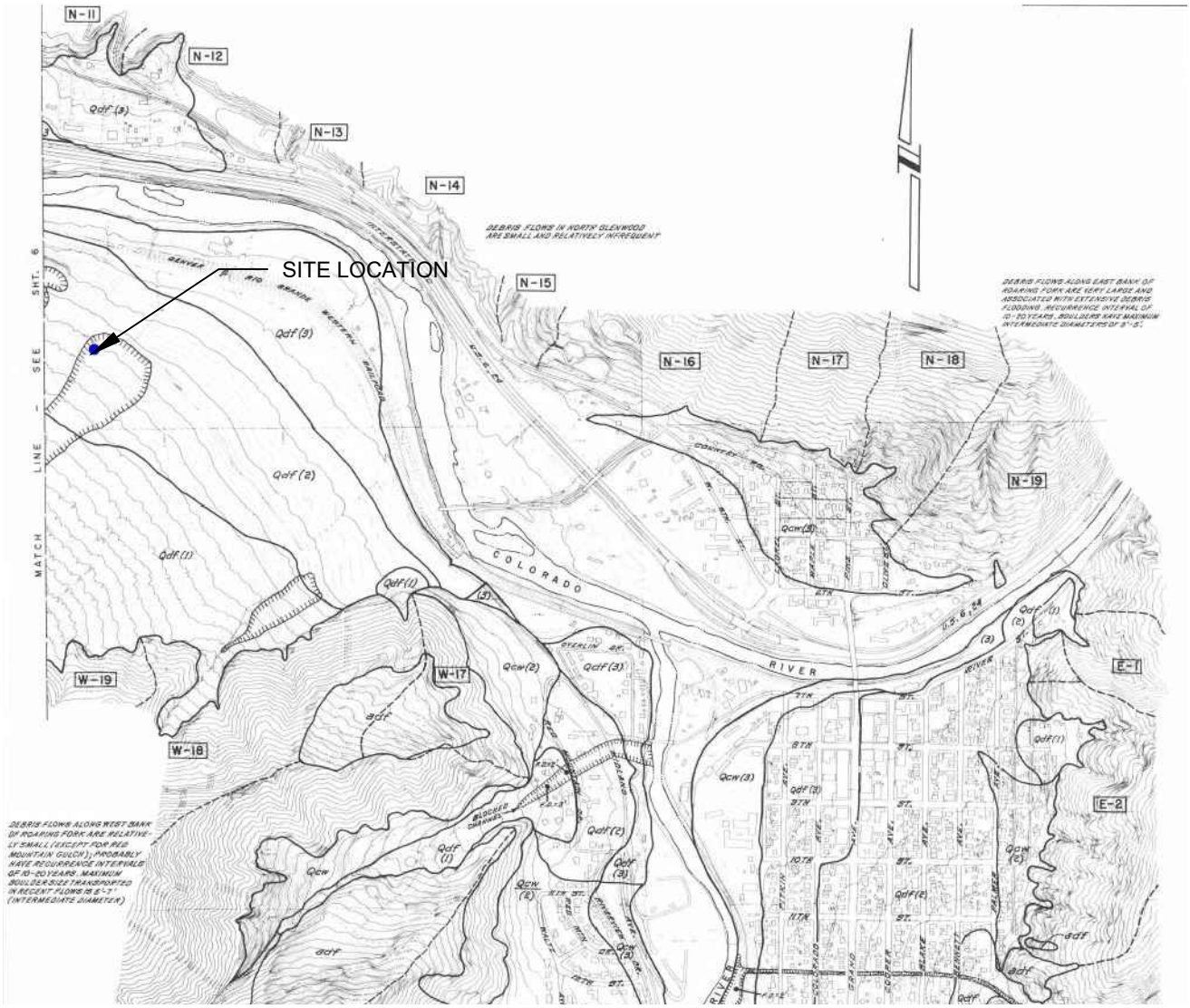


REFERENCE:

COLORADO GEOLOGICAL SURVEY

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FIGURE 9: SURFICIAL GEOLOGY AND DATA INDEX MAP



EXPLANATION:

Qdf ... MAPPED DEBRIS FANS
Qcw ... MAPPED COLLUVIAL WEDGE AND COLLUVIAL DEPOSITS
adf ... MAPPED ANCIENT DEBRIS FLOW, MUD FLOW AND LANDSLIDE DEPOSITS
(1) ... SEVERE HAZARD ZONE: POSSIBLE SERIOUS DAMAGE TO STRUCTURES AND RISK TO LIFE. MITIGATION NECESSARY.
(2) ... MODERATE HAZARD ZONE: POSSIBLE MINOR DAMAGE TO STRUCTURES AND RISK TO LIFE. MITIGATION RECOMMENDED. MAJOR CLEANUP PROBABLE.
(3) ... SLIGHT HAZARD ZONE: CLEANUP REQUIRED; LIMITED RISK TO STRUCTURES AND LIFE
AREA COVERED BY RECENT DEBRIS FLOWS (7-24-77, UNLESS OTHERWISE INDICATE)
F.D. FLOW DEPTH DATA POINT
DRAINAGE BASIN BOUNDARY (SEE PROJECT BOUNDARY AND BASIN INDEX MAP)
DRAINAGE BASIN INDEX NUMBER

NOTE: THESE MAPS ARE INTENDED FOR USE IN CONJUNCTION WITH THE REPORT, "DEBRIS FLOWS, HYDROCOMPACTION, AND GEOLOGIC HAZARDS IN GLENWOOD SPRINGS, COLORADO."

SEE SHEET NO. 6 FOR EXPLANATION OF SYMBOLS AND NOTE.

PREPARED FOR
THE COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR
DEPARTMENT OF NATURAL RESOURCES
STATE OF COLORADO

IN CO-OPERATION WITH
THE CITY OF GLENWOOD SPRINGS, COLORADO AND THE COUNTY OF GARFIELD, COLORADO

LINCOLN DeVORE TESTING LABORATORY
COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction – WYO. Rock Springs

400 0 400 800
SCALE IN FEET
CONTOUR INTERVAL = 5 FEET

MAP OF DEBRIS FAN DEPOSITS AND HAZARDS

GEOLOGIC HAZARDS OF THE GLENWOOD SPRINGS METROPOLITAN AREA

GARFIELD COUNTY, COLORADO

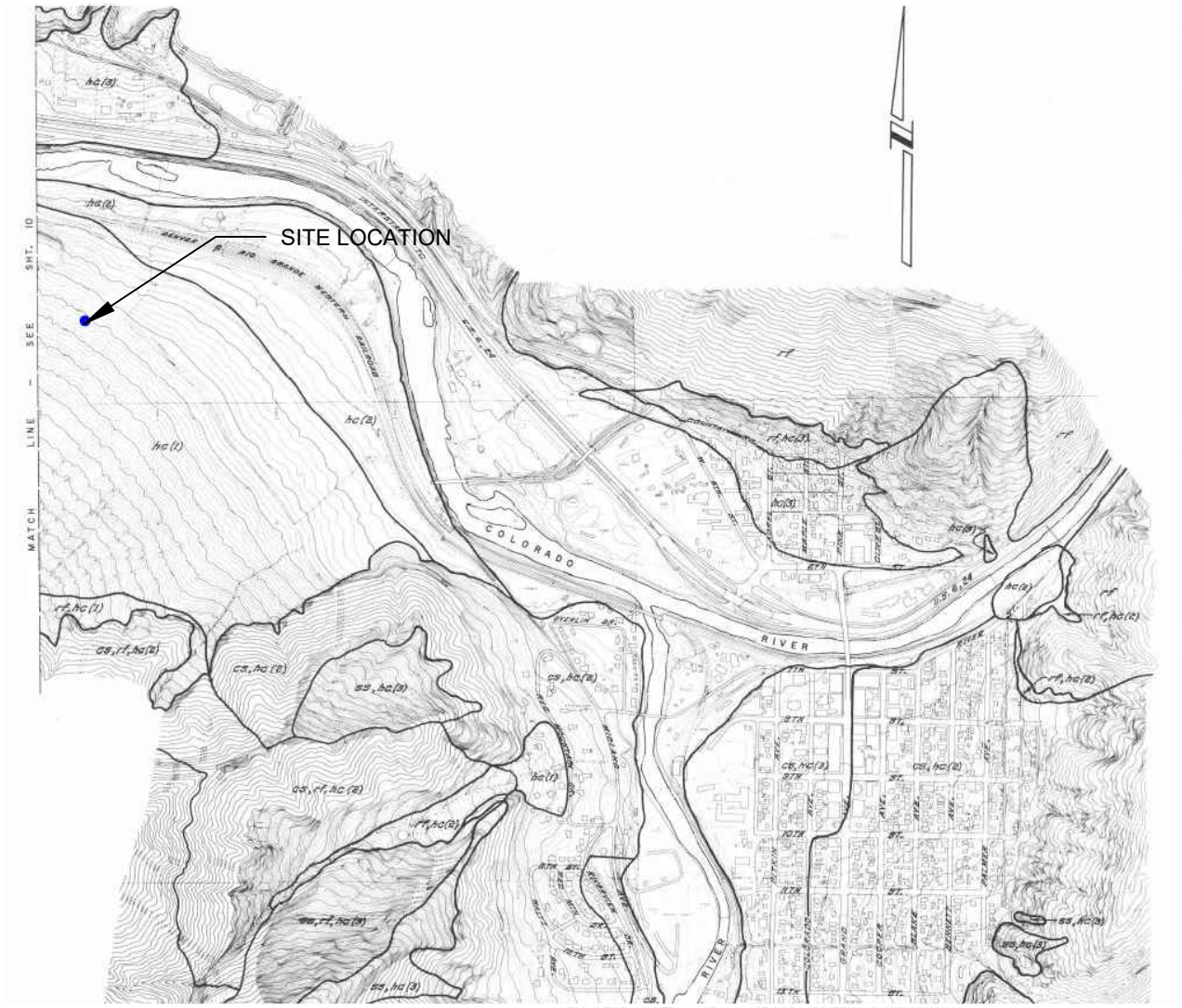
DECEMBER 1977

REFERENCE:

COLORADO GEOLOGICAL SURVEY

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FIGURE 10: DEBRIS FAN DEPOSIT AND HAZARDS



EXPLANATION

BOUNDARY BETWEEN MAPPED UNITS
INDEFINITE BOUNDARY BETWEEN MAPPED UNITS

- hc ____ ZONE OF POTENTIAL HYDROCOMPACTION AND RELATED SETTLEMENT HAZARDS
- (1) ____ SEVERE HAZARD ZONE. HIGH PROBABILITY OF MAJOR AND/OR RAPID SETTLEMENT, ACCOMPANIED BY LOCAL PIPING AND SLOPE INSTABILITY DUE TO SOIL STRUCTURE DISRUPTION.
- (2) ____ MODERATE HAZARD ZONE. LOW PROBABILITY OF RAPID MAJOR SETTLEMENT; HIGH PROBABILITY OF SIGNIFICANT LONG-TERM SETTLEMENT.
- (3) ____ SLIGHT HAZARD ZONE. VERY LOW PROBABILITY OF RAPID SETTLEMENT; MODERATE PROBABILITY OF SIGNIFICANT LONG-TERM SETTLEMENT.
- rf ____ ZONE OF SIGNIFICANT ROCKFALL HAZARDS. CRITERIA INCLUDE (A) AN IDENTIFIABLE SOURCE AREA FOR ROCKS AND (B) THE PRESENCE OF FALLEN ROCKS WITH INTERMEDIATE DIAMETERS OF 2 FEET OR MORE.
- ls ____ ZONE OF IDENTIFIED LAND SLIDE FEATURES. SLIDES ARE MOSTLY OLDER FEATURES, BUT HAVE POTENTIAL FOR REACTIVATION.
- ss ____ ZONE OF IDENTIFIED SLOPE STABILITY FEATURES OTHER THAN LANDSLIDES. DENOTES AREAS OF PAST AND CURRENT MASS WASTING PROCESSES.
- cs ____ ZONE OF SOILS POTENTIALLY CORROSIVE TO CONCRETE AND STEEL.

NOTE: THESE MAPS ARE INTENDED FOR USE IN CONJUNCTION WITH THE REPORT, "DEBRIS FLOWS, HYDROCOMPACTION, AND GEOLOGIC HAZARDS IN GLENWOOD SPRINGS, COLORADO."

SEE SHEET NO. 10 FOR EXPLANATION OF SYMBOLS AND NOTE.

PREPARED FOR
THE COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR
DEPARTMENT OF NATURAL RESOURCES
STATE OF COLORADO

IN CO-OPERATION WITH
THE CITY OF GLENWOOD SPRINGS, COLORADO AND THE COUNTY OF GARFIELD COLORADO

LINCOLN DeVORE TESTING LABORATORY
COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction – WYO. Rock Springs

400 0 400 800
SCALE IN FEET
CONTOUR INTERVAL = 5 FEET

GENERAL GEOLOGIC HAZARDS MAP

GEOLOGIC HAZARDS
OF THE
GLENWOOD SPRINGS METROPOLITAN AREA
GARFIELD COUNTY, COLORADO

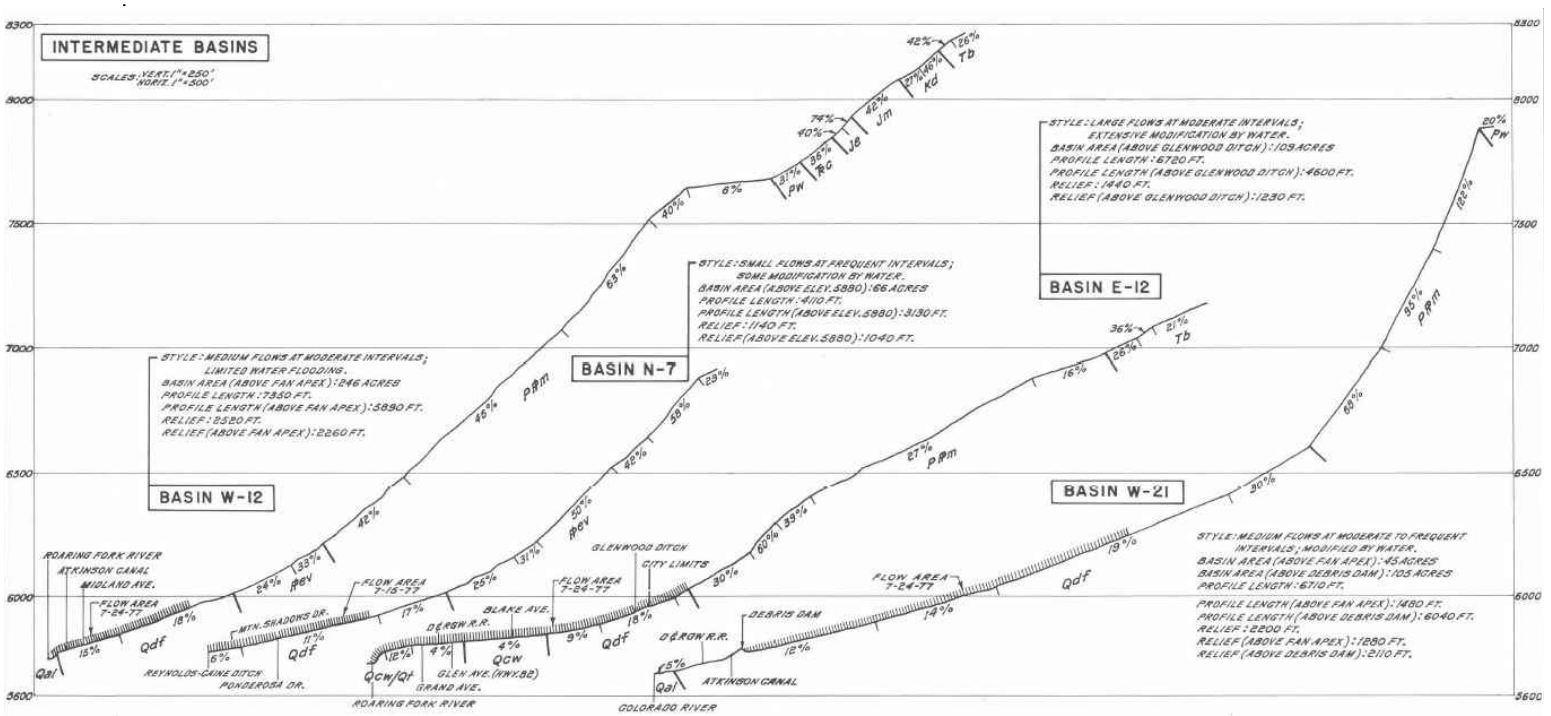
DECEMBER 1977

REFERENCE:

COLORADO GEOLOGICAL SURVEY

AMERICAN GEOSERVICES
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FIGURE 11: GENERAL GEOLOGIC HAZARD MAP



PREPARED FOR
THE COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR
DEPARTMENT OF NATURAL RESOURCES
STATE OF COLORADO

IN CO-OPERATION WITH
THE CITY OF GLENWOOD SPRINGS, COLORADO AND THE COUNTY OF GARFIELD COLORADO

LINCOLN DeVORE TESTING LABORATORY
COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction – WYO. Rock Springs

EXPLANATION:

VERTICAL EXAGGERATION = 2X
BREAK IN SLOPE
GEOLOGIC CONTACT
FAULT
DEBRIS FLOW AREA

SURFICIAL DEPOSIT SYMBOLS:

Qal.....ALLUVIUM
Qt.....STREAM TERRACE
Qcw....COLLUVIUM & COLLUVIAL WEDGE
Qdf.....DEBRIS FAN
Qls.....ANCIENT LANDSLIDE

FOR EXPLANATION OF BEDROCK SYMBOLS, SEE SHEET NO. 1

COMPARATIVE STREAM PROFILES SHEET

GEOLOGIC HAZARDS
OF THE
GLENWOOD SPRINGS METROPOLITAN AREA
GARFIELD COUNTY, COLORADO

REFERENCE:

COLORADO GEOLOGICAL SURVEY

AMERICAN GEOSERVICES
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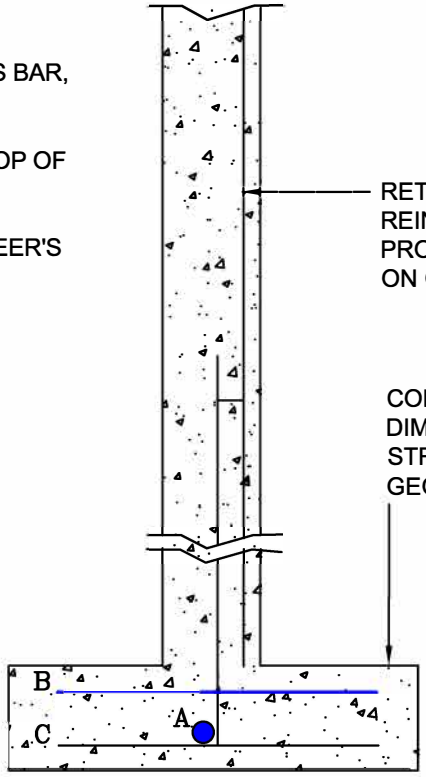
FIGURE 12: COMPARATIVE STREAM PROFILE SHEET

NOTES:

A. ADDITIONAL REINFORCEMENT, #4 CONTINUOUS BAR, BOTTOM OF FOOTING.

B. ADDITIONAL REINFORCEMENT, #4 AT 48" C/C, TOP OF FOOTING.

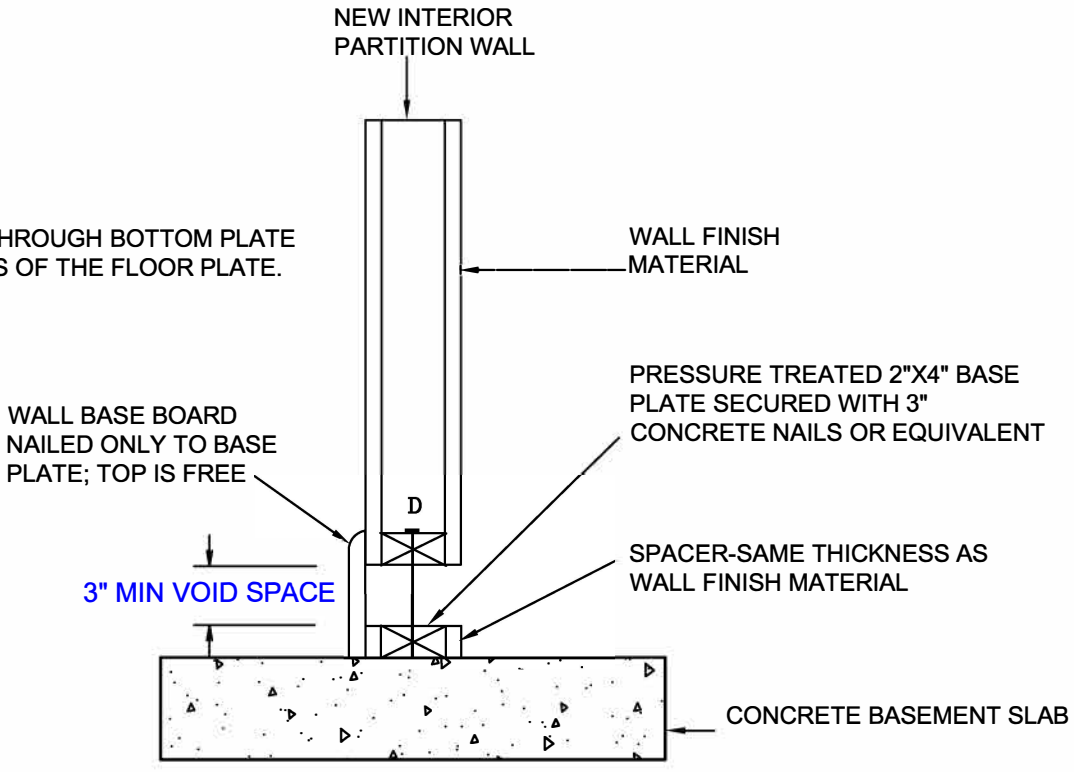
C. REINFORCEMENT AS PER STRUCTURAL ENGINEER'S DESIGN. AS A MINIMUM, USE #4 AT 48" C/C.



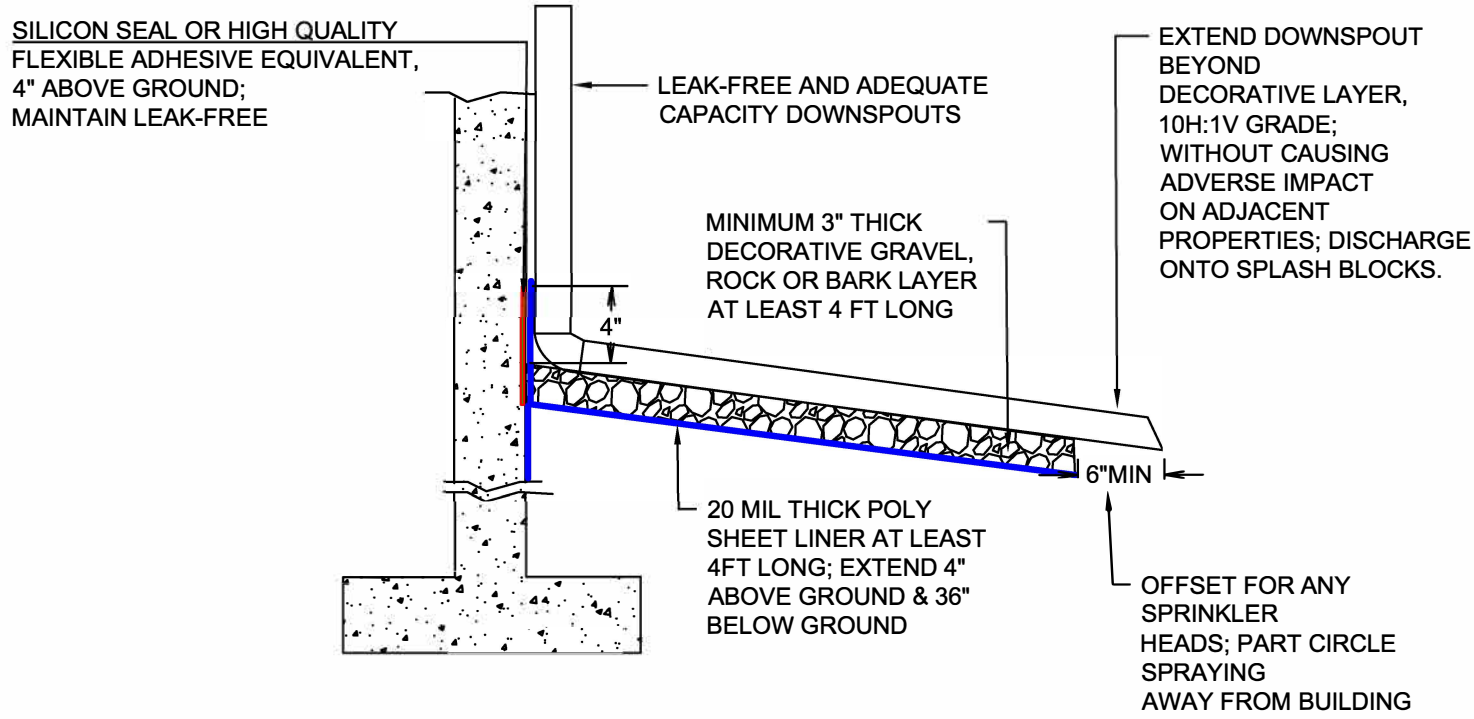
ADDITIONAL FOOTING REINFORCEMENT DETAIL

NOTES:

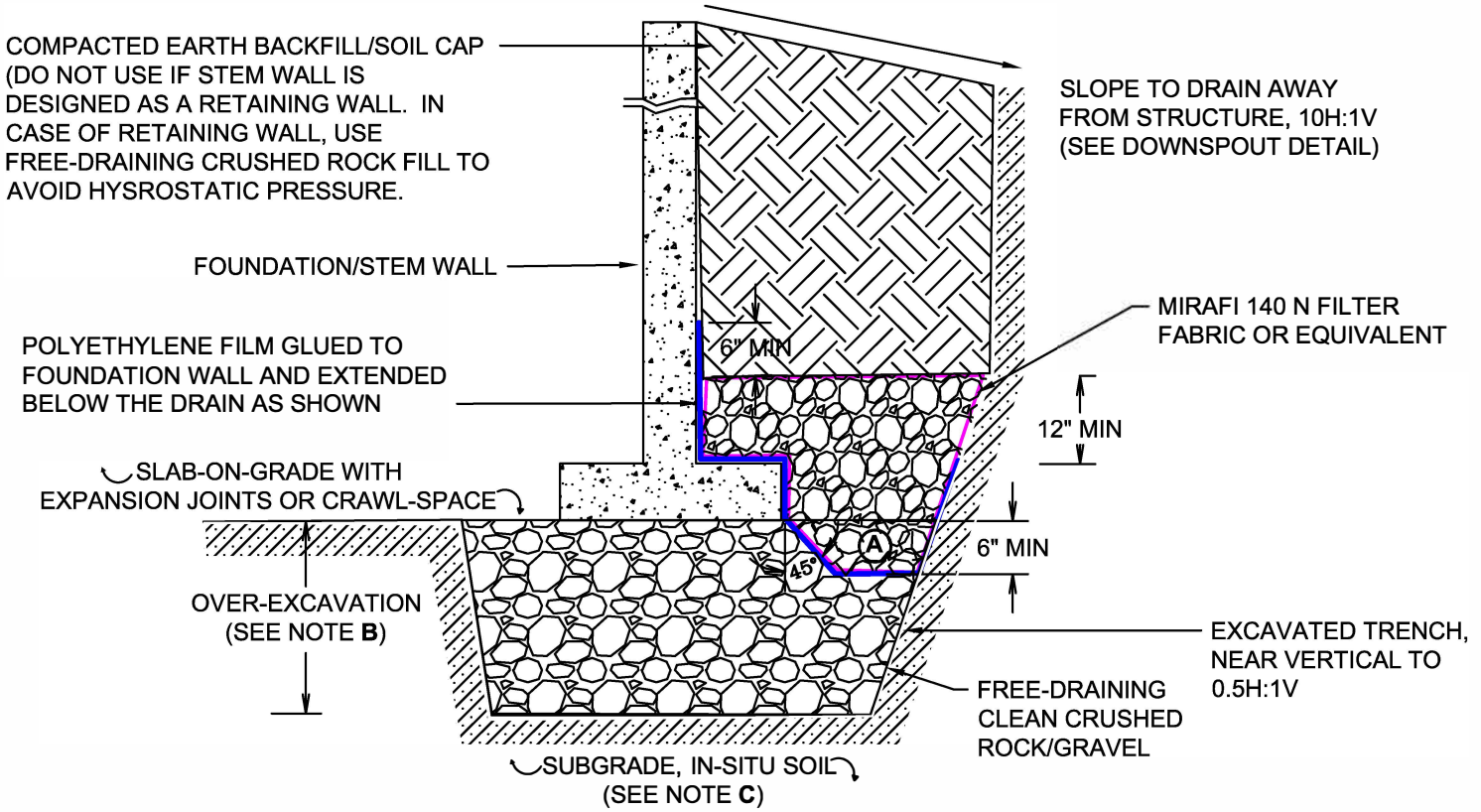
D. 40d NAILS EVERY 24" THROUGH BOTTOM PLATE INTO PRE-DRILLED HOLES OF THE FLOOR PLATE.



"FLOAT" (FLOATING WALL DETAIL)

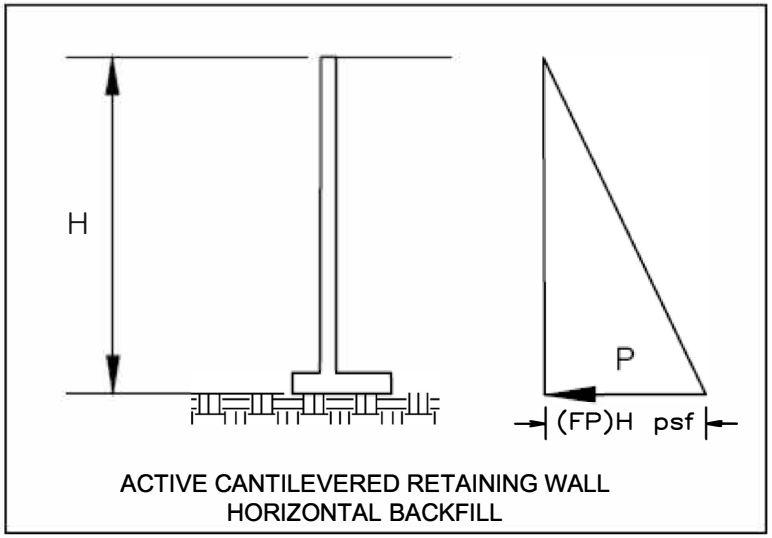


DOWNSPOUT & MOISTURE BARRIER DETAIL

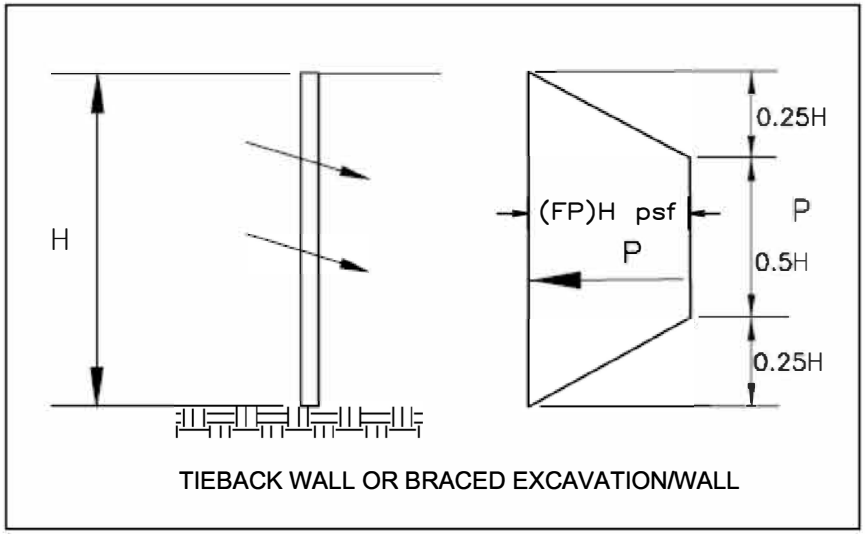


PERIMETER OR FOUNDATION DRAIN DETAIL

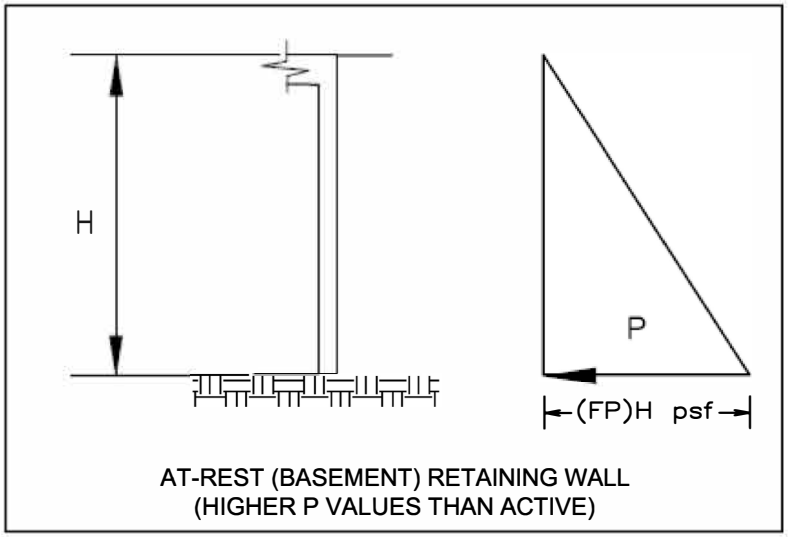
NOTES: **A**. 4-INCH DIAMETER PERFORATED PIPE PLACED 2" ABOVE DRAIN SUBGRADE EMBEDDED IN FREE-DRAINING GRAVEL OR CRUSHED ROCK ENVELOPE WITH 2% GRADE TO SUMP PIT OR DISCHARGED TO A SUITABLE RECEPTACLE SUCH THAT ON-SITE AS WELL AS OFF-SITE STABILITY IS NOT ADVERSELY IMPACTED. **B**. DEPTH BASED ON OPEN HOLE INSPECTION, FOR SHALLOW FOUNDATION OPTION. **C**. ALL FOUNDATION OR OVER-EXCAVATED SUBGRADES MUST BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER.



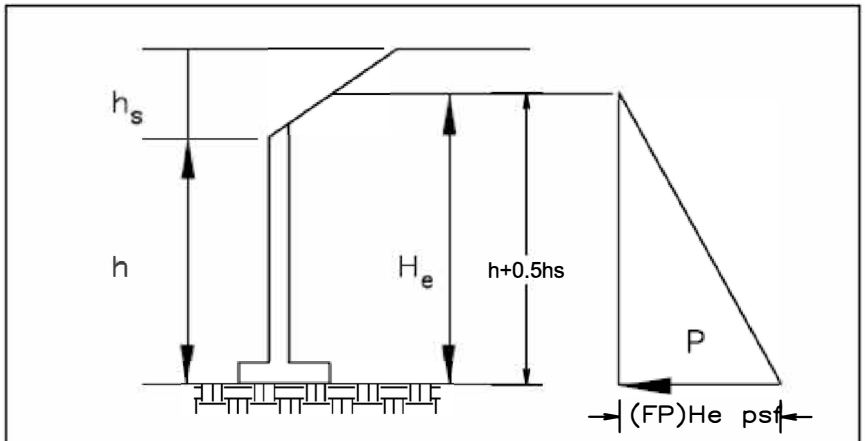
ACTIVE CANTILEVERED RETAINING WALL
HORIZONTAL BACKFILL



TIEBACK WALL OR BRACED EXCAVATION/WALL



AT-REST (BASEMENT) RETAINING WALL
(HIGHER P VALUES THAN ACTIVE)



ACTIVE CANTILEVERED RETAINING WALL
SLOPING BACKFILL

LEGEND:

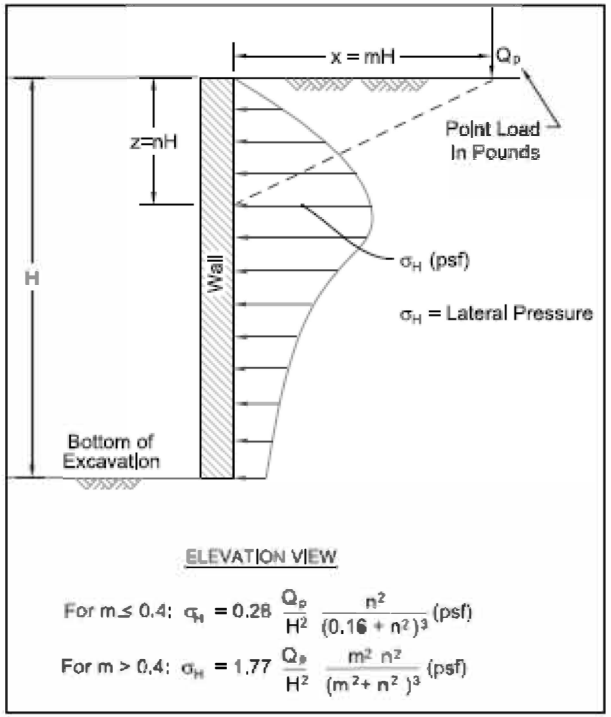
H: DESIGN WALL HEIGHT
HE: EQUIVALENT DESIGN WALL HEIGHT
H: WALL HEIGHT
HS: BROKEN BACKSLOPE HEIGHT
FP: EQUIVALENT FLUID PRESSURE
P: LATERAL EARTH PRESSURE BASED ON SOIL CONDITIONS AT THE SITE. SEE TABLE 1.0 FOR COEFF. OF LATERAL EARTH PRESSURES (K) OR FP VALUES

REFERENCES:

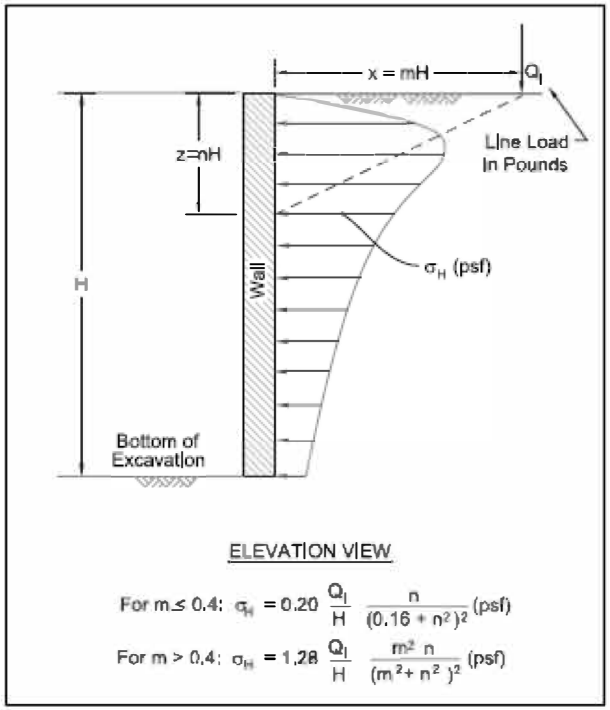
NAVFAC DM 7.2, 1974, 1986
POULOUS & DAVIS, 1974
TERZAGHI & PECK, 1967
BOWELS, 2001

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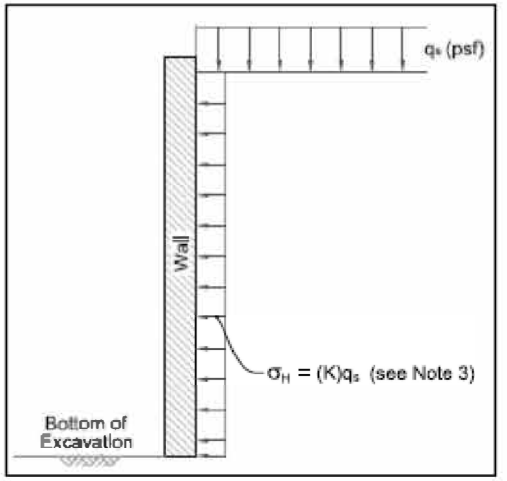
FIGURE 15: EARTH PRESSURES



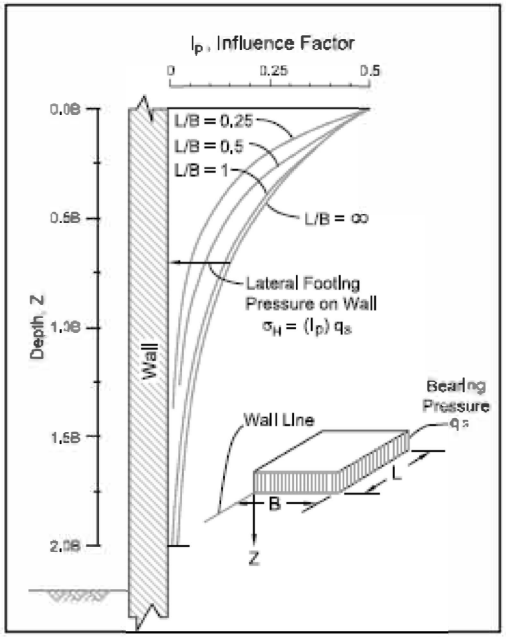
POINT SURCHARGE LOAD
(WHEEL OR ISOLATED FOOTING/COLUMN)



LINE SURCHARGE LOAD
(NARROW FOOTING)



UNIFORM SURCHARGE LOAD



CORNER FOOTING SURCHARGE LOAD

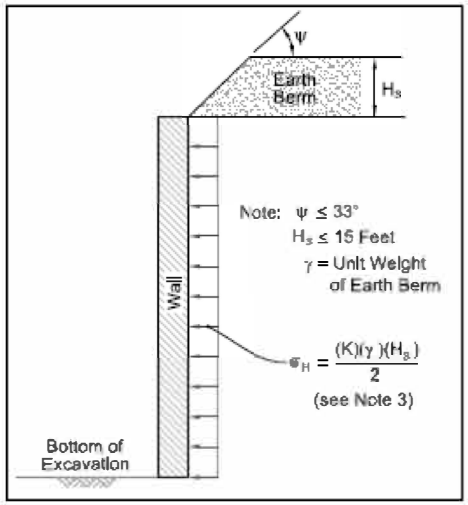
NOTES:

1.NOT TO SCALE.
SCHEMATICS ONLY.

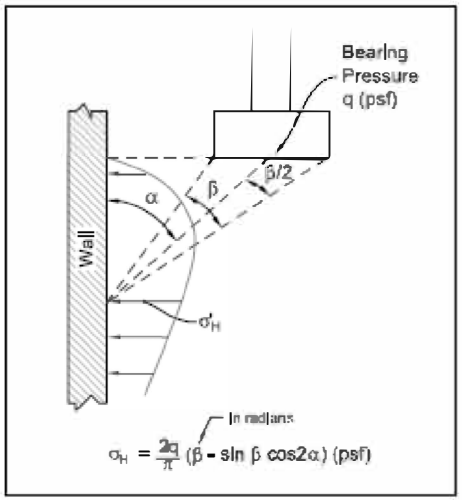
2.ADD APPROPRIATE SURCHARGE LOADING TO LATERAL EARTH PRESSURE & HYSROSTATIC PRESSURE ON THE WALL.

3.DESIGN VALUES ARE GIVEN IN THE REPORT.

4.WALL DESIGNS SHOULD BE REVIEWED AND APPROVED BY US TO CONFIRM PROPER USE OF SOIL DESIGN PARAMETERS.



BACKSLOPE/BERM SURCHARGE LOAD



STRIP FOOTING SURCHARGE LOAD

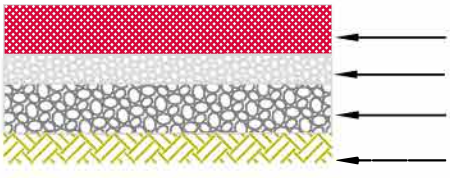
REFERENCES:
NAVFAC DM 7.2, 1974, 1986
FANG, 1991
POULOUS & DAVIS, 1974
TERZAGHI & PECK, 1967

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FIGURE 16: LATERAL PRESSURES

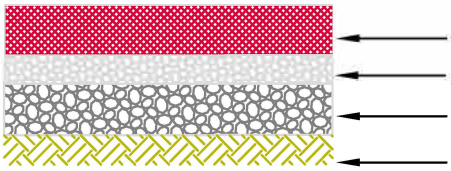
BITUMINOUS PAVEMENT SECTIONS

PARKING AREA
(LIGHTLY LOADED)



3.5" AC
2" 3/4"-0" BASE ROCK W/95% COMPACTION
4" 1 1/2"-0" BASE ROCK W/95% COMPACTION
SUBGRADE TO BE AT 95% COMPACTION (ASTM D698)

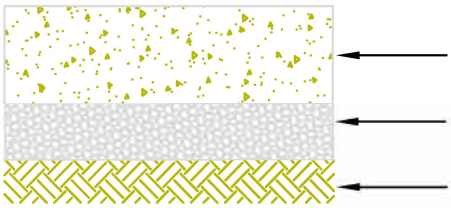
DRIVEWAYS, ETC
(HEAVILY LOADED)



4.5" AC CLASS 'C'
2" 3/4"-0" BASE ROCK W/95% COMPACTION
4" 1 1/2"-0" BASE ROCK W/95% COMPACTION
SUBGRADE TO BE AT 95% COMPACTION (ASTM D698)

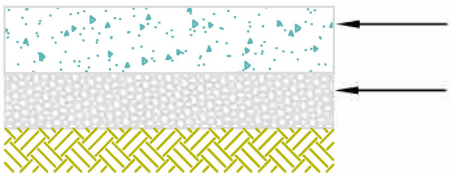
CONCRETE PAVEMENT SECTIONS

PARKING AREA
(LIGHTLY LOADED)



5.5" REINFORCED CONCRETE. 3500 PSI @ 28 DAYS
6X6W1.4X1.4WWM
4" OF 3/4"-0" BASE ROCK W/95% COMPACTION
SUBGRADE TO BE AT 95% COMPACTION (ASTM D698)

DRIVEWAYS, ETC
(HEAVILY LOADED)



6" REINFORCED CONCRETE. 3500 PSI @ 28 DAYS
6X6W1.4X1.4WWM
4" OF 3/4"-0" BASE ROCK W/95% COMPACTION
SUBGRADE TO BE AT 95% COMPACTION (ASTM D698)

SUBSURFACE EXPLORATION DATA

B1

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	25 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log	Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
OL	TOPSOIL: 3.0" thick, sand and organics									
ML/ GM	SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		7-5-8	20	4.5	107	NP		
GM/ ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	10		7-12-11	30	5.5	115	NP		
GM-ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	15		15-12-14	35	8	104	NP		
		20		10-22-14	29					
	End of Borehole. Refusal to augering. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	25		50+	30	2.5	125	NP		

B2

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	15 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
		SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		15-10-14		2.0			-2.0 @ 1000 psf	
	ML GM		10		8-10-10	35	5.0				
			15		10-10-34	25					
		End of Borehole at 15 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	20								
			25								

B3

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	15 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
	GM/ ML	SANDY SILT AND GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		5-8-12						
			10		50+						
			15		15-12-14						
		End of Borehole at 15 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	20								
			25								

B4

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	50 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 3.0" thick, sand and organics									
	ML/ GM	SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		11-10-9	40	3.5	105	NP	-1.5 @ 1000 psf	
	GM/ ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	10		9-10-13	30	6.5	110	NP		
			15		12-15-15	29	5.0	115	NP		
	GM-ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	20		17-20-19	32	6.0	120	NP		
			25		17-21-23	35					

B4

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	50 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 3.0" thick, sand and organics									
	ML/ GM	SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	30		15-20-19						
	GM/ ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	35		50+						
	GM-ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	40		22-50+	35					
			45		50+	30	6.5	125	NP		
		End of Borehole. Refusal to augering. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	50		50+						

B5

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	7-07-2020	Total Depth of Borehole	15 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
	GM/ ML	SANDY SILT AND GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		11-12-11						
			10		50+						
		End of Borehole at 15 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	15								
			20								
			25								

B6

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	7-07-2020	Total Depth of Borehole	10 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
	GM/ ML	SANDY SILT AND GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		50+						
		End of Borehole at 10 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	10 15 20 25								

B7-B8

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	25 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log	Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
OL	TOPSOIL: 5.0" thick, sand and organics									
ML/ GM	SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		10-15-10	25	4.0	105	NP		
		10		9-10-11						
		15		12-12-24	30	6	105	NP		
		20		24-50+	20					
	End of Borehole. Refusal to augering. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	25		50+	35	5.5	120	NP		

B9

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	7-07-2020	Total Depth of Borehole	10 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
	GM/ SM/ ML	SANDY SILT to SITY SAND and GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		10-10-12						
			10		12-14-15					-2.2 @ 1000 psf	
		End of Borehole at 10 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	15								
			20								
			25								

B10

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	40 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log	Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
OL	TOPSOIL: 3.0" thick, sand and organics									
ML/ GM	SANDY SILT with GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		5-8-10	23					
GM/ ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	10		10-10-10	35					
GM-ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	15		12-25-20	20	5.5	117	NP		
		20		15-50+						
		25		50+	25					

B10

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	6-26-2020	Total Depth of Borehole	40 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log	Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
GM	SANDY SILTY GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	30		5-8-10	23					
		35		10-10-10	35					
GM/ ML	SANDY GRAVEL AND SILT, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	40		12-25-50+	40	5.5	118	NP		
	End of Borehole. Refusal to augering. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	45								
		50								

B11

Glennwood Medows #6, Glennwood Springs, CO

Project Number	0280-WS20	Drill Rig: SPT Drill Rig / WDP / Soil Auger	
Geologist/Engineer	SMA	Ground Elevation	See Figures
Date Drilled	7-07-2020	Total Depth of Borehole	15 Feet
Borehole Diameter	4 OD Inches	Depth to Water	Not Encountered

Graphic Log		Description / Lithology	Depth (feet)	Sample	SPT Blow Count	%Passing #200	Moisture (%)	DD (pcf)	LL (%), PL (%)	Swell (%)	Completion
	OL	TOPSOIL: 6.0" thick, sand and organics									
	GM/ ML	SANDY SILT AND GRAVEL, red-brown to brown, trace to some cobbles, medium dense to dense, damp to moist, possible occasional boulder	5		7-8-12						
			10		10-10-21						
			15		50+						
		End of Borehole at 15 feet. Groundwater was not encountered during or at the completion of drilling. At completion, borehole was backfilled with soil cuttings. Soil descriptions/log are based on field explorations, soils/geologic research, lab testing, and local experience.	20								
			25								

AMERICAN GEOSERVICES

DESCRIPTIVE TERMINOLOGY & SOIL CLASSIFICATION
UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

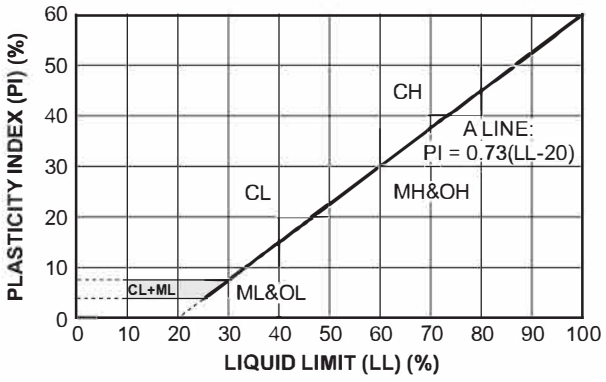
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



DESCRIPTIVE TERMINOLOGY & SOIL CLASSIFICATION

LABORATORY/FIELD TESTING DEFINITIONS FOR EXPLORATION LOGS

DD = DRY DENSITY (PCF)

WD = WET DENSITY (PCF)

MC = MOISTURE CONTENT (%)

PL = PLASTIC LIMIT (%)

LL = LIQUID LIMIT (%)

PI = PLASTICITY INDEX

OC = ORGANIC CONTENT (%)

S = SATURATION PERCENT (%)

SG = SPECIFIC GRAVITY

C = COHESION

Φ = ANGLE OF INTERNAL FRICTION

QU = UNCONFINED COMPRESSION STRENGTH

#200 = PERCENT PASSING THE #200 SIEVE

CBR = CALIFORNIA BEARING RATIO

VS = VANE SHEAR

PP = POCKET PENETROMETER

DP = DRIVE PROBE

SPT = STANDARD PENETRATION TEST

BPF = BLOWS PER FOOT (N VALUE)

SH = SHELBY TUBE SAMPLE

GW = GROUND WATER

RQD = ROCK QUALITY DESIDNATION

TP = TEST PIT

B = BORING

HA = HAND AUGER



GROUNDWATER LEVEL/SEEPAGE ENCOUNTERED DURING EXPLORATION



STATIC GROUNDWATER LEVEL WITH DATE MEASURED

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	STP (BPF)	PP (TSF)
VERY SOFT	0-1	LESS THAN 0.25
SOFT	2 - 4	0.25 - 0.5
MEDIUM STIFF	5 - 8	0.5 - 1.0
STIFF	9 - 15	1.0 - 2.0
VERY STIFF	16 - 30	2.0 - 4.0
HARD	30+	OVER 4.0

RELATIVE DENSITY OF COHESIONLESS SOILS

DENSITY	SPT (BPF)
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	50+

PARTICLE SIZE IDENTIFICATION

NAME	DIAMETER (INCHES)	SIEVE NO.
ROCK BLOCK	>120	
BOULDER	12-120	
COBBLE	3-12	
GRAVEL		
COURSE	3/4 - 3	
FINE	1/4 – 3/4	NO. 4
SAND		
COARSE	4.75 MM	NO. 10
MEDIUM	2.0MM	NO. 40
FINE	.425 MM	NO. 200
SILT	.075 MM	
CLAY	<0.005 MM	

GRAIN SIZE

FINE GRAINED	<0.04 INCH	FEW GRAINS ARE DISTINGUISHABLE IN THE FIELD OR WITH HAND LENS.
MEDIUM GRAINED	0.04-0.2 INCH	GRAINS ARE DISTINGUISHABLE WITH THE AID OF A HAND LENS.
COARSE GRAINED	0.04-0.2 INCH	MOST GRAINS ARE DISTINGUISHABLE WITH THE NAKED EYE.

DESCRIPTIVE TERMINOLOGY & SOIL CLASSIFICATION

SPT EXPLORATIONS:

STANDARD PENETRATION TESTING IS PERFORMED BY DRIVING A 2 – INCH O.D. SPLIT-SPOON INTO THE UNDISTURBED FORMATION AT THE BOTTOM OF THE BORING WITH REPEATED BLOWS OF A 140 – POUND PIN GUIDED HAMMER FALLING 30 INCHES. NUMBER OF BLOWS (N VALUE) REQUIRED TO DRIVE THE SAMPLER A GIVEN DISTANCE WAS CONSIDERED A MEASURE OF SOIL CONSISTENCY.

SH SAMPLING:

SHELBY TUBE SAMPLING IS PERFORMED WITH A THIN WALLED SAMPLER PUSHED INTO THE UNDISTURBED SOIL TO SAMPLE 2.0 FEET OF SOIL.

AIR TRACK EXPLORATION:

TESTING IS PERFORMED BY MEASURING RATE OF ADVANCEMENT AND SAMPLES ARE RETRIEVED FROM CUTTINGS.

HAND AUGUR EXPLORATION:

TESTING IS PREFORMED USING A 3.25" DIAMETER AUGUR TO ADVANCE INTO THE EARTH AND RETRIEVE SAMPLES.

DRIVE PROBE EXPLORATIONS:

THIS "RELATIVE DENSITY" EXPLORATION DEVICE IS USED TO DETERMINE THE DISTRIBUTION AND ESTIMATE STRENGTH OF THE SUBSURFACE SOIL AND DECOMPRESSED ROCK UNITS. THE RESISTANCE TO PENETRATION IS MEASURED IN BLOWS-PER-1/2 FOOT OF AN 11-POUND HAMMER WHICH FREE FALLS ROUGHLY 3.5 FEET DRIVING THE 0.5 INCH DIAMETER PIPE INTO THE GROUND. FOR A MORE DETAILED DESCRIPTION OF THIS GEOTECHNICAL EXPLORATION METHOD, THE SLOPE STABILITY REFERENCE GUIDE FOR NATIONAL FORESTS IN THE UNITED STATES, VOLUME I, UNITED STATES DEPARTMENT OF AGRICULTURE, EM-7170-13, AUGUST 1994, P. 317-321.

CPT EXPLORATION:

CONE PENETROMETER EXPLORATIONS CONSIST OF PUSHING A PROBE CONE INTO THE EARTH USING THE REACTION OF A 20-TON TRUCK. THE CONE RESISTANCE (QC) AND SLEEVE FRICTION (FS) ARE MEASURED AS THE PROBE WAS PUSHED INTO THE EARTH. THE VALUES OF QC AND FS (IN TSF) ARE NOTED AS THE LOCALIZED INDEX OF SOIL STRENGTH.

ANGULARITY OF GRAVEL & COBBLES

ANGULAR	COARSE PARTICLES HAVE SHARP EDGES AND RELATIVELY PLANE SIDES WITH UNPOLISHED SURFACES.
SUBANGULAR	COARSE GRAINED PARTICLES ARE SIMILAR TO ANGULAR BUT HAVE ROUNDED EDGES.
SUBROUNDED	COARSE GRAINED PARTICLES HAVE NEARLY PLANE SIDES BUT HAVE WELL ROUNDED CORNERS AND EDGES.
ROUNDED	COARSE GRAINED PARTICLES HAVE SMOOTHLY CURVED SIDES AND NO EDGES.

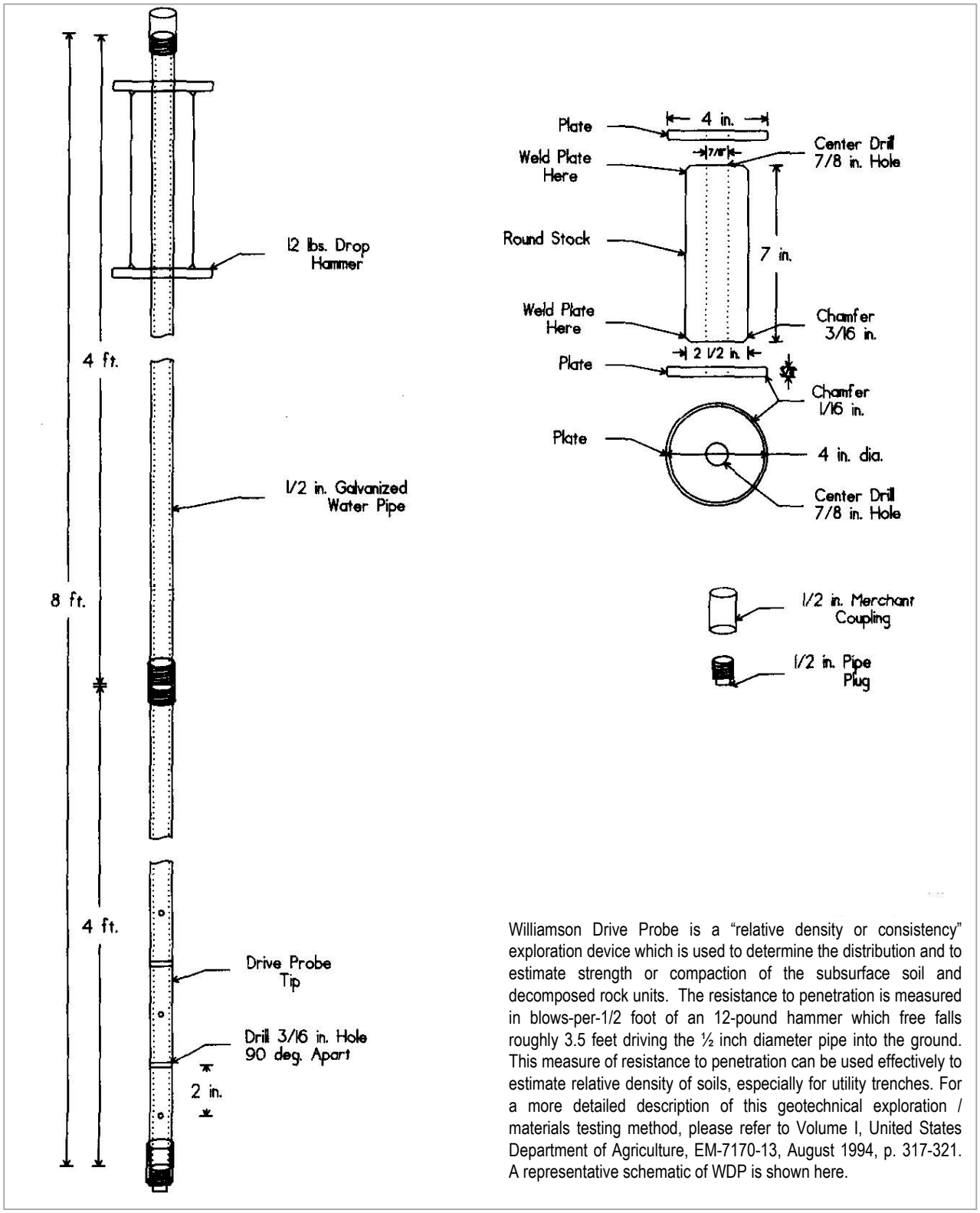
SOIL MOISTURE MODIFIER

DRY	ABSENCE OF MOISTURE; DUSTY, DRY TO TOUCH
MOIST	DAMP BUT NO VISIBLE WATER
WET	VISIBLE FREE WATER

WEATHERED STATE

FRESH	NO VISIBLE SIGN OF ROCK MATERIAL WEATHERING; PERHAPS SLIGHT DISCOLORATION IN MAJOR DISCONTINUITY SURFACES.
SLIGHTLY WEATHERED	DISCOLORATION INDICATES WEATHERING OF ROCK MATERIAL AND DISCONTINUITY SURFACES. ALL THE ROCK MATERIAL MAY BE DISCOLORED BY WEATHERING AND MAY BE SOMEWHAT WEAKER EXTERNALLY THAN ITS FRESH CONDITION.
MODERATELY WEATHERED	LESS THAN HALF OF THE ROCK MATERIAL IS DECOMPOSED AND/OR DISINTEGRATED TO SOIL. FRESH OR DISCOLORED ROCK IS PRESENT EITHER AS A CONTINUOUS FRAMEWORK OR AS CORE STONES.
HIGHLY WEATHERED	MORE THAN HALF OF THE ROCK MATERIAL IS DECOMPOSED AND/OR DISINTEGRATED TO SOIL. FRESH OR DISCOLORED ROCK IS PRESENT EITHER AS DISCONTINUOUS FRAMEWORK OR AS CORE STONE.
COMPLETELY WEATHERED	ALL ROCK MATERIAL IS DECOMPOSED AND/OR DISINTEGRATED TO SOIL. THE ORIGINAL MASS STRUCTURE IS STILL LARGELY INTACT.
RESIDUAL SOIL	ALL ROCK MATERIAL IS CONVERTED TO SOIL. THE MASS STRUCTURE AND MATERIAL FABRIC IS DESTROYED. THERE IS A LARGE CHANGE IN VOLUME, BUT THE SOIL HAS NOT BEEN SIGNIFICANTLY TRANSPORTED.

Drive Prove Schematic

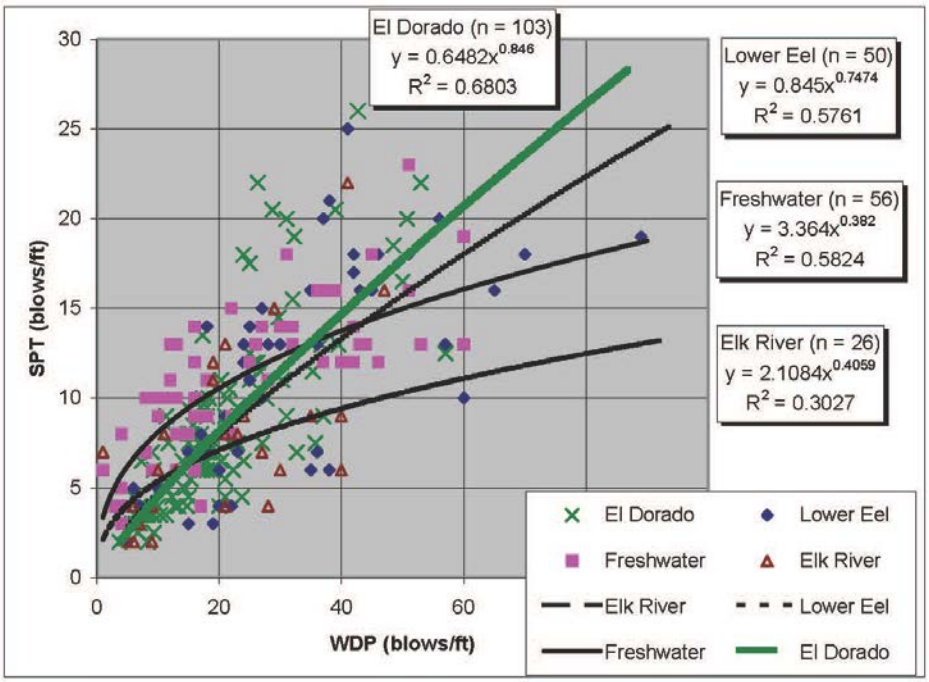


Williamson Drive Probe is a "relative density or consistency" exploration device which is used to determine the distribution and to estimate strength or compaction of the subsurface soil and decomposed rock units. The resistance to penetration is measured in blows-per-1/2 foot of an 12-pound hammer which free falls roughly 3.5 feet driving the ½ inch diameter pipe into the ground. This measure of resistance to penetration can be used effectively to estimate relative density of soils, especially for utility trenches. For a more detailed description of this geotechnical exploration / materials testing method, please refer to Volume I, United States Department of Agriculture, EM-7170-13, August 1994, p. 317-321. A representative schematic of WDP is shown here.

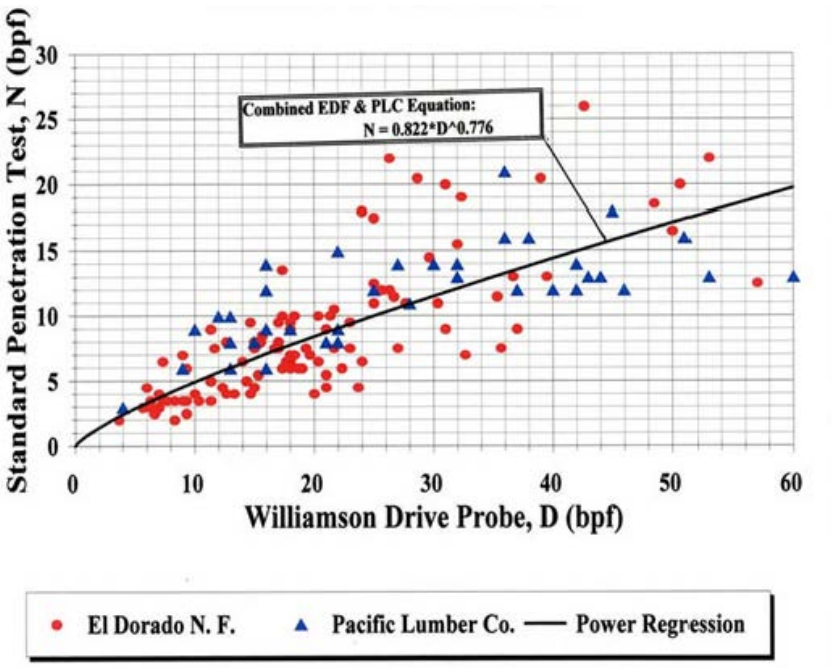
Reference: Figure 3.6.1, Appendix 3.6, Page No. 321, USDA EM-7170-13, August 1994, Volume I

CORRELATION

WILLIAMSON DRIVE PROBE (WDP)
STANDARD PENETRATION TEST (SPT)



SOURCE: Published literature by W.C. Adams (Hart Crowser, Inc.), R.W. Prellwitz (Bitterroot Geotechnical) & T.E. Koler (El Dorado National Forest).



SOURCE: United States Forest Service, Technology Development Program Website (http://www.fs.fed.us/t-d/programs/im/williamson_drive/correlation.shtml)

GEOPHYSICAL SETTING

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

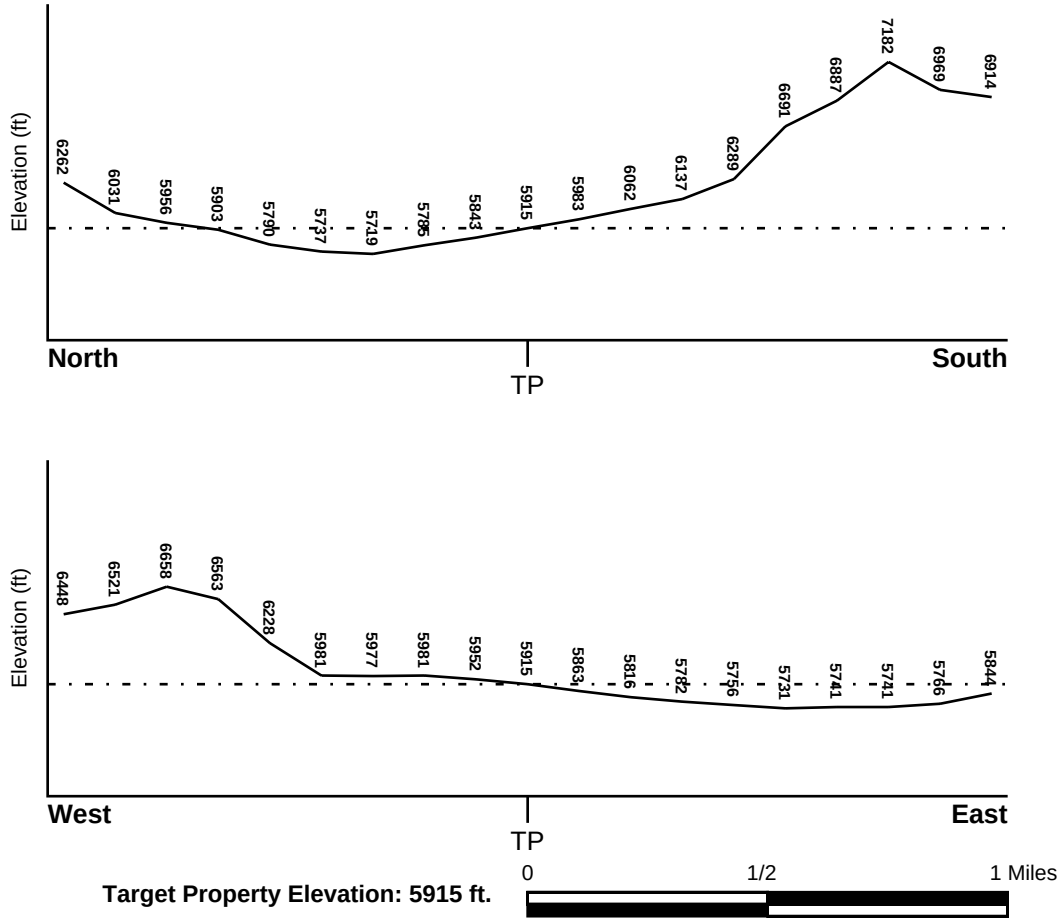
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

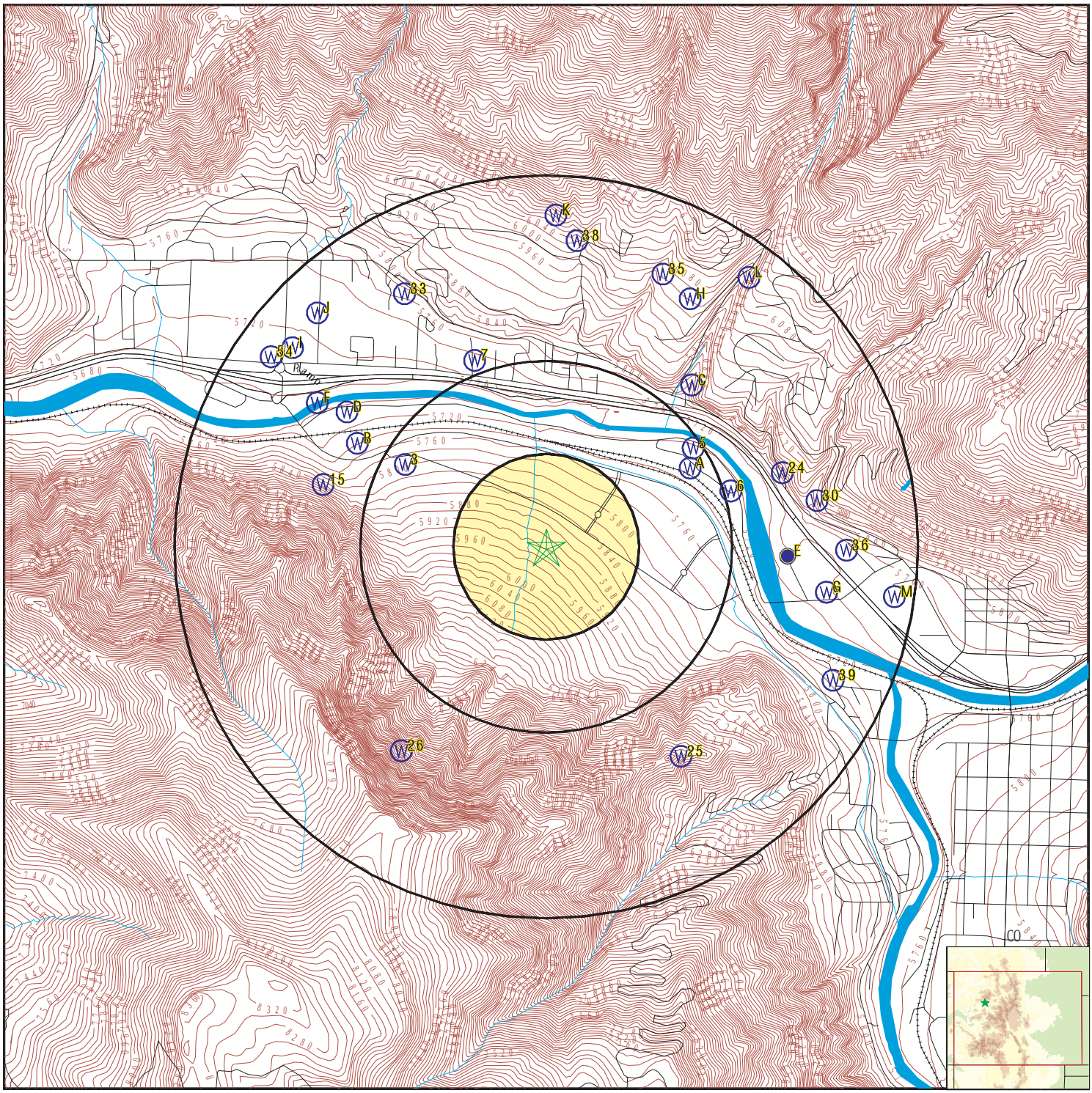
General Topographic Gradient: General NNE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

PHYSICAL SETTING SOURCE MAP - 6118520.2s



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

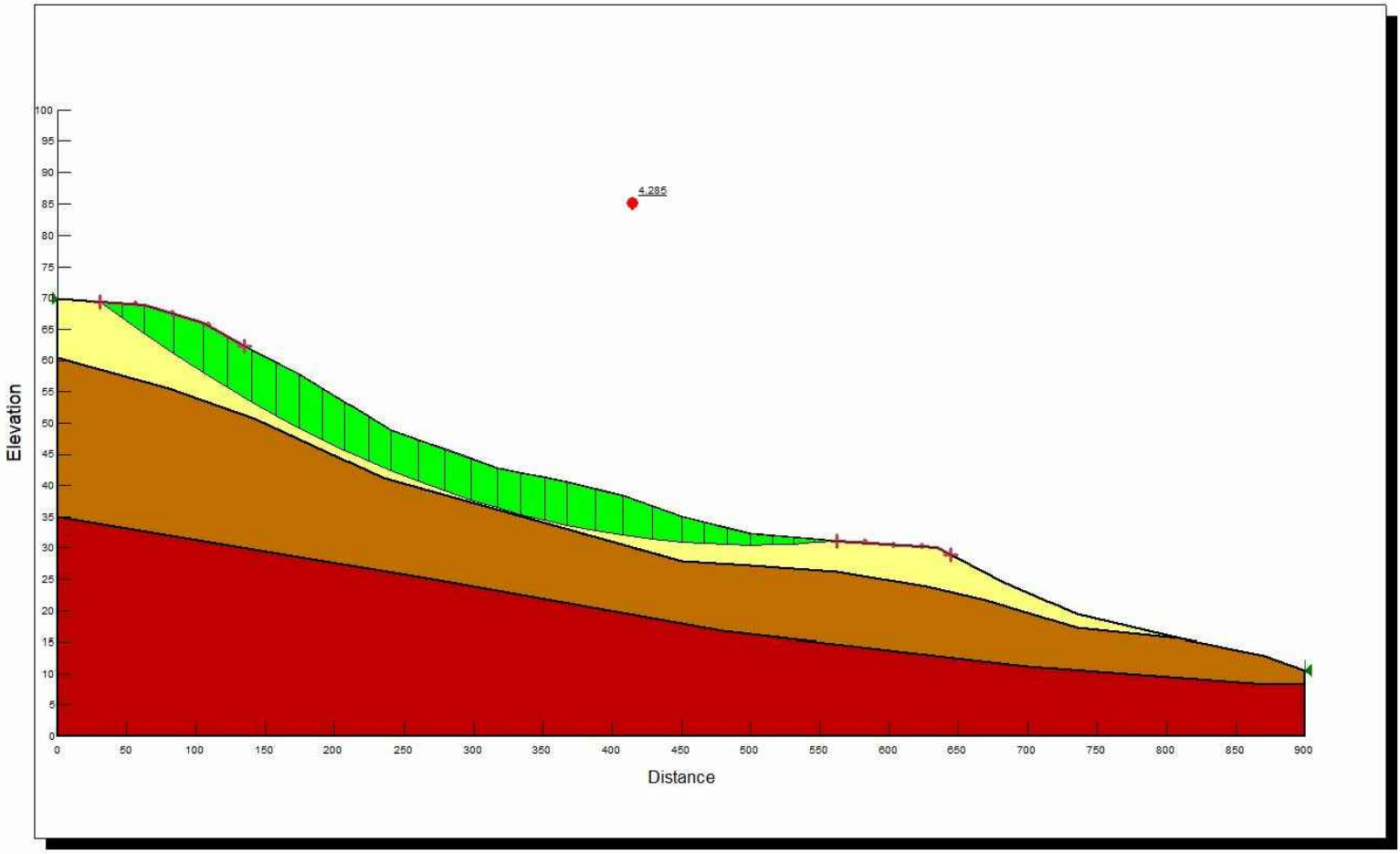
Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
Oil, gas or related wells

N

SITE NAME:	Glenwood Meadows Housing	CLIENT:	American Geoservices, LLC
ADDRESS:	Wulfsohn Road Glenwood Springs CO 81601	CONTACT:	SAM ADETTIWAR
LAT/LONG:	39.554395 / 107.348062	INQUIRY #:	6118520.2s
		DATE:	July 13, 2020 2:19 pm

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SLOPE STABILITY ANALYSIS RESULTS

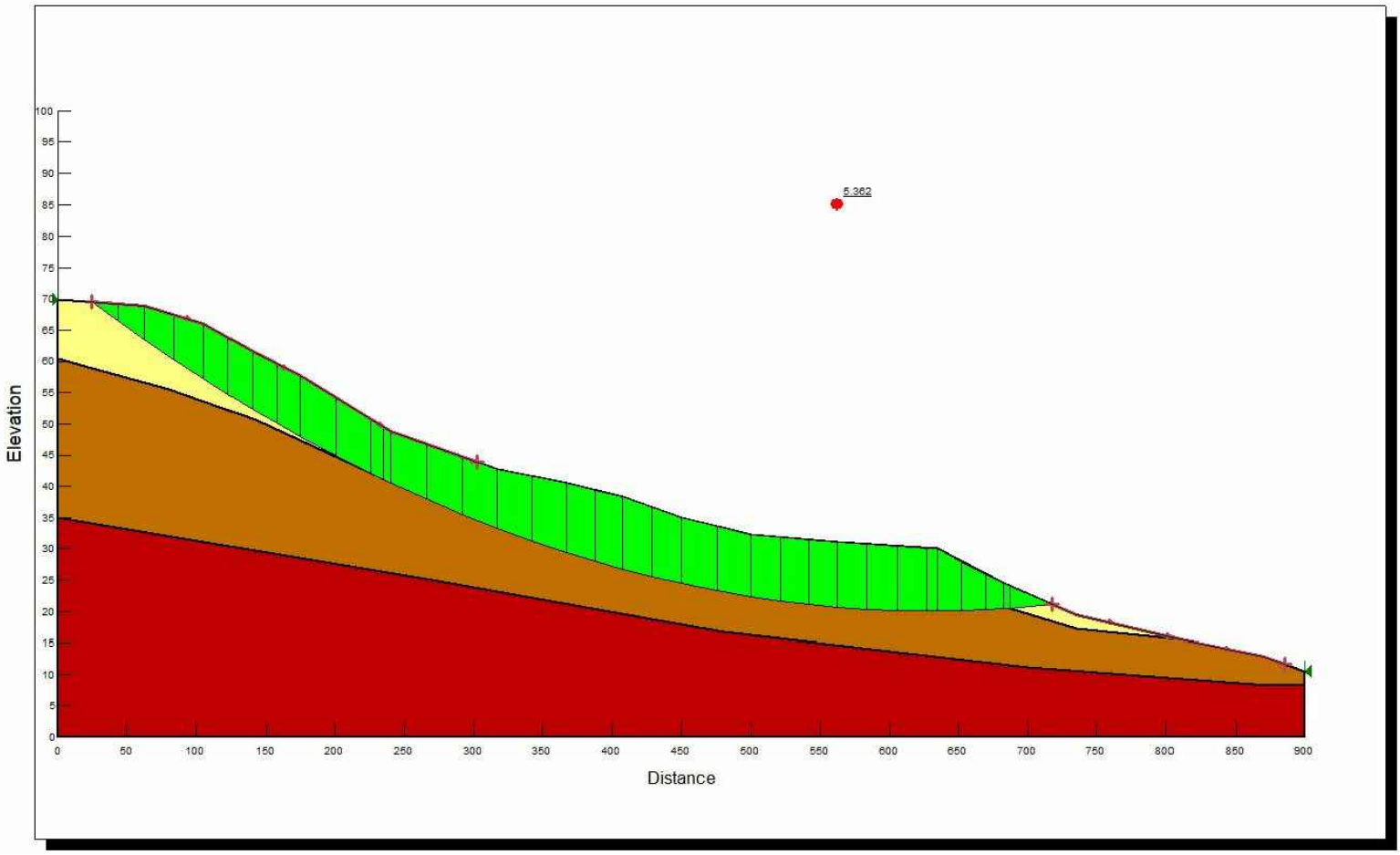


N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (STATIC)

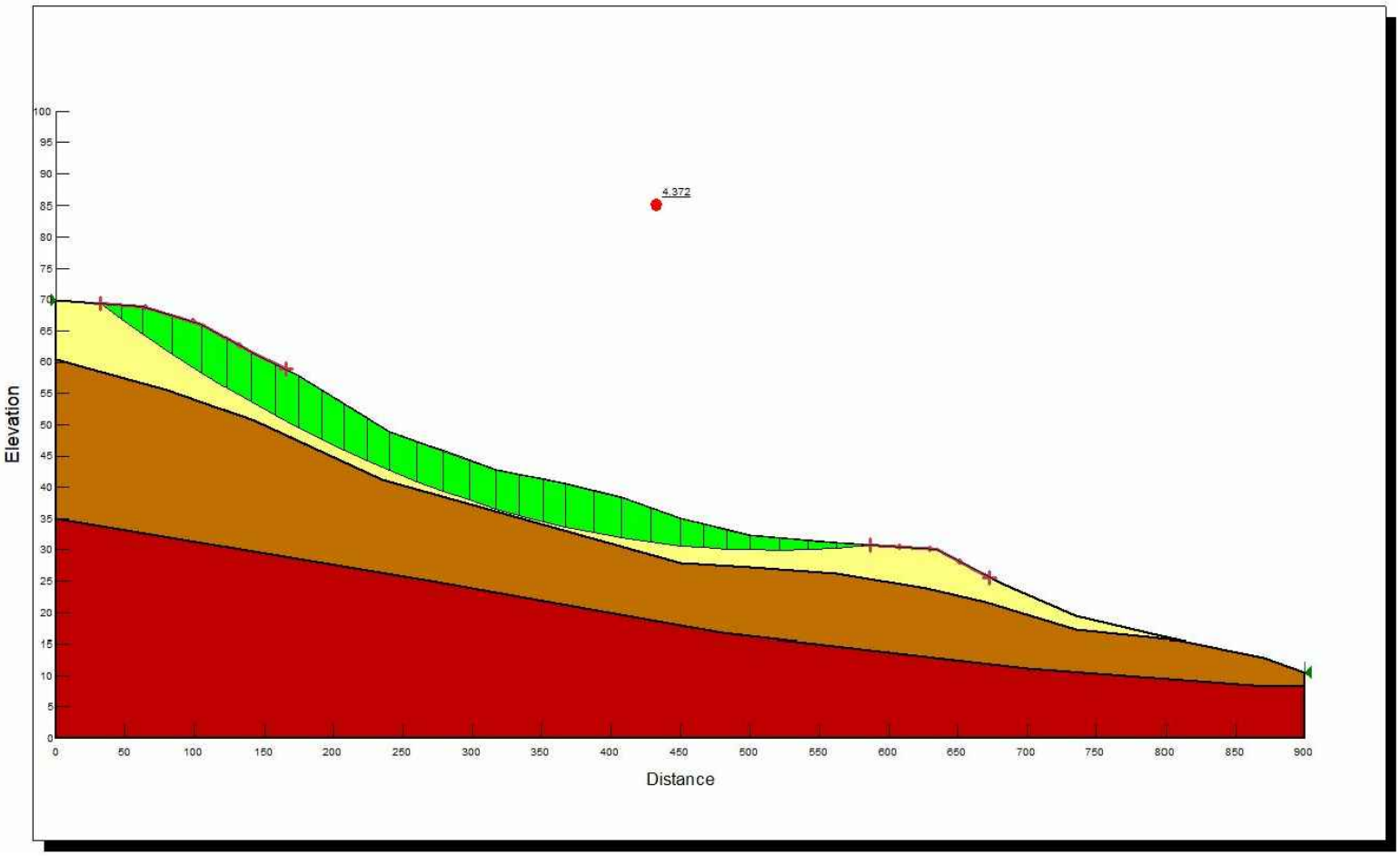


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REFERENCE:
SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (STATIC)

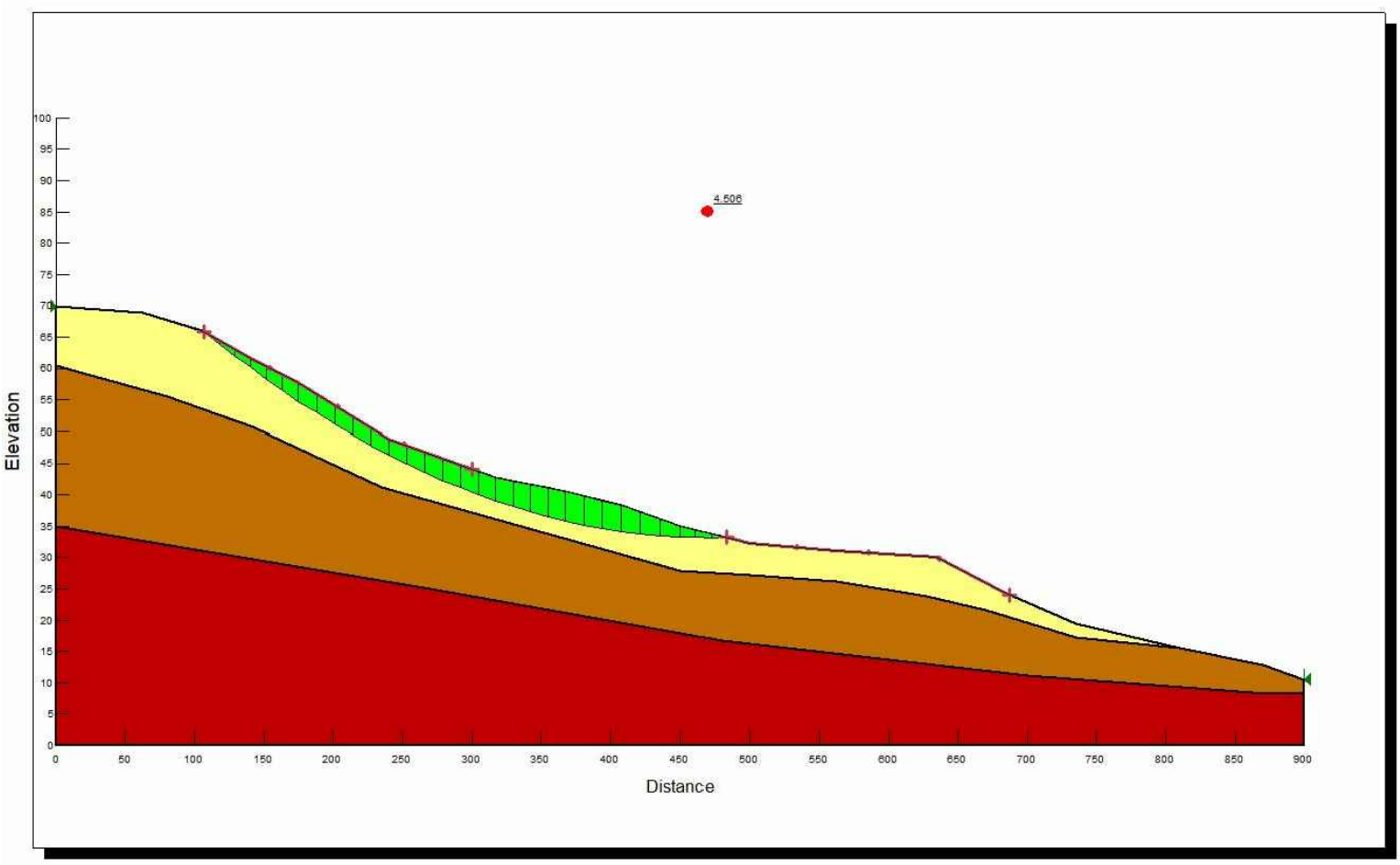


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REFERENCE:
SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (STATIC)

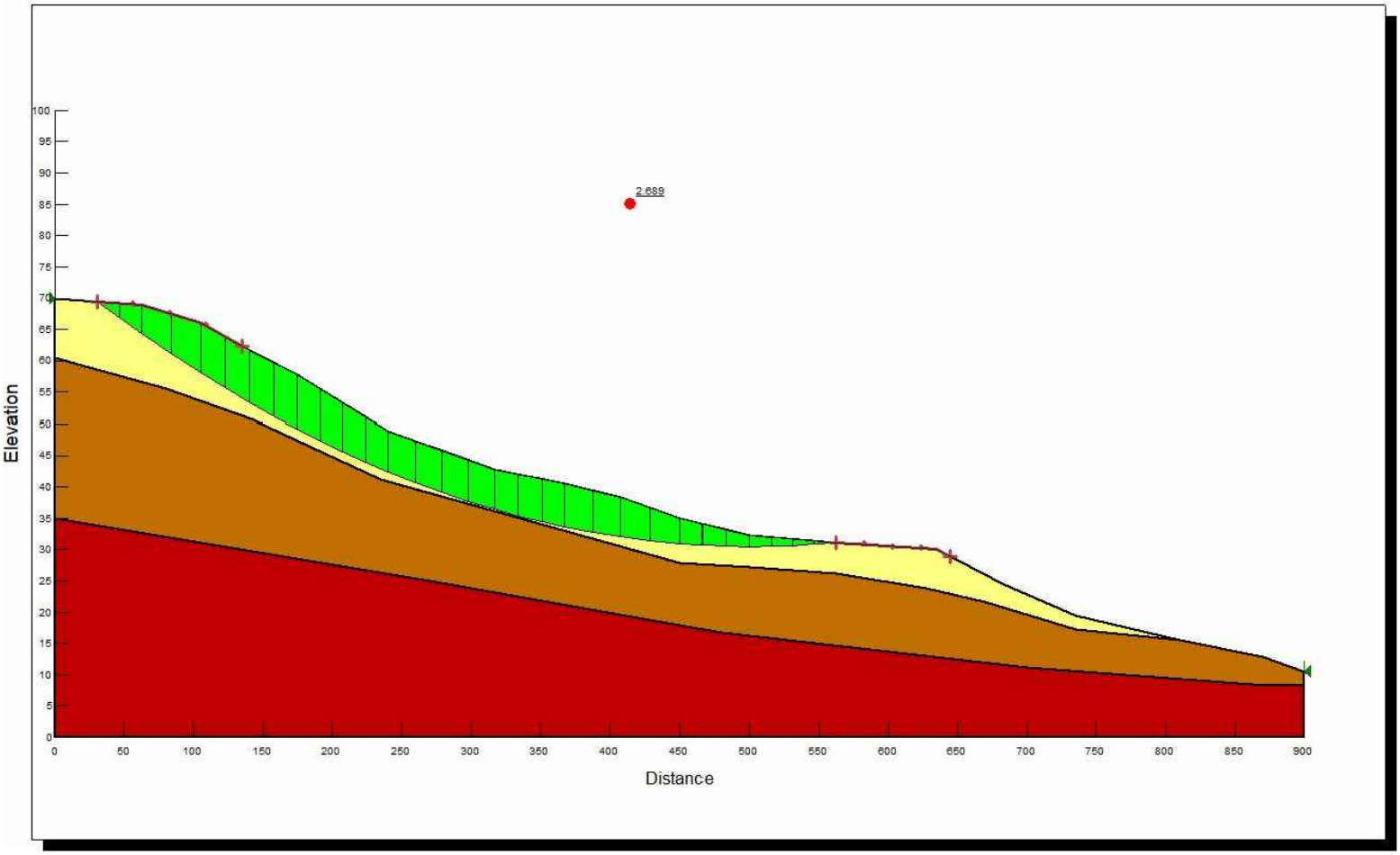


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SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (STATIC)

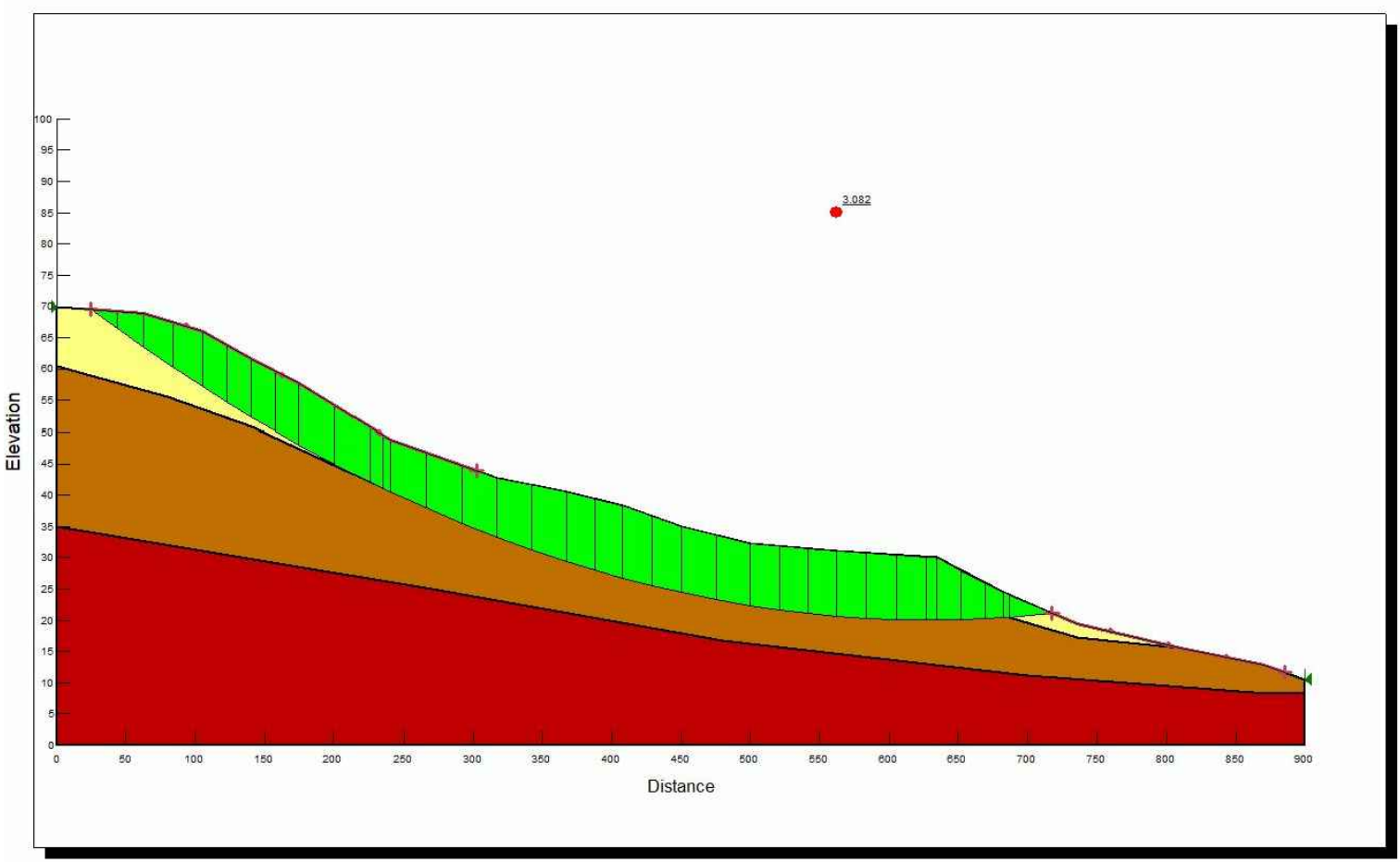


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REFERENCE:
SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.05g)

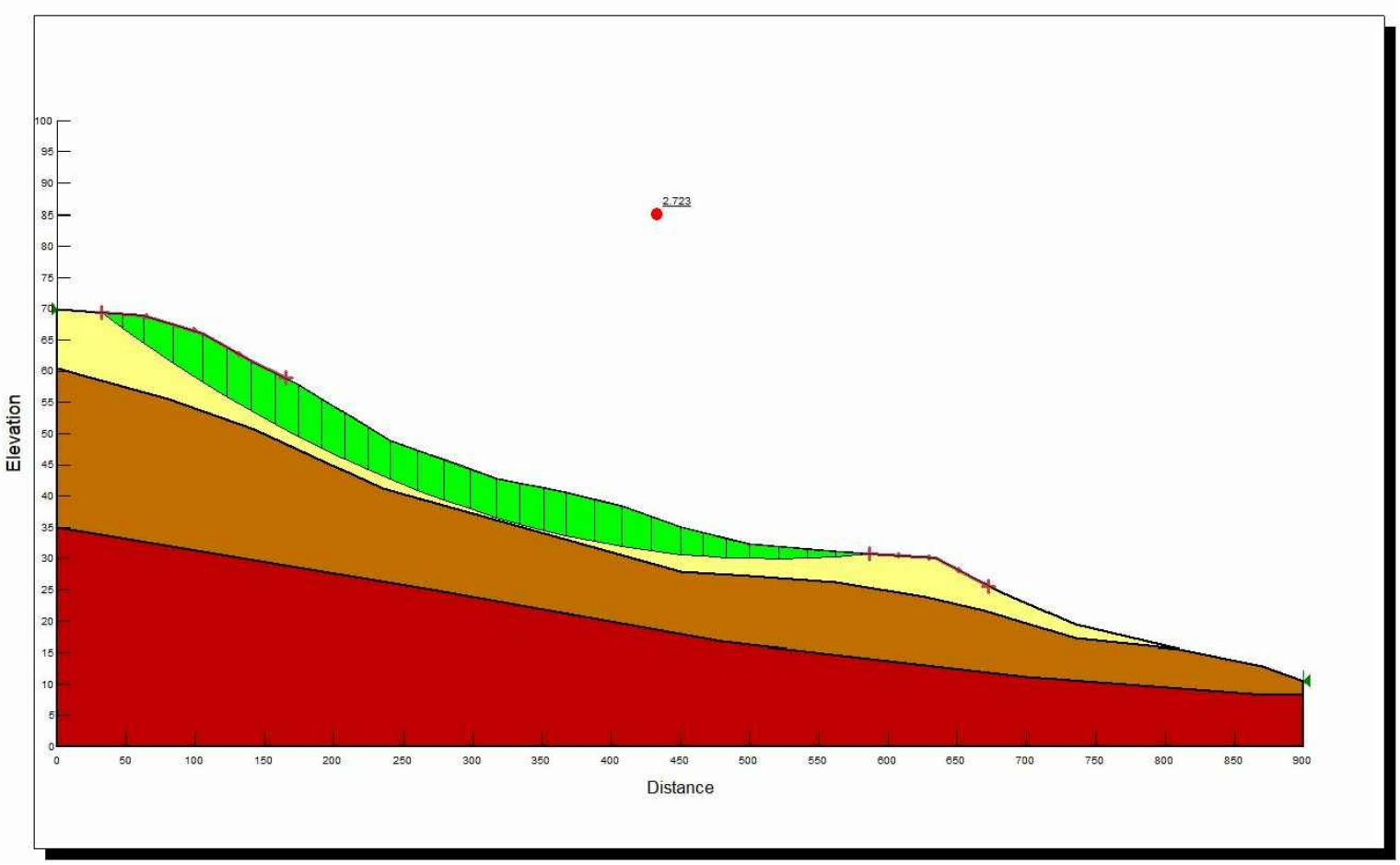


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.05g)

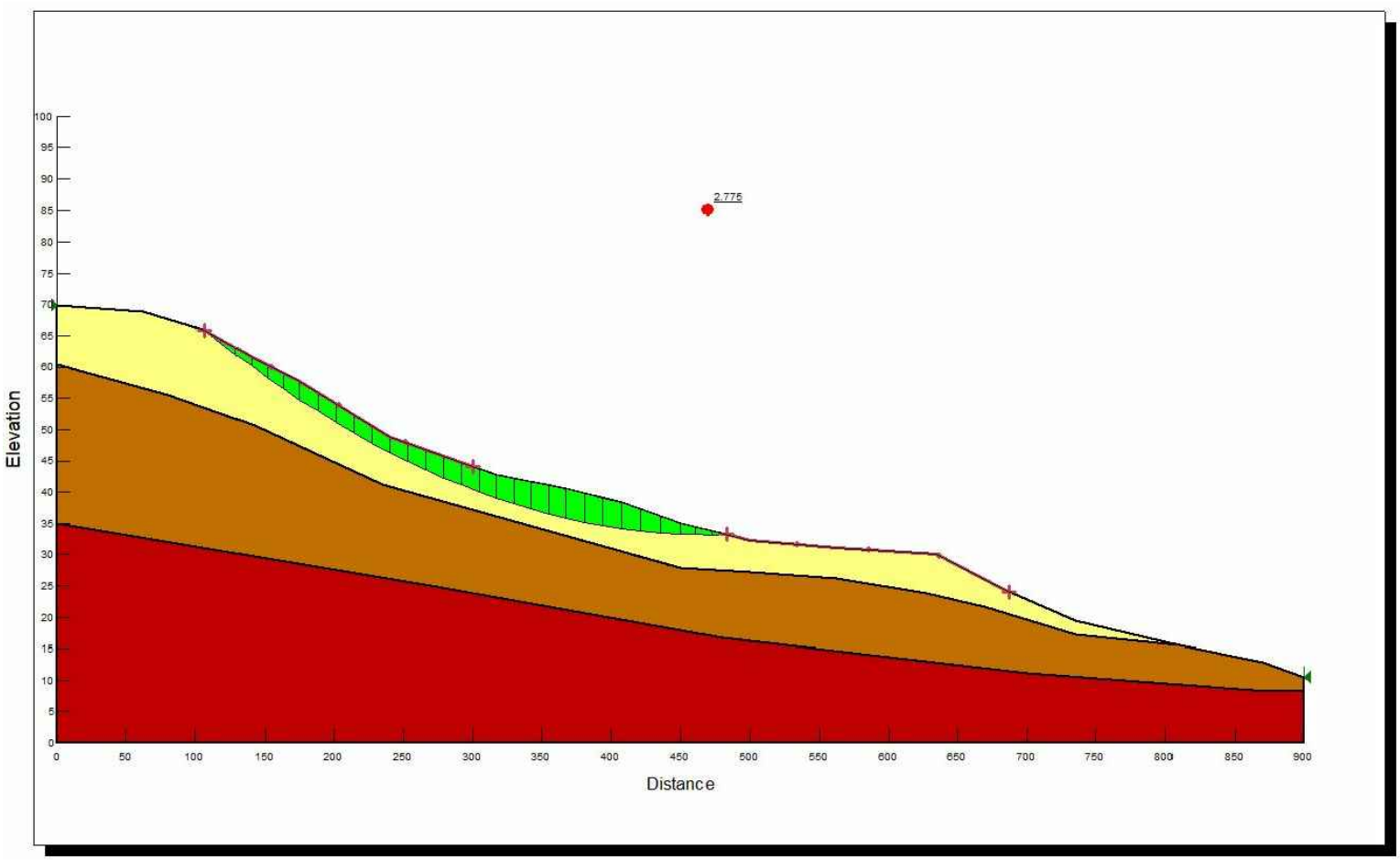


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.05g)

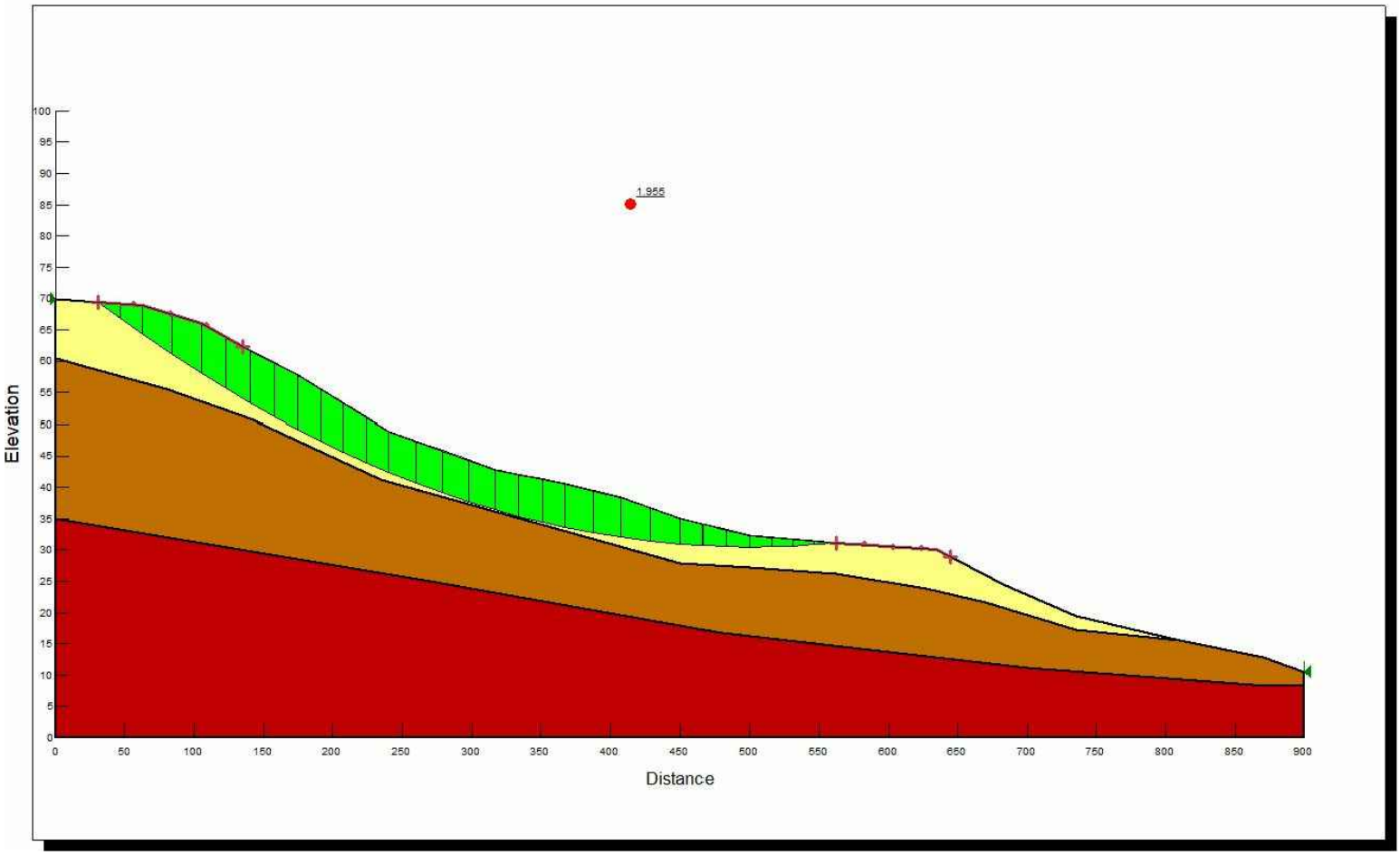


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.05g)

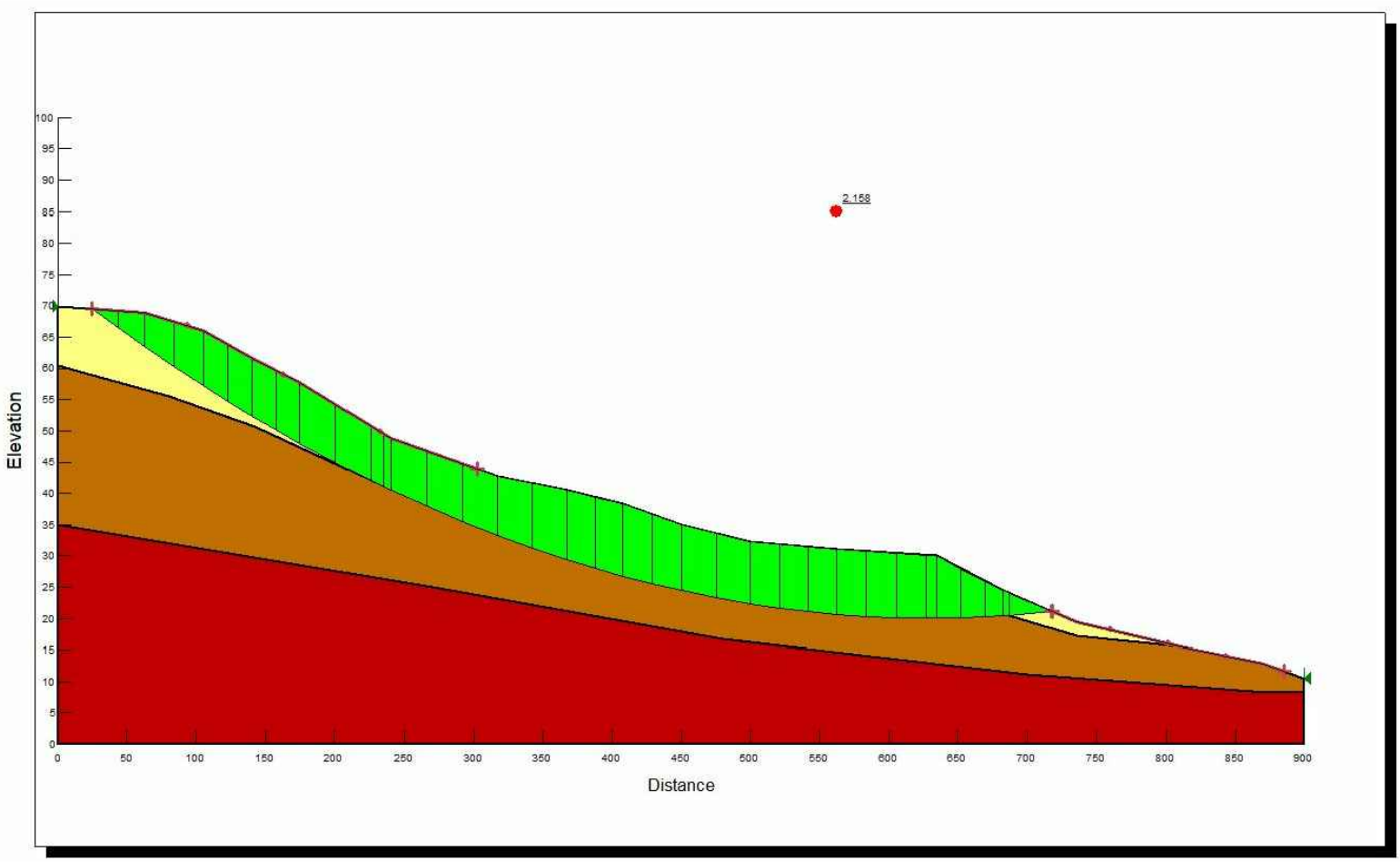


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.1g)

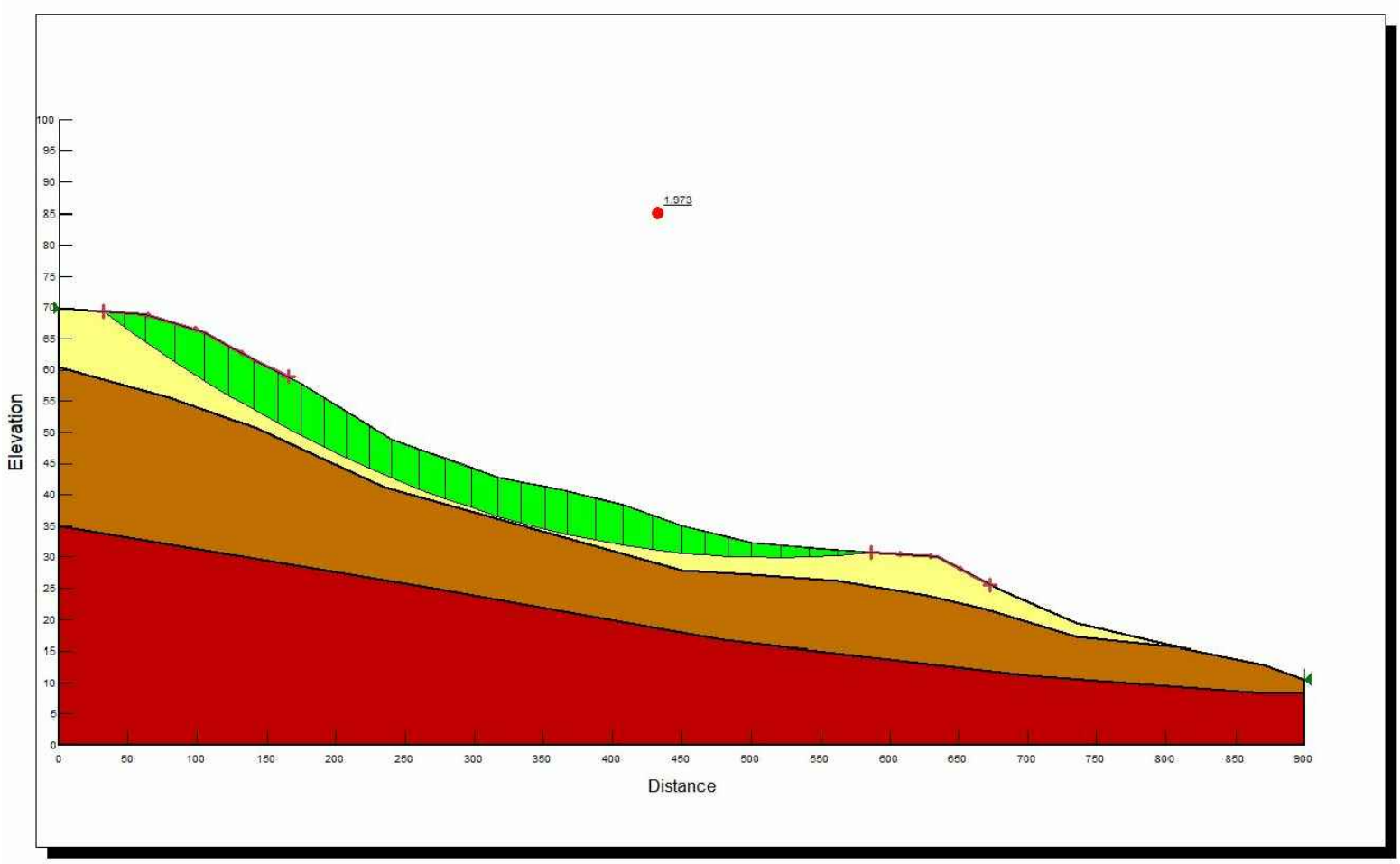


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.1g)

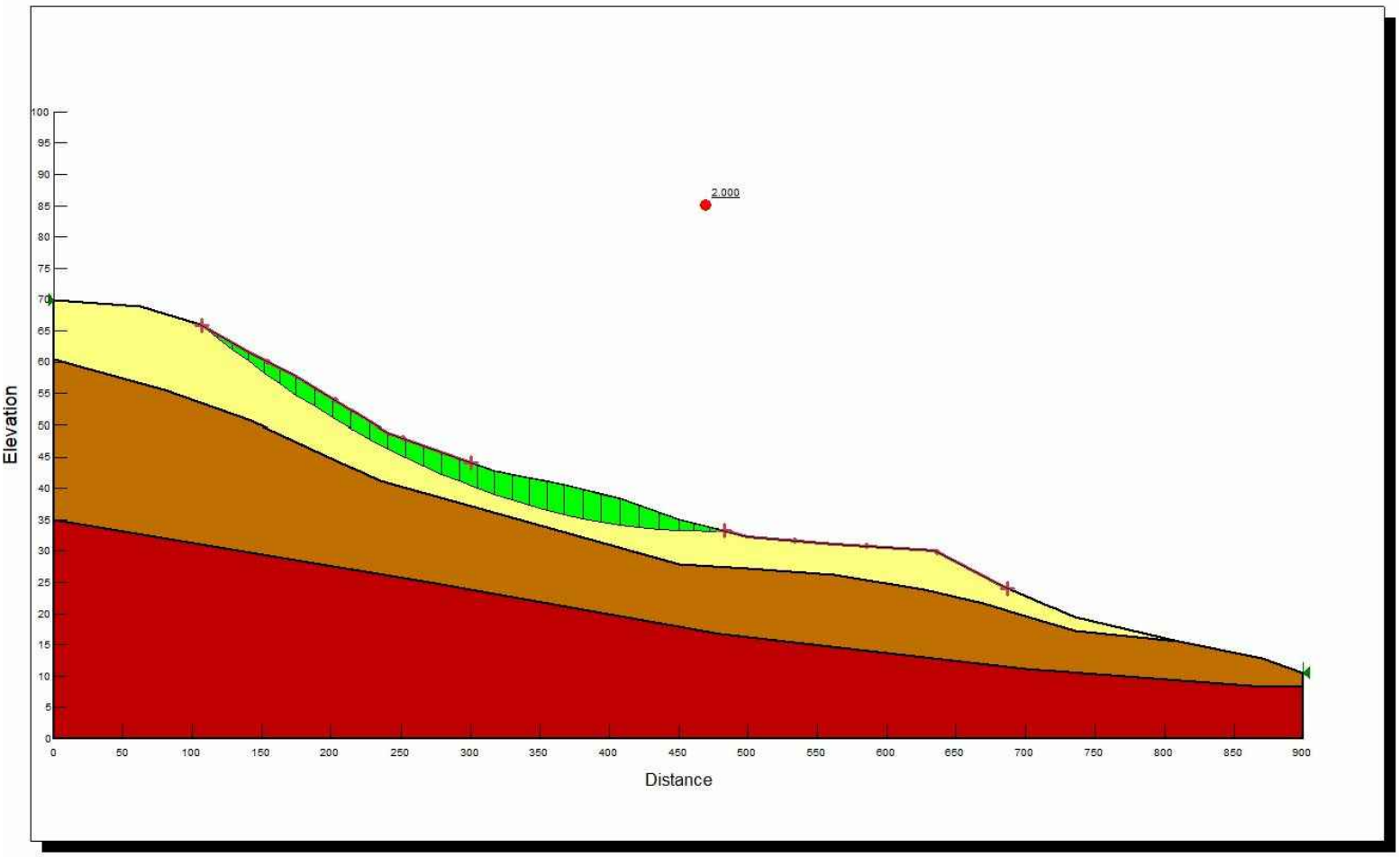


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.1g)

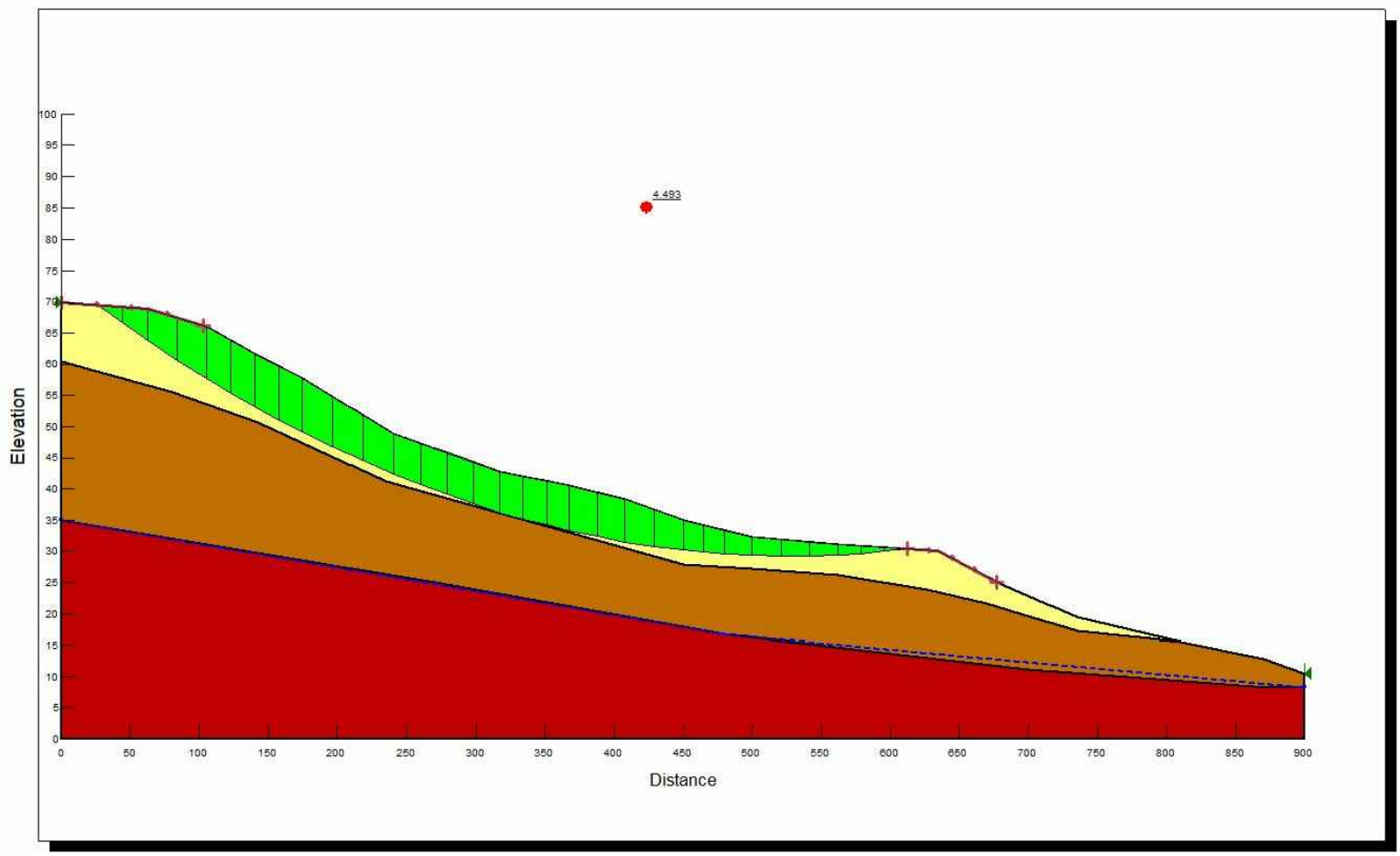


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SLOPE STABILITY ANALYSIS WITHOUT WATER TABLE (SEISMIC Kh=0.1g)

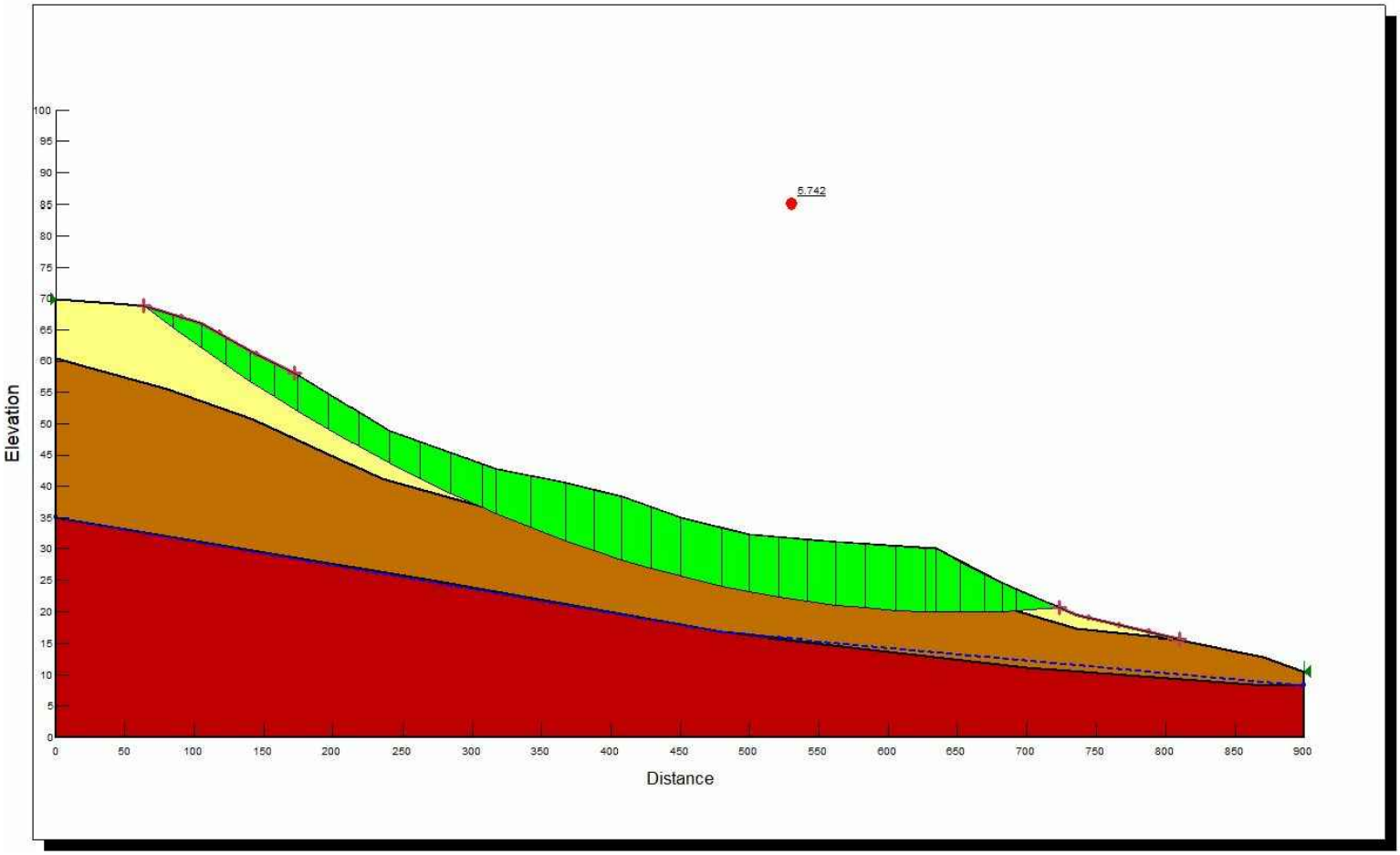


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SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

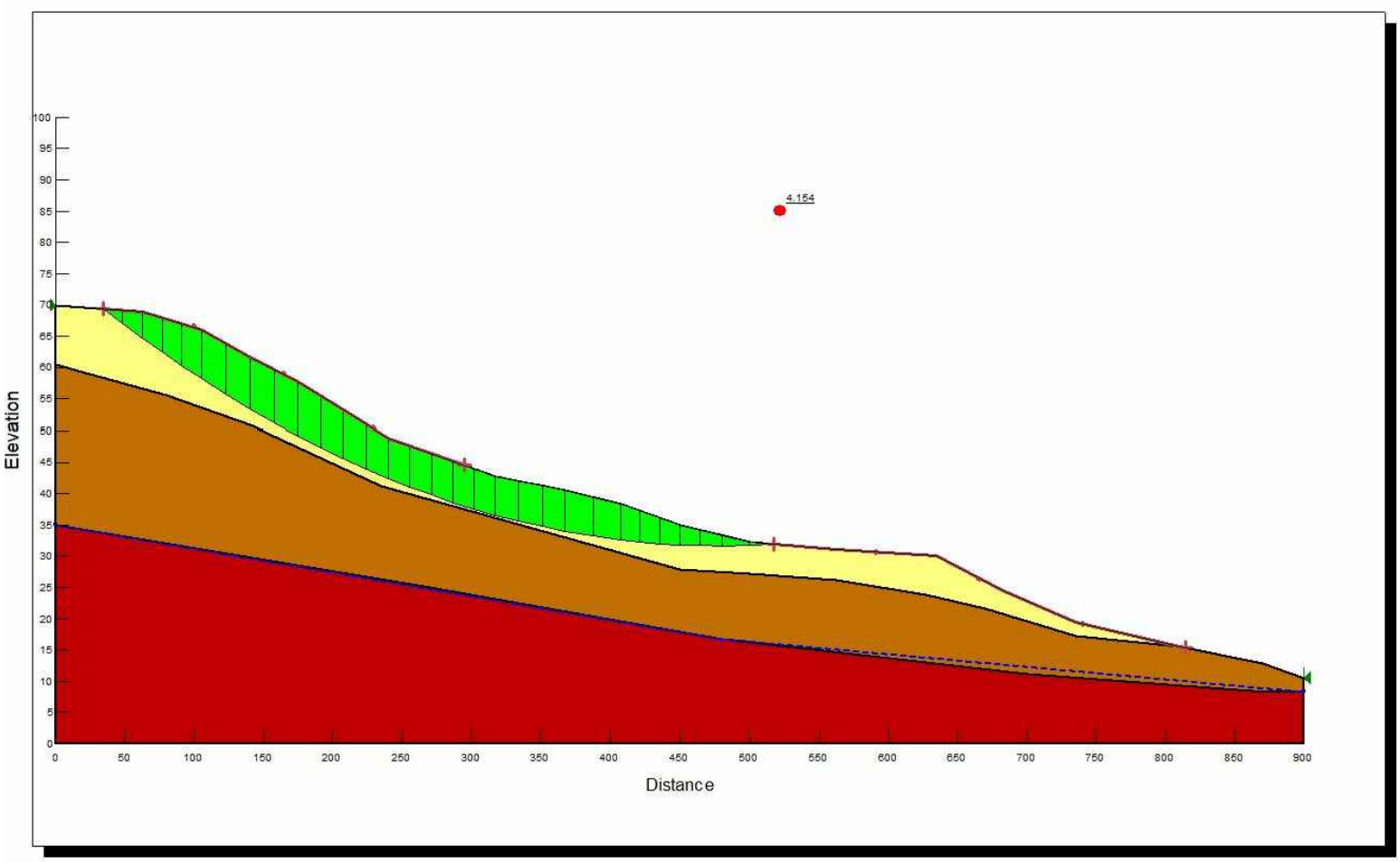


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SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

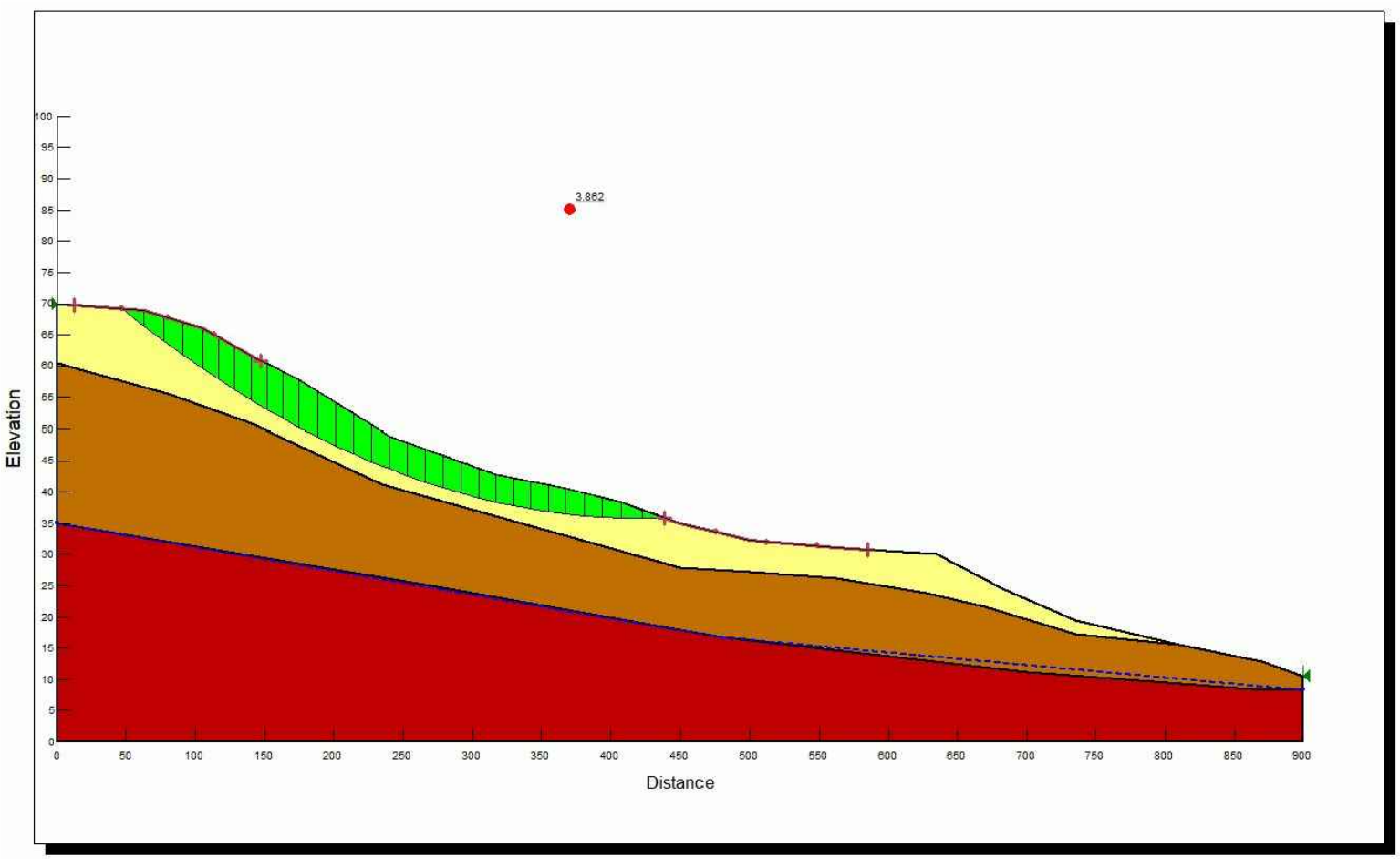


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

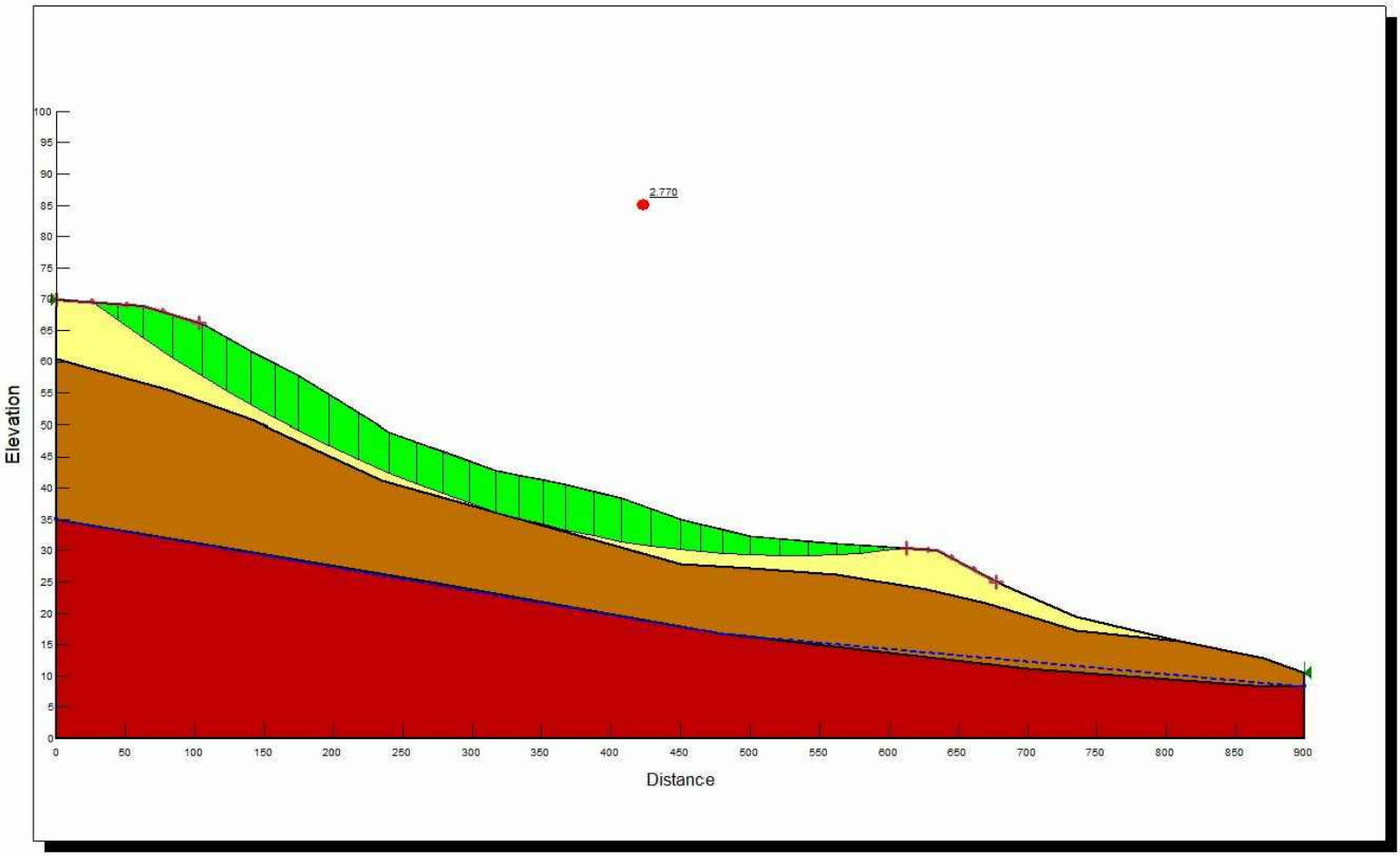


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

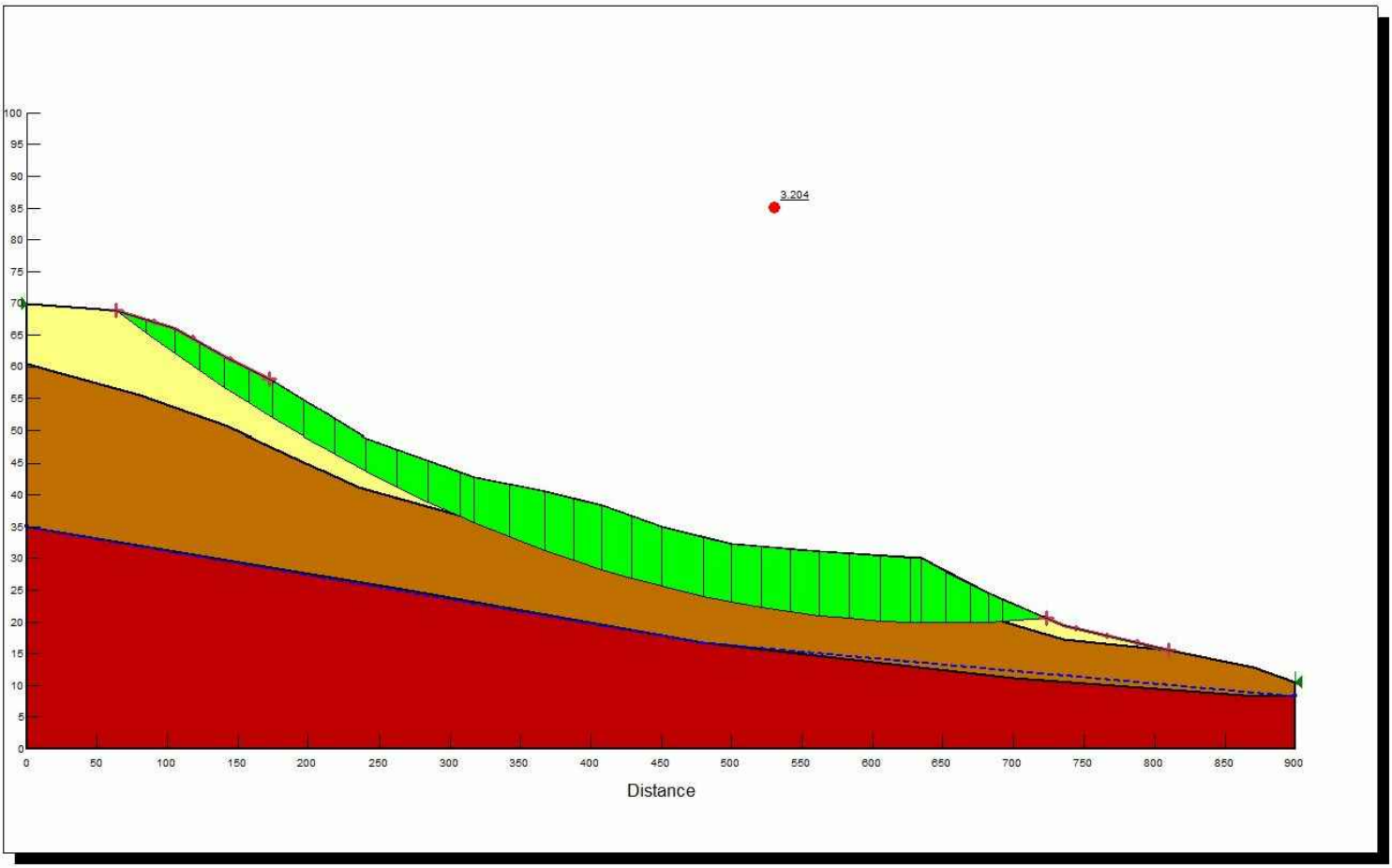


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

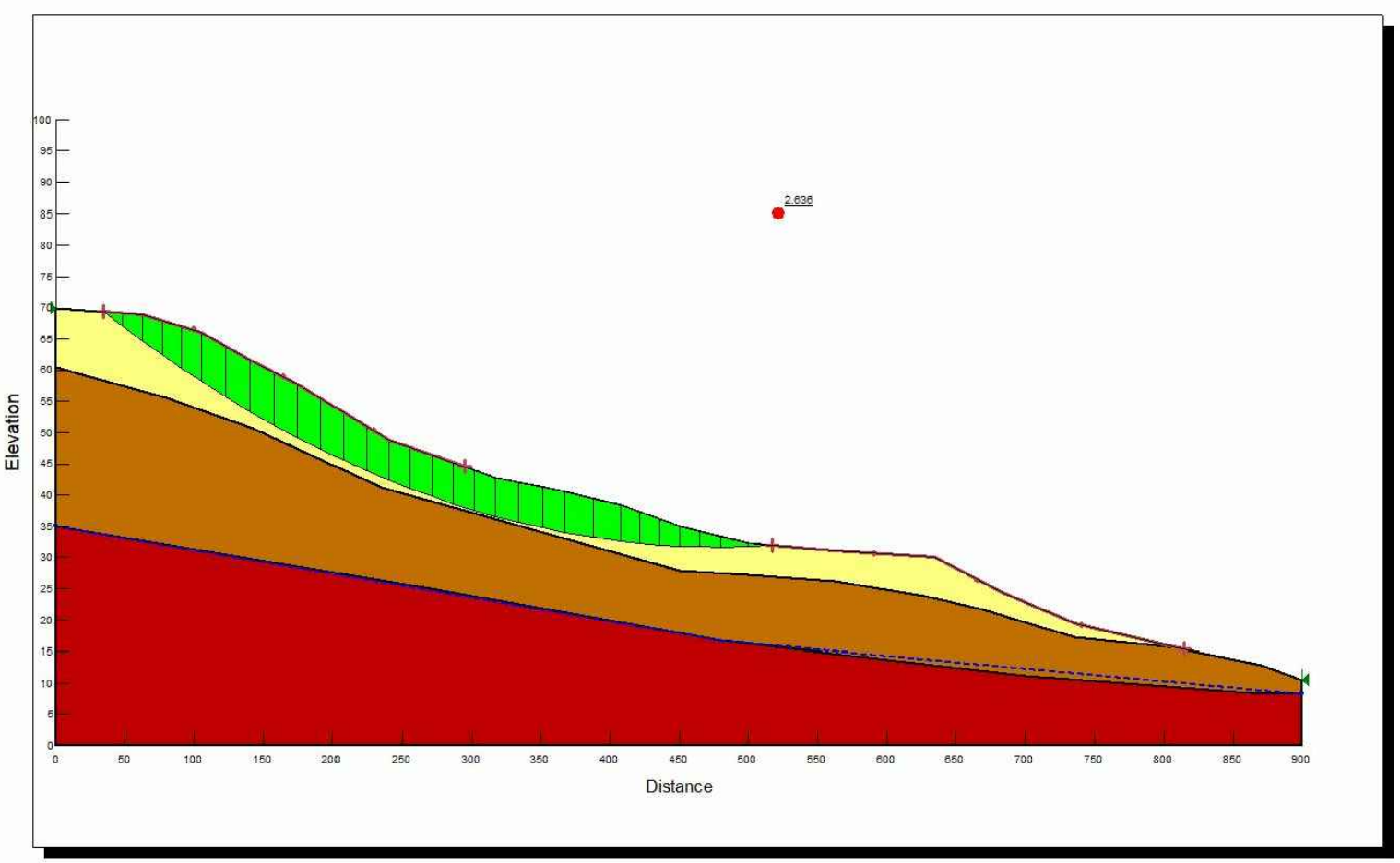


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

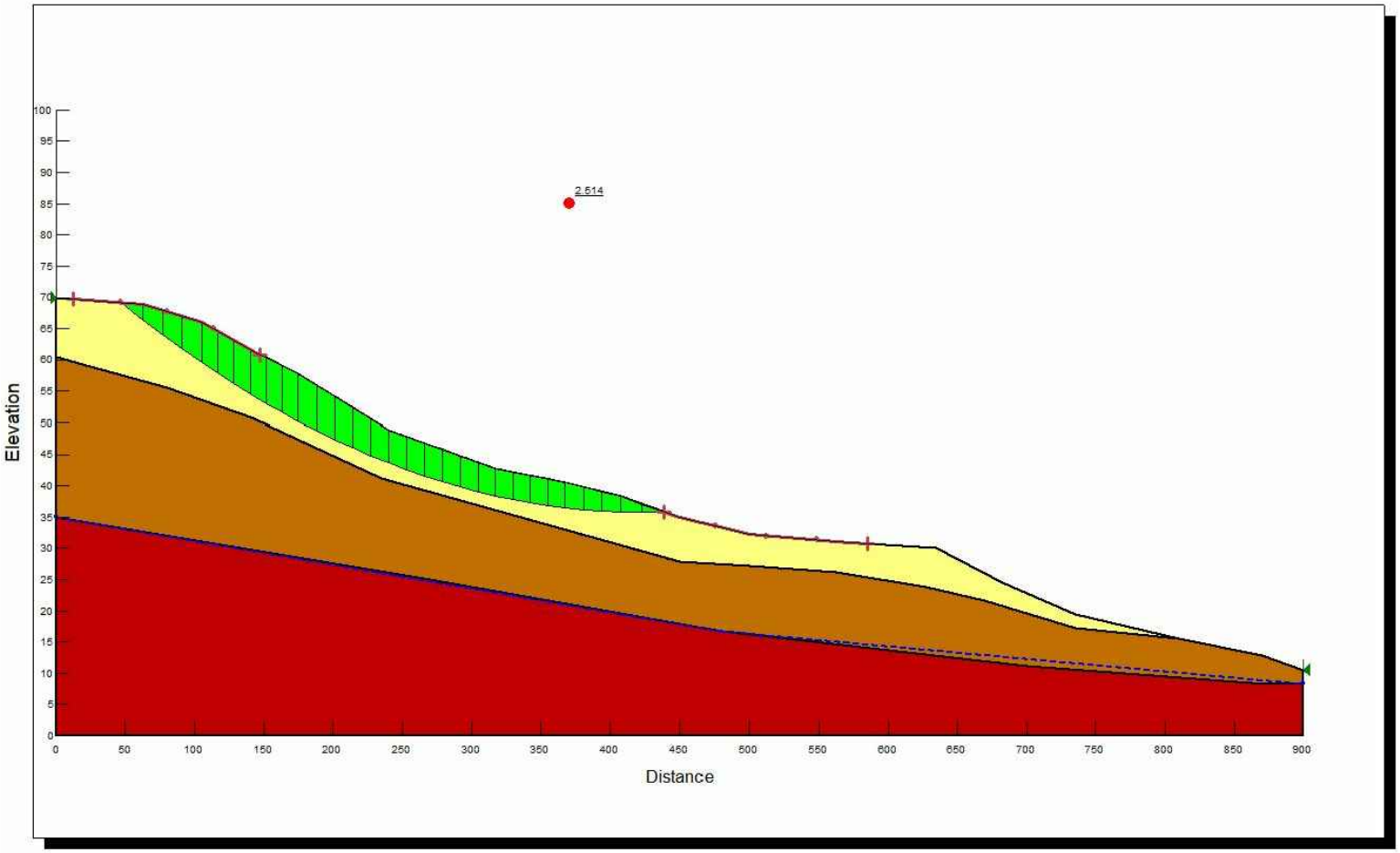


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

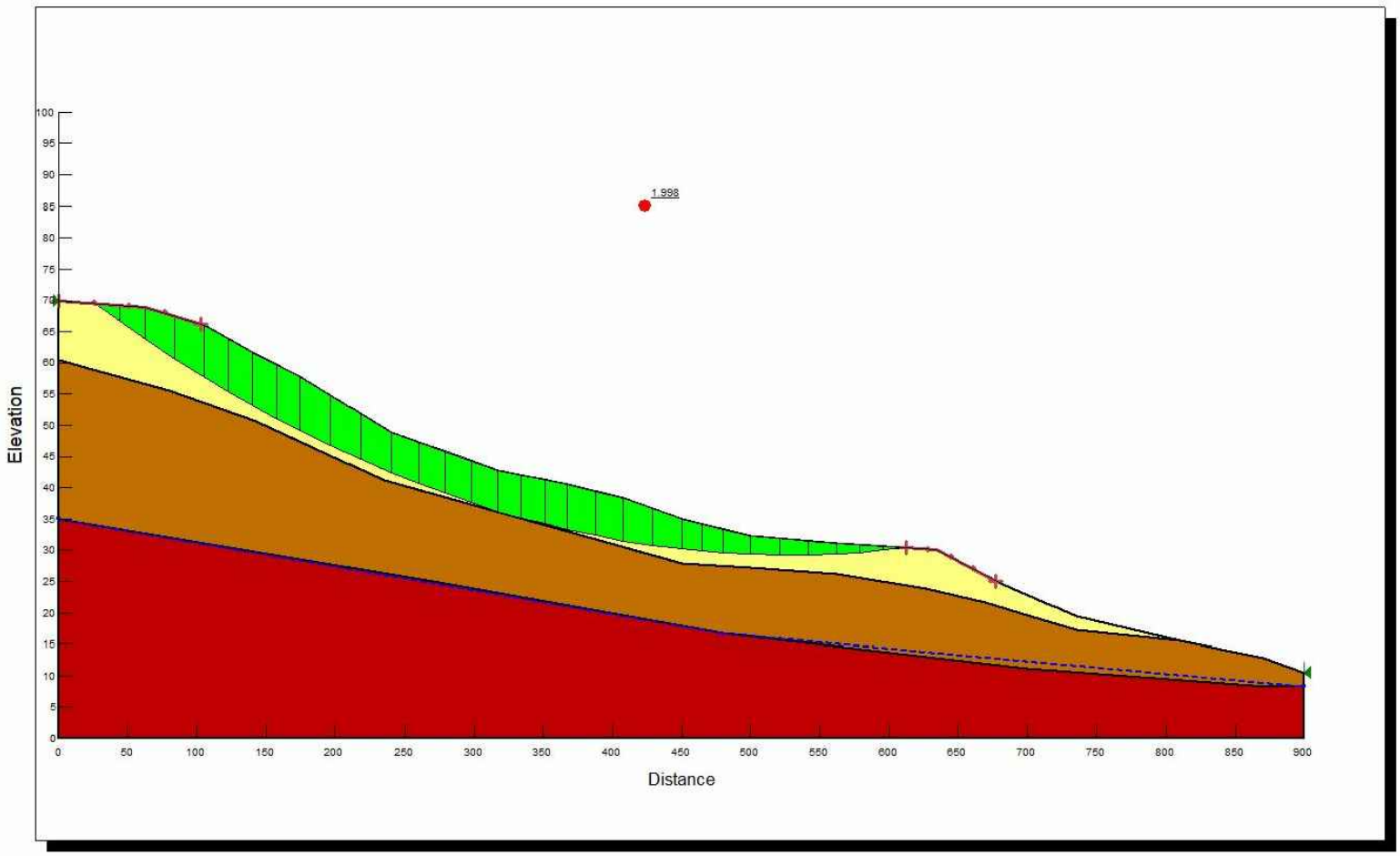


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

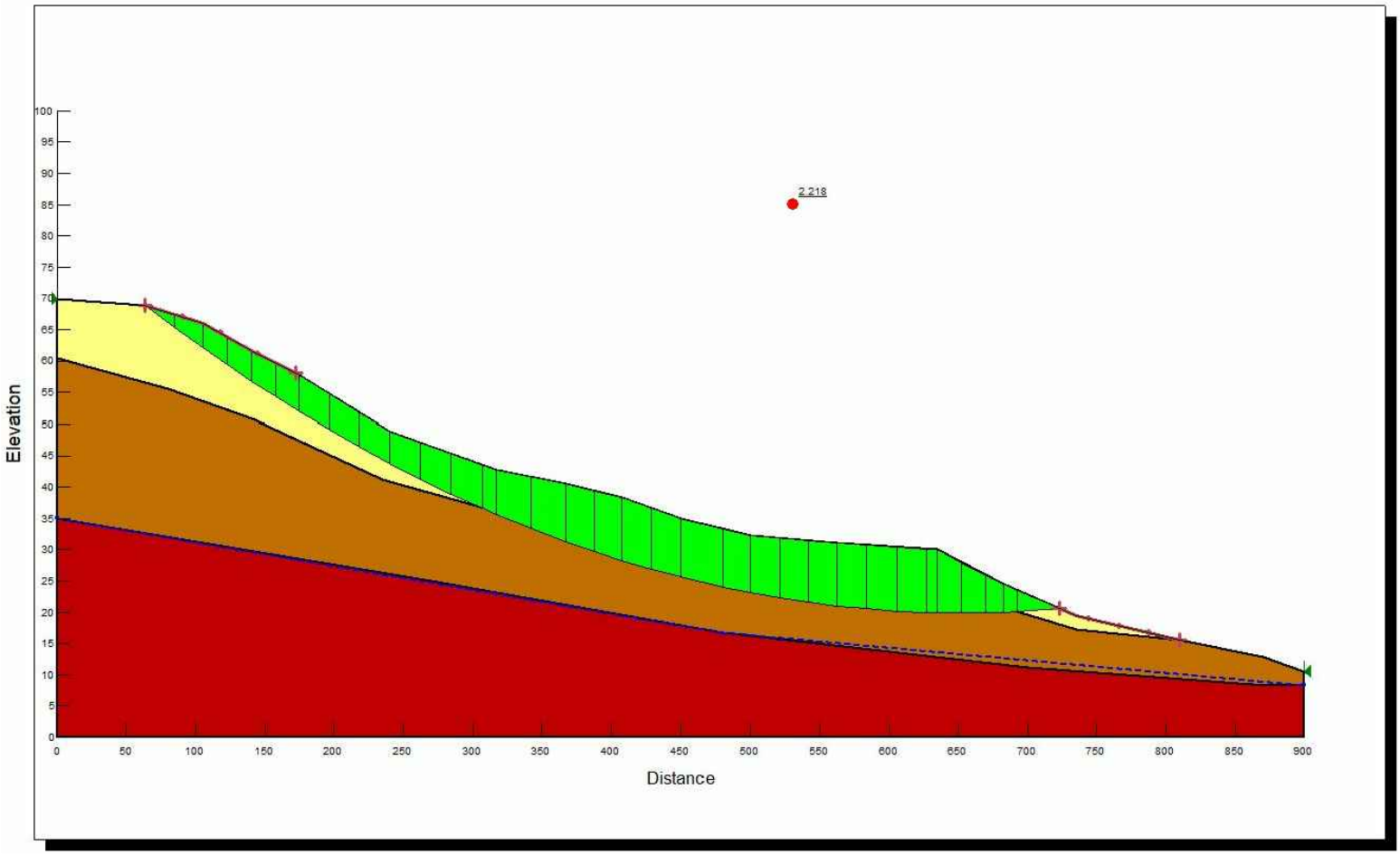


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

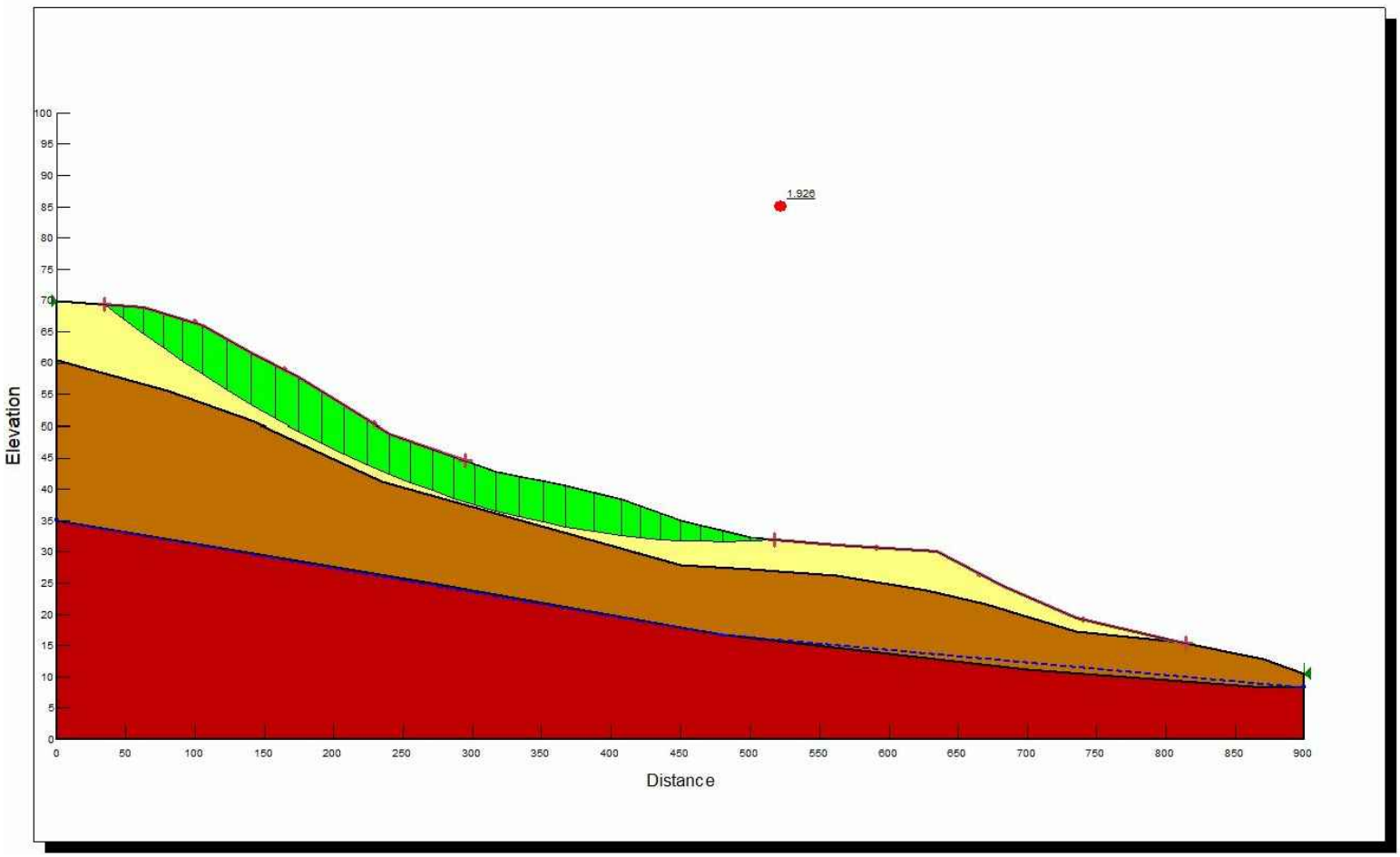


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

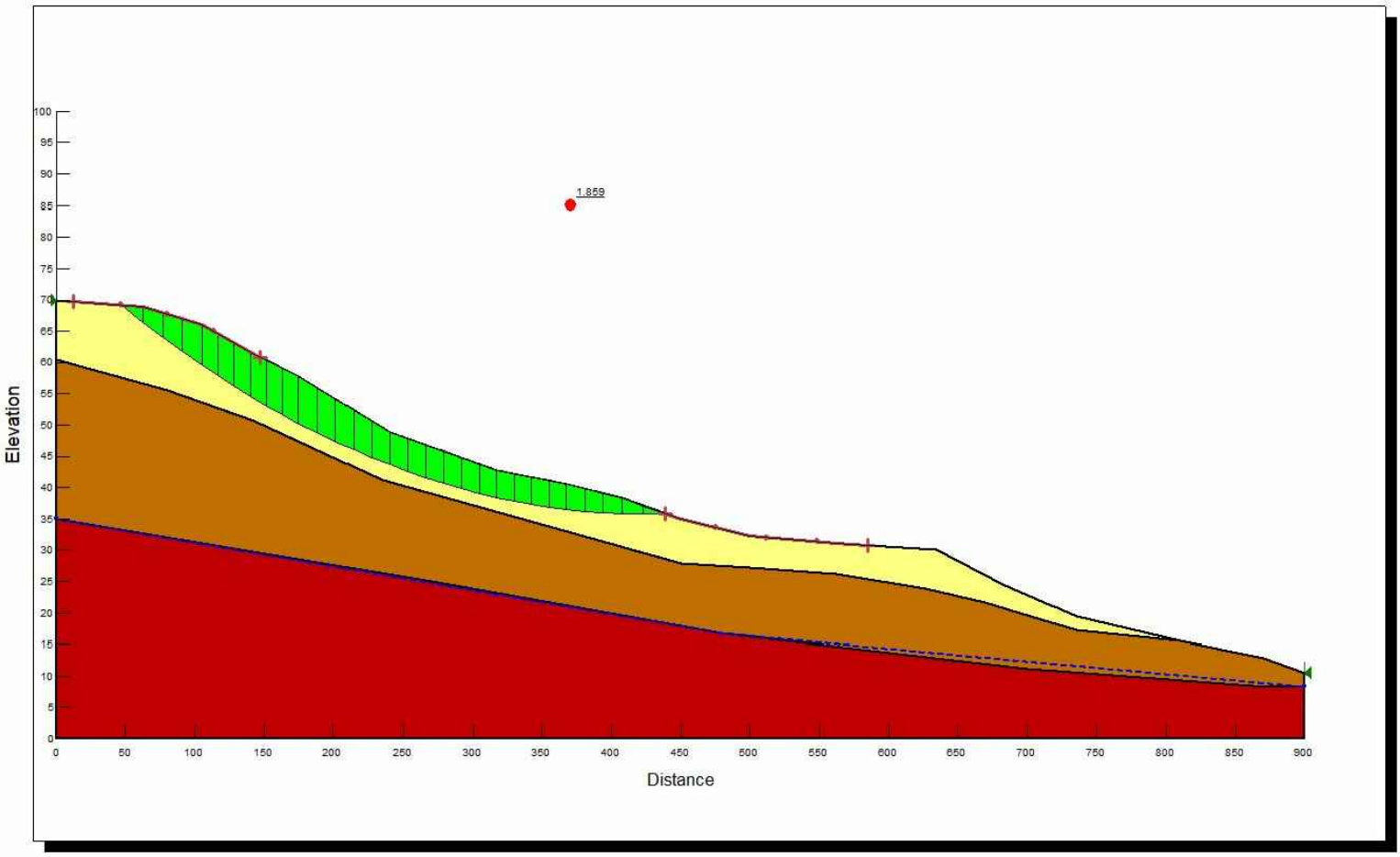


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

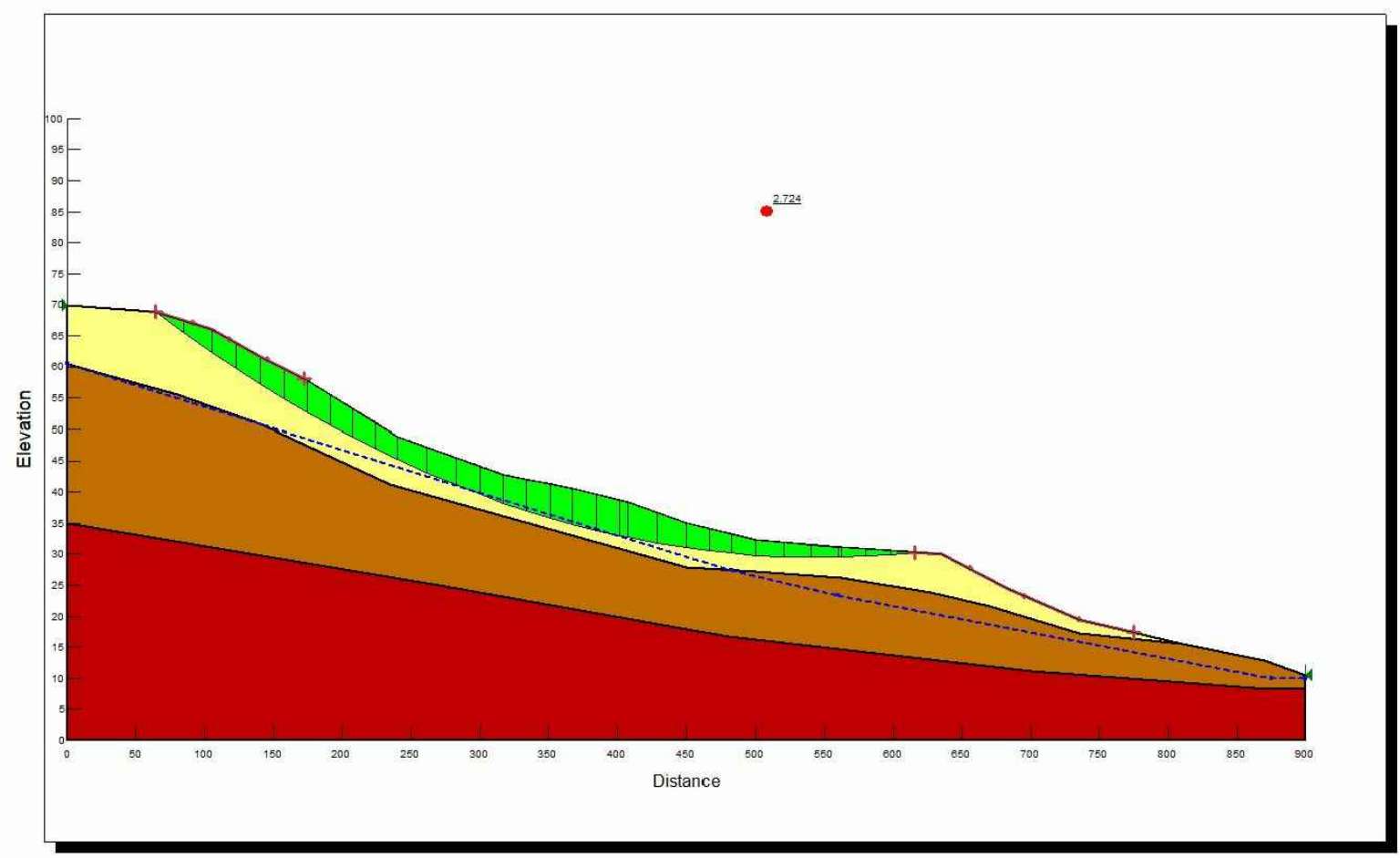


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

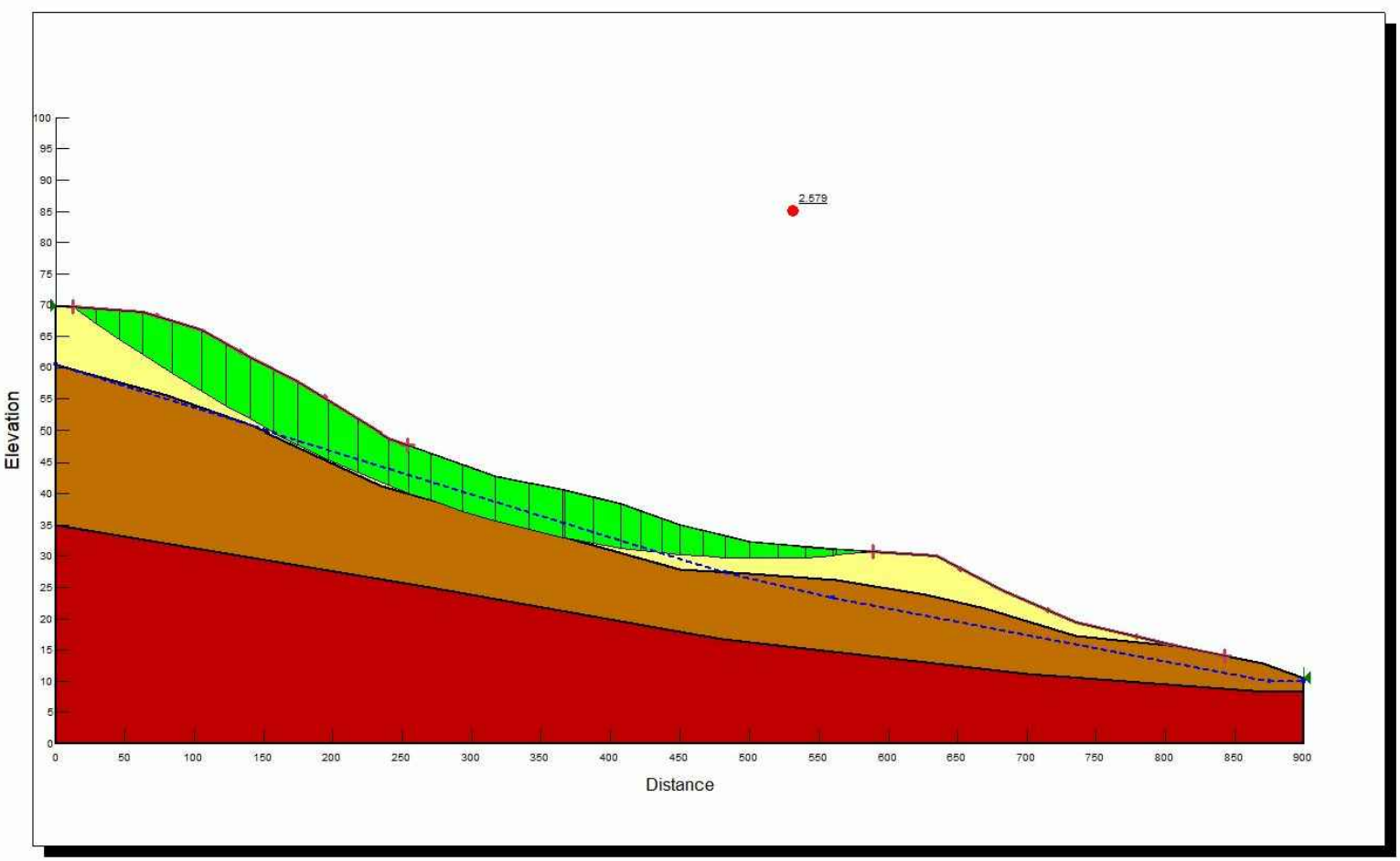


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

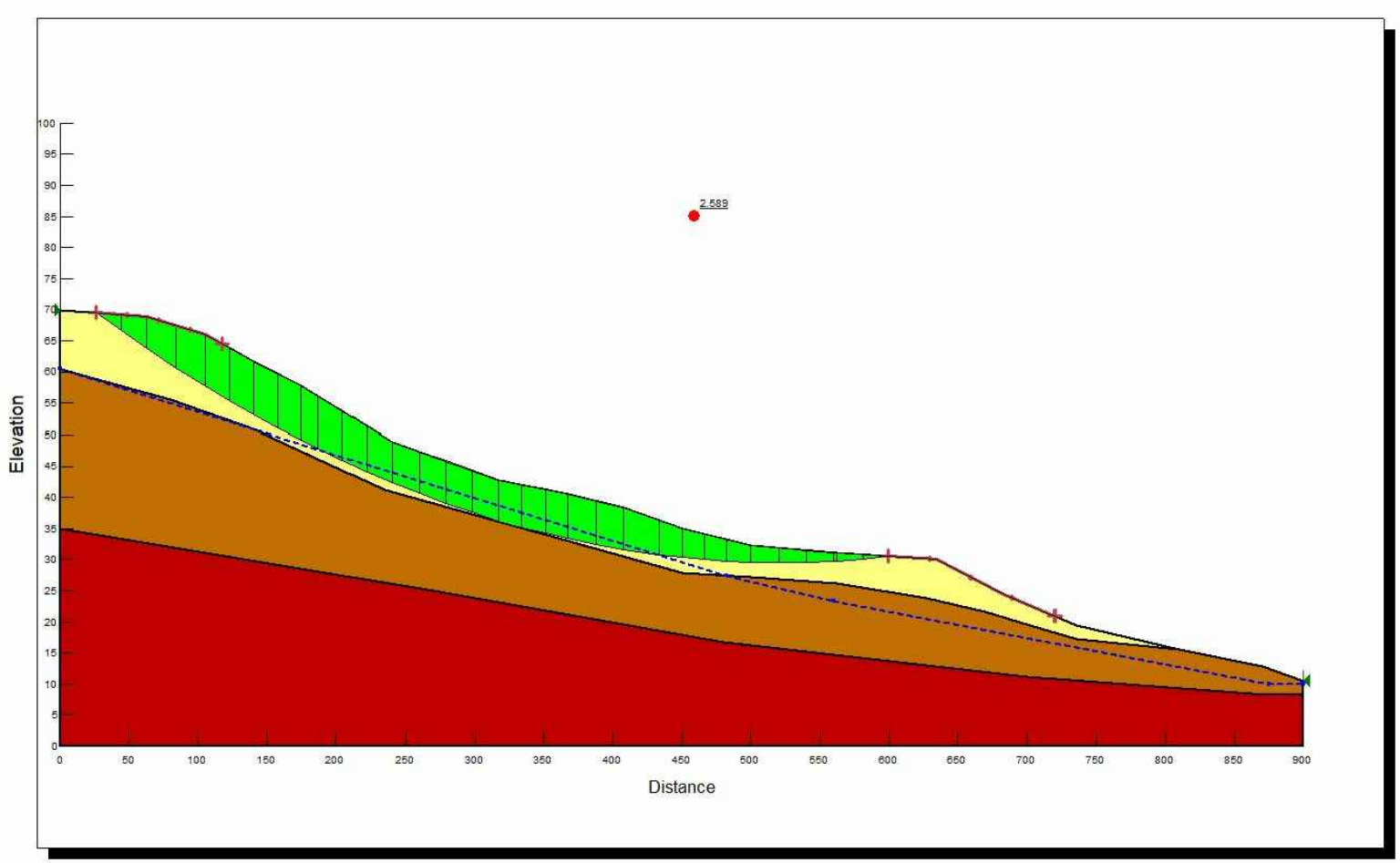


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

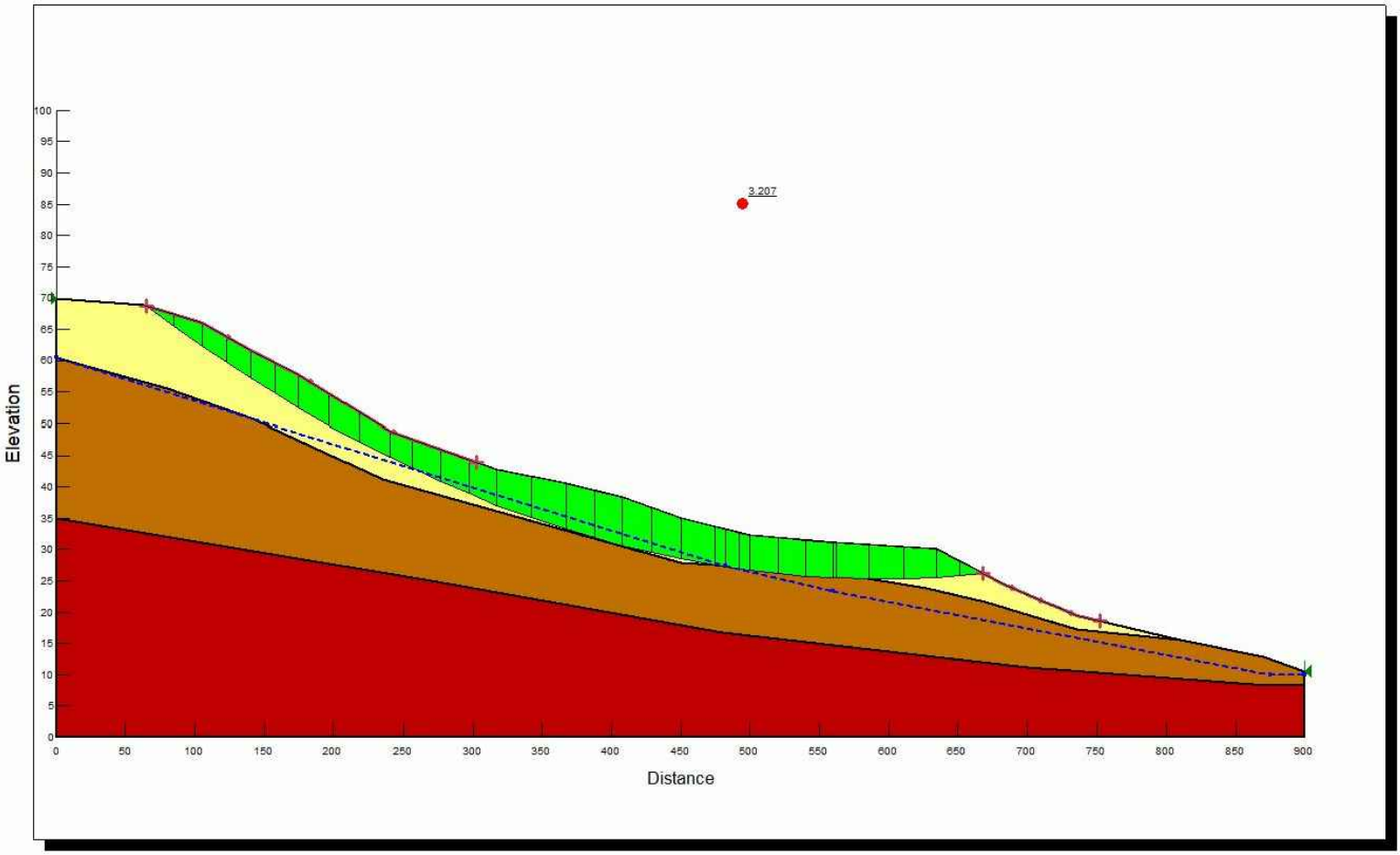


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

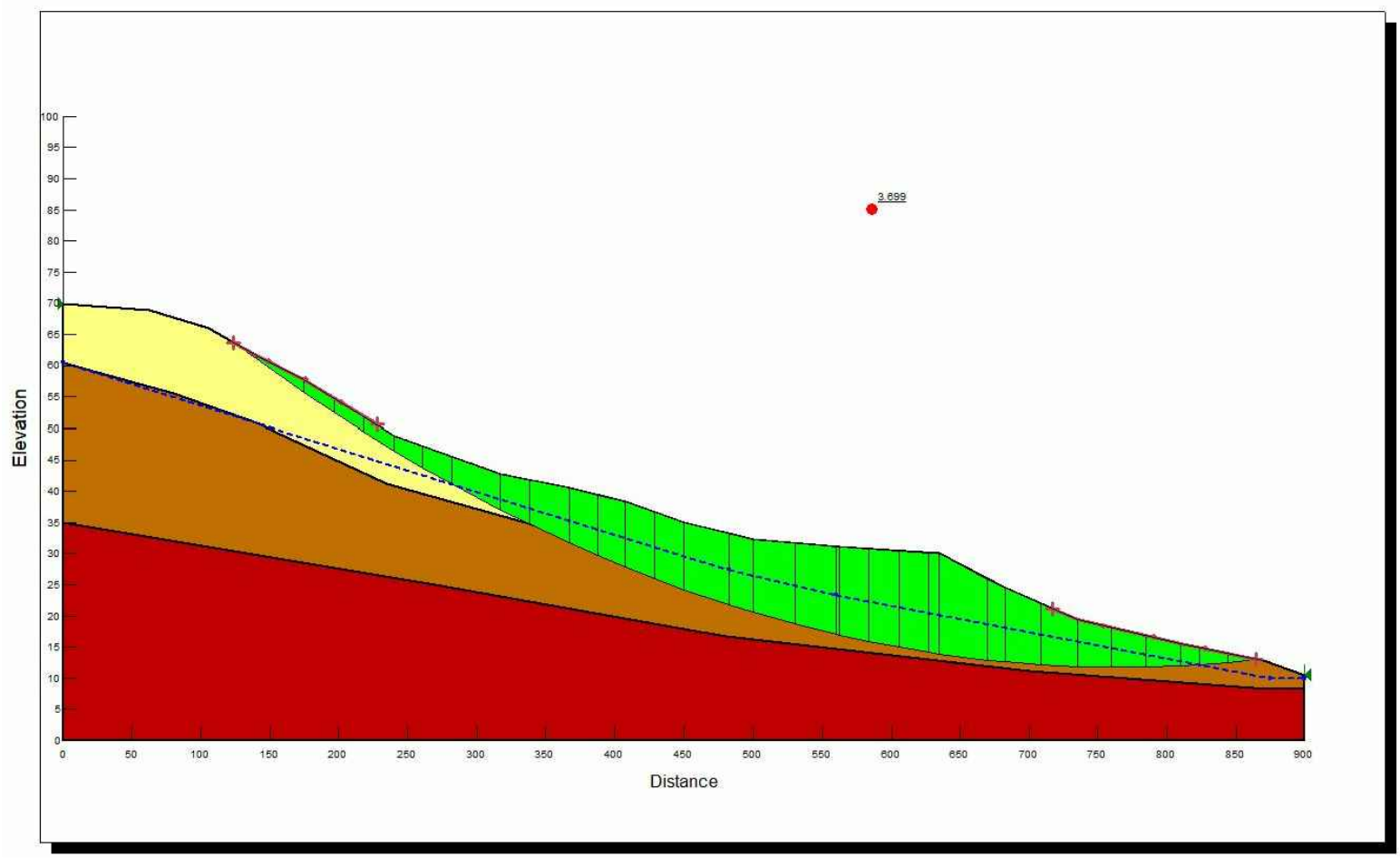


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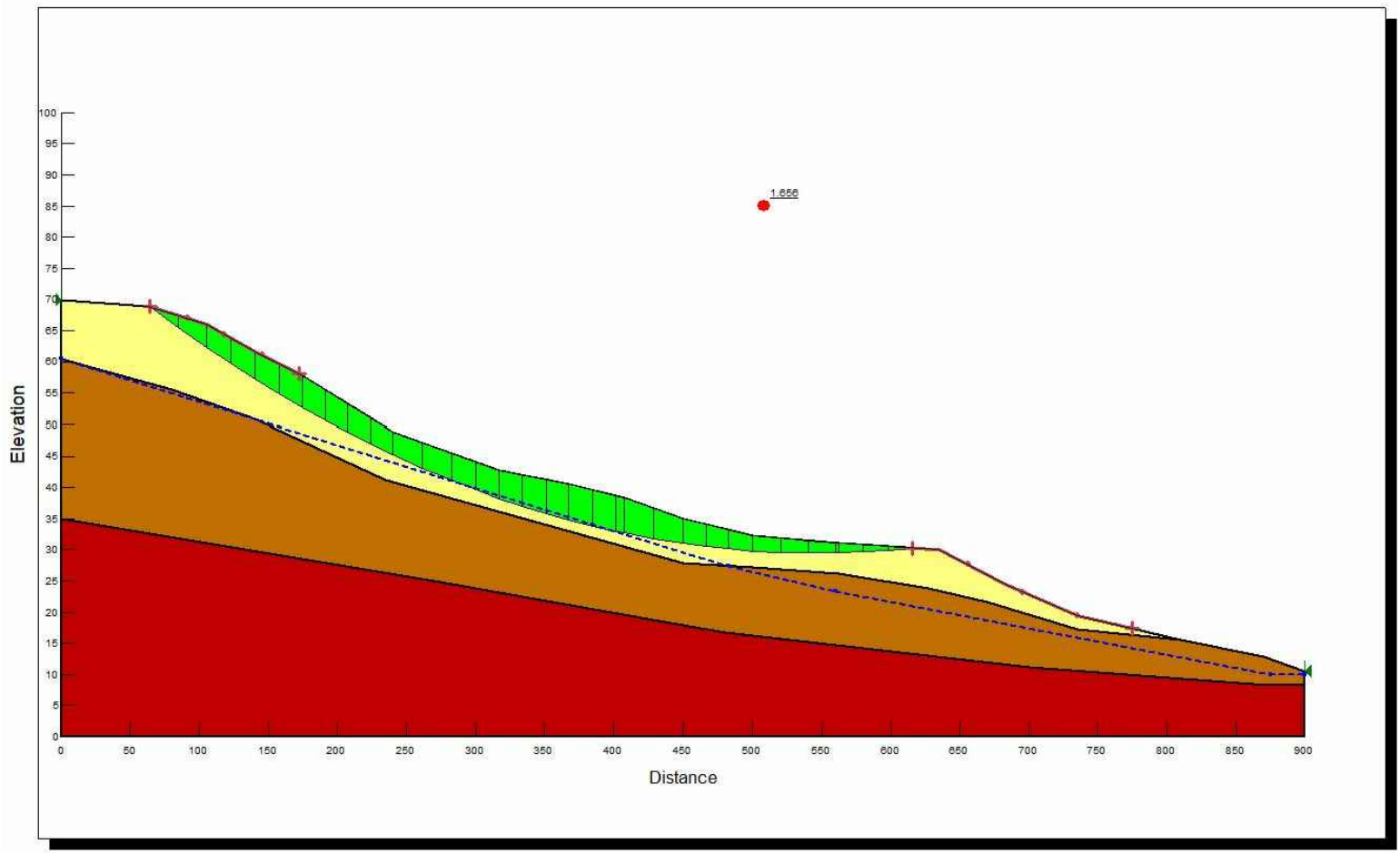


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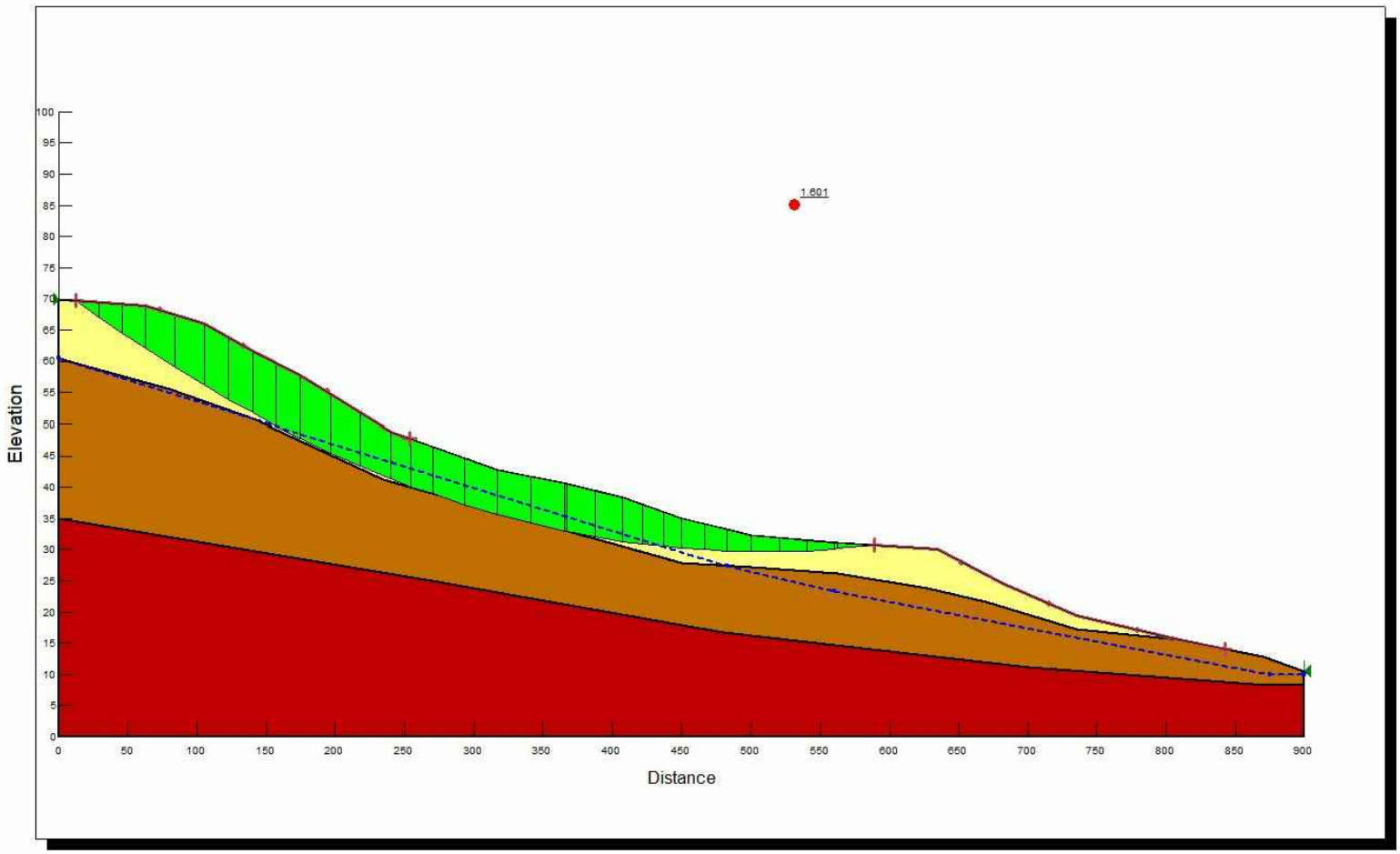


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

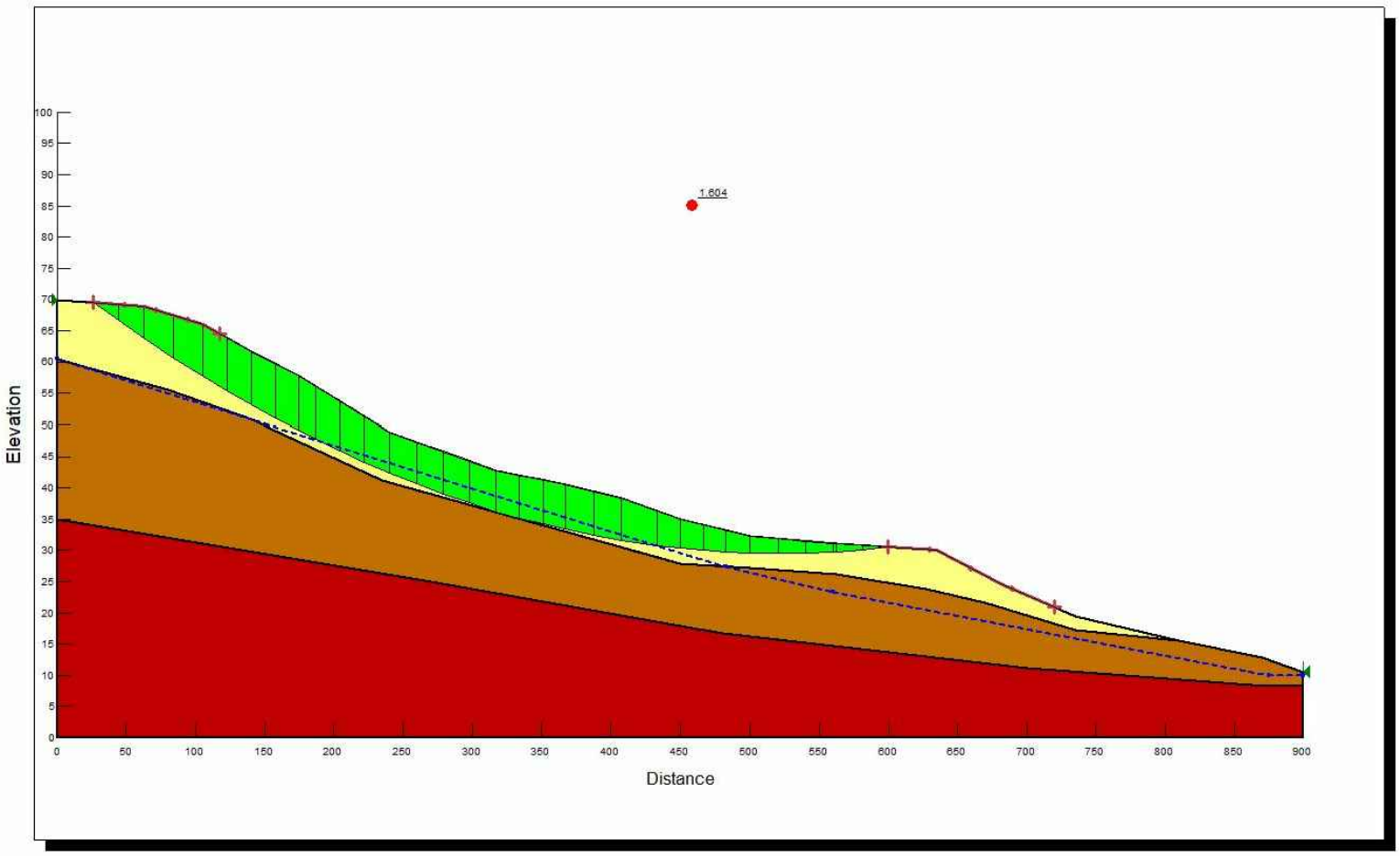


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

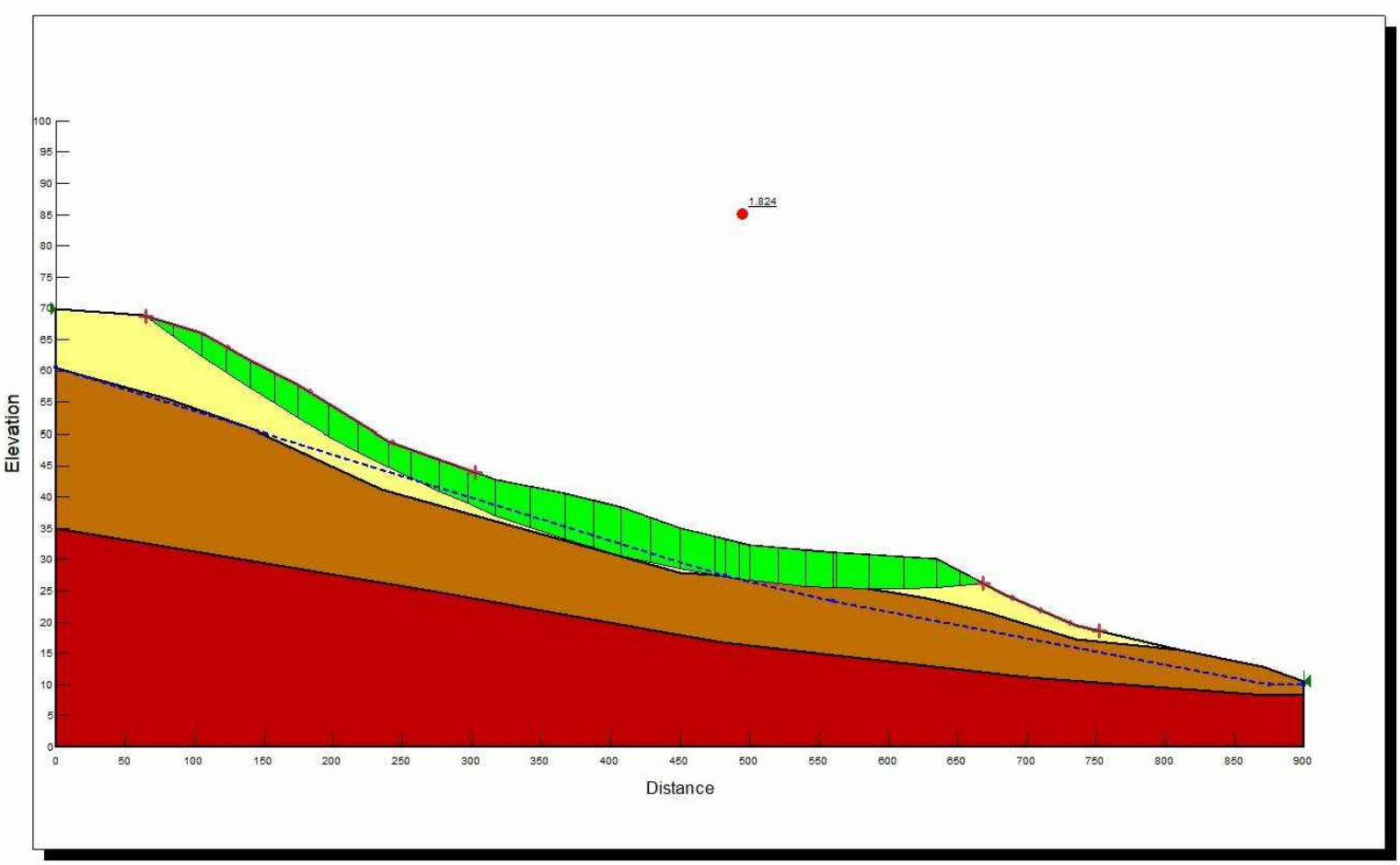


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

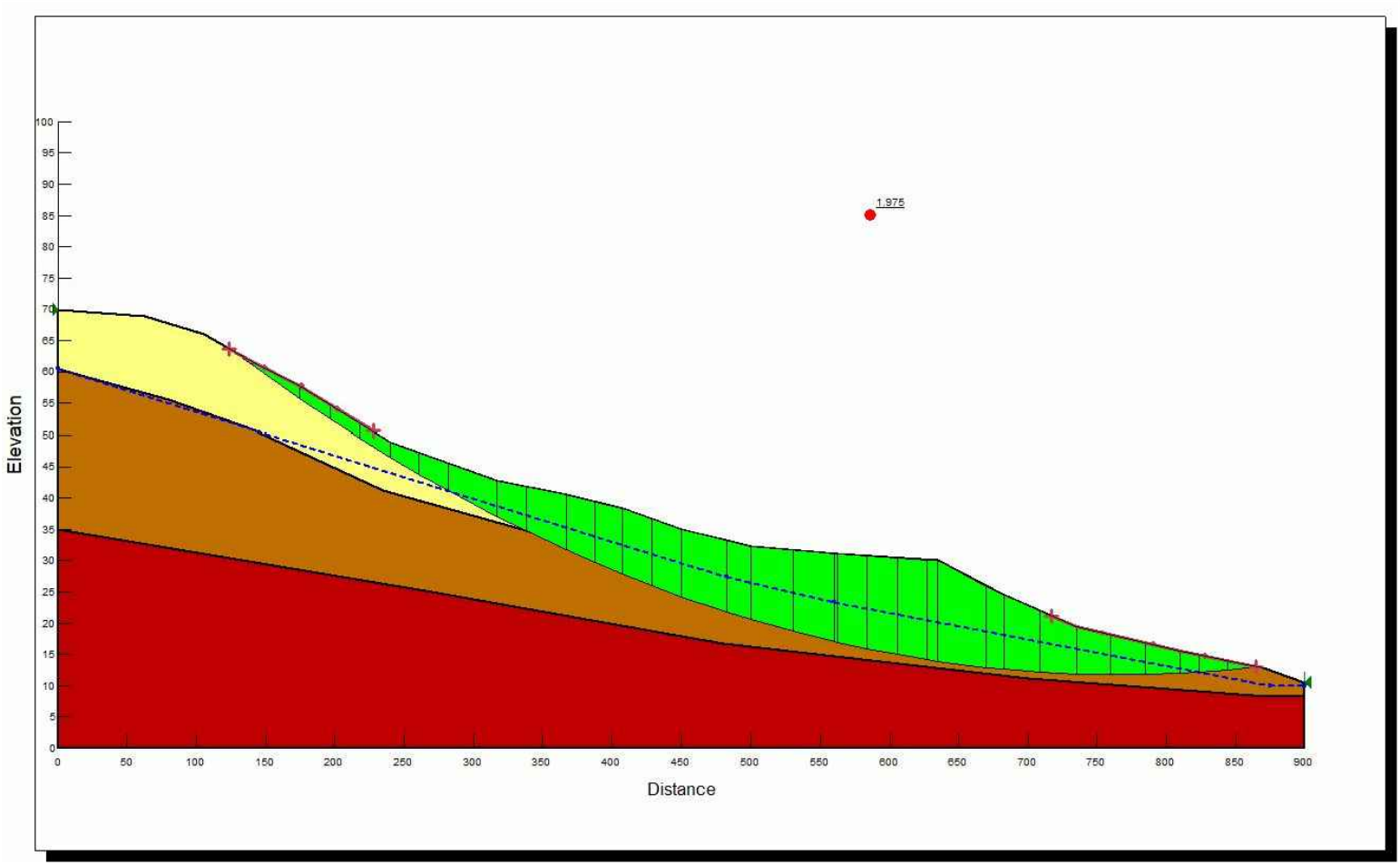


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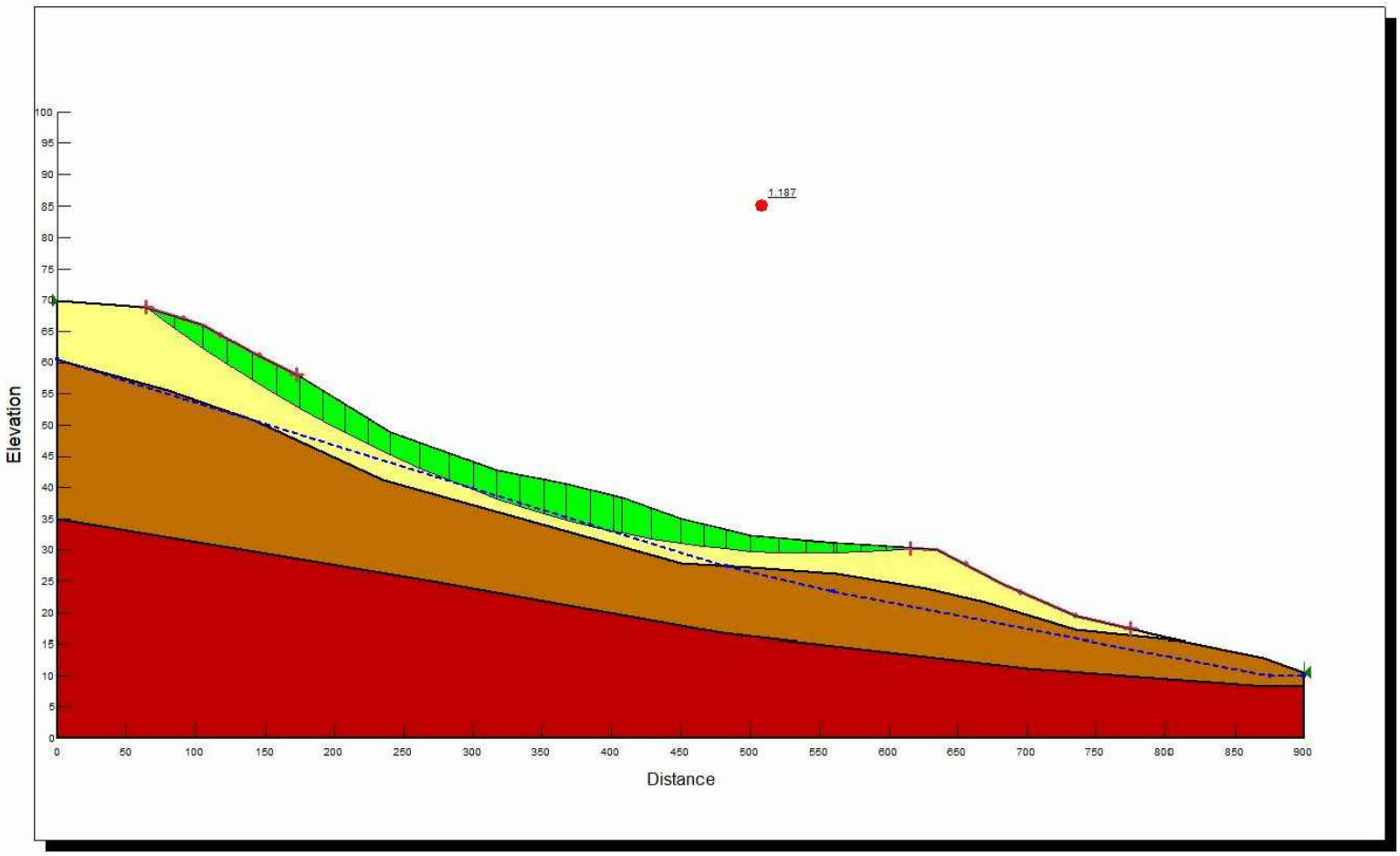


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

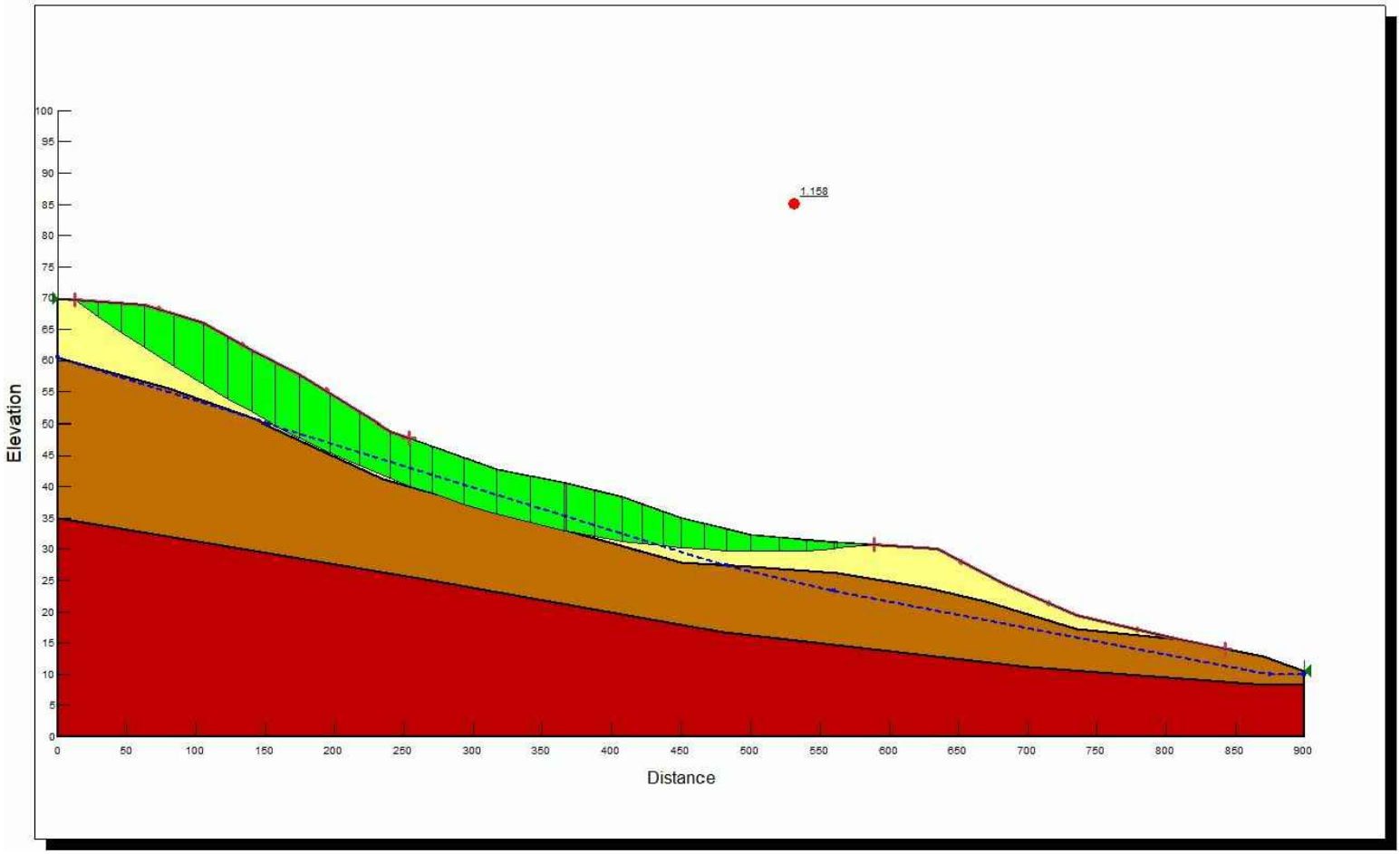


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

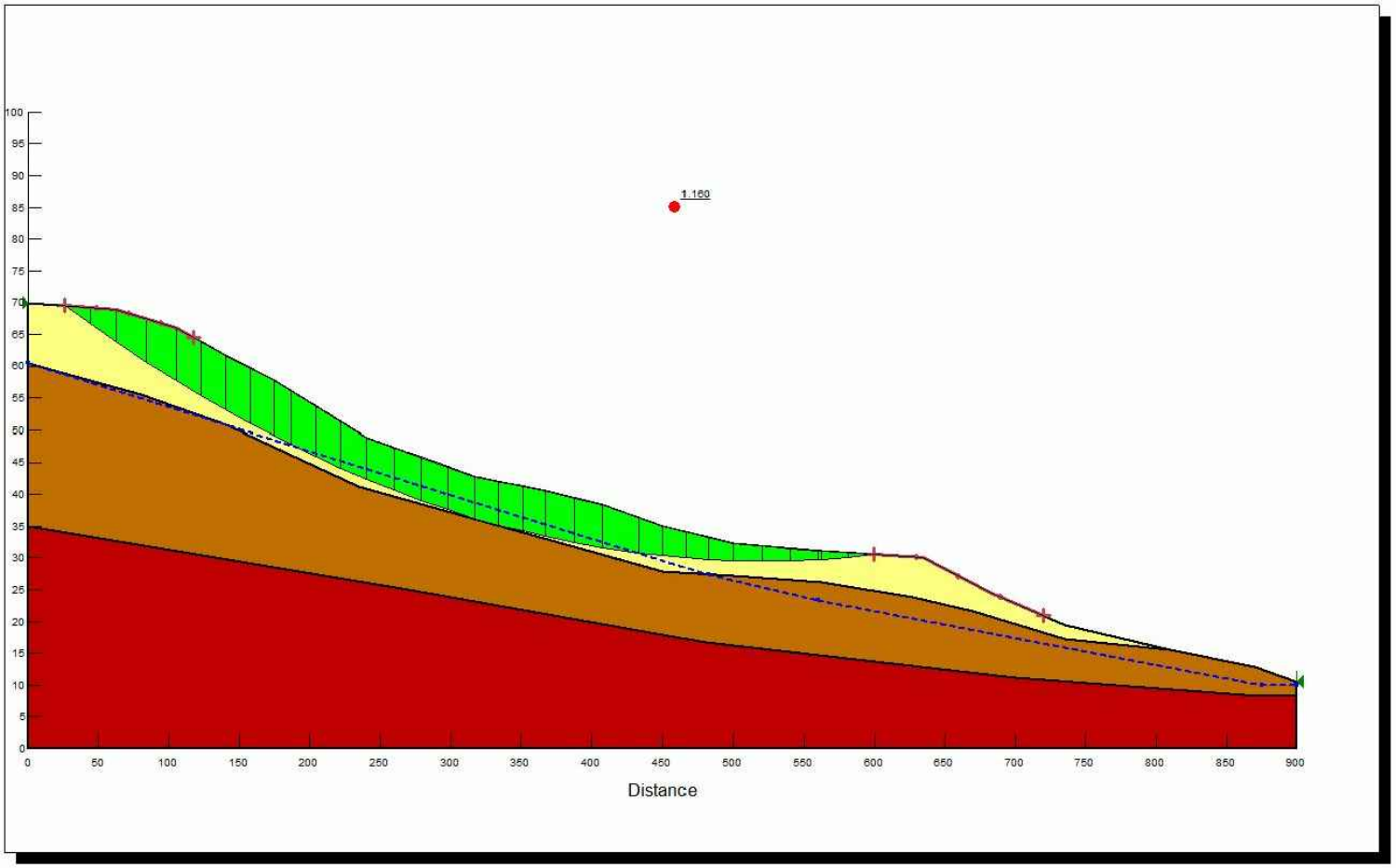


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

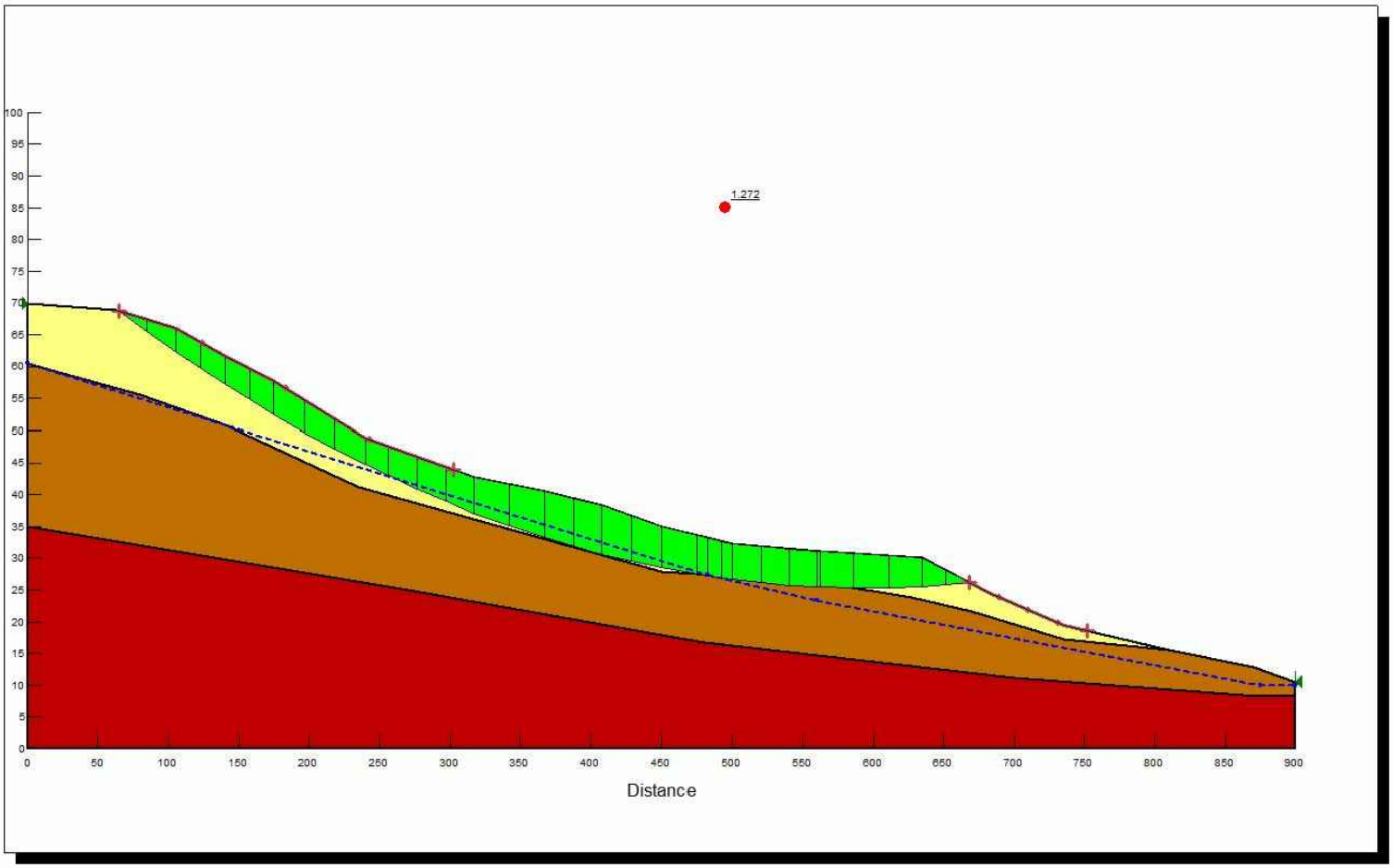


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

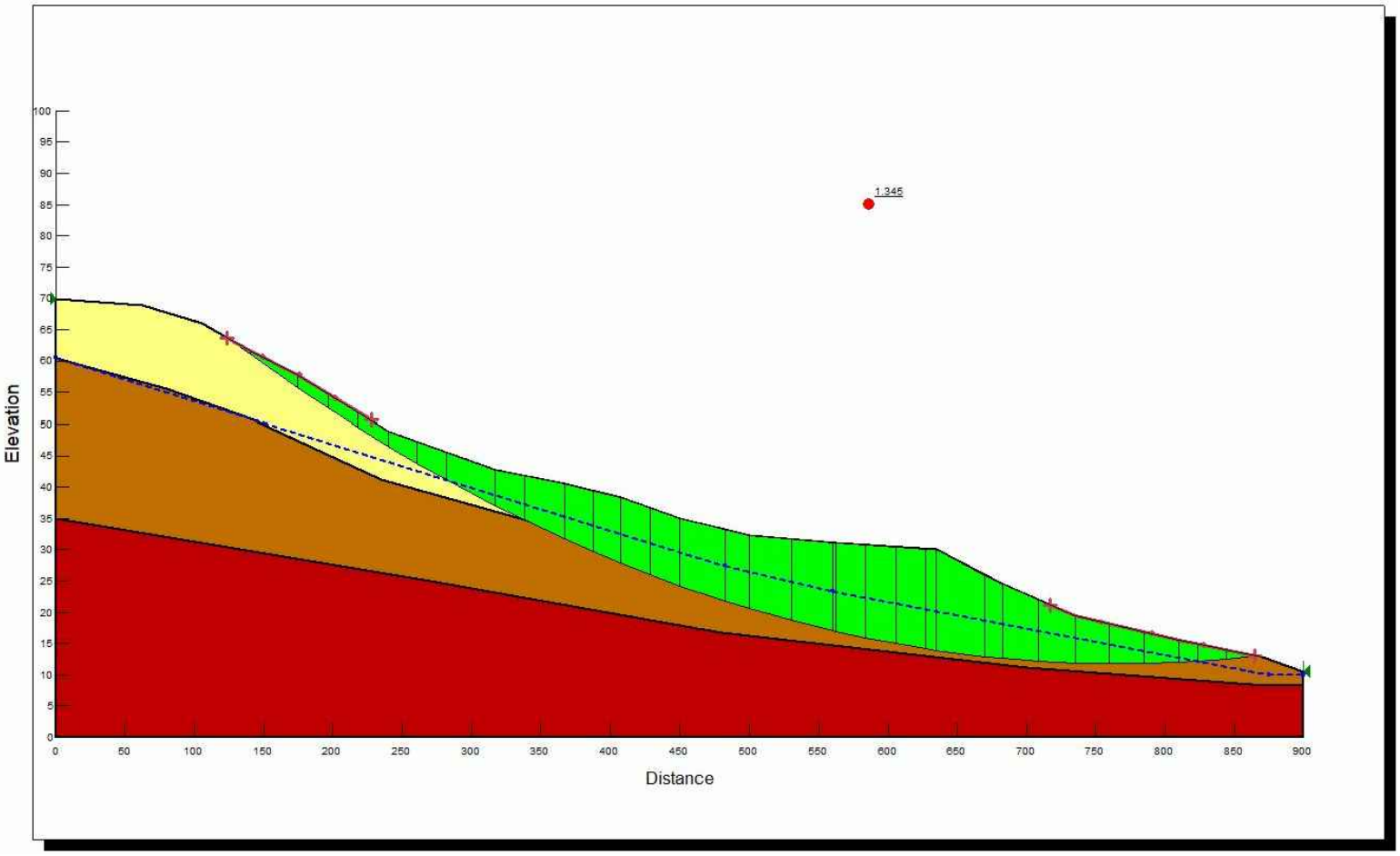


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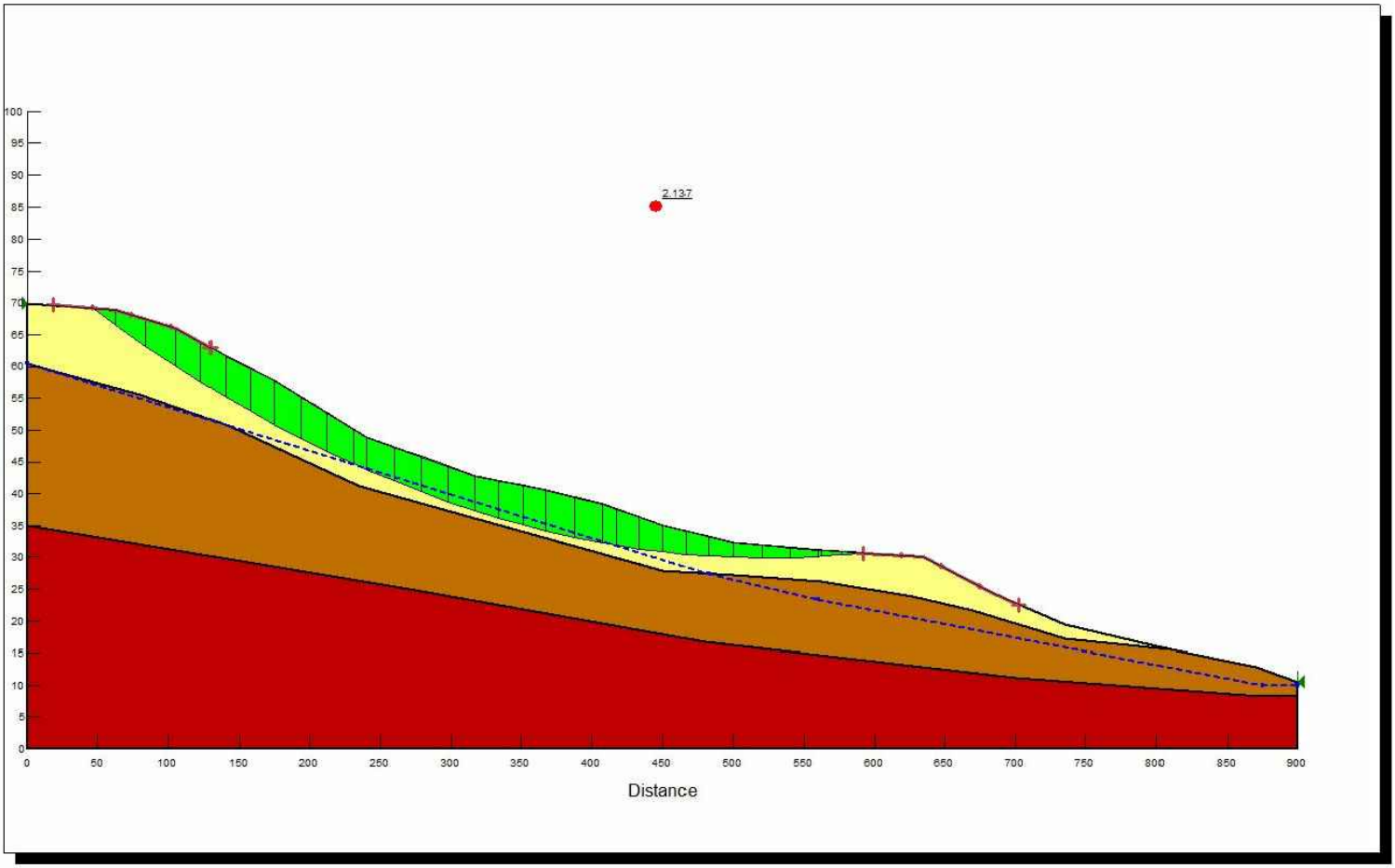


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

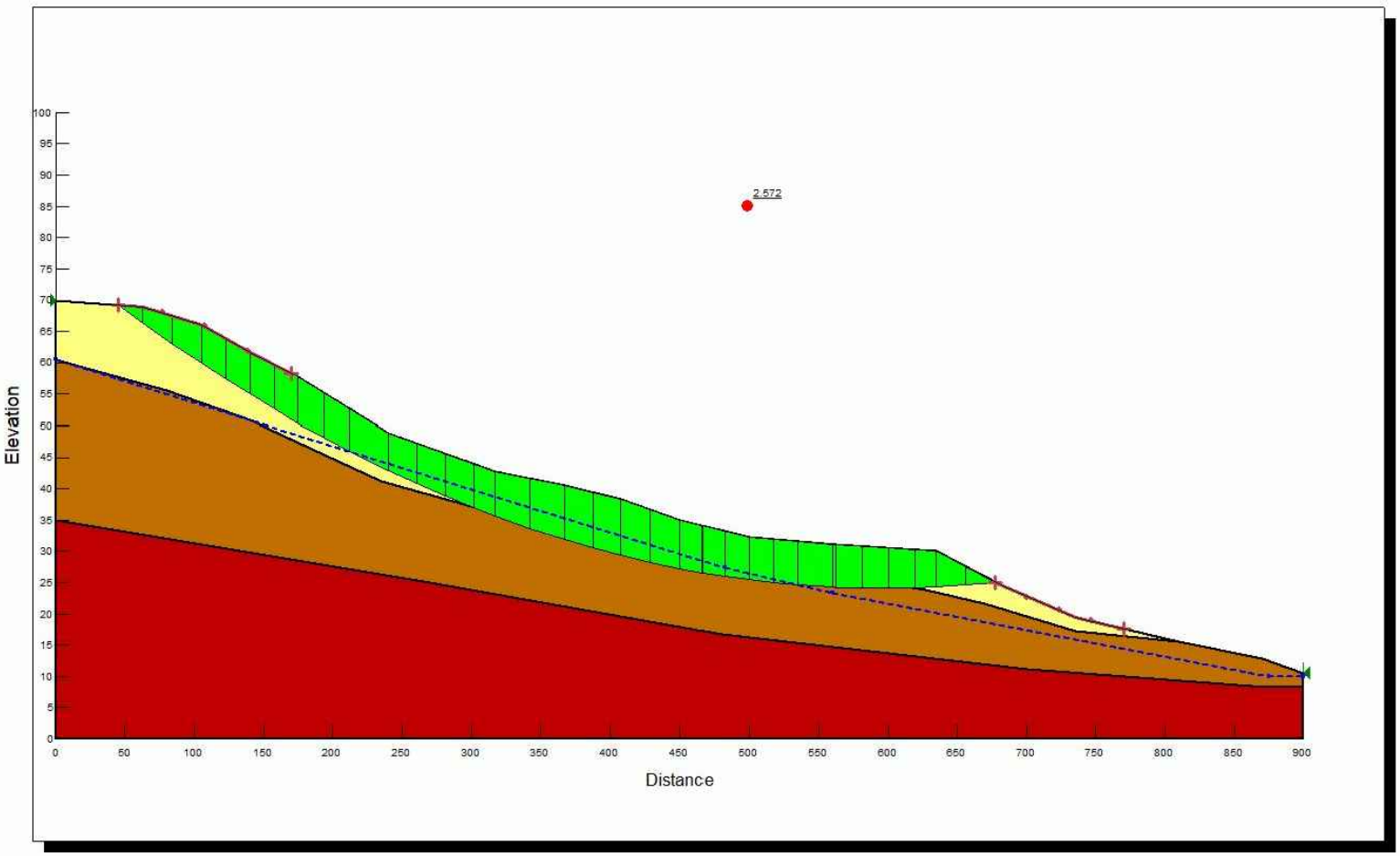


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

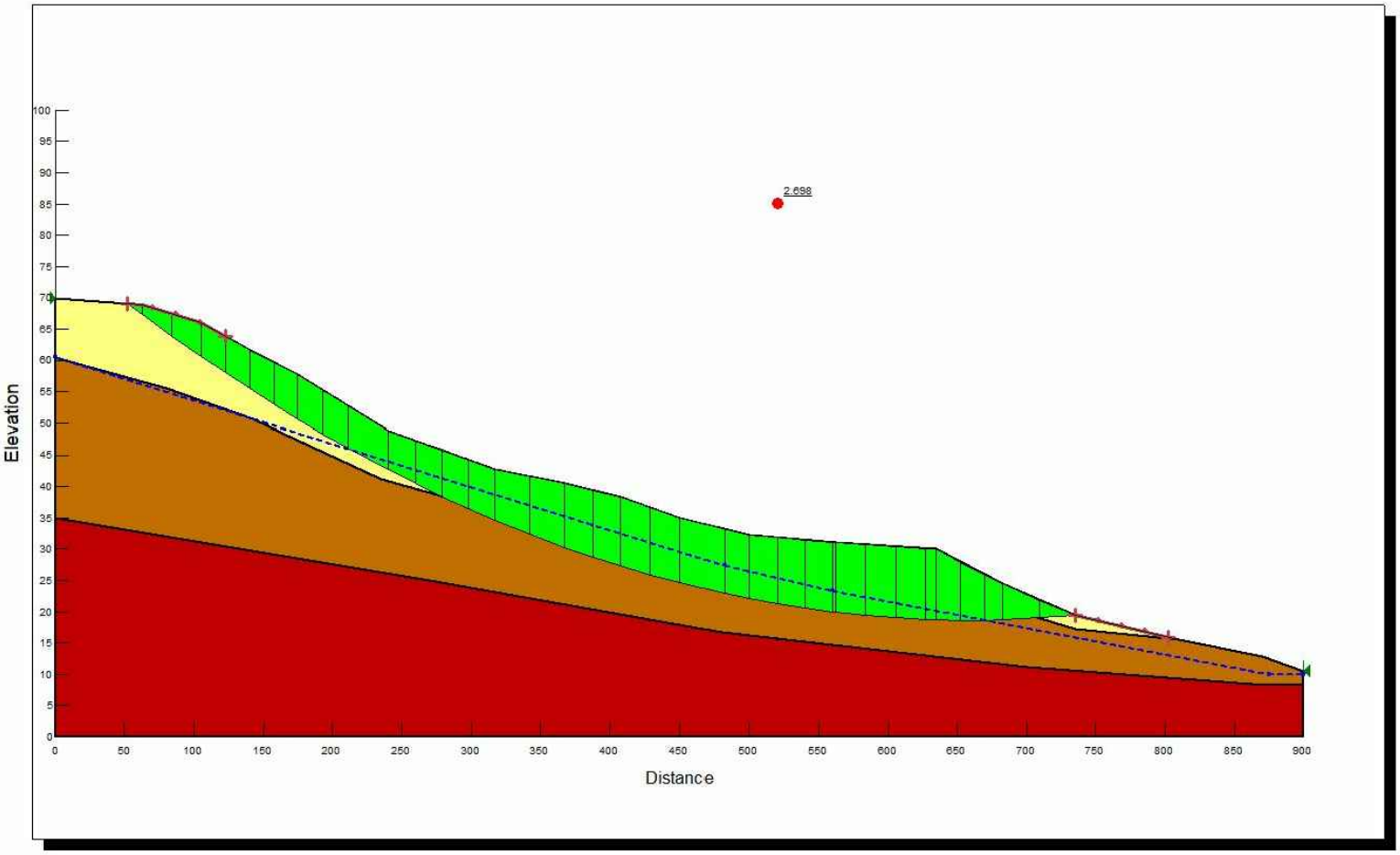


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REFERENCE:
SLOPE/W SOFTWARE

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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

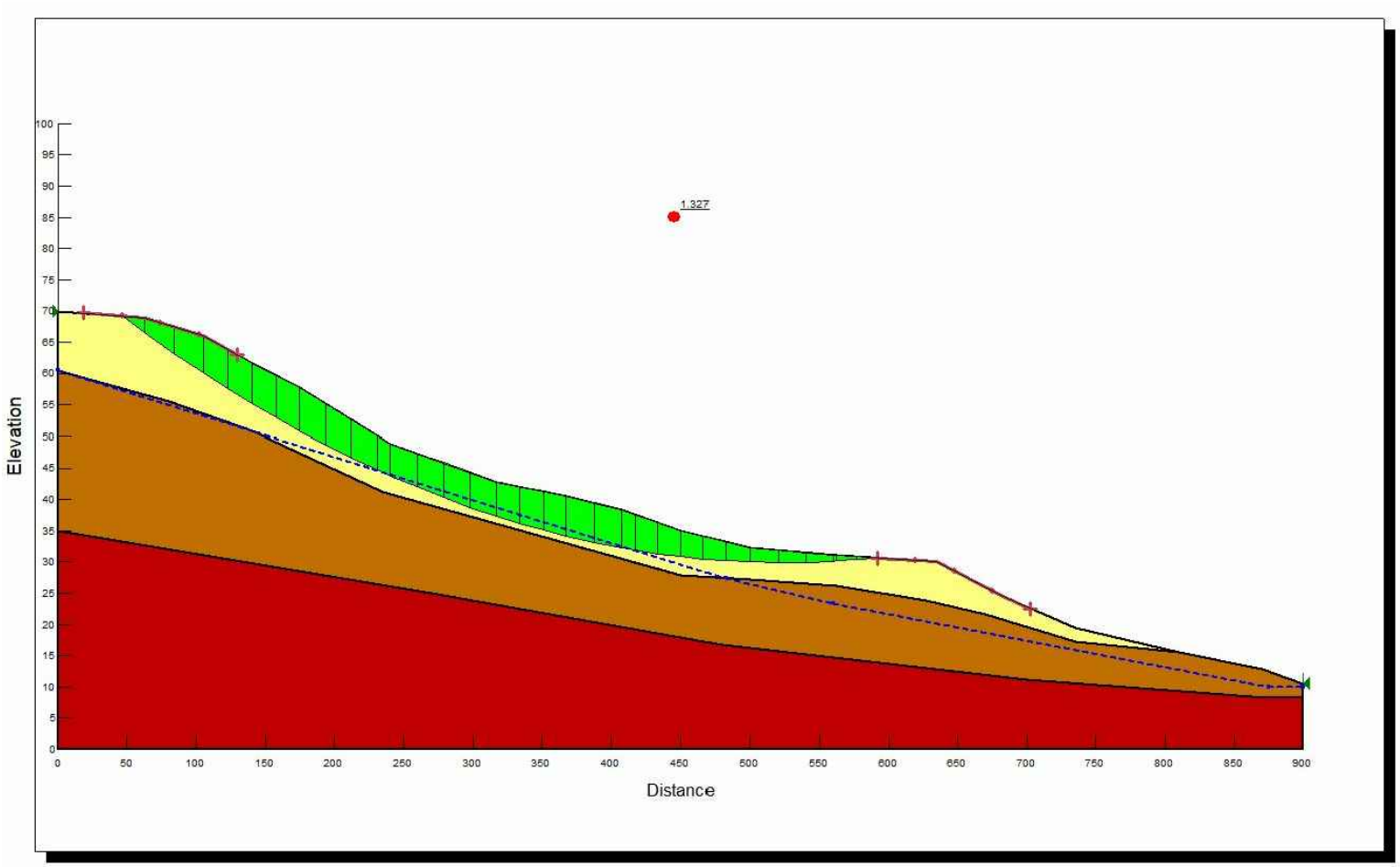


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

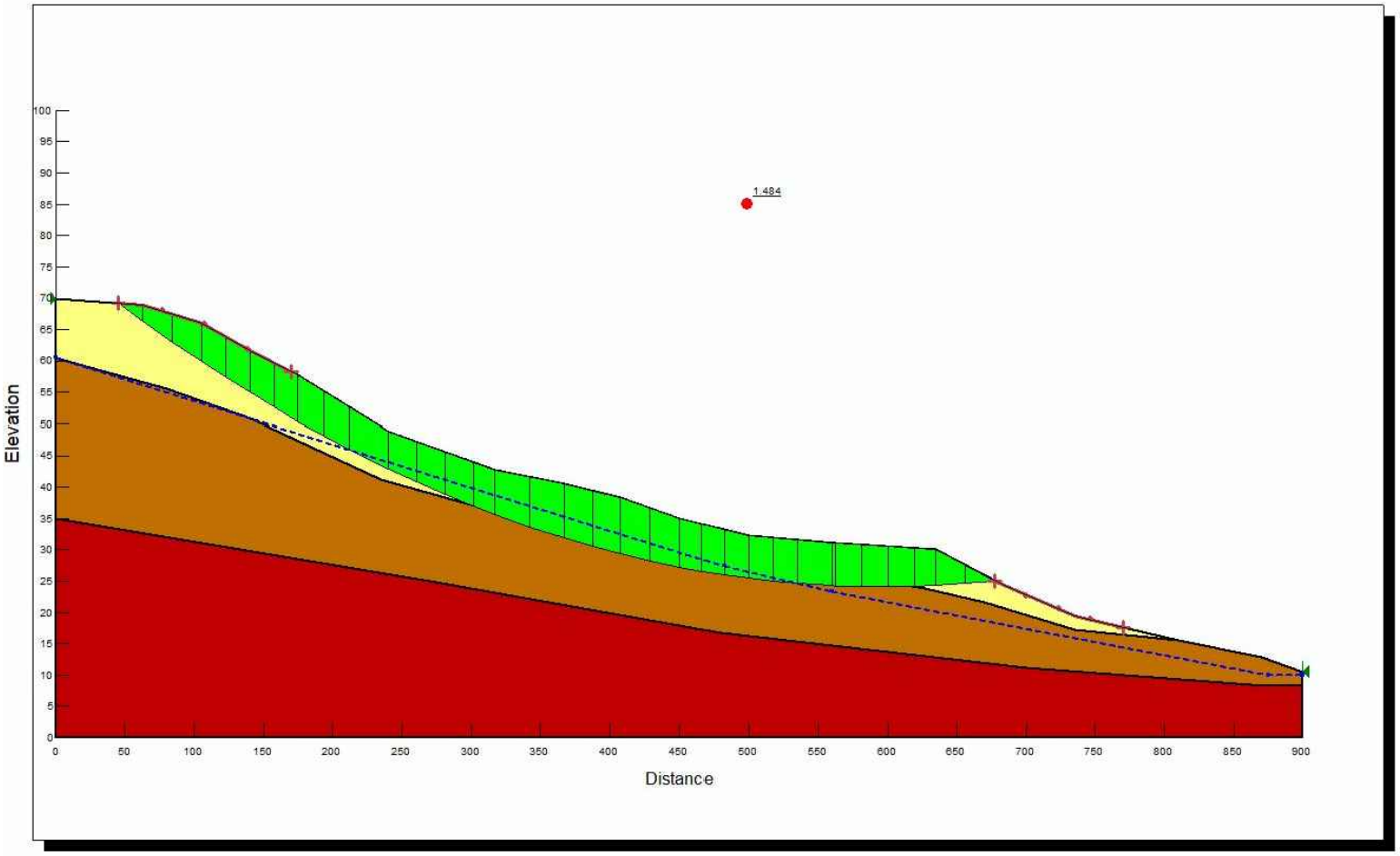


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REFERENCE:
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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

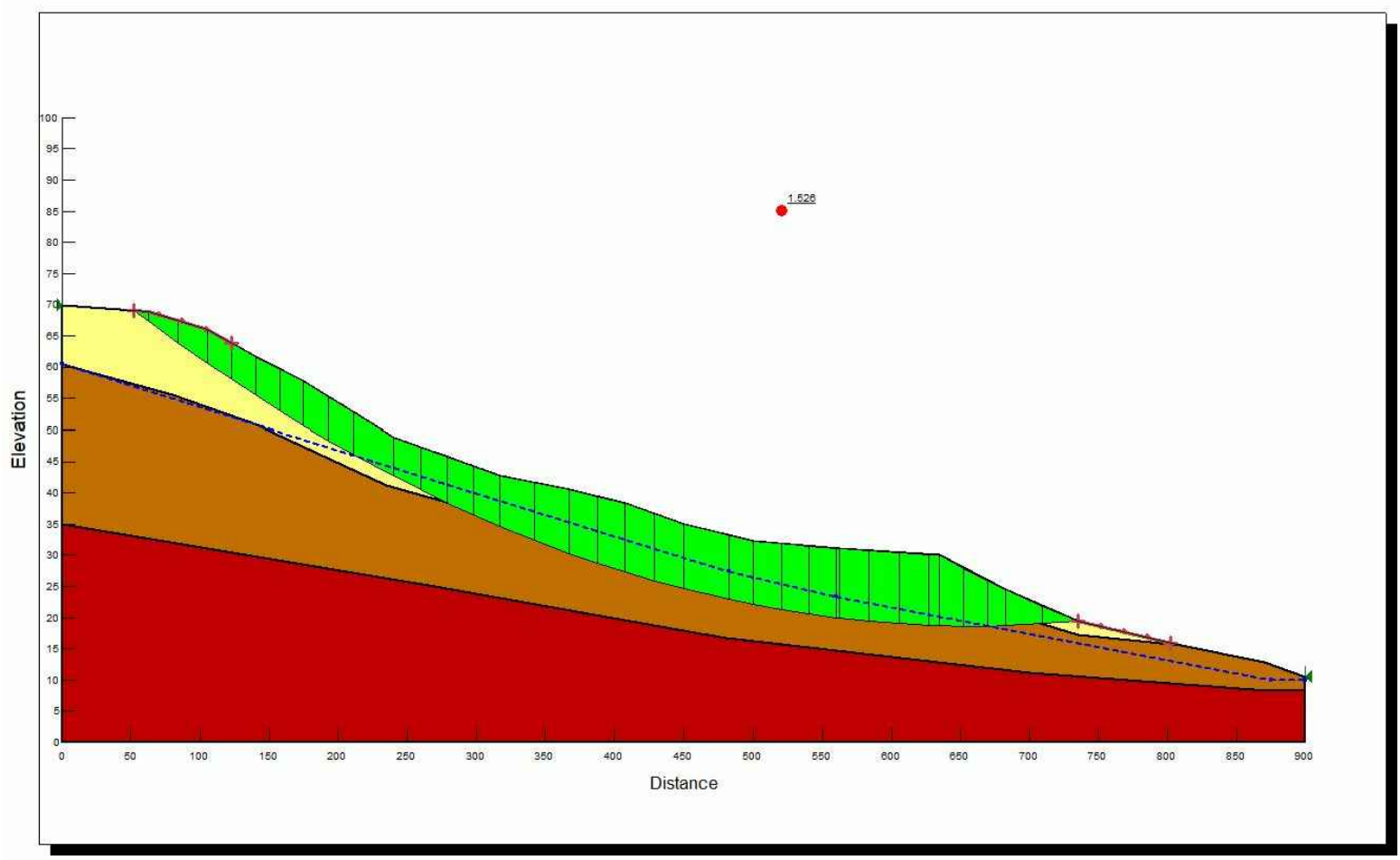


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

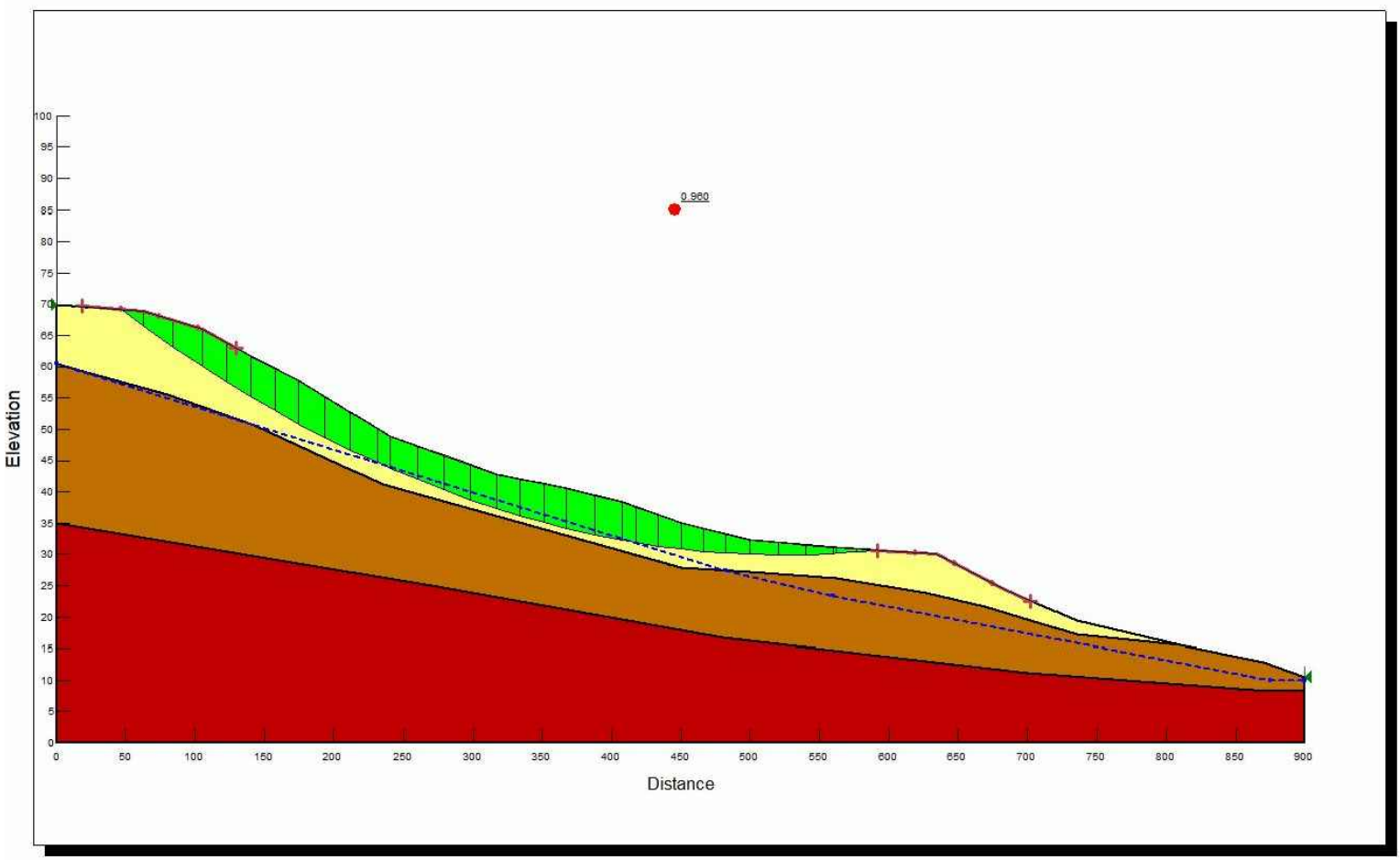


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

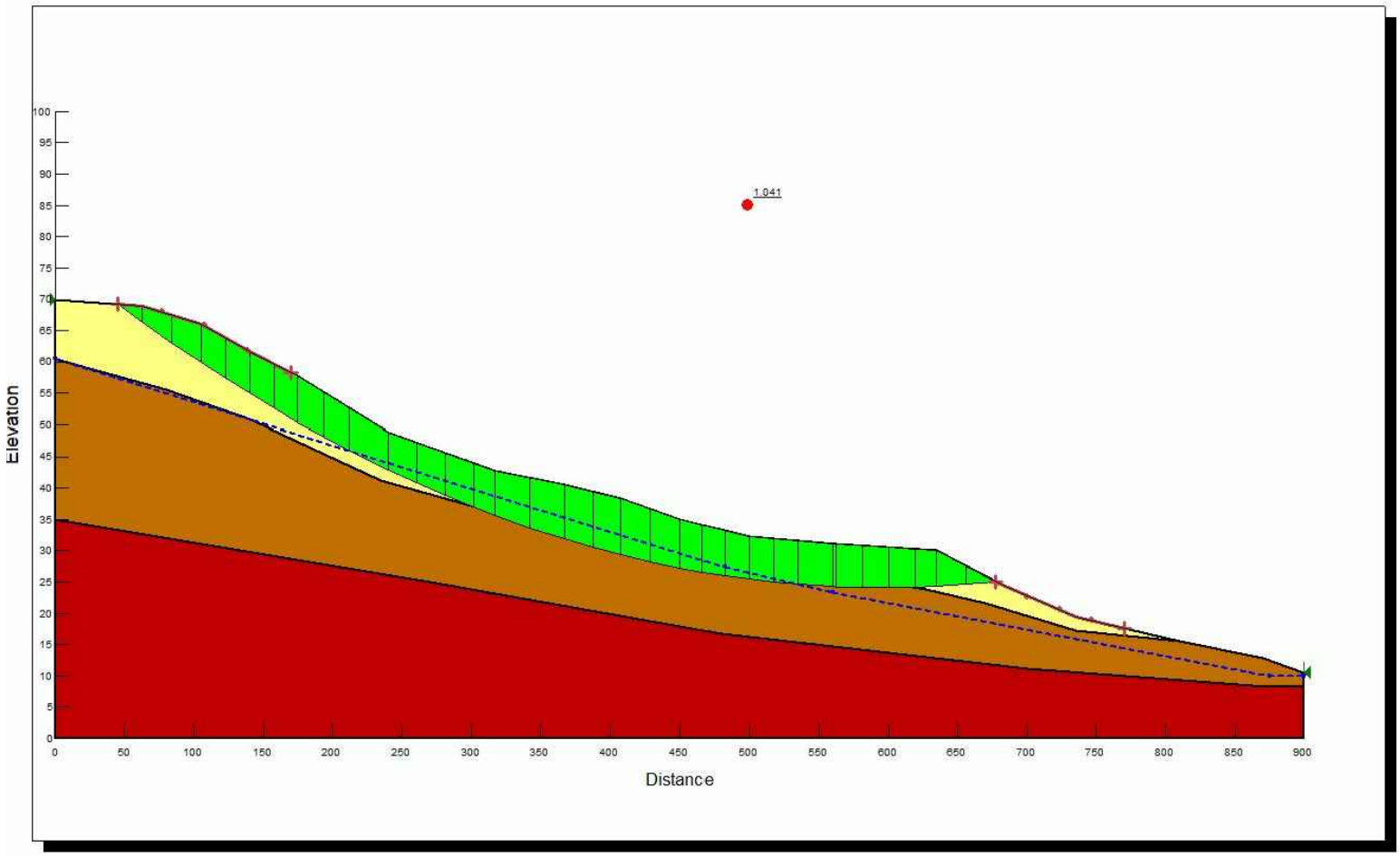


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

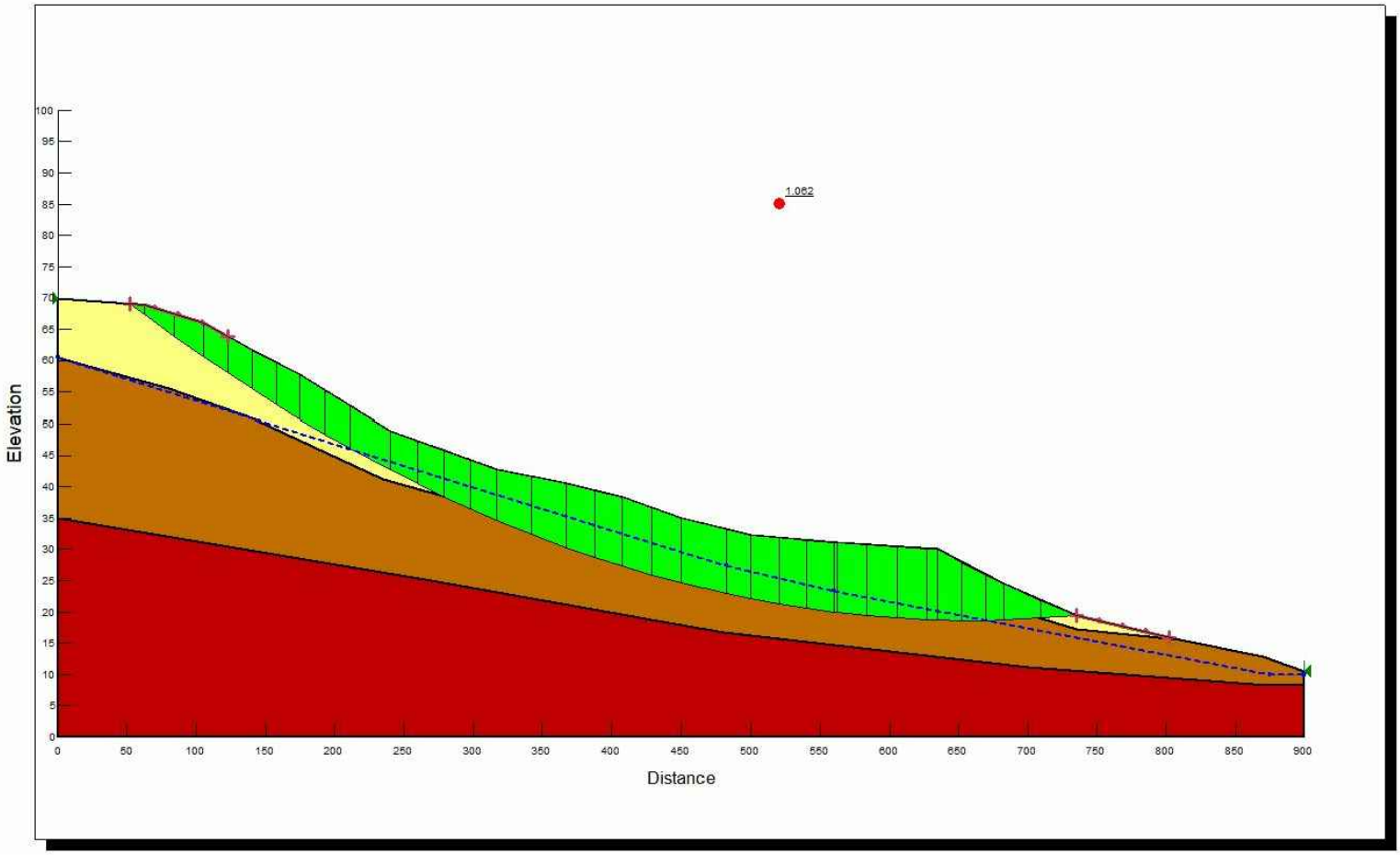


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

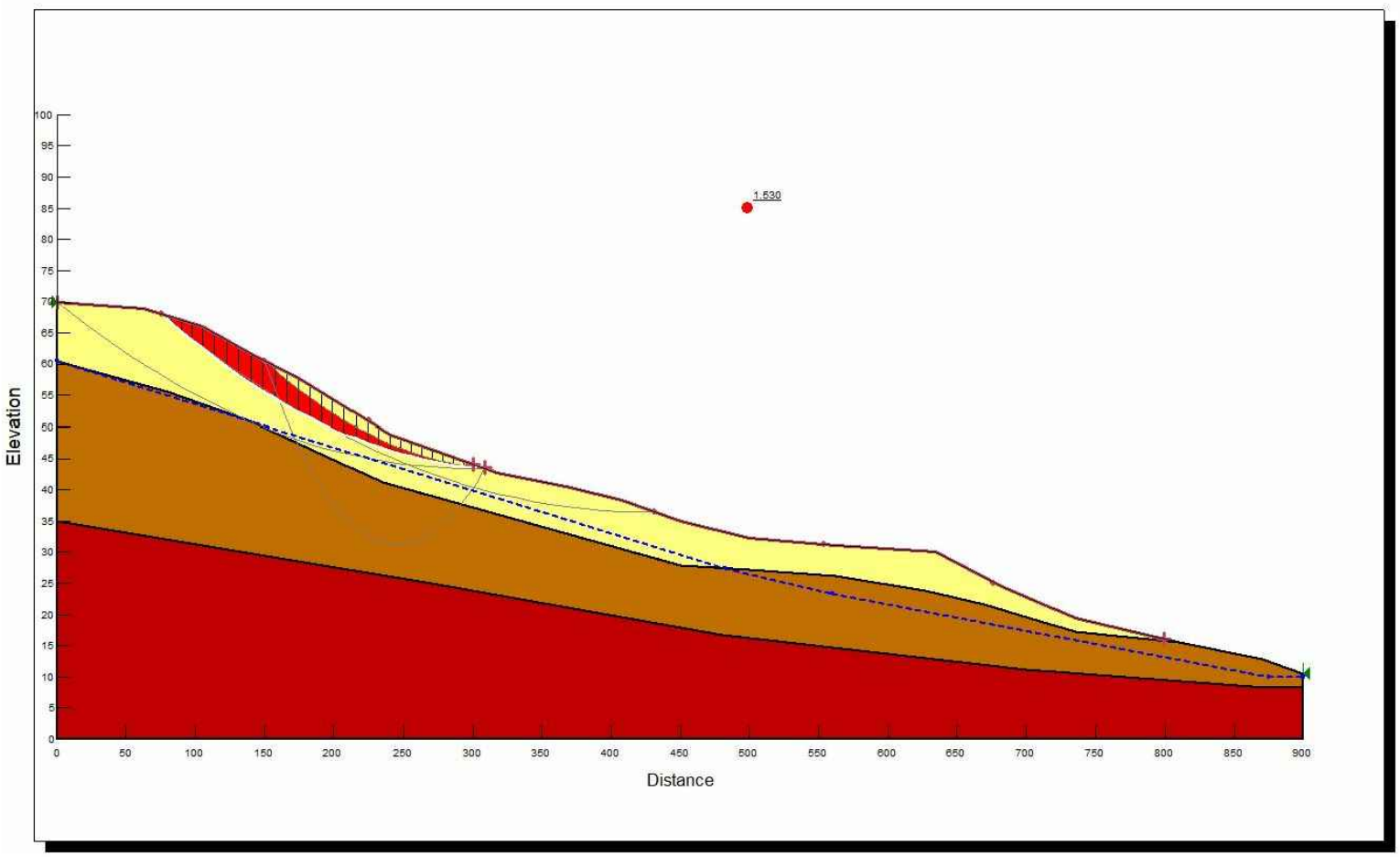


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

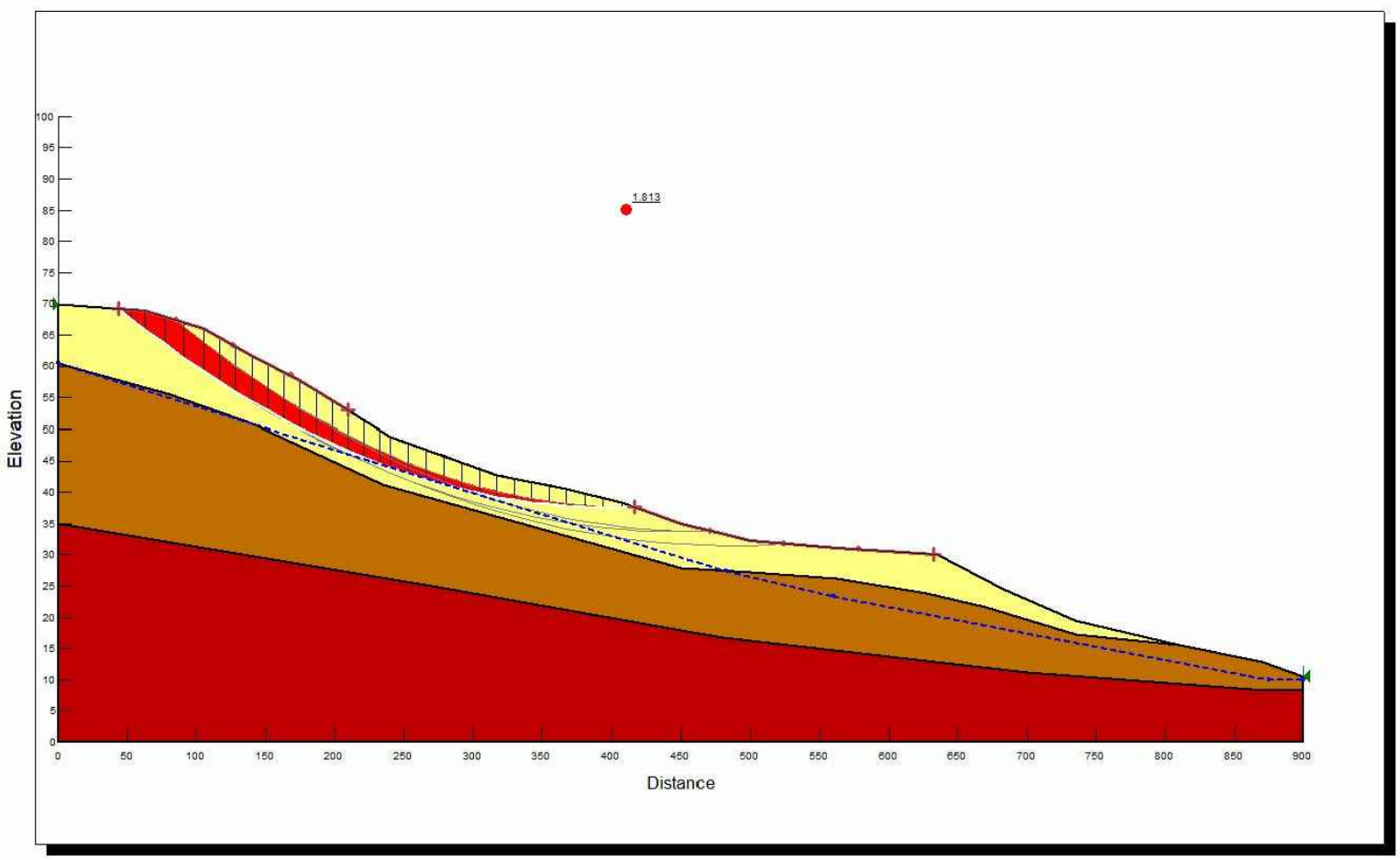


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

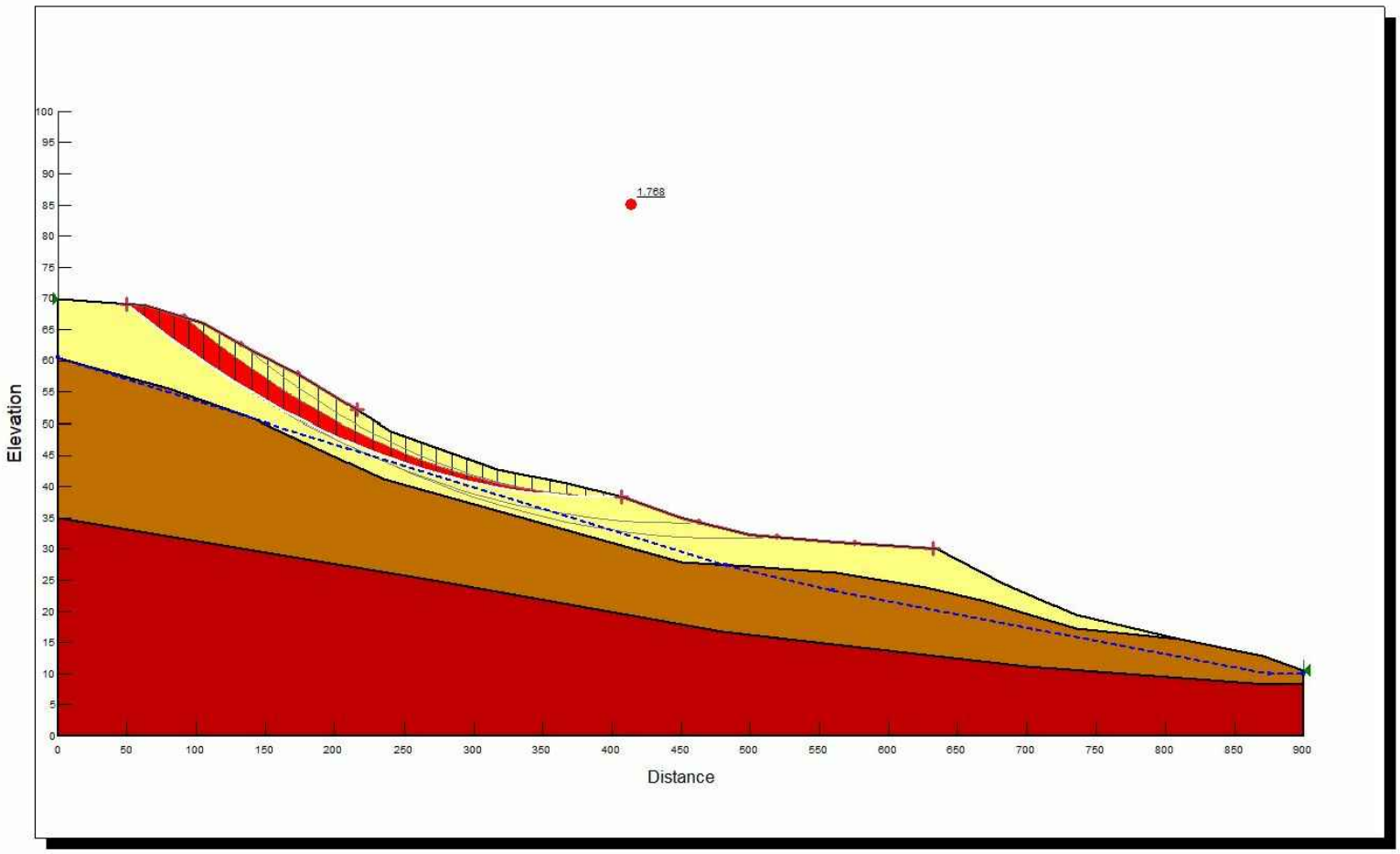


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SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

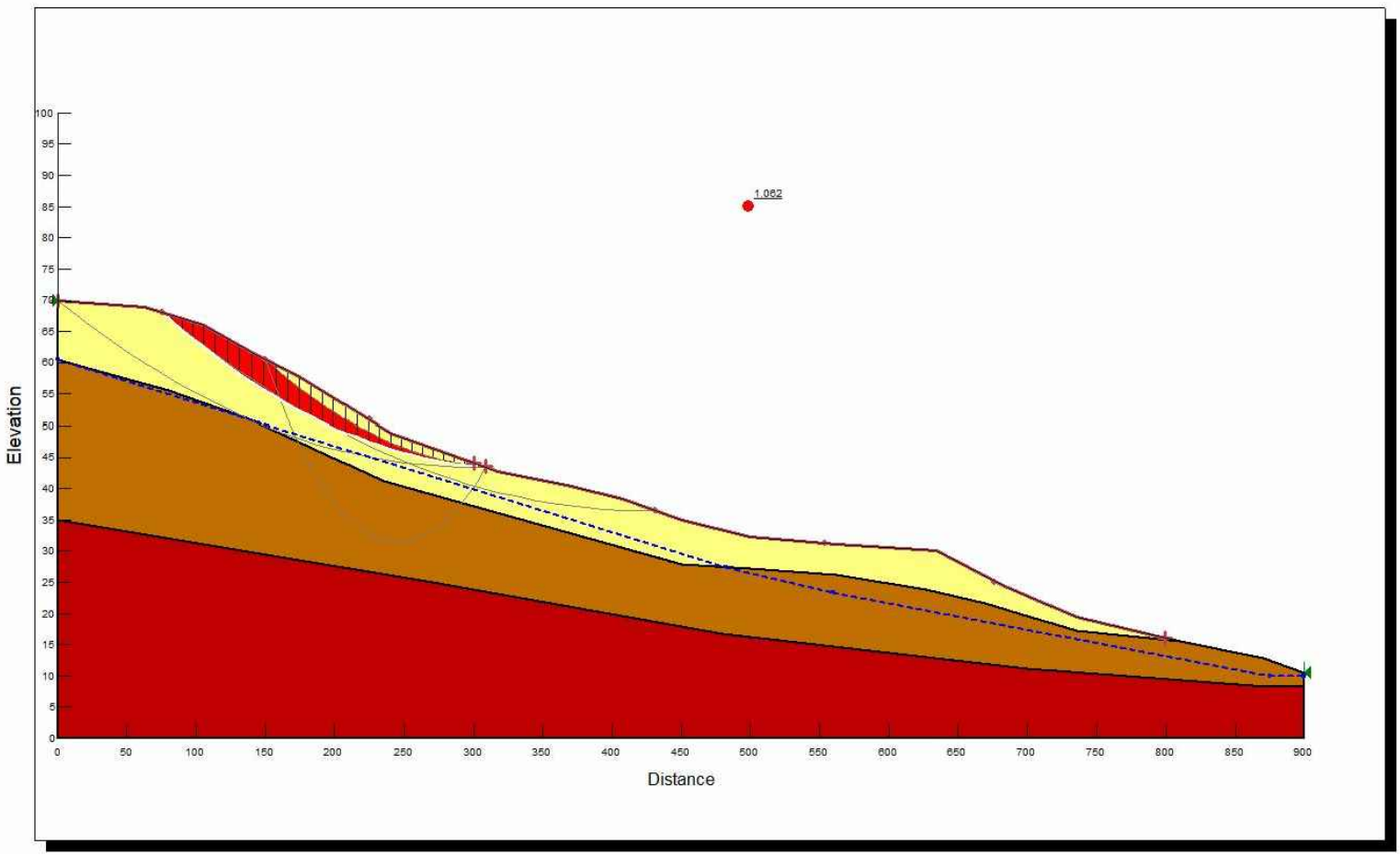


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (STATIC)

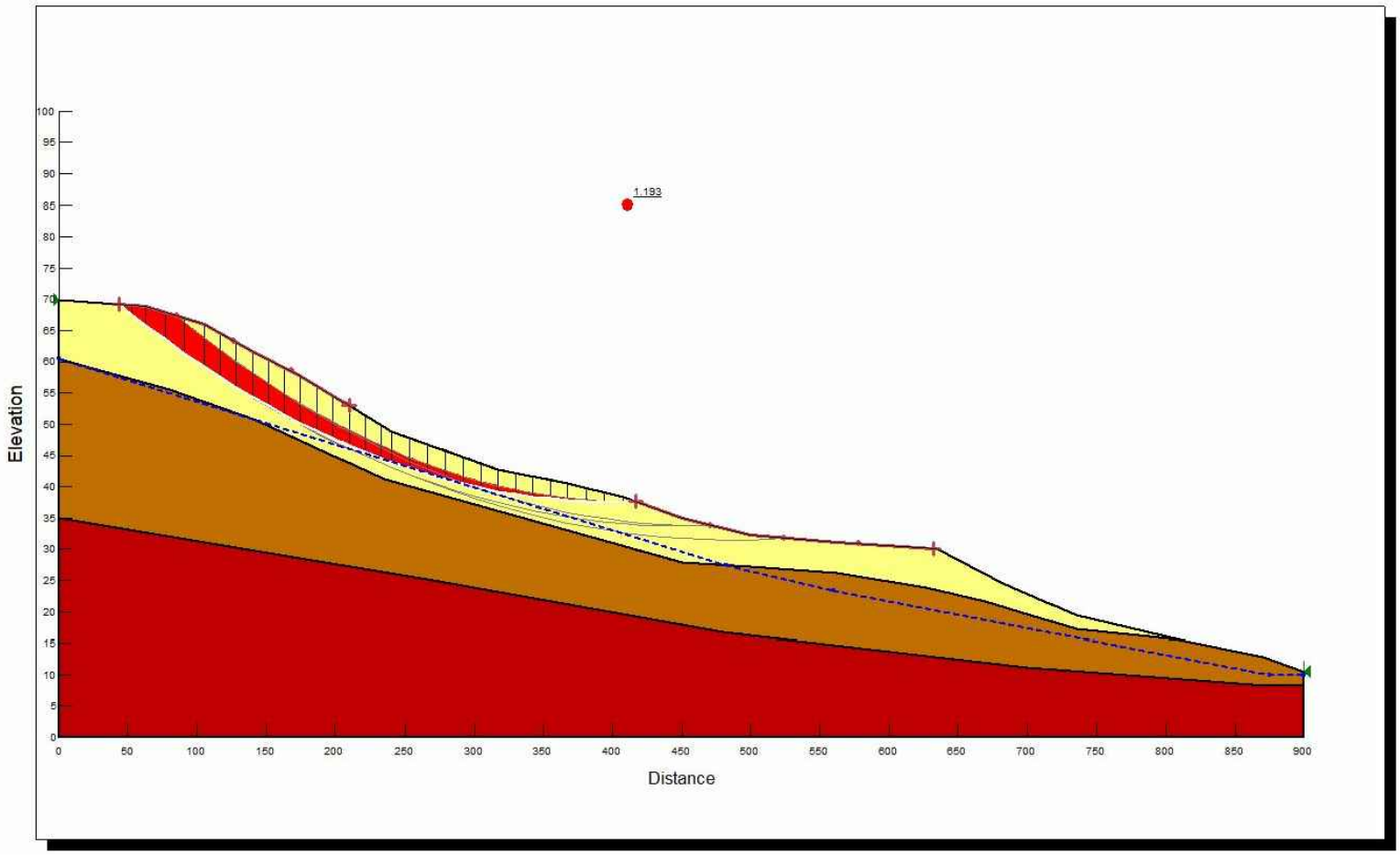


N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

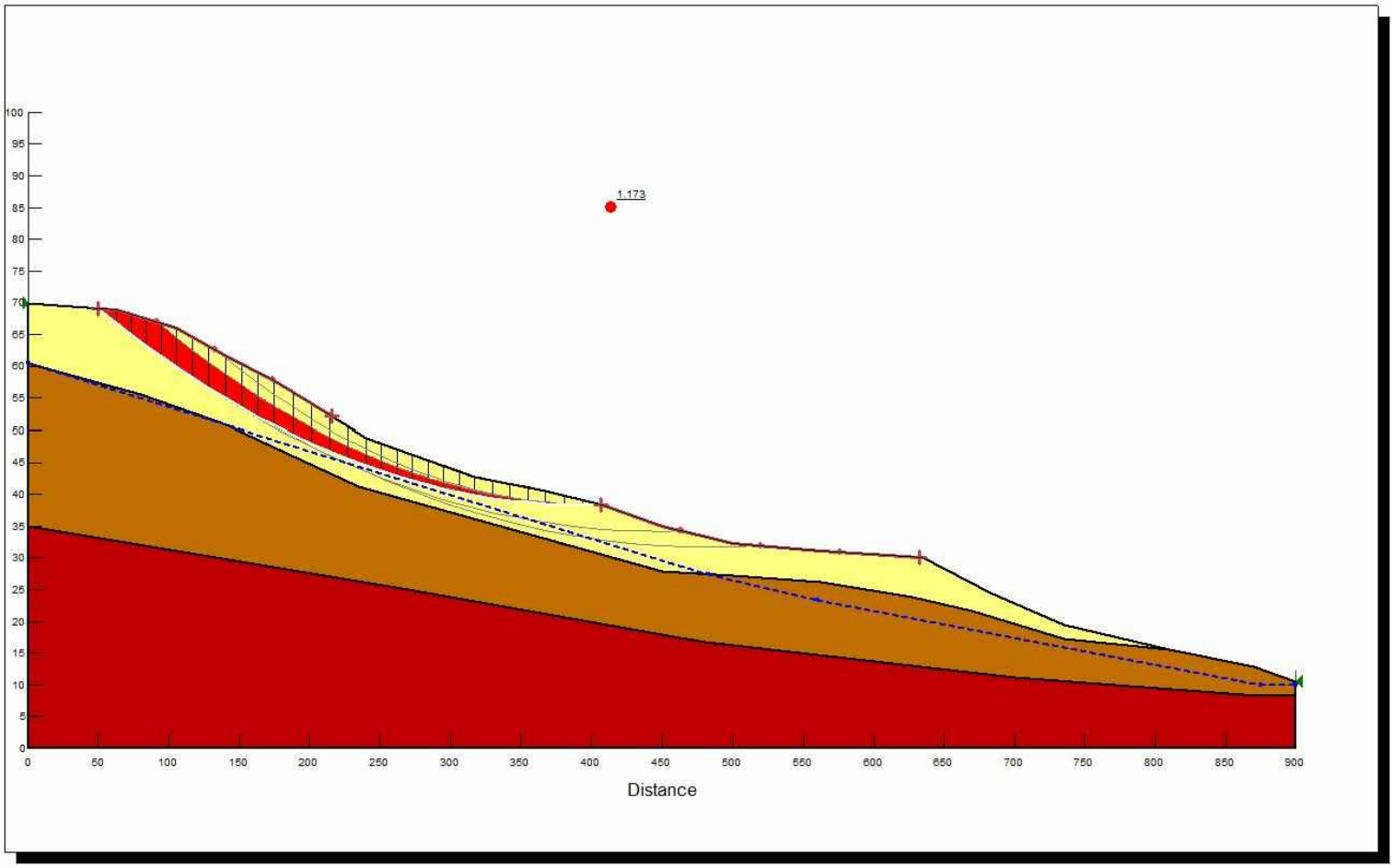


N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

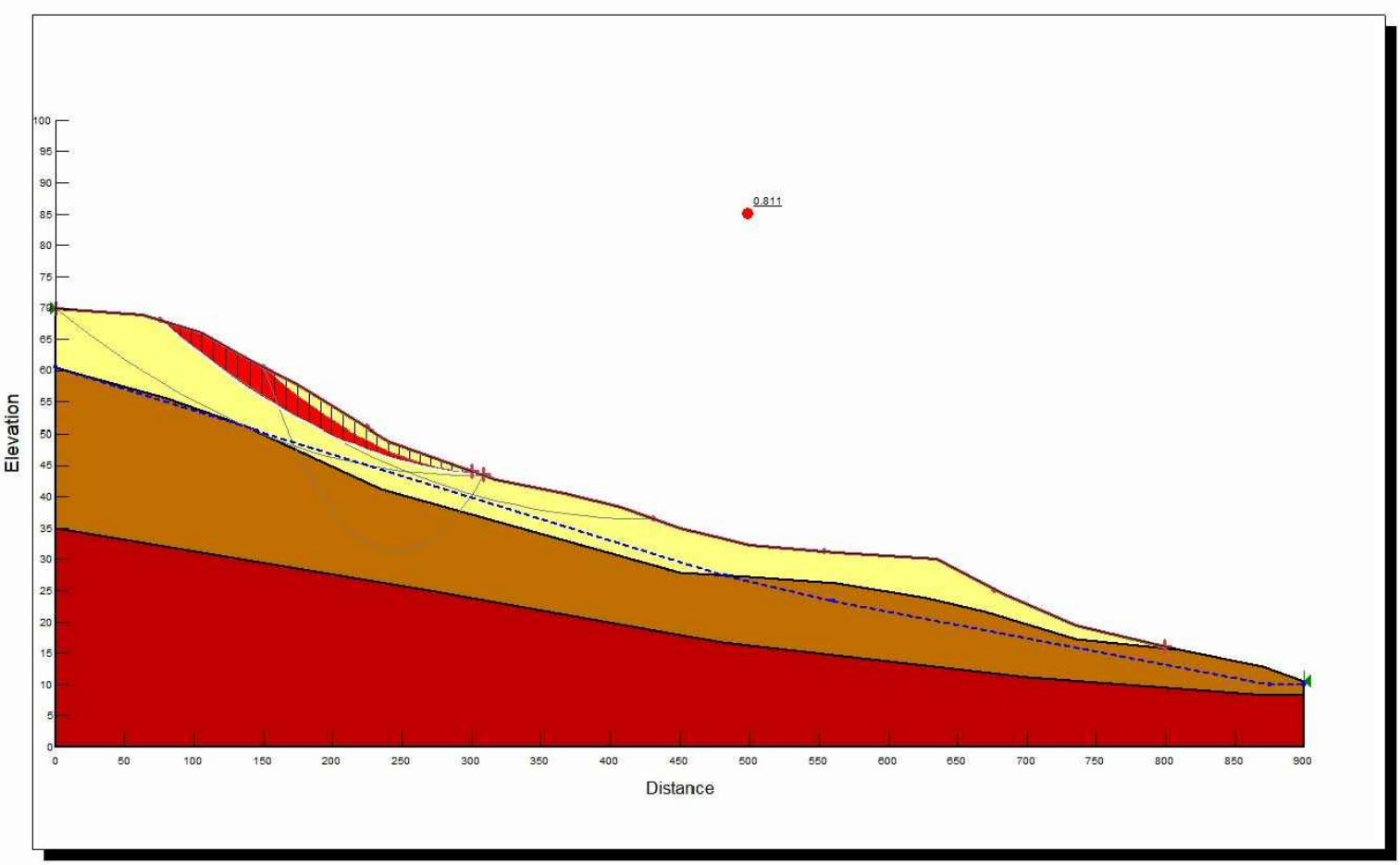


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REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.05g)

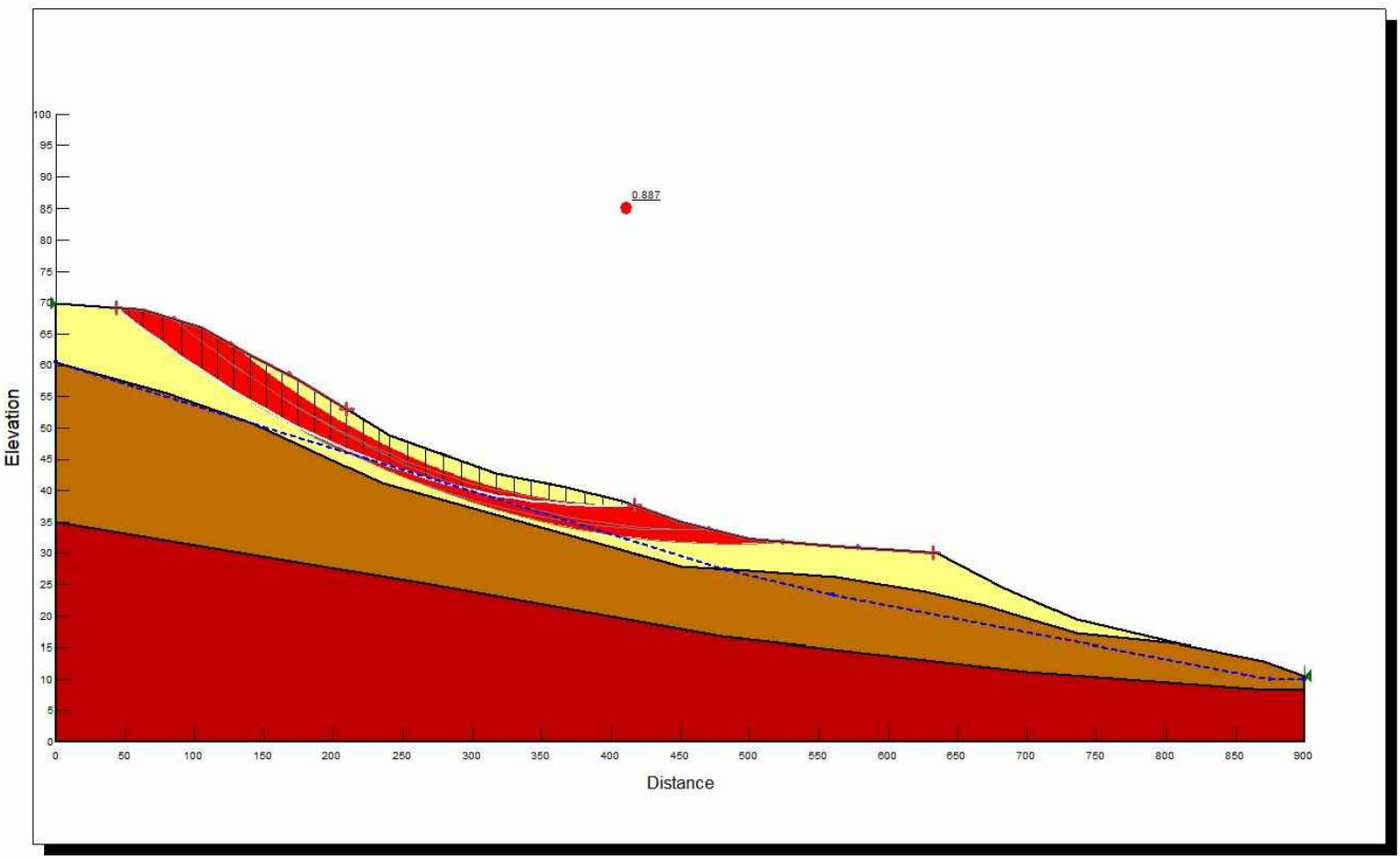


N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

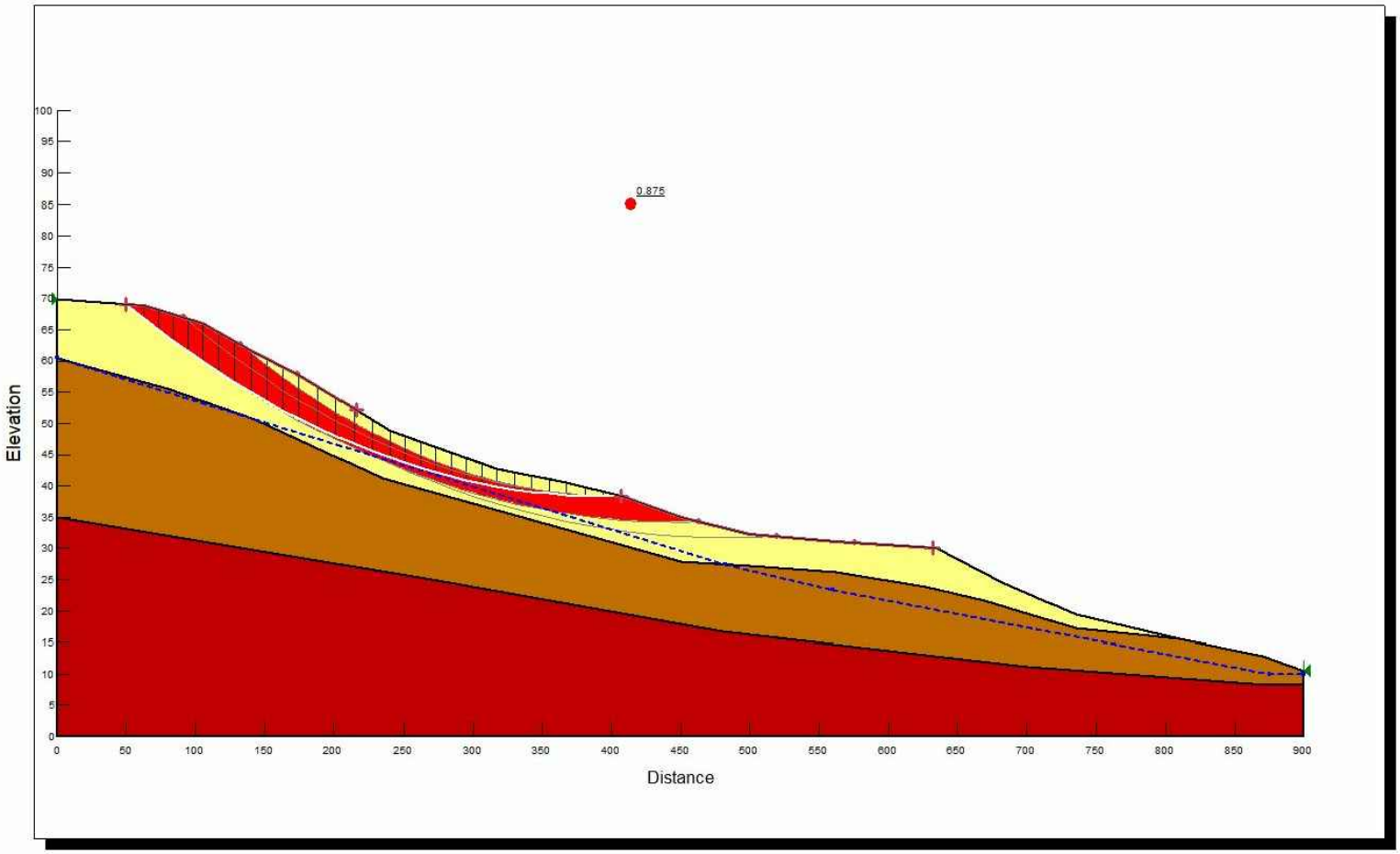


N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)



N

REFERENCE:
SLOPE/W SOFTWARE

AMERICAN GEOSERVICES
888.276.4027 - americangeoservices.com

SLOPE STABILITY ANALYSIS WITH WATER TABLE (SEISMIC Kh=0.1g)

AERIAL PHOTOS

EDR Aerial Photo Decade Package

07/13/20

Site Name:

Glenwood Meadows Housing
Wulfsohn Road
Glenwood Springs, CO 81601
EDR Inquiry # 6118520.5

Client Name:

American Geoservices, LLC
2663 Cinnabar Rd
Colorado Springs, CO 80921
Contact: SAM ADETTIWAR

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2017	1"=500'	Flight Year: 2017	USDA/NAIP
2013	1"=500'	Flight Year: 2013	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1999	1"=500'	Flight Date: September 07, 1999	USGS
1993	1"=500'	Acquisition Date: September 03, 1993	USGS/DOQQ
1989	1"=500'	Flight Date: July 19, 1989	USGS
1983	1"=500'	Flight Date: September 10, 1983	USDA
1979	1"=500'	Flight Date: September 07, 1979	USGS
1960	1"=500'	Flight Date: August 18, 1960	USGS
1955	1"=500'	Flight Date: October 16, 1955	USGS

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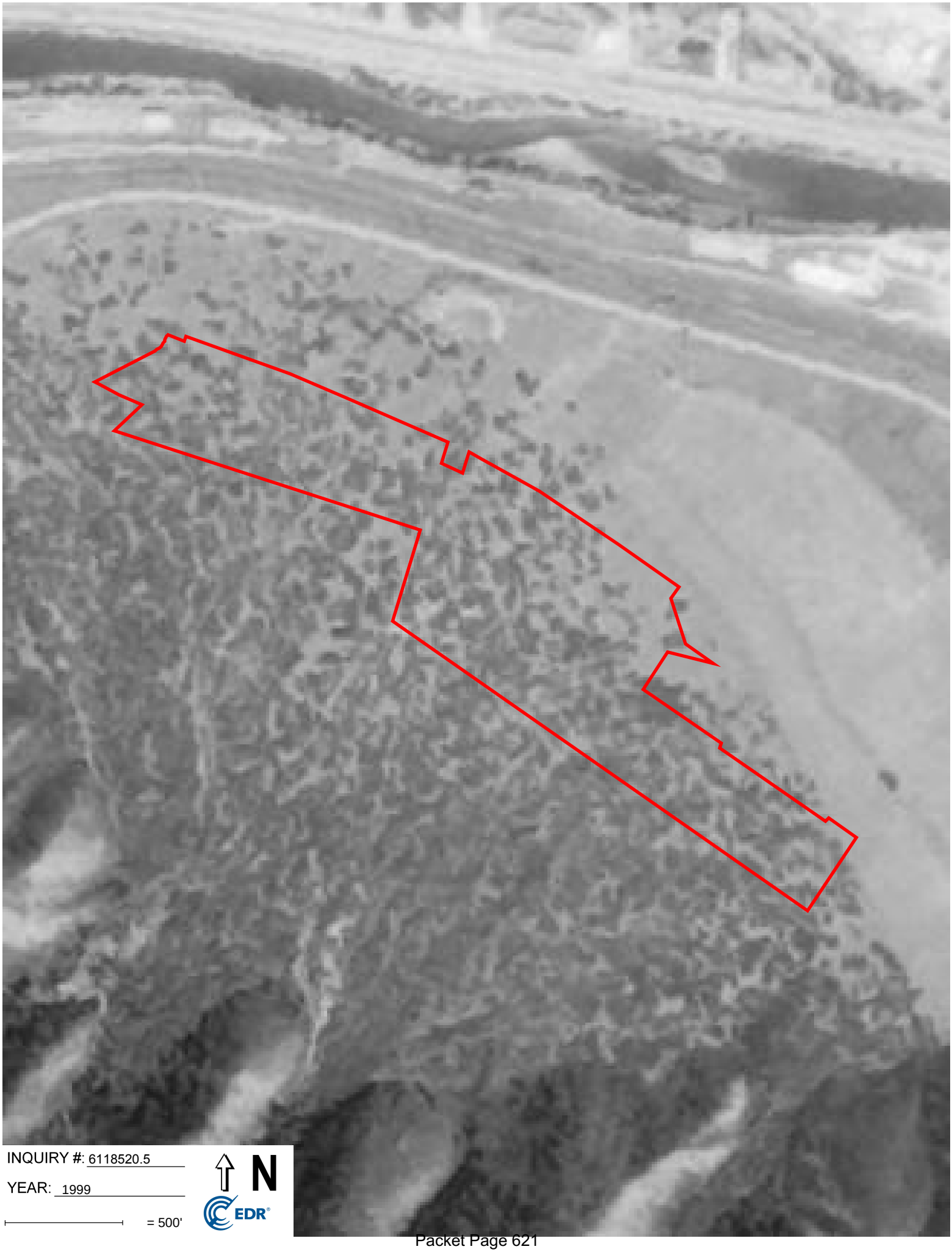
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INQUIRY #: 6118520.5
YEAR: 2017
= 500'
N
EDR


INQUIRY #: 6118520.5
YEAR: 2013
= 500'
N
EDR


INQUIRY #: 6118520.5
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 6118520.5
YEAR: 2006
= 500'
N
EDR



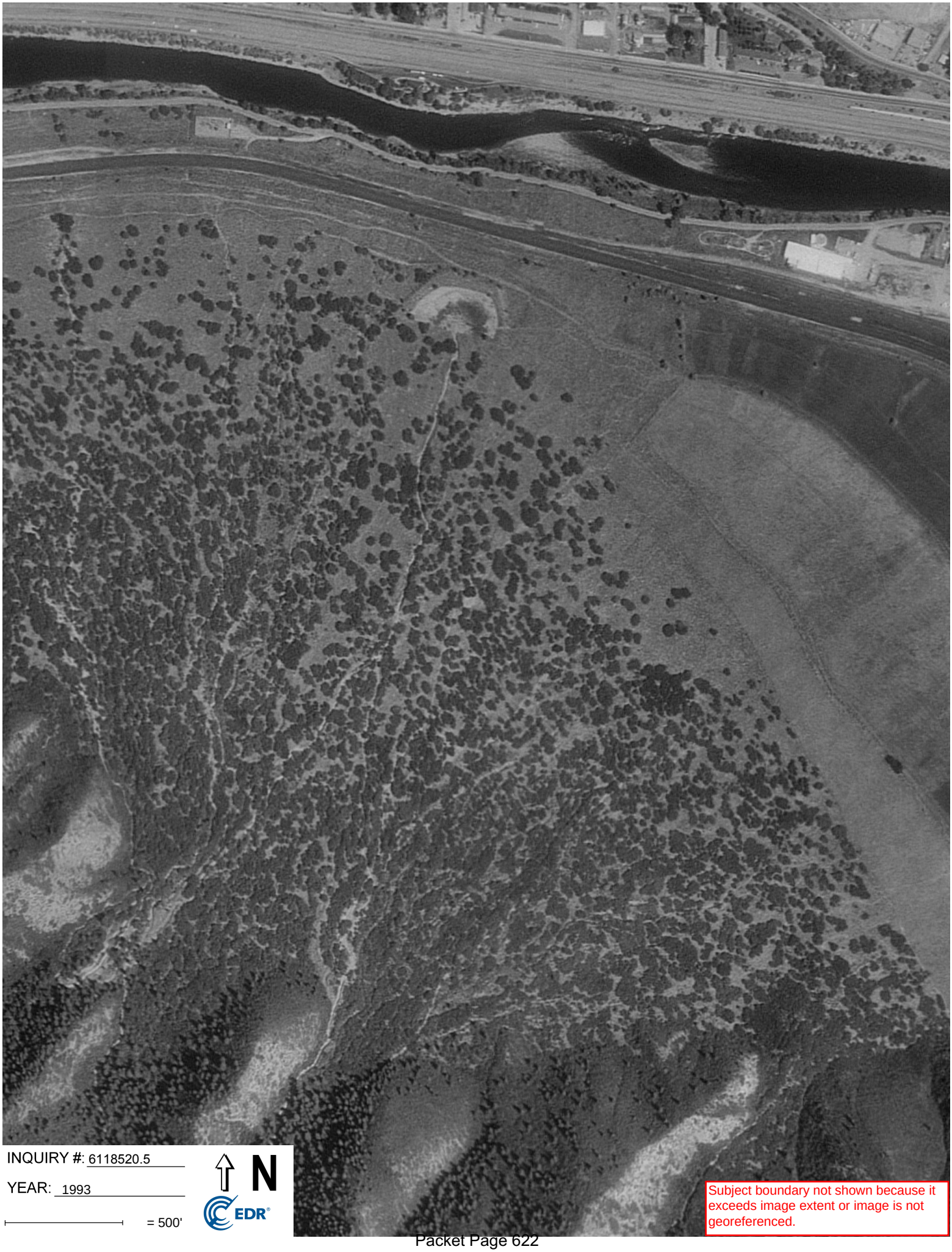
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YEAR: 1999

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EDR



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YEAR: 1993

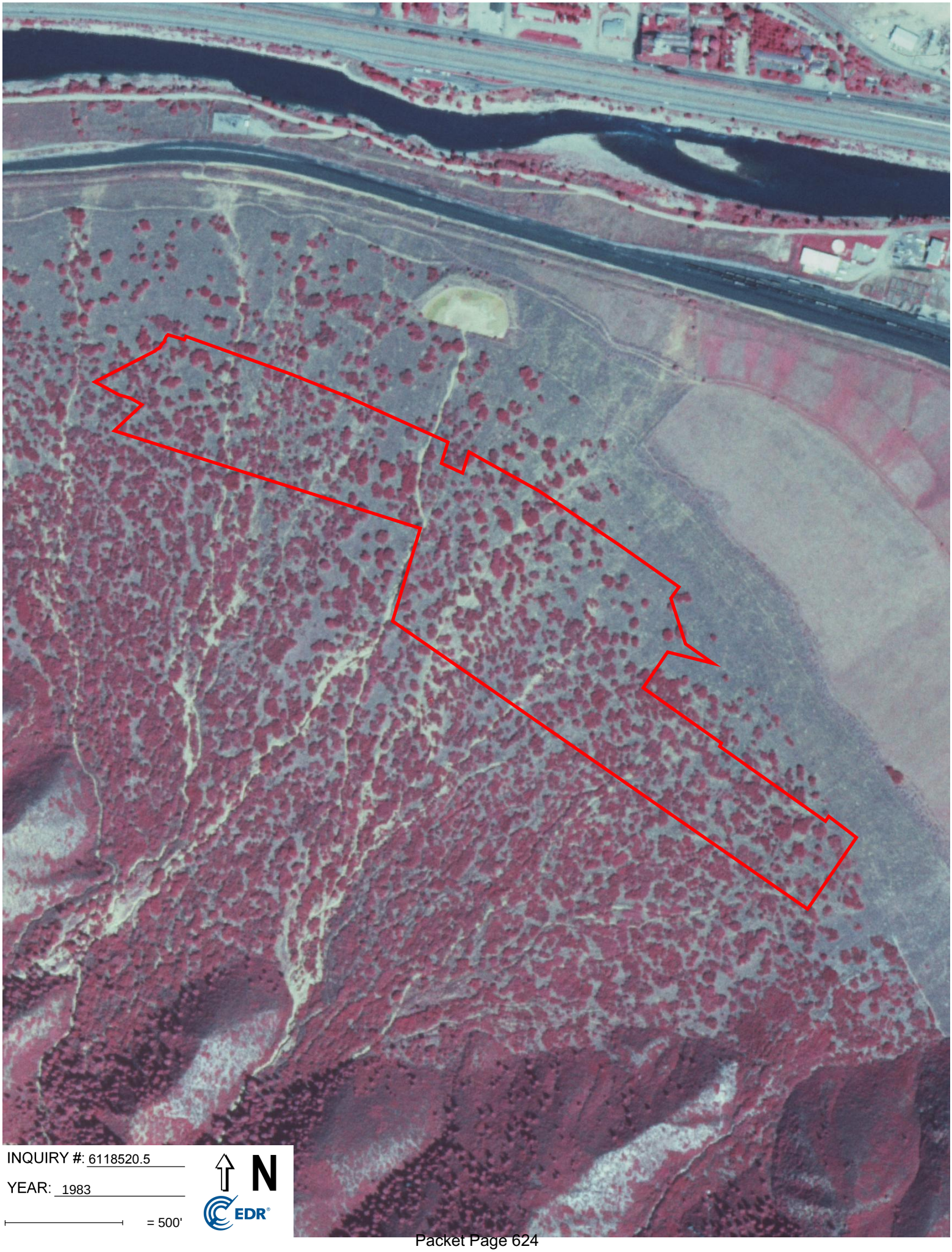
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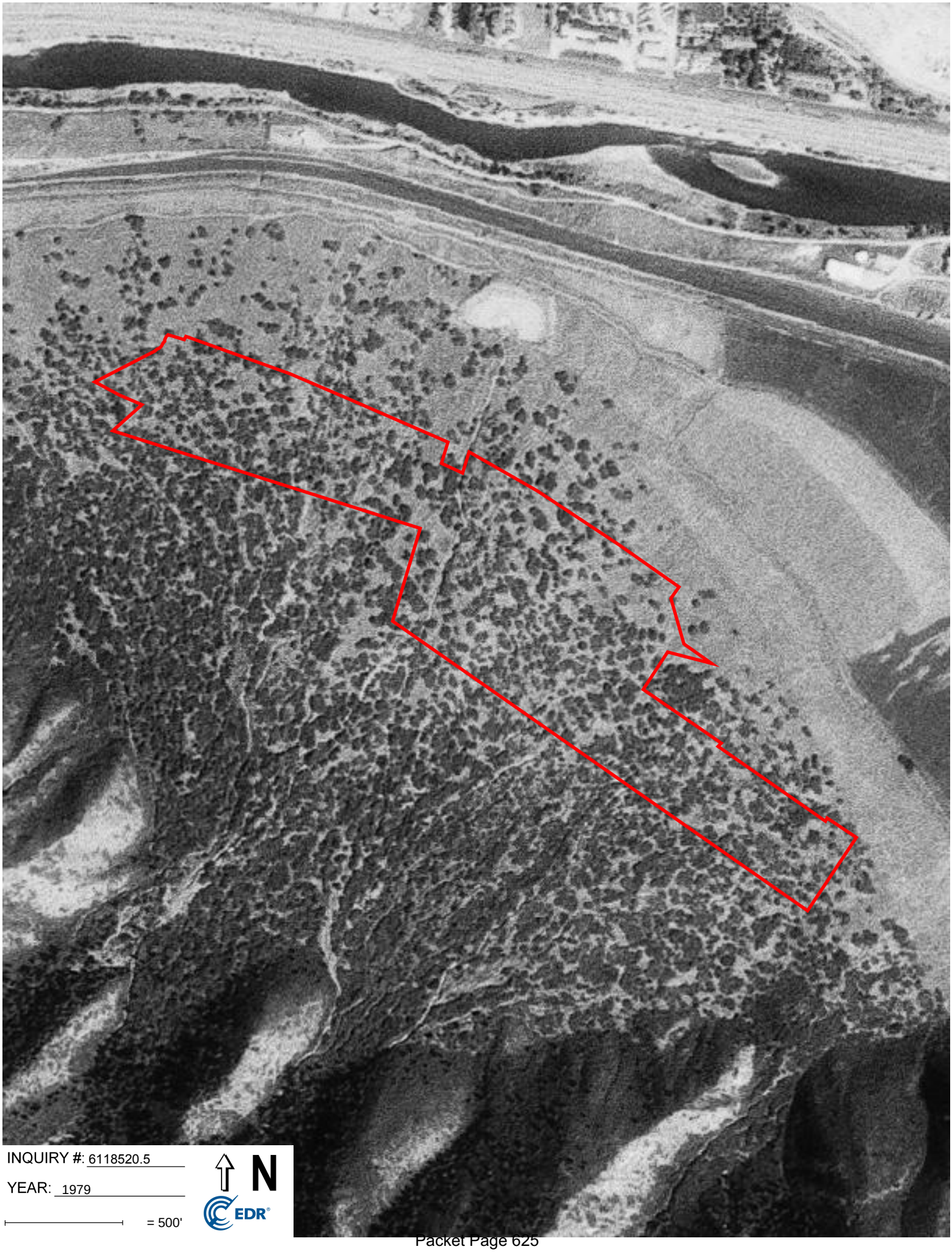
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EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.


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YEAR: 1989
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EDR


INQUIRY #: 6118520.5
YEAR: 1983
= 500'
N
EDR



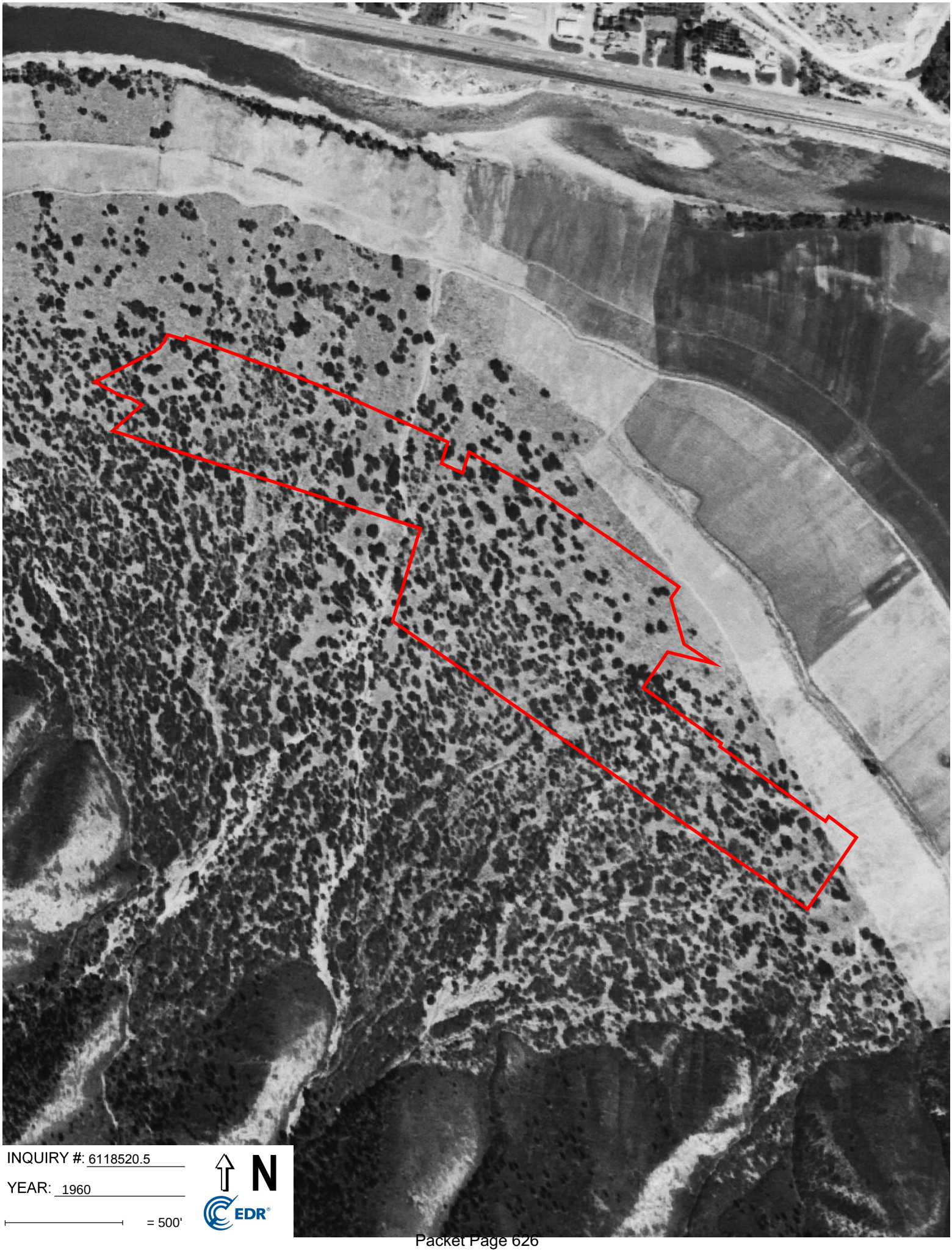
INQUIRY #: 6118520.5

YEAR: 1979

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EDR



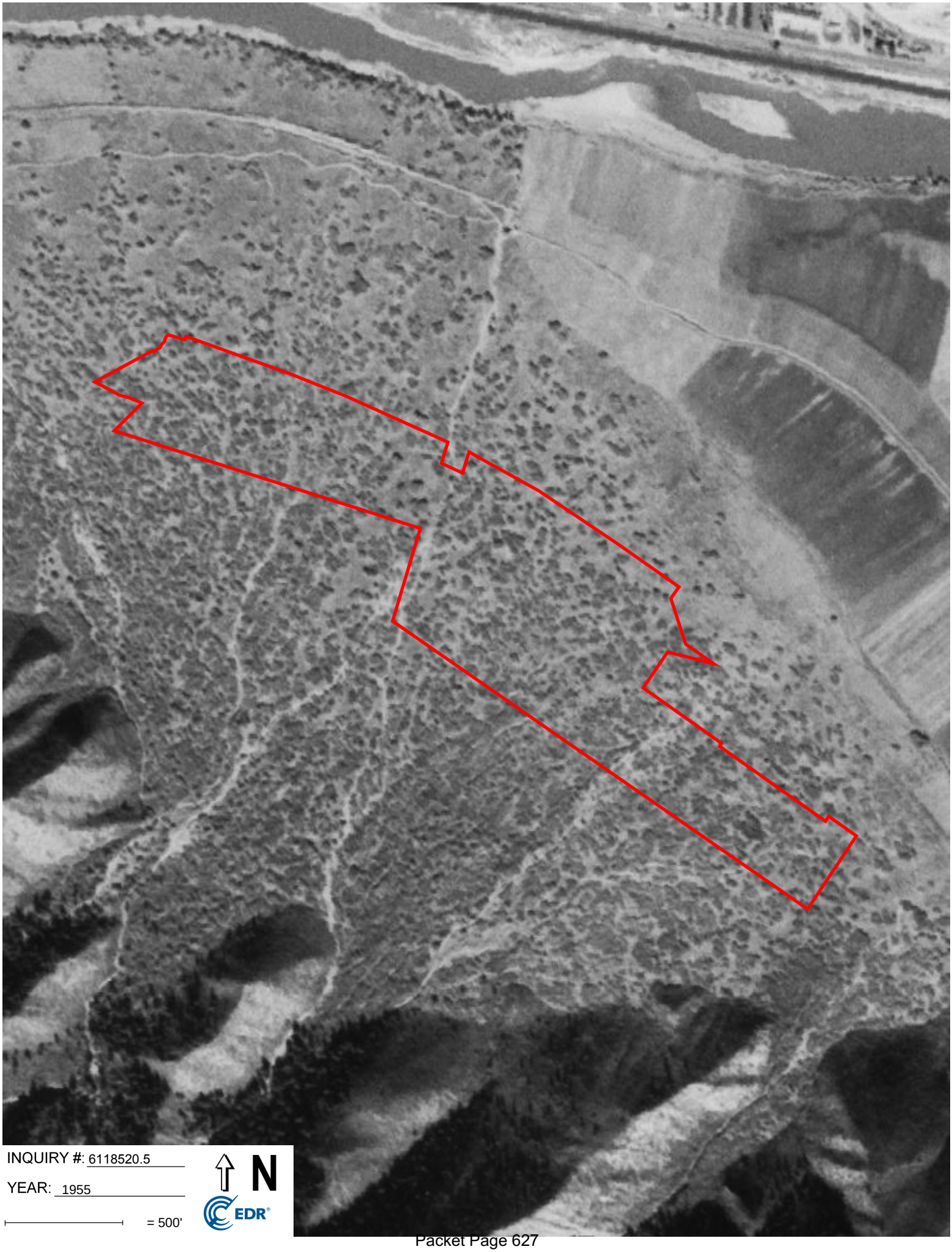
INQUIRY #: 6118520.5

YEAR: 1960

= 500'

N

EDR


INQUIRY #: 6118520.5
YEAR: 1955
= 500'
N
EDR

SITE PHOTOS

















































































































































SLOPE STABILITY ANALYSIS WITHOUT WATERTABLE (STATIC)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 79
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:44:59
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:45:00

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (30.79374, 69.45256) ft
Left-Zone Right Coordinate: (135, 62.30159) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (562.27681, 31.11508) ft
Right-Zone Right Coordinate: (644.49999, 28.88889) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 4.285
Volume: 2,954.1635 ft³
Weight: 3,10,187.17 lbs
Resisting Moment: 3.2312006e+008 lbs-ft
Activating Moment: 7,54,12,295 lbs-ft
Resisting Force: 1,12,090.06 lbs
Activating Force: 26,160.608 lbs
F of S Rank: 1
Exit: (562.27681, 31.115078) ft
Entry: (30.79374, 69.452556) ft
Radius: 2,869.6254 ft
Center: (502.10181, 2,900.1095) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	38.720305	68.155564	0	119.63948	43.545209	0
Slice 2	54.573435	65.607077	0	354.08517	128.87646	0
Slice 3	73.125	62.749203	0	563.0916	204.94858	0
Slice 4	94.375	59.617701	0	743.14432	270.48241	0
Slice 5	113.75	56.897424	0	837.72803	304.90807	0
Slice 6	131.25	54.561908	0	849.56314	309.2157	0
Slice 7	148.74016	52.337036	0	864.54412	314.66833	0
Slice 8	166.22047	50.222431	0	882.71298	321.28125	0
Slice 9	183.09055	48.282906	0	868.48111	316.10127	0
Slice 10	199.35039	46.510935	0	822.5252	299.37469	0
Slice 11	215.61024	44.832658	0	766.87937	279.12126	0
Slice 12	231.87008	43.247909	0	701.49906	255.32478	0
Slice 13	249.6875	41.623456	0	676.46651	246.21368	0
Slice 14	269.0625	39.978692	0	689.86235	251.08936	0
Slice 15	288.4375	38.466053	0	689.51356	250.96241	0
Slice 16	307.8125	37.085328	0	675.35098	245.80766	0
Slice 17	325.83333	35.915068	0	680.18446	247.5669	0

Slice 18	342.5	34.938017	0	705.86504	256.91387	0
Slice 19	359.16667	34.058217	0	721.29716	262.5307	0
Slice 20	377.5	33.207997	0	714.15477	259.93108	0
Slice 21	397.5	32.408617	0	682.0831	248.25794	0
Slice 22	418.125	31.732793	0	607.56014	221.13381	0
Slice 23	439.375	31.189419	0	489.58318	178.1937	0
Slice 24	458.33333	30.829994	0	390.97215	142.30222	0
Slice 25	475	30.624169	0	315.0633	114.67366	0
Slice 26	491.66667	30.515158	0	228.90485	83.314551	0
Slice 27	507.7846	30.50027	0	167.0069	60.785539	0
Slice 28	523.3538	30.57334	0	130.03691	47.329565	0
Slice 29	538.92301	30.730889	0	84.198809	30.64586	0
Slice 30	554.49221	30.972931	0	29.529675	10.747923	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 82
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:53:34
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:53:37

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (24.40773, 69.56609) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.92524, 21.07061) ft
Right-Zone Right Coordinate: (885, 11.66667) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 5.362
Volume: 6,122.6541 ft³
Weight: 6,50,658.16 lbs
Resisting Moment: 8.8365152e+008 lbs-ft
Activating Moment: 1.6479033e+008 lbs-ft
Resisting Force: 2,35,734.13 lbs
Activating Force: 43,961.841 lbs
F of S Rank: 1
Exit: (717.92524, 21.070608) ft
Entry: (24.40773, 69.566085) ft
Radius: 3,735.7164 ft
Center: (630.62637, 3,755.7668) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	33.930797	68.025204	0	142.35368	51.812503	0
Slice 2	52.976932	64.99385	0	421.62645	153.45948	0
Slice 3	73.125	61.899787	0	652.64841	237.54459	0
Slice 4	94.375	58.75504	0	834.32978	303.67121	0
Slice 5	113.75	55.991468	0	933.32016	339.70076	0
Slice 6	131.25	53.588788	0	951.78232	346.42043	0
Slice 7	148.74016	51.271593	0	975.92237	355.20669	0
Slice 8	166.22047	49.039629	0	1,005.7755	366.07234	0
Slice 9	187.65476	46.428656	0	996.0067	362.51679	0
Slice 10	213.04303	43.48479	0	941.8843	342.81785	0
Slice 11	230.36858	41.557766	0	896.67663	326.3636	0
Slice 12	237.5	40.794111	0	875.64269	318.70787	0
Slice 13	252.91667	39.216846	0	901.86148	328.25074	0
Slice 14	278.75	36.682043	0	959.42008	349.20035	0
Slice 15	304.58333	34.328293	0	997.49744	363.05938	0
Slice 16	330	32.187438	0	1,060.9222	386.14409	0
Slice 17	355	30.253447	0	1,150.3828	418.70508	0

Slice 18	377.5	28.649506	0	1,204.5149	438.40757	0
Slice 19	397.5	27.34509	0	1,226.5035	446.41075	0
Slice 20	418.125	26.11445	0	1,211.1688	440.82939	0
Slice 21	439.375	24.96441	0	1,157.6321	421.34361	0
Slice 22	462.5	23.856605	0	1,116.5256	406.3821	0
Slice 23	487.5	22.814201	0	1,085.2652	395.00422	0
Slice 24	510.41667	21.999567	0	1,081.8518	393.76187	0
Slice 25	531.25	21.386999	0	1,109.1931	403.71327	0
Slice 26	552.08333	20.890741	0	1,123.5463	408.93741	0
Slice 27	573.33333	20.505516	0	1,126.5491	410.03033	0
Slice 28	595	20.23603	0	1,117.6518	406.792	0
Slice 29	616.66667	20.092228	0	1,094.6577	398.42282	0
Slice 30	631.25	20.052372	0	1,072.4402	390.33631	0
Slice 31	643.75	20.083737	0	951.6792	346.3829	0
Slice 32	661.25	20.186207	0	719.98407	262.05277	0
Slice 33	676.25	20.334274	0	514.28485	187.18438	0
Slice 34	684.9204	20.445791	0	397.68931	144.74707	0
Slice 35	702.63302	20.77579	0	184.30993	67.083329	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 87
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:00:58
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:01:00

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (32.06557, 69.42995) ft
Left-Zone Right Coordinate: (164.9719, 58.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (586.522, 30.74296) ft
Right-Zone Right Coordinate: (672.99997, 25.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 4.372
Volume: 2,968.2288 ft³
Weight: 3,11,664.02 lbs
Resisting Moment: 3.3789285e+008 lbs-ft
Activating Moment: 7,72,79,986 lbs-ft
Resisting Force: 1,12,655.76 lbs
Activating Force: 25,765.824 lbs
F of S Rank: 1
Exit: (586.522, 30.742957) ft
Entry: (32.06557, 69.429946) ft
Radius: 2,986.1639 ft
Center: (516.24486, 3,016.0798) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	39.674177	68.199896	0	113.35419	41.257552	0
Slice 2	54.891392	65.780049	0	335.78672	122.21637	0
Slice 3	73.125	62.995937	0	537.8709	195.769	0
Slice 4	94.375	59.885358	0	715.84683	260.54694	0
Slice 5	113.75	57.178846	0	809.01819	294.45854	0
Slice 6	131.25	54.850993	0	820.00916	298.45893	0
Slice 7	148.74016	52.629501	0	834.5627	303.75598	0
Slice 8	166.22047	50.514016	0	852.72018	310.36476	0
Slice 9	183.09055	48.569695	0	838.8614	305.32058	0
Slice 10	199.35039	46.789313	0	793.64681	288.86382	0
Slice 11	215.61024	45.098986	0	739.12182	269.01834	0
Slice 12	231.87008	43.49856	0	675.24923	245.77062	0
Slice 13	249.6875	41.852587	0	652.32826	237.42807	0
Slice 14	269.0625	40.179713	0	668.51657	243.32013	0
Slice 15	288.4375	38.633855	0	671.5186	244.41278	0
Slice 16	307.8125	37.214817	0	661.27612	240.68482	0
Slice 17	325.83333	36.004521	0	670.24163	243.948	0

Slice 18	342.5	34.986379	0	700.19152	254.84887	0
Slice 19	359.16667	34.061734	0	720.32675	262.1775	0
Slice 20	377.5	33.157644	0	718.8899	261.65452	0
Slice 21	397.5	32.294546	0	693.62186	252.45771	0
Slice 22	418.125	31.54727	0	626.77682	228.1281	0
Slice 23	439.375	30.92436	0	517.36236	188.3045	0
Slice 24	458.33333	30.489117	0	426.88674	155.37407	0
Slice 25	475	30.212364	0	358.55402	130.50299	0
Slice 26	491.66667	30.028661	0	280.3344	102.03338	0
Slice 27	510.41667	29.939738	0	221.3179	80.553129	0
Slice 28	531.25	29.971751	0	178.76554	65.065334	0
Slice 29	552.08333	30.14912	0	120.90717	44.006611	0
Slice 30	574.511	30.508551	0	44.070687	16.040418	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 90
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:06:20
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:06:22

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (106.92331, 65.86688) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (483.19428, 33.15587) ft
Right-Zone Right Coordinate: (687.5, 23.96825) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 4.506
Volume: 1,117.1407 ft³
Weight: 1,17,299.78 lbs
Resisting Moment: 8,79,19,662 lbs-ft
Activating Moment: 1,95,11,912 lbs-ft
Resisting Force: 42,416.87 lbs
Activating Force: 9,413.5477 lbs
F of S Rank: 1
Exit: (483.19428, 33.155872) ft
Entry: (106.92331, 65.86688) ft
Radius: 2,064.0739 ft
Center: (473.07445, 2,097.205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	112.43609	64.888627	0	28.77401	10.472883	0
Slice 2	123.46165	62.962925	0	83.081131	30.239059	0
Slice 3	134.48722	61.098748	0	130.96402	47.667003	0
Slice 4	145.82677	59.246378	0	182.95568	66.590422	0
Slice 5	157.48031	57.409228	0	238.7304	86.89076	0
Slice 6	169.13386	55.64025	0	287.48772	104.63697	0
Slice 7	181.46457	53.844599	0	314.1759	114.35068	0
Slice 8	194.47244	52.030423	0	317.97793	115.7345	0
Slice 9	207.48031	50.300519	0	313.16095	113.98126	0
Slice 10	220.48819	48.654671	0	299.72731	109.09182	0
Slice 11	233.49606	47.092678	0	277.66658	101.06237	0
Slice 12	246.45833	45.61924	0	285.84482	104.03901	0
Slice 13	259.375	44.233593	0	324.41207	118.07634	0
Slice 14	272.29167	42.930096	0	354.5648	129.05103	0
Slice 15	285.20833	41.708593	0	376.28448	136.95635	0
Slice 16	298.125	40.568938	0	389.5436	141.78228	0
Slice 17	311.04167	39.510994	0	394.30866	143.51661	0

Slice 18	323.75	38.54909	0	413.20713	150.3951	0
Slice 19	336.25	37.680528	0	446.54645	162.52962	0
Slice 20	348.75	36.88817	0	471.91805	171.76412	0
Slice 21	361.25	36.171927	0	489.28252	178.08427	0
Slice 22	374.16667	35.512996	0	490.87043	178.66223	0
Slice 23	387.5	34.916536	0	476.07836	173.27835	0
Slice 24	400.83333	34.406431	0	452.06728	164.53903	0
Slice 25	414.58333	33.972151	0	400.48469	145.76451	0
Slice 26	428.75	33.619198	0	320.74927	116.74319	0
Slice 27	442.91667	33.363548	0	230.69263	83.965251	0
Slice 28	455.53238	33.213023	0	155.66893	56.658857	0
Slice 29	466.59714	33.148641	0	97.721936	35.567876	0
Slice 30	477.6619	33.143576	0	33.595989	12.22794	0

SLOPE STABILITY ANALYSIS WITHOUT WATERTABLE (SEISMIC Kh=0.05g)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 80
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:49:56
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:50:01

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (30.79374, 69.45256) ft
Left-Zone Right Coordinate: (135, 62.30159) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (562.27681, 31.11508) ft
Right-Zone Right Coordinate: (644.49999, 28.88889) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.689
Volume: 2,954.1635 ft³
Weight: 3,10,187.17 lbs
Resisting Moment: 3.2175468e+008 lbs-ft
Activating Moment: 1.196644e+008 lbs-ft
Resisting Force: 1,11,617.77 lbs
Activating Force: 41,512.295 lbs
F of S Rank: 1
Exit: (562.27681, 31.115078) ft
Entry: (30.79374, 69.452556) ft
Radius: 2,869.6254 ft
Center: (502.10181, 2,900.1095) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	38.720305	68.155564	0	118.64264	43.182391	0
Slice 2	54.573435	65.607077	0	351.12311	127.79836	0
Slice 3	73.125	62.749203	0	558.35994	203.2264	0
Slice 4	94.375	59.617701	0	736.93543	268.22256	0
Slice 5	113.75	56.897424	0	830.82555	302.39577	0
Slice 6	131.25	54.561908	0	842.69166	306.71468	0
Slice 7	148.74016	52.337036	0	857.76545	312.20109	0
Slice 8	166.22047	50.222431	0	876.0918	318.87134	0
Slice 9	183.09055	48.282906	0	862.29638	313.85022	0
Slice 10	199.35039	46.510935	0	817.00354	297.36497	0
Slice 11	215.61024	44.832658	0	762.08753	277.37718	0
Slice 12	231.87008	43.247909	0	697.47799	253.86123	0
Slice 13	249.6875	41.623456	0	673.0428	244.96755	0
Slice 14	269.0625	39.978692	0	686.92224	250.01925	0
Slice 15	288.4375	38.466053	0	687.13036	250.095	0
Slice 16	307.8125	37.085328	0	673.55796	245.15505	0
Slice	325.83333	35.915068	0	678.86742	247.08753	0

17						
Slice 18	342.5	34.938017	0	704.92806	256.57283	0
Slice 19	359.16667	34.058217	0	720.74046	262.32807	0
Slice 20	377.5	33.207997	0	713.99702	259.87366	0
Slice 21	397.5	32.408617	0	682.28891	248.33285	0
Slice 22	418.125	31.732793	0	608.02496	221.30299	0
Slice 23	439.375	31.189419	0	490.15948	178.40346	0
Slice 24	458.33333	30.829994	0	391.538	142.50818	0
Slice 25	475	30.624169	0	315.56546	114.85644	0
Slice 26	491.66667	30.515158	0	229.29645	83.457084	0
Slice 27	507.7846	30.50027	0	167.2955	60.890583	0
Slice 28	523.3538	30.57334	0	130.24569	47.405553	0
Slice 29	538.92301	30.730889	0	84.319939	30.689948	0
Slice 30	554.49221	30.972931	0	29.567353	10.761636	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 84
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:56:02
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:56:06

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (24.40773, 69.56609) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.92524, 21.07061) ft
Right-Zone Right Coordinate: (885, 11.66667) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 3.082
Volume: 6,122.6541 ft³
Weight: 6,50,658.16 lbs
Resisting Moment: 8.8067076e+008 lbs-ft
Activating Moment: 2.8575098e+008 lbs-ft
Resisting Force: 2,34,941.84 lbs
Activating Force: 76,232.157 lbs
F of S Rank: 1
Exit: (717.92524, 21.070608) ft
Entry: (24.40773, 69.566085) ft
Radius: 3,735.7164 ft
Center: (630.62637, 3,755.7668) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	33.930797	68.025204	0	141.17953	51.385146	0
Slice 2	52.976932	64.99385	0	418.11538	152.18155	0
Slice 3	73.125	61.899787	0	647.15117	235.54376	0
Slice 4	94.375	58.75504	0	827.25485	301.09614	0
Slice 5	113.75	55.991468	0	925.38878	336.81397	0
Slice 6	131.25	53.588788	0	943.69201	343.4758	0
Slice 7	148.74016	51.271593	0	967.68716	352.20932	0
Slice 8	166.22047	49.039629	0	997.41495	363.02935	0
Slice 9	187.65476	46.428656	0	987.92064	359.57371	0
Slice 10	213.04303	43.48479	0	934.5149	340.13561	0
Slice 11	230.36858	41.557766	0	889.8886	323.89296	0
Slice 12	237.5	40.794111	0	869.1178	316.33301	0
Slice 13	252.91667	39.216846	0	895.48117	325.92849	0
Slice 14	278.75	36.682043	0	953.30371	346.97417	0
Slice 15	304.58333	34.328293	0	991.8807	361.01505	0
Slice 16	330	32.187438	0	1,055.7828	384.27353	0
Slice	355	30.253447	0	1,145.7185	417.00744	0

17						
Slice 18	377.5	28.649506	0	1,200.4734	436.93658	0
Slice 19	397.5	27.34509	0	1,223.1395	445.18638	0
Slice 20	418.125	26.11445	0	1,208.6042	439.89597	0
Slice 21	439.375	24.96441	0	1,155.9227	420.72145	0
Slice 22	462.5	23.856605	0	1,115.6145	406.05047	0
Slice 23	487.5	22.814201	0	1,085.0854	394.9388	0
Slice 24	510.41667	21.999567	0	1,082.2199	393.89584	0
Slice 25	531.25	21.386999	0	1,109.968	403.99532	0
Slice 26	552.08333	20.890741	0	1,124.6596	409.34261	0
Slice 27	573.33333	20.505516	0	1,127.9179	410.52852	0
Slice 28	595	20.23603	0	1,119.1762	407.34683	0
Slice 29	616.66667	20.092228	0	1,096.2241	398.99294	0
Slice 30	631.25	20.052372	0	1,073.9744	390.89471	0
Slice 31	643.75	20.083737	0	953.05455	346.88349	0
Slice 32	661.25	20.186207	0	721.02914	262.43315	0
Slice 33	676.25	20.334274	0	515.01757	187.45107	0
Slice 34	684.9204	20.445791	0	398.24345	144.94876	0
Slice 35	702.63302	20.77579	0	184.5673	67.177004	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 88
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:02:43
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:02:49

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (32.06557, 69.42995) ft
Left-Zone Right Coordinate: (164.9719, 58.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (586.522, 30.74296) ft
Right-Zone Right Coordinate: (672.99997, 25.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.723
Volume: 2,968.2288 ft³
Weight: 3,11,664.02 lbs
Resisting Moment: 3.3649354e+008 lbs-ft
Activating Moment: 1.2355877e+008 lbs-ft
Resisting Force: 1,12,190.52 lbs
Activating Force: 41,196.137 lbs
F of S Rank: 1
Exit: (586.522, 30.742957) ft
Entry: (32.06557, 69.429946) ft
Radius: 2,986.1639 ft
Center: (516.24486, 3,016.0798) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	39.674177	68.199896	0	112.42494	40.919333	0
Slice 2	54.891392	65.780049	0	333.03044	121.21317	0
Slice 3	73.125	62.995937	0	533.44654	194.15866	0
Slice 4	94.375	59.885358	0	709.99963	258.41873	0
Slice 5	113.75	57.178846	0	802.49952	292.08594	0
Slice 6	131.25	54.850993	0	813.51383	296.09482	0
Slice 7	148.74016	52.629501	0	828.13513	301.41654	0
Slice 8	166.22047	50.514016	0	846.40836	308.06745	0
Slice 9	183.09055	48.569695	0	832.93069	303.16198	0
Slice 10	199.35039	46.789313	0	788.31694	286.9239	0
Slice 11	215.61024	45.098986	0	734.45596	267.32011	0
Slice 12	231.87008	43.49856	0	671.28896	244.3292	0
Slice 13	249.6875	41.852587	0	648.89083	236.17695	0
Slice 14	269.0625	40.179713	0	665.47773	242.21409	0
Slice 15	288.4375	38.633855	0	668.95961	243.48139	0
Slice 16	307.8125	37.214817	0	659.24455	239.94539	0
Slice	325.83333	36.004521	0	668.63582	243.36354	0

17						
Slice 18	342.5	34.986379	0	698.92601	254.38826	0
Slice 19	359.16667	34.061734	0	719.42003	261.84748	0
Slice 20	377.5	33.157644	0	718.38639	261.47126	0
Slice 21	397.5	32.294546	0	693.51811	252.41995	0
Slice 22	418.125	31.54727	0	627.00476	228.21107	0
Slice 23	439.375	30.92436	0	517.80138	188.46429	0
Slice 24	458.33333	30.489117	0	427.40203	155.56162	0
Slice 25	475	30.212364	0	359.07293	130.69186	0
Slice 26	491.66667	30.028661	0	280.80081	102.20314	0
Slice 27	510.41667	29.939738	0	221.71208	80.696597	0
Slice 28	531.25	29.971751	0	179.07518	65.178036	0
Slice 29	552.08333	30.14912	0	121.10156	44.077362	0
Slice 30	574.511	30.508551	0	44.135367	16.06396	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 91
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:07:43
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:07:46

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (106.92331, 65.86688) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (483.19428, 33.15587) ft
Right-Zone Right Coordinate: (687.5, 23.96825) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.775
Volume: 1,117.1407 ft³
Weight: 1,17,299.78 lbs
Resisting Moment: 8,75,66,106 lbs-ft
Activating Moment: 3,15,56,524 lbs-ft
Resisting Force: 42,246.793 lbs
Activating Force: 15,224.718 lbs
F of S Rank: 1
Exit: (483.19428, 33.155872) ft
Entry: (106.92331, 65.86688) ft
Radius: 2,064.0739 ft
Center: (473.07445, 2,097.205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	112.43609	64.888627	0	28.516029	10.378986	0
Slice 2	123.46165	62.962925	0	82.335348	29.967616	0
Slice 3	134.48722	61.098748	0	129.78715	47.23866	0
Slice 4	145.82677	59.246378	0	181.31862	65.994582	0
Slice 5	157.48031	57.409228	0	236.61595	86.121163	0
Slice 6	169.13386	55.64025	0	284.97884	103.72381	0
Slice 7	181.46457	53.844599	0	311.48516	113.37133	0
Slice 8	194.47244	52.030423	0	315.32084	114.7674	0
Slice 9	207.48031	50.300519	0	310.62974	113.05998	0
Slice 10	220.48819	48.654671	0	297.40508	108.2466	0
Slice 11	233.49606	47.092678	0	275.62418	100.319	0
Slice 12	246.45833	45.61924	0	283.89488	103.32929	0
Slice 13	259.375	44.233593	0	322.40088	117.34432	0
Slice 14	272.29167	42.930096	0	352.58563	128.33067	0
Slice 15	285.20833	41.708593	0	374.41735	136.27677	0
Slice 16	298.125	40.568938	0	387.85296	141.16693	0
Slice	311.04167	39.510994	0	392.84193	142.98277	0

17						
Slice 18	323.75	38.54909	0	411.91275	149.92398	0
Slice 19	336.25	37.680528	0	445.38559	162.1071	0
Slice 20	348.75	36.88817	0	470.92519	171.40275	0
Slice 21	361.25	36.171927	0	488.47498	177.79035	0
Slice 22	374.16667	35.512996	0	490.26925	178.44342	0
Slice 23	387.5	34.916536	0	475.68037	173.13349	0
Slice 24	400.83333	34.406431	0	451.83586	164.45481	0
Slice 25	414.58333	33.972151	0	400.39224	145.73086	0
Slice 26	428.75	33.619198	0	320.75112	116.74386	0
Slice 27	442.91667	33.363548	0	230.73446	83.980477	0
Slice 28	455.53238	33.213023	0	155.71128	56.674273	0
Slice 29	466.59714	33.148641	0	97.751169	35.578516	0
Slice 30	477.6619	33.143576	0	33.606708	12.231842	0

SLOPE STABILITY ANALYSIS WITHOUT WATERTABLE (SEISMIC Kh=0.1g)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 81
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:51:35
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:51:37

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (30.79374, 69.45256) ft
Left-Zone Right Coordinate: (135, 62.30159) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (562.27681, 31.11508) ft
Right-Zone Right Coordinate: (644.49999, 28.88889) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.955
Volume: 2,954.1635 ft³
Weight: 3,10,187.17 lbs
Resisting Moment: 3.203944e+008 lbs-ft
Activating Moment: 1.639165e+008 lbs-ft
Resisting Force: 1,11,147.29 lbs
Activating Force: 56,864.207 lbs
F of S Rank: 1
Exit: (562.27681, 31.115078) ft
Entry: (30.79374, 69.452556) ft
Radius: 2,869.6254 ft
Center: (502.10181, 2,900.1095) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	38.720305	68.155564	0	117.65384	42.822495	0
Slice 2	54.573435	65.607077	0	348.18351	126.72843	0
Slice 3	73.125	62.749203	0	553.65967	201.51564	0
Slice 4	94.375	59.617701	0	730.75815	265.97421	0
Slice 5	113.75	56.897424	0	823.94613	299.89187	0
Slice 6	131.25	54.561908	0	835.8305	304.21742	0
Slice 7	148.74016	52.337036	0	850.98411	309.73289	0
Slice 8	166.22047	50.222431	0	869.45589	316.45606	0
Slice 9	183.09055	48.282906	0	856.08721	311.59026	0
Slice 10	199.35039	46.510935	0	811.45129	295.34411	0
Slice 11	215.61024	44.832658	0	757.26268	275.62107	0
Slice 12	231.87008	43.247909	0	693.42518	252.38612	0
Slice 13	249.6875	41.623456	0	669.59174	243.71146	0
Slice 14	269.0625	39.978692	0	683.96246	248.94198	0
Slice 15	288.4375	38.466053	0	684.73817	249.22431	0
Slice 16	307.8125	37.085328	0	671.7683	244.50367	0
Slice	325.83333	35.915068	0	677.56549	246.61367	0

17						
Slice 18	342.5	34.938017	0	704.01654	256.24106	0
Slice 19	359.16667	34.058217	0	720.21814	262.13796	0
Slice 20	377.5	33.207997	0	713.8804	259.83122	0
Slice 21	397.5	32.408617	0	682.53879	248.4238	0
Slice 22	418.125	31.732793	0	608.53135	221.4873	0
Slice 23	439.375	31.189419	0	490.76995	178.62565	0
Slice 24	458.33333	30.829994	0	392.12991	142.72362	0
Slice 25	475	30.624169	0	316.08664	115.04613	0
Slice 26	491.66667	30.515158	0	229.70044	83.604121	0
Slice 27	507.7846	30.50027	0	167.59162	60.998361	0
Slice 28	523.3538	30.57334	0	130.45873	47.483095	0
Slice 29	538.92301	30.730889	0	84.442972	30.734728	0
Slice 30	554.49221	30.972931	0	29.605497	10.77552	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 85
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 11:57:36
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 11:57:39

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (24.40773, 69.56609) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.92524, 21.07061) ft
Right-Zone Right Coordinate: (885, 11.66667) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.158
Volume: 6,122.6541 ft³
Weight: 6,50,658.16 lbs
Resisting Moment: 8.7770586e+008 lbs-ft
Activating Moment: 4.0671162e+008 lbs-ft
Resisting Force: 2,34,153.81 lbs
Activating Force: 1,08,503.11 lbs
F of S Rank: 1
Exit: (717.92524, 21.070608) ft
Entry: (24.40773, 69.566085) ft
Radius: 3,735.7164 ft
Center: (630.62637, 3,755.7668) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	33.930797	68.025204	0	140.01664	50.961888	0
Slice 2	52.976932	64.99385	0	414.63689	150.91548	0
Slice 3	73.125	61.899787	0	641.70151	233.56025	0
Slice 4	94.375	58.75504	0	820.23424	298.54085	0
Slice 5	113.75	55.991468	0	917.5092	333.94604	0
Slice 6	131.25	53.588788	0	935.64445	340.54673	0
Slice 7	148.74016	51.271593	0	959.48426	349.22371	0
Slice 8	166.22047	49.039629	0	989.07535	359.99399	0
Slice 9	187.65476	46.428656	0	979.8398	356.63252	0
Slice 10	213.04303	43.48479	0	927.13342	337.44897	0
Slice 11	230.36858	41.557766	0	883.07897	321.41446	0
Slice 12	237.5	40.794111	0	862.56812	313.94912	0
Slice 13	252.91667	39.216846	0	889.0707	323.59527	0
Slice 14	278.75	36.682043	0	947.15128	344.73487	0
Slice 15	304.58333	34.328293	0	986.22708	358.9573	0
Slice 16	330	32.187438	0	1,050.6106	382.39098	0
Slice	355	30.253447	0	1,141.0295	415.30079	0

17						
Slice 18	377.5	28.649506	0	1,196.4184	435.46068	0
Slice 19	397.5	27.34509	0	1,219.7744	443.96159	0
Slice 20	418.125	26.11445	0	1,206.0525	438.96721	0
Slice 21	439.375	24.96441	0	1,154.2403	420.10913	0
Slice 22	462.5	23.856605	0	1,114.7437	405.73354	0
Slice 23	487.5	22.814201	0	1,084.9571	394.8921	0
Slice 24	510.41667	21.999567	0	1,082.6459	394.05089	0
Slice 25	531.25	21.386999	0	1,110.8033	404.29934	0
Slice 26	552.08333	20.890741	0	1,125.832	409.76934	0
Slice 27	573.33333	20.505516	0	1,129.3411	411.04655	0
Slice 28	595	20.23603	0	1,120.7474	407.91869	0
Slice 29	616.66667	20.092228	0	1,097.8276	399.57655	0
Slice 30	631.25	20.052372	0	1,075.5387	391.46407	0
Slice 31	643.75	20.083737	0	954.45324	347.39257	0
Slice 32	661.25	20.186207	0	722.08877	262.81882	0
Slice 33	676.25	20.334274	0	515.75892	187.7209	0
Slice 34	684.9204	20.445791	0	398.80356	145.15263	0
Slice 35	702.63302	20.77579	0	184.82721	67.271603	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 89
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:04:25
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:04:28

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (32.06557, 69.42995) ft
Left-Zone Right Coordinate: (164.9719, 58.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (586.522, 30.74296) ft
Right-Zone Right Coordinate: (672.99997, 25.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.973
Volume: 2,968.2288 ft³
Weight: 3,11,664.02 lbs
Resisting Moment: 3.3509943e+008 lbs-ft
Activating Moment: 1.6983756e+008 lbs-ft
Resisting Force: 1,11,727.04 lbs
Activating Force: 56,626.691 lbs
F of S Rank: 1
Exit: (586.522, 30.742957) ft
Entry: (32.06557, 69.429946) ft
Radius: 2,986.1639 ft
Center: (516.24486, 3,016.0798) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	39.674177	68.199896	0	111.50311	40.583814	0
Slice 2	54.891392	65.780049	0	330.295	120.21755	0
Slice 3	73.125	62.995937	0	529.05197	192.55917	0
Slice 4	94.375	59.885358	0	704.18385	256.30196	0
Slice 5	113.75	57.178846	0	796.00576	289.7224	0
Slice 6	131.25	54.850993	0	807.03261	293.73585	0
Slice 7	148.74016	52.629501	0	821.7105	299.07816	0
Slice 8	166.22047	50.514016	0	840.08873	305.76729	0
Slice 9	183.09055	48.569695	0	826.98295	300.99718	0
Slice 10	199.35039	46.789313	0	782.96348	284.9754	0
Slice 11	215.61024	45.098986	0	729.76291	265.61198	0
Slice 12	231.87008	43.49856	0	667.30093	242.87767	0
Slice 13	249.6875	41.852587	0	645.42763	234.91644	0
Slice 14	269.0625	40.179713	0	662.41779	241.10036	0
Slice 15	288.4375	38.633855	0	666.38702	242.54504	0
Slice 16	307.8125	37.214817	0	657.20889	239.20448	0
Slice	325.83333	36.004521	0	667.03557	242.78109	0

17						
Slice 18	342.5	34.986379	0	697.67514	253.93298	0
Slice 19	359.16667	34.061734	0	718.53653	261.52591	0
Slice 20	377.5	33.157644	0	717.91382	261.29926	0
Slice 21	397.5	32.294546	0	693.45067	252.3954	0
Slice 22	418.125	31.54727	0	627.27008	228.30764	0
Slice 23	439.375	30.92436	0	518.27433	188.63643	0
Slice 24	458.33333	30.489117	0	427.94605	155.75962	0
Slice 25	475	30.212364	0	359.61526	130.88925	0
Slice 26	491.66667	30.028661	0	281.28484	102.37931	0
Slice 27	510.41667	29.939738	0	222.11841	80.84449	0
Slice 28	531.25	29.971751	0	179.39212	65.293392	0
Slice 29	552.08333	30.14912	0	121.29936	44.149355	0
Slice 30	574.511	30.508551	0	44.200899	16.087812	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 92
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:09:13
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\
Last Solved Date: 29-06-2020
Last Solved Time: 12:09:15

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: (none)

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (106.92331, 65.86688) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (483.19428, 33.15587) ft
Right-Zone Right Coordinate: (687.5, 23.96825) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8

1			
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.000
Volume: 1,117.1407 ft³
Weight: 1,17,299.78 lbs
Resisting Moment: 8,72,13,787 lbs-ft
Activating Moment: 4,36,01,136 lbs-ft
Resisting Force: 42,077.317 lbs
Activating Force: 21,036 lbs
F of S Rank: 1
Exit: (483.19428, 33.155872) ft
Entry: (106.92331, 65.86688) ft
Radius: 2,064.0739 ft
Center: (473.07445, 2,097.205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	112.43609	64.888627	0	28.260513	10.285985	0
Slice 2	123.46165	62.962925	0	81.596205	29.69859	0
Slice 3	134.48722	61.098748	0	128.61974	46.813757	0
Slice 4	145.82677	59.246378	0	179.69294	65.402881	0
Slice 5	157.48031	57.409228	0	234.51352	85.355942	0
Slice 6	169.13386	55.64025	0	282.48076	102.81459	0
Slice 7	181.46457	53.844599	0	308.8017	112.39463	0
Slice 8	194.47244	52.030423	0	312.66616	113.80117	0
Slice 9	207.48031	50.300519	0	308.09635	112.1379	0
Slice 10	220.48819	48.654671	0	295.07695	107.39923	0
Slice 11	233.49606	47.092678	0	273.57352	99.572616	0
Slice 12	246.45833	45.61924	0	281.93561	102.61617	0
Slice 13	259.375	44.233593	0	320.38015	116.60884	0
Slice 14	272.29167	42.930096	0	350.59786	127.60719	0
Slice 15	285.20833	41.708593	0	372.54379	135.59485	0
Slice 16	298.125	40.568938	0	386.15918	140.55045	0
Slice	311.04167	39.510994	0	391.37612	142.44926	0

17						
Slice 18	323.75	38.54909	0	410.62346	149.45472	0
Slice 19	336.25	37.680528	0	444.23387	161.68791	0
Slice 20	348.75	36.88817	0	469.94511	171.04603	0
Slice 21	361.25	36.171927	0	487.68302	177.5021	0
Slice 22	374.16667	35.512996	0	489.68521	178.23084	0
Slice 23	387.5	34.916536	0	475.29945	172.99485	0
Slice 24	400.83333	34.406431	0	451.61988	164.37619	0
Slice 25	414.58333	33.972151	0	400.3121	145.70169	0
Slice 26	428.75	33.619198	0	320.76133	116.74758	0
Slice 27	442.91667	33.363548	0	230.78099	83.99741	0
Slice 28	455.53238	33.213023	0	155.75587	56.690501	0
Slice 29	466.59714	33.148641	0	97.781284	35.589477	0
Slice 30	477.6619	33.143576	0	33.617599	12.235806	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (STATIC)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 96
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:21:12
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:21:13

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0.17917, 69.99681) ft
Left-Zone Right Coordinate: (102.5, 66.27451) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (612.4616, 30.34542) ft
Right-Zone Right Coordinate: (677.5, 25.02924) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35

Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 4.493
Volume: 3,255.2947 ft^3
Weight: 3,41,805.94 lbs
Resisting Moment: 3.9095275e+008 lbs-ft
Activating Moment: 8,70,21,874 lbs-ft
Resisting Force: 1,23,595.95 lbs
Activating Force: 27,511.307 lbs
F of S Rank: 1
Exit: (612.4616, 30.345416) ft
Entry: (25.779131, 69.541705) ft
Radius: 3,149.7994 ft
Center: (528.17393, 3,179.0169) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	34.959348	68.086251	0	133.8733	48.725897	0
Slice 2	53.319783	65.230808	0	395.74588	144.03972	0
Slice 3	73.125	62.279552	0	612.36757	222.88357	0
Slice 4	94.375	59.250893	0	782.00326	284.62591	0
Slice 5	113.75	56.612151	0	868.24564	316.01557	0
Slice 6	131.25	54.339297	0	873.56134	317.95033	0
Slice 7	148.74016	52.167204	0	883.00414	321.38722	0
Slice 8	166.22047	50.095551	0	896.60968	326.33924	0
Slice 9	185.80052	47.899197	0	870.52656	316.84576	0
Slice 10	207.48031	45.60448	0	801.95577	291.88803	0

Slice 11	229.1601	43.461338	0	717.65952	261.2067	0
Slice 12	249.6875	41.567738	0	682.02333	248.23619	0
Slice 13	269.0625	39.90822	0	696.75739	253.59895	0
Slice 14	288.4375	38.369105	0	698.99535	254.4135	0
Slice 15	307.8125	36.950214	0	688.6883	250.66204	0
Slice 16	325.83333	35.734368	0	698.20077	254.1243	0
Slice 17	342.5	34.705842	0	729.21643	265.41308	0
Slice 18	359.16667	33.765968	0	750.94583	273.32193	0
Slice 19	377.5	32.839273	0	751.91119	273.67329	0
Slice 20	397.5	31.945138	0	729.97685	265.68984	0
Slice 21	418.125	31.158464	0	667.39693	242.91262	0
Slice 22	439.375	30.487355	0	563.21406	204.99315	0
Slice 23	457.5	30.01937	0	481.19088	175.13916	0
Slice 24	472.5	29.718459	0	425.25923	154.7817	0
Slice 25	490	29.464668	0	349.6528	127.26321	0
Slice 26	510.41667	29.284737	0	290.53856	105.74739	0
Slice 27	531.25	29.236184	0	256.50996	93.36199	0
Slice 28	552.08333	29.32543	0	207.91263	75.674008	0
Slice 29	570.82693	29.517273	0	154.5854	56.264485	0
Slice 30	587.4808	29.786858	0	99.189597	36.102061	0
Slice 31	604.13467	30.144544	0	34.588516	12.58919	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 99
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:25:52
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:25:55

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.53878, 68.821) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (723.00849, 20.58649) ft
Right-Zone Right Coordinate: (810, 15.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35

Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 5.742
Volume: 4,730.2192 ft^3
Weight: 5,02,241.83 lbs
Resisting Moment: 6.5095824e+008 lbs-ft
Activating Moment: 1.1337376e+008 lbs-ft
Resisting Force: 1,82,069.45 lbs
Activating Force: 31,710.138 lbs
F of S Rank: 1
Exit: (723.00849, 20.586489) ft
Entry: (63.53878, 68.820996) ft
Radius: 3,564.4879 ft
Center: (652.16965, 3,584.3704) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	73.904085	67.116854	0	106.59779	38.798421	0
Slice 2	94.634695	63.771225	0	313.08505	113.95364	0
Slice 3	113.75	60.792695	0	436.27236	158.79015	0
Slice 4	131.25	58.163033	0	478.23616	174.06373	0
Slice 5	148.74016	55.623496	0	525.30219	191.19436	0
Slice 6	166.22047	53.173794	0	577.51804	210.19938	0
Slice 7	185.80052	50.540438	0	596.01688	216.9324	0
Slice 8	207.48031	47.746877	0	578.41415	210.52553	0
Slice 9	229.1601	45.088318	0	546.94129	199.07035	0
Slice 10	251.11123	42.534575	0	567.59581	206.58798	0

Slice 11	273.33369	40.088758	0	640.11846	232.98406	0
Slice 12	295.55615	37.78387	0	698.19979	254.12394	0
Slice 13	312.08369	36.147486	0	734.33581	267.27638	0
Slice 14	330	34.493911	0	807.61243	293.94688	0
Slice 15	355	32.313705	0	923.35907	336.07522	0
Slice 16	377.5	30.495065	0	1,000.5289	364.16273	0
Slice 17	397.5	29.005895	0	1,042.4576	379.42353	0
Slice 18	418.125	27.590447	0	1,047.2058	381.15172	0
Slice 19	439.375	26.255864	0	1,013.8608	369.01516	0
Slice 20	465	24.831693	0	992.92533	361.39527	0
Slice 21	490	23.587522	0	983.87931	358.10278	0
Slice 22	510.41667	22.717508	0	1,001.2319	364.4186	0
Slice 23	531.25	21.949353	0	1,045.7857	380.63486	0
Slice 24	552.08333	21.303176	0	1,076.787	391.91843	0
Slice 25	573.33333	20.77091	0	1,096.1652	398.97152	0
Slice 26	595	20.357472	0	1,103.3305	401.57945	0
Slice 27	616.66667	20.075789	0	1,095.7361	398.81531	0
Slice 28	631.25	19.945872	0	1,083.5766	394.38961	0
Slice 29	643.75	19.903195	0	971.12196	353.45949	0
Slice 30	661.25	19.904817	0	750.73112	273.24378	0
Slice 31	676.25	19.969331	0	554.36026	201.77063	0
Slice 32	687.60994	20.062363	0	411.95082	149.93784	0
Slice 33	707.86418	20.34983	0	176.6404	64.291846	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 102
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:32:27
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:32:28

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (34.18753, 69.39222) ft
Left-Zone Right Coordinate: (295, 44.55197) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (517.22354, 31.91602) ft
Right-Zone Right Coordinate: (815, 15.32408) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35

Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 4.154
Volume: 2,773.5066 ft^3
Weight: 2,91,218.2 lbs
Resisting Moment: 2.77261e+008 lbs-ft
Activating Moment: 6,67,48,992 lbs-ft
Resisting Force: 1,05,187.13 lbs
Activating Force: 25,323.334 lbs
F of S Rank: 1
Exit: (517.22354, 31.916024) ft
Entry: (34.18753, 69.392222) ft
Radius: 2,623.2665 ft
Center: (477.75402, 2,654.8856) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	41.265648	68.197832	0	110.4818	40.212088	0
Slice 2	55.421883	65.848835	0	327.2023	119.0919	0
Slice 3	69.583333	63.578496	0	500.79981	182.27623	0
Slice 4	83.75	61.386663	0	631.41385	229.81585	0
Slice 5	97.916667	59.274001	0	753.92447	274.40606	0
Slice 6	113.75	57.011422	0	825.05548	300.29564	0
Slice 7	131.25	54.619406	0	842.76929	306.74294	0
Slice 8	148.74016	52.348471	0	862.60485	313.96249	0
Slice 9	166.22047	50.198171	0	884.61003	321.97172	0
Slice 10	183.09055	48.233775	0	873.15226	317.80143	0

Slice 11	199.35039	46.447023	0	828.95494	301.71492	0
Slice 12	215.61024	44.762784	0	774.15781	281.7704	0
Slice 13	231.87008	43.180861	0	708.7005	257.94589	0
Slice 14	247.75	41.733316	0	681.23044	247.9476	0
Slice 15	263.25	40.415329	0	692.34198	251.99187	0
Slice 16	278.75	39.189855	0	693.81788	252.52905	0
Slice 17	294.25	38.056764	0	685.61067	249.54188	0
Slice 18	309.75	37.015936	0	667.67401	243.01346	0
Slice 19	325.83333	36.035153	0	668.58117	243.34364	0
Slice 20	342.5	35.121496	0	687.60992	250.26954	0
Slice 21	359.16667	34.314156	0	695.359	253.08998	0
Slice 22	377.5	33.554598	0	678.51224	246.95826	0
Slice 23	397.5	32.866066	0	634.49946	230.93892	0
Slice 24	414.58333	32.389365	0	567.89307	206.69617	0
Slice 25	428.75	32.086398	0	482.82191	175.7328	0
Slice 26	442.91667	31.859978	0	389.5884	141.79858	0
Slice 27	457.5	31.707992	0	303.07376	110.30983	0
Slice 28	472.5	31.635062	0	222.83562	81.105531	0
Slice 29	490	31.666724	0	116.99931	42.584267	0
Slice 30	508.61177	31.814715	0	26.770323	9.7436006	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 105
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:40:36
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:40:37

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.5127, 69.77755) ft
Left-Zone Right Coordinate: (147.5, 60.8324) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (438.98291, 35.86408) ft
Right-Zone Right Coordinate: (585, 30.76628) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35

Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 3.862
Volume: 1,912.0951 ft^3
Weight: 2,00,769.99 lbs
Resisting Moment: 1.5649502e+008 lbs-ft
Activating Moment: 4,05,21,197 lbs-ft
Resisting Force: 72,430.986 lbs
Activating Force: 18,754.626 lbs
F of S Rank: 1
Exit: (438.98291, 35.864085) ft
Entry: (46.36065, 69.175811) ft
Radius: 2,148.9251 ft
Center: (423.5778, 2,184.734) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.430325	67.768656	0	130.40052	47.461909	0
Slice 2	69.583333	65.178487	0	334.93838	121.9076	0
Slice 3	83.75	62.861046	0	478.27018	174.07611	0
Slice 4	97.916667	60.640617	0	611.66443	222.62765	0
Slice 5	110.83333	58.696521	0	688.03228	250.42327	0
Slice 6	122.5	57.012994	0	708.98346	258.04888	0
Slice 7	134.16667	55.39472	0	723.36201	263.28224	0
Slice 8	145.82677	53.842387	0	740.6662	269.58045	0
Slice 9	157.48031	52.355779	0	760.92117	276.95266	0
Slice 10	169.13386	50.933851	0	774.64441	281.94751	0

Slice 11	181.46457	49.501562	0	764.68091	278.32109	0
Slice 12	194.47244	48.066694	0	730.14825	265.75223	0
Slice 13	207.48031	46.71193	0	687.31187	250.16106	0
Slice 14	220.48819	45.437116	0	636.11863	231.52825	0
Slice 15	233.49606	44.242111	0	576.51589	209.83462	0
Slice 16	246.45833	43.130412	0	547.67429	199.33714	0
Slice 17	259.375	42.10134	0	549.75154	200.0932	0
Slice 18	272.29167	41.150594	0	543.59112	197.85099	0
Slice 19	285.20833	40.27807	0	529.15283	192.59588	0
Slice 20	298.125	39.483671	0	506.40263	184.31548	0
Slice 21	311.04167	38.767312	0	475.31539	173.00065	0
Slice 22	323.75	38.137975	0	459.21499	167.14059	0
Slice 23	336.25	37.59312	0	458.40295	166.84503	0
Slice 24	348.75	37.121158	0	449.8011	163.71421	0
Slice 25	361.25	36.72204	0	433.40521	157.7466	0
Slice 26	374.16667	36.387356	0	400.36259	145.72006	0
Slice 27	387.5	36.122084	0	350.15992	127.44779	0
Slice 28	400.83333	35.939577	0	291.17673	105.97966	0
Slice 29	415.37073	35.838952	0	197.58718	71.915852	0
Slice 30	431.11218	35.836489	0	67.827144	24.687061	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.05g)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 97
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:22:51
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:22:53

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0.17917, 69.99681) ft
Left-Zone Right Coordinate: (102.5, 66.27451) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (612.4616, 30.34542) ft
Right-Zone Right Coordinate: (677.5, 25.02924) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 2.770
Volume: 3,255.2947 ft³
Weight: 3,41,805.94 lbs
Resisting Moment: 3.8937718e+008 lbs-ft
Activating Moment: 1.405678e+008 lbs-ft
Resisting Force: 1,23,099.22 lbs
Activating Force: 44,440.03 lbs
F of S Rank: 1
Exit: (612.4616, 30.345416) ft
Entry: (25.779131, 69.541705) ft
Radius: 3,149.7994 ft
Center: (528.17393, 3,179.0169) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	34.959348	68.086251	0	132.79311	48.332739	0
Slice 2	53.319783	65.230808	0	392.55425	142.87806	0
Slice 3	73.125	62.279552	0	607.43466	221.08813	0
Slice 4	94.375	59.250893	0	775.76108	282.35394	0
Slice 5	113.75	56.612151	0	861.41693	313.53012	0
Slice 6	131.25	54.339297	0	866.80988	315.49299	0
Slice 7	148.74016	52.167204	0	876.3641	318.97045	0
Slice 8	166.22047	50.095551	0	890.1181	323.9765	0
Slice 9	185.80052	47.899197	0	864.53602	314.66538	0
Slice	207.48031	45.60448	0	796.79875	290.01103	0

10						
Slice 11	229.1601	43.461338	0	713.42008	259.66367	0
Slice 12	249.6875	41.567738	0	678.41222	246.92186	0
Slice 13	269.0625	39.90822	0	693.53299	252.42537	0
Slice 14	288.4375	38.369105	0	696.2366	253.4094	0
Slice 15	307.8125	36.950214	0	686.44482	249.84548	0
Slice 16	325.83333	35.734368	0	696.37342	253.4592	0
Slice 17	342.5	34.705842	0	727.72191	264.86911	0
Slice 18	359.16667	33.765968	0	749.80992	272.90849	0
Slice 19	377.5	32.839273	0	751.19163	273.41139	0
Slice 20	397.5	31.945138	0	729.68839	265.58485	0
Slice 21	418.125	31.158464	0	667.49331	242.9477	0
Slice 22	439.375	30.487355	0	563.59273	205.13098	0
Slice 23	457.5	30.01937	0	481.70592	175.32662	0
Slice 24	472.5	29.718459	0	425.83061	154.98967	0
Slice 25	490	29.464668	0	350.22701	127.47221	0
Slice 26	510.41667	29.284737	0	291.07976	105.94437	0
Slice 27	531.25	29.236184	0	257.00032	93.540467	0
Slice 28	552.08333	29.32543	0	208.30431	75.81657	0
Slice 29	570.82693	29.517273	0	154.86174	56.365064	0
Slice 30	587.4808	29.786858	0	99.354152	36.161954	0
Slice 31	604.13467	30.144544	0	34.641607	12.608514	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 100
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:27:47
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:27:49

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.53878, 68.821) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (723.00849, 20.58649) ft
Right-Zone Right Coordinate: (810, 15.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 3.204
Volume: 4,730.2192 ft³
Weight: 5,02,241.83 lbs
Resisting Moment: 6.4890622e+008 lbs-ft
Activating Moment: 2.0250949e+008 lbs-ft
Resisting Force: 1,81,497.56 lbs
Activating Force: 56,641.814 lbs
F of S Rank: 1
Exit: (723.00849, 20.586489) ft
Entry: (63.53878, 68.820996) ft
Radius: 3,564.4879 ft
Center: (652.16965, 3,584.3704) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	73.904085	67.116854	0	105.69922	38.471371	0
Slice 2	94.634695	63.771225	0	310.41268	112.98098	0
Slice 3	113.75	60.792695	0	432.49592	157.41564	0
Slice 4	131.25	58.163033	0	474.042	172.53718	0
Slice 5	148.74016	55.623496	0	520.67412	189.50988	0
Slice 6	166.22047	53.173794	0	572.44809	208.35407	0
Slice 7	185.80052	50.540438	0	590.81855	215.04037	0
Slice 8	207.48031	47.746877	0	573.42617	208.71006	0
Slice 9	229.1601	45.088318	0	542.3183	197.38772	0
Slice	251.11123	42.534575	0	563.01629	204.92117	0

10						
Slice 11	273.33369	40.088758	0	635.31151	231.23448	0
Slice 12	295.55615	37.78387	0	693.36399	252.36385	0
Slice 13	312.08369	36.147486	0	729.58452	265.54705	0
Slice 14	330	34.493911	0	802.82938	292.206	0
Slice 15	355	32.313705	0	918.6066	334.34546	0
Slice 16	377.5	30.495065	0	996.07231	362.54067	0
Slice 17	397.5	29.005895	0	1,038.457	377.96743	0
Slice 18	418.125	27.590447	0	1,043.8554	379.93229	0
Slice 19	439.375	26.255864	0	1,011.2899	368.07941	0
Slice 20	465	24.831693	0	991.17689	360.75888	0
Slice 21	490	23.587522	0	982.84279	357.72552	0
Slice 22	510.41667	22.717508	0	1,000.6835	364.21901	0
Slice 23	531.25	21.949353	0	1,045.6646	380.59078	0
Slice 24	552.08333	21.303176	0	1,077.0608	392.01807	0
Slice 25	573.33333	20.77091	0	1,096.7802	399.19536	0
Slice 26	595	20.357472	0	1,104.2086	401.89908	0
Slice 27	616.66667	20.075789	0	1,096.7761	399.19385	0
Slice 28	631.25	19.945872	0	1,084.6677	394.78676	0
Slice 29	643.75	19.903195	0	972.15723	353.8363	0
Slice 30	661.25	19.904817	0	751.5807	273.553	0
Slice 31	676.25	19.969331	0	554.99991	202.00345	0
Slice 32	687.60994	20.062363	0	412.42428	150.11016	0
Slice 33	707.86418	20.34983	0	176.8482	64.367481	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 103
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:33:49
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:33:50

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (34.18753, 69.39222) ft
Left-Zone Right Coordinate: (295, 44.55197) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (517.22354, 31.91602) ft
Right-Zone Right Coordinate: (815, 15.32408) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.636
Volume: 2,773.5066 ft³
Weight: 2,91,218.2 lbs
Resisting Moment: 2.7605273e+008 lbs-ft
Activating Moment: 1.0471379e+008 lbs-ft
Resisting Force: 1,04,730.15 lbs
Activating Force: 39,727.077 lbs
F of S Rank: 1
Exit: (517.22354, 31.916024) ft
Entry: (34.18753, 69.392222) ft
Radius: 2,623.2665 ft
Center: (477.75402, 2,654.8856) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	41.265648	68.197832	0	109.53161	39.866248	0
Slice 2	55.421883	65.848835	0	324.36605	118.05959	0
Slice 3	69.583333	63.578496	0	496.42513	180.68397	0
Slice 4	83.75	61.386663	0	625.88287	227.80274	0
Slice 5	97.916667	59.274001	0	747.35516	272.01503	0
Slice 6	113.75	57.011422	0	817.94555	297.70783	0
Slice 7	131.25	54.619406	0	835.65258	304.15267	0
Slice 8	148.74016	52.348471	0	855.57664	311.40443	0
Slice 9	166.22047	50.198171	0	877.76815	319.48148	0
Slice	183.09055	48.233775	0	866.80792	315.49228	0

10						
Slice 11	199.35039	46.447023	0	823.35424	299.67644	0
Slice 12	215.61024	44.762784	0	769.37689	280.03029	0
Slice 13	231.87008	43.180861	0	704.78117	256.51937	0
Slice 14	247.75	41.733316	0	677.95199	246.75434	0
Slice 15	263.25	40.415329	0	689.5273	250.96741	0
Slice 16	278.75	39.189855	0	691.51355	251.69035	0
Slice 17	294.25	38.056764	0	683.83616	248.89601	0
Slice 18	309.75	37.015936	0	666.42225	242.55786	0
Slice 19	325.83333	36.035153	0	667.78345	243.0533	0
Slice 20	342.5	35.121496	0	687.21123	250.12443	0
Slice 21	359.16667	34.314156	0	695.32413	253.07729	0
Slice 22	377.5	33.554598	0	678.80993	247.06661	0
Slice 23	397.5	32.866066	0	635.03933	231.13541	0
Slice 24	414.58333	32.389365	0	568.52268	206.92533	0
Slice 25	428.75	32.086398	0	483.43621	175.95639	0
Slice 26	442.91667	31.859978	0	390.12547	141.99406	0
Slice 27	457.5	31.707992	0	303.49899	110.4646	0
Slice 28	472.5	31.635062	0	223.13262	81.213634	0
Slice 29	490	31.666724	0	117.14194	42.636178	0
Slice 30	508.61177	31.814715	0	26.798082	9.7537042	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 106
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:42:48
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:42:55

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.5127, 69.77755) ft
Left-Zone Right Coordinate: (147.5, 60.8324) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (438.98291, 35.86408) ft
Right-Zone Right Coordinate: (585, 30.76628) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 2.514
Volume: 1,912.0951 ft³
Weight: 2,00,769.99 lbs
Resisting Moment: 1.5576157e+008 lbs-ft
Activating Moment: 6,19,47,934 lbs-ft
Resisting Force: 72,092.574 lbs
Activating Force: 28,672.126 lbs
F of S Rank: 1
Exit: (438.98291, 35.864085) ft
Entry: (46.36065, 69.175811) ft
Radius: 2,148.9251 ft
Center: (423.5778, 2,184.734) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.430325	67.768656	0	129.22892	47.035481	0
Slice 2	69.583333	65.178487	0	331.90425	120.80327	0
Slice 3	83.75	62.861046	0	473.91379	172.49051	0
Slice 4	97.916667	60.640617	0	606.12343	220.61089	0
Slice 5	110.83333	58.696521	0	681.86994	248.18036	0
Slice 6	122.5	57.012994	0	702.72788	255.77203	0
Slice 7	134.16667	55.39472	0	717.13069	261.01423	0
Slice 8	145.82677	53.842387	0	734.50183	267.3368	0
Slice 9	157.48031	52.355779	0	754.86882	274.74978	0
Slice	169.13386	50.933851	0	768.81548	279.82595	0

10						
Slice 11	181.46457	49.501562	0	759.30856	276.36572	0
Slice 12	194.47244	48.066694	0	725.43842	264.03799	0
Slice 13	207.48031	46.71193	0	683.31433	248.70608	0
Slice 14	220.48819	45.437116	0	632.85537	230.34052	0
Slice 15	233.49606	44.242111	0	573.98116	208.91206	0
Slice 16	246.45833	43.130412	0	545.68993	198.61489	0
Slice 17	259.375	42.10134	0	548.17867	199.52072	0
Slice 18	272.29167	41.150594	0	542.43479	197.43012	0
Slice 19	285.20833	40.27807	0	528.3961	192.32045	0
Slice 20	298.125	39.483671	0	506.00926	184.17231	0
Slice 21	311.04167	38.767312	0	475.23353	172.97086	0
Slice 22	323.75	38.137975	0	459.35872	167.1929	0
Slice 23	336.25	37.59312	0	458.70318	166.9543	0
Slice 24	348.75	37.121158	0	450.20966	163.86292	0
Slice 25	361.25	36.72204	0	433.86867	157.91528	0
Slice 26	374.16667	36.387356	0	400.82513	145.88842	0
Slice 27	387.5	36.122084	0	350.56524	127.59531	0
Slice 28	400.83333	35.939577	0	291.48403	106.09151	0
Slice 29	415.37073	35.838952	0	197.76079	71.979042	0
Slice 30	431.11218	35.836489	0	67.872502	24.70357	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.1g)

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 98
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:24:27
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:24:29

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0.17917, 69.99681) ft
Left-Zone Right Coordinate: (102.5, 66.27451) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (612.4616, 30.34542) ft
Right-Zone Right Coordinate: (677.5, 25.02924) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 1.998
Volume: 3,255.2947 ft³
Weight: 3,41,805.94 lbs
Resisting Moment: 3.878076e+008 lbs-ft
Activating Moment: 1.9411373e+008 lbs-ft
Resisting Force: 1,22,604.41 lbs
Activating Force: 61,369.021 lbs
F of S Rank: 1
Exit: (612.4616, 30.345416) ft
Entry: (25.779131, 69.541705) ft
Radius: 3,149.7994 ft
Center: (528.17393, 3,179.0169) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	34.959348	68.086251	0	131.72149	47.9427	0
Slice 2	53.319783	65.230808	0	389.38633	141.72504	0
Slice 3	73.125	62.279552	0	602.53408	219.30447	0
Slice 4	94.375	59.250893	0	769.55173	280.09392	0
Slice 5	113.75	56.612151	0	854.61424	311.05415	0
Slice 6	131.25	54.339297	0	860.07384	313.04128	0
Slice 7	148.74016	52.167204	0	869.72865	316.55534	0
Slice 8	166.22047	50.095551	0	883.62074	321.61165	0
Slice 9	185.80052	47.899197	0	858.5294	312.47915	0
Slice	207.48031	45.60448	0	791.61786	288.12534	0

10						
Slice 11	229.1601	43.461338	0	709.15376	258.11086	0
Slice 12	249.6875	41.567738	0	674.77505	245.59803	0
Slice 13	269.0625	39.90822	0	690.28582	251.24349	0
Slice 14	288.4375	38.369105	0	693.46106	252.39918	0
Slice 15	307.8125	36.950214	0	684.19265	249.02576	0
Slice 16	325.83333	35.734368	0	694.54592	252.79404	0
Slice 17	342.5	34.705842	0	726.23563	264.32815	0
Slice 18	359.16667	33.765968	0	748.69067	272.50112	0
Slice 19	377.5	32.839273	0	750.49702	273.15858	0
Slice 20	397.5	31.945138	0	729.43178	265.49146	0
Slice 21	418.125	31.158464	0	667.62511	242.99567	0
Slice 22	439.375	30.487355	0	564.00632	205.28151	0
Slice 23	457.5	30.01937	0	482.25326	175.52583	0
Slice 24	472.5	29.718459	0	426.43114	155.20824	0
Slice 25	490	29.464668	0	350.8255	127.69004	0
Slice 26	510.41667	29.284737	0	291.6397	106.14817	0
Slice 27	531.25	29.236184	0	257.50423	93.723876	0
Slice 28	552.08333	29.32543	0	208.70451	75.962231	0
Slice 29	570.82693	29.517273	0	155.14281	56.467366	0
Slice 30	587.4808	29.786858	0	99.520991	36.222678	0
Slice 31	604.13467	30.144544	0	34.695323	12.628065	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 101
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:29:09
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:29:10

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.53878, 68.821) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (723.00849, 20.58649) ft
Right-Zone Right Coordinate: (810, 15.55556) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.218
Volume: 4,730.2192 ft³
Weight: 5,02,241.83 lbs
Resisting Moment: 6.4686483e+008 lbs-ft
Activating Moment: 2.9164521e+008 lbs-ft
Resisting Force: 1,80,928.66 lbs
Activating Force: 81,573.964 lbs
F of S Rank: 1
Exit: (723.00849, 20.586489) ft
Entry: (63.53878, 68.820996) ft
Radius: 3,564.4879 ft
Center: (652.16965, 3,584.3704) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	73.904085	67.116854	0	104.80992	38.14769	0
Slice 2	94.634695	63.771225	0	307.76672	112.01792	0
Slice 3	113.75	60.792695	0	428.75425	156.05379	0
Slice 4	131.25	58.163033	0	469.88268	171.02331	0
Slice 5	148.74016	55.623496	0	516.07933	187.83752	0
Slice 6	166.22047	53.173794	0	567.4082	206.5197	0
Slice 7	185.80052	50.540438	0	585.64268	213.15651	0
Slice 8	207.48031	47.746877	0	568.44987	206.89883	0
Slice 9	229.1601	45.088318	0	537.6965	195.70552	0
Slice	251.11123	42.534575	0	558.42976	203.25181	0

10						
Slice 11	273.33369	40.088758	0	630.49071	229.47985	0
Slice 12	295.55615	37.78387	0	688.50858	250.59663	0
Slice 13	312.08369	36.147486	0	724.81067	263.80951	0
Slice 14	330	34.493911	0	798.02202	290.45626	0
Slice 15	355	32.313705	0	913.82999	332.60692	0
Slice 16	377.5	30.495065	0	991.59543	360.91122	0
Slice 17	397.5	29.005895	0	1,034.4426	376.5063	0
Slice 18	418.125	27.590447	0	1,040.5005	378.7112	0
Slice 19	439.375	26.255864	0	1,008.7255	367.14606	0
Slice 20	465	24.831693	0	989.44808	360.12965	0
Slice 21	490	23.587522	0	981.83719	357.35951	0
Slice 22	510.41667	22.717508	0	1,000.1731	364.03323	0
Slice 23	531.25	21.949353	0	1,045.5862	380.56227	0
Slice 24	552.08333	21.303176	0	1,077.3793	392.13399	0
Slice 25	573.33333	20.77091	0	1,097.4386	399.43499	0
Slice 26	595	20.357472	0	1,105.1258	402.2329	0
Slice 27	616.66667	20.075789	0	1,097.8483	399.58409	0
Slice 28	631.25	19.945872	0	1,085.7856	395.19364	0
Slice 29	643.75	19.903195	0	973.21359	354.22078	0
Slice 30	661.25	19.904817	0	752.44382	273.86715	0
Slice 31	676.25	19.969331	0	555.64782	202.23927	0
Slice 32	687.60994	20.062363	0	412.90299	150.2844	0
Slice 33	707.86418	20.34983	0	177.05797	64.443831	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 104
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:35:14
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:35:16

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (34.18753, 69.39222) ft
Left-Zone Right Coordinate: (295, 44.55197) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (517.22354, 31.91602) ft
Right-Zone Right Coordinate: (815, 15.32408) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.926
Volume: 2,773.5066 ft³
Weight: 2,91,218.2 lbs
Resisting Moment: 2.748491e+008 lbs-ft
Activating Moment: 1.4267858e+008 lbs-ft
Resisting Force: 1,04,274.96 lbs
Activating Force: 54,131.027 lbs
F of S Rank: 1
Exit: (517.22354, 31.916024) ft
Entry: (34.18753, 69.392222) ft
Radius: 2,623.2665 ft
Center: (477.75402, 2,654.8856) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	41.265648	68.197832	0	108.58931	39.523278	0
Slice 2	55.421883	65.848835	0	321.55206	117.03538	0
Slice 3	69.583333	63.578496	0	492.08137	179.10297	0
Slice 4	83.75	61.386663	0	620.38498	225.80167	0
Slice 5	97.916667	59.274001	0	740.81642	269.63512	0
Slice 6	113.75	57.011422	0	810.85624	295.12754	0
Slice 7	131.25	54.619406	0	828.54109	301.56429	0
Slice 8	148.74016	52.348471	0	848.53822	308.84265	0
Slice 9	166.22047	50.198171	0	870.90234	316.98253	0
Slice	183.09055	48.233775	0	860.42972	313.17081	0

10						
Slice 11	199.35039	46.447023	0	817.71491	297.62389	0
Slice 12	215.61024	44.762784	0	764.55765	278.27623	0
Slice 13	231.87008	43.180861	0	700.82856	255.08074	0
Slice 14	247.75	41.733316	0	674.64823	245.55188	0
Slice 15	263.25	40.415329	0	686.69727	249.93737	0
Slice 16	278.75	39.189855	0	689.20583	250.85041	0
Slice 17	294.25	38.056764	0	682.07112	248.25358	0
Slice 18	309.75	37.015936	0	665.19252	242.11028	0
Slice 19	325.83333	36.035153	0	667.01943	242.77522	0
Slice 20	342.5	35.121496	0	686.85611	249.99518	0
Slice 21	359.16667	34.314156	0	695.33915	253.08275	0
Slice 22	377.5	33.554598	0	679.15913	247.19371	0
Slice 23	397.5	32.866066	0	635.62637	231.34908	0
Slice 24	414.58333	32.389365	0	569.19144	207.16874	0
Slice 25	428.75	32.086398	0	484.08096	176.19106	0
Slice 26	442.91667	31.859978	0	390.68422	142.19743	0
Slice 27	457.5	31.707992	0	303.9381	110.62442	0
Slice 28	472.5	31.635062	0	223.43727	81.324514	0
Slice 29	490	31.666724	0	117.28734	42.689099	0
Slice 30	508.61177	31.814715	0	26.826236	9.7639514	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 107
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 29-06-2020
Time: 12:44:55
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\With Water Table\
Last Solved Date: 29-06-2020
Last Solved Time: 12:44:57

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 0 psf
Phi': 20 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.5127, 69.77755) ft
Left-Zone Right Coordinate: (147.5, 60.8324) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (438.98291, 35.86408) ft
Right-Zone Right Coordinate: (585, 30.76628) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	35
Coordinate 2	480	16.66667
Coordinate 3	900	8.33333

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556
Point 30	25	58.88889

Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 1.859
Volume: 1,912.0951 ft³
Weight: 2,00,769.99 lbs
Resisting Moment: 1.5503083e+008 lbs-ft
Activating Moment: 8,33,74,671 lbs-ft
Resisting Force: 71,755.441 lbs
Activating Force: 38,589.77 lbs
F of S Rank: 1
Exit: (438.98291, 35.864085) ft
Entry: (46.36065, 69.175811) ft
Radius: 2,148.9251 ft
Center: (423.5778, 2,184.734) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.430325	67.768656	0	128.06694	46.612554	0
Slice 2	69.583333	65.178487	0	328.89253	119.70709	0
Slice 3	83.75	62.861046	0	469.58409	170.91463	0
Slice 4	97.916667	60.640617	0	600.60736	218.6032	0
Slice 5	110.83333	58.696521	0	675.72457	245.94363	0
Slice 6	122.5	57.012994	0	696.47844	253.49742	0
Slice 7	134.16667	55.39472	0	710.89422	258.74434	0
Slice 8	145.82677	53.842387	0	728.32166	265.0874	0
Slice 9	157.48031	52.355779	0	748.79142	272.53779	0
Slice	169.13386	50.933851	0	762.95443	277.6927	0

10						
Slice 11	181.46457	49.501562	0	753.90006	274.39718	0
Slice 12	194.47244	48.066694	0	720.6926	262.31065	0
Slice 13	207.48031	46.71193	0	679.28521	247.2396	0
Slice 14	220.48819	45.437116	0	629.5685	229.14419	0
Slice 15	233.49606	44.242111	0	571.43332	207.98472	0
Slice 16	246.45833	43.130412	0	543.70388	197.89203	0
Slice 17	259.375	42.10134	0	546.61582	198.95189	0
Slice 18	272.29167	41.150594	0	541.29983	197.01703	0
Slice 19	285.20833	40.27807	0	527.6707	192.05643	0
Slice 20	298.125	39.483671	0	505.65477	184.04328	0
Slice 21	311.04167	38.767312	0	475.19509	172.95687	0
Slice 22	323.75	38.137975	0	459.54763	167.26166	0
Slice 23	336.25	37.59312	0	459.04777	167.07972	0
Slice 24	348.75	37.121158	0	450.65887	164.02642	0
Slice 25	361.25	36.72204	0	434.36675	158.09657	0
Slice 26	374.16667	36.387356	0	401.31434	146.06648	0
Slice 27	387.5	36.122084	0	350.98855	127.74938	0
Slice 28	400.83333	35.939577	0	291.80161	106.2071	0
Slice 29	415.37073	35.838952	0	197.93847	72.043713	0
Slice 30	431.11218	35.836489	0	67.918539	24.720326	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (STATIC) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 110
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:23:56
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:25:15

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.93757, 68.79493) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (615.86238, 30.2933) ft
Right-Zone Right Coordinate: (775, 17.37037) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.724
Volume: 2,042.6351 ft³
Weight: 2,14,476.68 lbs
Resisting Moment: 1.3523224e+008 lbs-ft
Activating Moment: 4,96,40,335 lbs-ft
Resisting Force: 45,312.572 lbs
Activating Force: 16,633.194 lbs
F of S Rank: 1
Exit: (615.86238, 30.293297) ft
Entry: (63.93757, 68.794931) ft
Radius: 2,972.4794 ft
Center: (545.85626, 3,001.9482) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.203178	67.145142	0	101.41441	21.556299	0
Slice 2	94.734393	63.919113	0	296.48278	63.019361	0
Slice 3	113.75	61.057232	0	408.1283	86.750349	0
Slice 4	131.25	58.539073	0	438.60743	93.228887	0
Slice 5	148.74016	56.128323	0	472.4428	100.42082	0
Slice 6	166.22047	53.824605	0	509.69408	108.33882	0
Slice 7	183.09055	51.699453	0	514.14526	109.28495	0
Slice 8	199.35039	49.745565	0	486.51322	103.41158	0
Slice 9	215.61024	47.882465	0	449.52116	95.548672	0

Slice 10	231.87008	46.109984	0	403.15163	85.692525	0
Slice 11	250.68978	44.179605	0	401.16465	85.270178	0
Slice 12	272.06934	42.124017	0	440.28087	93.584587	0
Slice 13	291.44434	40.389099	0	462.53344	98.314519	0
Slice 14	308.81478	38.948176	0	470.61673	100.03267	0
Slice 15	325.83333	37.634821	0	498.24106	105.90441	0
Slice 16	342.5	36.444839	0	545.88477	116.03139	0
Slice 17	359.16667	35.348969	0	583.75762	124.08151	0
Slice 18	376.04636	34.335516	0	602.10783	127.98197	0
Slice 19	393.13908	33.406816	0	600.61431	127.66451	0
Slice 20	404.59272	32.828825	0	594.92601	126.45543	0
Slice 21	418.125	32.233509	0	553.44111	117.63754	0
Slice 22	439.375	31.395654	0	466.93593	99.250295	0
Slice 23	458.125	30.774884	0	397.46548	84.483896	0
Slice 24	474.375	30.339528	0	348.47397	74.07043	0
Slice 25	491.25	29.983313	0	287.40123	61.089016	0
Slice 26	510	29.701905	0	247.15761	52.534972	0
Slice 27	530	29.527924	0	227.97961	48.458561	0
Slice 28	550	29.48852	0	194.56711	41.356516	0
Slice 29	561.25	29.508934	0	171.27105	36.404785	0
Slice 30	571.39373	29.591819	0	145.77599	30.985643	0
Slice 31	589.18119	29.797875	0	95.259804	20.248096	0
Slice 32	606.96865	30.110407	0	33.600333	7.1419712	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 114
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:30:23
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:30:25

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.50934, 69.77761) ft
Left-Zone Right Coordinate: (254.09093, 47.77778) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (589.08127, 30.70373) ft
Right-Zone Right Coordinate: (842.5, 14.05093) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.579
Volume: 3,610.7035 ft³
Weight: 3,79,123.86 lbs
Resisting Moment: 2.4909419e+008 lbs-ft
Activating Moment: 9,65,76,317 lbs-ft
Resisting Force: 80,041.66 lbs
Activating Force: 31,033.157 lbs
F of S Rank: 1
Exit: (589.08127, 30.703735) ft
Entry: (12.50934, 69.777612) ft
Radius: 3,098.6679 ft
Center: (509.39642, 3,128.3469) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	20.841117	68.447329	0	122.4369	26.024767	0
Slice 2	37.50467	65.833232	0	362.38853	77.028061	0
Slice 3	54.168223	63.311957	0	592.61415	125.96403	0
Slice 4	73.125	60.563509	0	789.75022	167.86659	0
Slice 5	94.375	57.61651	0	951.00079	202.14146	0
Slice 6	113.75	55.054051	0	1,029.4985	218.82666	0
Slice 7	131.25	52.851749	0	1,027.6918	218.44264	0
Slice 8	148.6073	50.76685	0	1,029.842	218.89967	0
Slice 9	166.08761	48.768648	0	1,036.0714	220.22378	0

Slice 10	185.80052	46.641243	0	1,001.5733	212.89098	0
Slice 11	207.48031	44.441763	0	923.3792	196.27031	0
Slice 12	229.1601	42.396156	0	829.17221	176.24599	0
Slice 13	247.4981	40.775767	0	783.1478	166.4632	0
Slice 14	262.49429	39.540396	0	789.59495	167.83359	0
Slice 15	281.86929	38.066583	0	785.19362	166.89806	0
Slice 16	305.6231	36.409382	0	764.11759	162.41821	0
Slice 17	329.43801	34.932148	0	766.58908	162.94354	0
Slice 18	353.31404	33.635561	0	792.56648	168.46521	0
Slice 19	366.37603	32.981533	0	800.93405	170.24379	0
Slice 20	377.5	32.503556	0	788.04279	167.50367	0
Slice 21	397.5	31.716164	0	754.79198	160.43599	0
Slice 22	414.9679	31.127132	0	697.22937	148.20068	0
Slice 23	429.90371	30.707806	0	618.40627	131.44631	0
Slice 24	443.68581	30.382232	0	539.0809	114.58518	0
Slice 25	458.125	30.113845	0	467.76468	99.426452	0
Slice 26	474.375	29.887552	0	396.53312	84.285716	0
Slice 27	491.25	29.744473	0	312.79462	66.486549	0
Slice 28	510	29.695178	0	247.92797	52.698716	0
Slice 29	530	29.76362	0	203.09081	43.168283	0
Slice 30	550	29.961161	0	144.65435	30.747232	0
Slice 31	561.25	30.113129	0	107.49558	22.848892	0
Slice 32	575.79063	30.418892	0	51.457781	10.937689	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 122
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:52:24
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:52:26

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (26.11806, 69.53568) ft
Left-Zone Right Coordinate: (117.5, 64.52381) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (599.7058, 30.54091) ft
Right-Zone Right Coordinate: (720, 20.87301) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.589
Volume: 3,200.073 ft³
Weight: 3,36,007.66 lbs
Resisting Moment: 2.1968382e+008 lbs-ft
Activating Moment: 8,48,50,372 lbs-ft
Resisting Force: 70,942.476 lbs
Activating Force: 27,400.903 lbs
F of S Rank: 1
Exit: (599.7058, 30.540907) ft
Entry: (26.11806, 69.535679) ft
Radius: 3,083.3321 ft
Center: (521.13552, 3,112.8718) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	35.213545	68.084118	0	133.58955	28.395335	0
Slice 2	53.404515	65.236642	0	394.87458	83.933184	0
Slice 3	73.125	62.280337	0	612.10991	130.10798	0
Slice 4	94.375	59.235052	0	783.42088	166.52125	0
Slice 5	113.75	56.583832	0	870.9436	185.12478	0
Slice 6	131.25	54.302118	0	877.19589	186.45374	0
Slice 7	148.74016	52.123329	0	887.36102	188.61441	0
Slice 8	166.22047	50.047136	0	901.4755	191.61453	0
Slice 9	180.80571	48.38521	0	890.64073	189.31153	0

Slice 10	195.54233	46.791868	0	847.54433	180.15111	0
Slice 11	213.3254	44.955553	0	786.6037	167.19778	0
Slice 12	231.10847	43.223356	0	714.83771	151.94344	0
Slice 13	249.6875	41.527075	0	686.34462	145.88705	0
Slice 14	269.0625	39.876235	0	700.23037	148.83856	0
Slice 15	288.4375	38.348378	0	701.34342	149.07515	0
Slice 16	307.8125	36.94332	0	689.63007	146.5854	0
Slice 17	325.83333	35.74256	0	697.59348	148.27807	0
Slice 18	342.5	34.730039	0	726.95465	154.51898	0
Slice 19	359.16667	33.808066	0	746.81594	158.74063	0
Slice 20	377.5	32.903351	0	745.4632	158.45309	0
Slice 21	397.5	32.035692	0	720.71125	153.1919	0
Slice 22	420.45956	31.211006	0	642.86937	136.6461	0
Slice 23	441.70956	30.573994	0	534.98095	113.71371	0
Slice 24	458.125	30.194286	0	459.17509	97.600678	0
Slice 25	474.375	29.904974	0	394.65319	83.886125	0
Slice 26	491.25	29.696925	0	317.82104	67.554947	0
Slice 27	510	29.575995	0	260.54603	55.380769	0
Slice 28	530	29.568629	0	223.71934	47.553015	0
Slice 29	550	29.690998	0	173.19844	36.814464	0
Slice 30	561.25	29.800881	0	140.45789	29.855245	0
Slice 31	571.80145	29.97001	0	105.2213	22.365478	0
Slice 32	590.40435	30.331891	0	37.019489	7.8687352	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 126
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:59:44
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:59:46

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (64.7782, 68.73999) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (668.1743, 26.11996) ft
Right-Zone Right Coordinate: (752.5, 18.53703) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 3.207
Volume: 3,141.7559 ft³
Weight: 3,29,884.37 lbs
Resisting Moment: 2.2783092e+008 lbs-ft
Activating Moment: 7,10,40,461 lbs-ft
Resisting Force: 69,812.513 lbs
Activating Force: 21,768.484 lbs
F of S Rank: 1
Exit: (668.1743, 26.119962) ft
Entry: (64.7782, 68.739988) ft
Radius: 3,252.7096 ft
Center: (594.66289, 3,277.9988) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.83365	67.112052	0	100.75767	21.416704	0
Slice 2	94.94455	63.920716	0	295.4001	62.789229	0
Slice 3	113.75	61.049247	0	409.59271	87.061618	0
Slice 4	131.25	58.481716	0	445.15385	94.620371	0
Slice 5	148.74016	56.012616	0	484.9731	103.08421	0
Slice 6	166.22047	53.641614	0	529.10344	112.46441	0
Slice 7	185.80052	51.106784	0	537.48381	114.24571	0
Slice 8	207.48031	48.433757	0	507.48399	107.86905	0
Slice 9	229.1601	45.908359	0	462.279	98.260434	0

Slice 10	247.92316	43.83307	0	459.37525	97.643225	0
Slice 11	266.12194	41.940383	0	507.3726	107.84538	0
Slice 12	286.67316	39.919787	0	549.58201	116.81726	0
Slice 13	307.22439	38.030807	0	578.23328	122.90728	0
Slice 14	330	36.098713	0	638.16174	135.64547	0
Slice 15	355	34.154706	0	726.22153	154.36315	0
Slice 16	377.5	32.562044	0	777.66126	165.297	0
Slice 17	397.5	31.285641	0	795.97691	169.19012	0
Slice 18	418.125	30.100856	0	775.63338	164.86596	0
Slice 19	439.375	29.015508	0	715.6697	152.12029	0
Slice 20	462.32605	28.005771	0	663.21078	140.9698	0
Slice 21	478.57605	27.363733	0	636.35291	135.26099	0
Slice 22	487.40164	27.061877	0	616.80001	131.10489	0
Slice 23	496.15164	26.783548	0	595.18247	126.50994	0
Slice 24	510	26.406569	0	593.91603	126.24075	0
Slice 25	530	25.947359	0	605.09242	128.61636	0
Slice 26	550	25.611198	0	603.19342	128.21272	0
Slice 27	561.25	25.461033	0	597.97186	127.10284	0
Slice 28	574.36061	25.374161	0	585.60328	124.47382	0
Slice 29	598.41592	25.314199	0	552.89914	117.52234	0
Slice 30	622.8053	25.433783	0	500.59625	106.40502	0
Slice 31	643.29358	25.663306	0	354.35448	75.32037	0
Slice 32	659.88073	25.953639	0	119.55081	25.411309	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 131
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 12:07:51
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 12:07:52

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (123.479, 63.76457) ft
Left-Zone Right Coordinate: (227.80513, 50.55556) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.08249, 21.15087) ft
Right-Zone Right Coordinate: (865, 13.00926) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 21
F of S: 3.699
Volume: 5,909.8163 ft³
Weight: 6,20,530.71 lbs
Resisting Moment: 5.2552436e+008 lbs-ft
Activating Moment: 1.420671e+008 lbs-ft
Resisting Force: 1,31,463.81 lbs
Activating Force: 35,539.208 lbs
F of S Rank: 1
Exit: (865, 13.009262) ft
Entry: (123.479, 63.764573) ft
Radius: 3,988.0222 ft
Center: (765.38773, 3,999.7873) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	131.7395	62.435189	0	29.15993	6.1981345	0
Slice 2	157.48031	58.409689	0	136.3781	28.98806	0
Slice 3	185.80052	54.121277	0	225.85295	48.006526	0
Slice 4	207.48031	50.997461	0	242.42141	51.528261	0
Slice 5	229.1601	47.995049	0	246.40629	52.375274	0
Slice 6	250.41474	45.167945	0	300.82542	63.942416	0
Slice 7	271.24423	42.511246	0	406.19408	86.339216	0
Slice 8	299.57949	39.103164	0	528.23649	112.28013	0
Slice 9	327.8456	35.853613	0	671.58137	142.74903	0

Slice 10	352.8456	33.187542	0	833.70807	177.21012	0
Slice 11	377.5	30.686157	0	969.0041	205.96818	0
Slice 12	397.5	28.782454	0	1,052.1501	223.64141	0
Slice 13	418.125	26.927301	0	1,101.4846	234.12779	0
Slice 14	439.375	25.127091	0	1,116.2875	237.27424	0
Slice 15	466.25	23.033248	0	1,154.867	245.47457	0
Slice 16	491.25	21.207992	0	1,201.7109	255.43154	0
Slice 17	515	19.661445	0	1,285.9803	273.34355	0
Slice 18	545	17.887591	0	1,417.5046	301.2999	0
Slice 19	561.25	16.993312	0	1,481.858	314.97863	0
Slice 20	573.33333	16.406926	0	1,524.2704	323.99367	0
Slice 21	595	15.421331	0	1,594.0008	338.81532	0
Slice 22	616.66667	14.553775	0	1,651.3091	350.99658	0
Slice 23	631.25	14.023293	0	1,684.2291	357.99394	0
Slice 24	652.5	13.401519	0	1,529.4341	325.09124	0
Slice 25	676.25	12.766217	0	1,305.0715	277.4015	0
Slice 26	695.625	12.396853	0	1,136.0532	241.47555	0
Slice 27	721.875	12.024006	0	912.65968	193.9918	0
Slice 28	747.5	11.824724	0	734.02048	156.02087	0
Slice 29	772.5	11.790949	0	601.10435	127.76867	0
Slice 30	797.5	11.913898	0	451.61222	95.993141	0
Slice 31	816.67491	12.100402	0	331.1365	70.385236	0
Slice 32	833.76236	12.364801	0	219.99001	46.760321	0
Slice 33	854.58745	12.776306	0	75.213231	15.987066	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.05g) ADDITIONAL TRIALS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 111
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:27:20
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:27:22

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.93757, 68.79493) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (615.86238, 30.2933) ft
Right-Zone Right Coordinate: (775, 17.37037) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.656
Volume: 2,042.6351 ft^3
Weight: 2,14,476.68 lbs
Resisting Moment: 1.3470706e+008 lbs-ft
Activating Moment: 8,13,65,296 lbs-ft
Resisting Force: 45,137.059 lbs
Activating Force: 27,263.753 lbs
F of S Rank: 1
Exit: (615.86238, 30.293297) ft
Entry: (63.93757, 68.794931) ft
Radius: 2,972.4794 ft
Center: (545.85626, 3,001.9482) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.203178	67.145142	0	100.58904	21.380861	0
Slice 2	94.734393	63.919113	0	294.10063	62.513019	0
Slice 3	113.75	61.057232	0	404.8872	86.061431	0
Slice 4	131.25	58.539073	0	435.16594	92.497377	0
Slice 5	148.74016	56.128323	0	468.8087	99.648366	0
Slice 6	166.22047	53.824605	0	505.88167	107.52847	0
Slice 7	183.09055	51.699453	0	510.41591	108.49225	0
Slice 8	199.35039	49.745565	0	483.09726	102.68549	0
Slice	215.61024	47.882465	0	446.48359	94.903018	0

9						
Slice 10	231.87008	46.109984	0	400.54474	85.138412	0
Slice 11	250.68978	44.179605	0	398.75964	84.758979	0
Slice 12	272.06934	42.124017	0	437.92117	93.083018	0
Slice 13	291.44434	40.389099	0	460.32364	97.84481	0
Slice 14	308.81478	38.948176	0	468.61724	99.607668	0
Slice 15	325.83333	37.634821	0	496.38819	105.51057	0
Slice 16	342.5	36.444839	0	544.13286	115.65901	0
Slice 17	359.16667	35.348969	0	582.17008	123.74407	0
Slice 18	376.04636	34.335516	0	600.7581	127.69508	0
Slice 19	393.13908	33.406816	0	599.54734	127.43772	0
Slice 20	404.59272	32.828825	0	594.04697	126.26858	0
Slice 21	418.125	32.233509	0	552.81686	117.50485	0
Slice 22	439.375	31.395654	0	466.65974	99.191591	0
Slice 23	458.125	30.774884	0	397.40506	84.471053	0
Slice 24	474.375	30.339528	0	348.53923	74.084299	0
Slice 25	491.25	29.983313	0	287.55323	61.121327	0
Slice 26	510	29.701905	0	247.35994	52.577979	0
Slice 27	530	29.527924	0	228.20815	48.50714	0
Slice 28	550	29.48852	0	194.78791	41.403448	0
Slice 29	561.25	29.508934	0	171.47319	36.447751	0
Slice 30	571.39373	29.591819	0	145.95326	31.023322	0
Slice 31	589.18119	29.797875	0	95.378136	20.273249	0
Slice 32	606.96865	30.110407	0	33.642882	7.1510153	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 115
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:32:42
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:32:44

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.50934, 69.77761) ft
Left-Zone Right Coordinate: (254.09093, 47.77778) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (589.08127, 30.70373) ft
Right-Zone Right Coordinate: (842.5, 14.05093) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.601
Volume: 3,610.7035 ft^3
Weight: 3,79,123.86 lbs
Resisting Moment: 2.4807322e+008 lbs-ft
Activating Moment: 1.5498909e+008 lbs-ft
Resisting Force: 79,714.528 lbs
Activating Force: 49,803.763 lbs
F of S Rank: 1
Exit: (589.08127, 30.703735) ft
Entry: (12.50934, 69.777612) ft
Radius: 3,098.6679 ft
Center: (509.39642, 3,128.3469) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	20.841117	68.447329	0	121.43922	25.812704	0
Slice 2	37.50467	65.833232	0	359.41665	76.396367	0
Slice 3	54.168223	63.311957	0	587.73322	124.92655	0
Slice 4	73.125	60.563509	0	783.24751	166.4844	0
Slice 5	94.375	57.61651	0	943.25372	200.49477	0
Slice 6	113.75	55.054051	0	1,021.2639	217.07633	0
Slice 7	131.25	52.851749	0	1,019.6537	216.73409	0
Slice 8	148.6073	50.76685	0	1,022.0563	217.24478	0
Slice	166.08761	48.768648	0	1,028.5977	218.63518	0

9						
Slice 10	185.80052	46.641243	0	994.7987	211.45099	0
Slice 11	207.48031	44.441763	0	917.6533	195.05323	0
Slice 12	229.1601	42.396156	0	824.56799	175.26734	0
Slice 13	247.4981	40.775767	0	779.30338	165.64605	0
Slice 14	262.49429	39.540396	0	786.18448	167.10867	0
Slice 15	281.86929	38.066583	0	782.4084	166.30604	0
Slice 16	305.6231	36.409382	0	762.13303	161.99638	0
Slice 17	329.43801	34.932148	0	765.30513	162.67063	0
Slice 18	353.31404	33.635561	0	791.90233	168.32404	0
Slice 19	366.37603	32.981533	0	800.59909	170.17259	0
Slice 20	377.5	32.503556	0	787.97719	167.48972	0
Slice 21	397.5	31.716164	0	755.14228	160.51045	0
Slice 22	414.9679	31.127132	0	697.8513	148.33287	0
Slice 23	429.90371	30.707806	0	619.16948	131.60854	0
Slice 24	443.68581	30.382232	0	539.90138	114.75958	0
Slice 25	458.125	30.113845	0	468.59155	99.60221	0
Slice 26	474.375	29.887552	0	397.31634	84.452194	0
Slice 27	491.25	29.744473	0	313.4712	66.63036	0
Slice 28	510	29.695178	0	248.48252	52.81659	0
Slice 29	530	29.76362	0	203.52281	43.260108	0
Slice 30	550	29.961161	0	144.93461	30.806802	0
Slice 31	561.25	30.113129	0	107.68553	22.889267	0
Slice 32	575.79063	30.418892	0	51.544724	10.956169	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 123
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:55:25
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:55:26

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (26.11806, 69.53568) ft
Left-Zone Right Coordinate: (117.5, 64.52381) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (599.7058, 30.54091) ft
Right-Zone Right Coordinate: (720, 20.87301) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.604
Volume: 3,200.073 ft^3
Weight: 3,36,007.66 lbs
Resisting Moment: 2.1878664e+008 lbs-ft
Activating Moment: 1.3637152e+008 lbs-ft
Resisting Force: 70,653.557 lbs
Activating Force: 44,039.309 lbs
F of S Rank: 1
Exit: (599.7058, 30.540907) ft
Entry: (26.11806, 69.535679) ft
Radius: 3,083.3321 ft
Center: (521.13552, 3,112.8718) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	35.213545	68.084118	0	132.50316	28.164415	0
Slice 2	53.404515	65.236642	0	391.66073	83.250058	0
Slice 3	73.125	62.280337	0	607.12759	129.04895	0
Slice 4	94.375	59.235052	0	777.09794	165.17727	0
Slice 5	113.75	56.583832	0	864.01748	183.65258	0
Slice 6	131.25	54.302118	0	870.34417	184.99736	0
Slice 7	148.74016	52.123329	0	880.6249	187.1826	0
Slice 8	166.22047	50.047136	0	894.89887	190.21663	0
Slice	180.80571	48.38521	0	884.39263	187.98346	0

9						
Slice 10	195.54233	46.791868	0	841.85836	178.94252	0
Slice 11	213.3254	44.955553	0	781.65635	166.14619	0
Slice 12	231.10847	43.223356	0	710.67792	151.05926	0
Slice 13	249.6875	41.527075	0	682.76031	145.12518	0
Slice 14	269.0625	39.876235	0	697.06466	148.16567	0
Slice 15	288.4375	38.348378	0	698.67344	148.50762	0
Slice 16	307.8125	36.94332	0	687.50102	146.13285	0
Slice 17	325.83333	35.74256	0	695.90237	147.91862	0
Slice 18	342.5	34.730039	0	725.61516	154.23426	0
Slice 19	359.16667	33.808066	0	745.84735	158.53475	0
Slice 20	377.5	32.903351	0	744.91349	158.33625	0
Slice 21	397.5	32.035692	0	720.58211	153.16446	0
Slice 22	420.45956	31.211006	0	643.13061	136.70163	0
Slice 23	441.70956	30.573994	0	535.46702	113.81703	0
Slice 24	458.125	30.194286	0	459.74378	97.721558	0
Slice 25	474.375	29.904974	0	395.24592	84.012114	0
Slice 26	491.25	29.696925	0	318.37825	67.673386	0
Slice 27	510	29.575995	0	261.0434	55.486487	0
Slice 28	530	29.568629	0	224.14523	47.643539	0
Slice 29	550	29.690998	0	173.51449	36.881644	0
Slice 30	561.25	29.800881	0	140.70113	29.906949	0
Slice 31	571.80145	29.97001	0	105.39587	22.402584	0
Slice 32	590.40435	30.331891	0	37.075311	7.8806006	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 127
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 12:03:52
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 12:03:53

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (64.7782, 68.73999) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (668.1743, 26.11996) ft
Right-Zone Right Coordinate: (752.5, 18.53703) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.824
Volume: 3,141.7559 ft^3
Weight: 3,29,884.37 lbs
Resisting Moment: 2.2707994e+008 lbs-ft
Activating Moment: 1.2446673e+008 lbs-ft
Resisting Force: 69,583.046 lbs
Activating Force: 38,140.08 lbs
F of S Rank: 1
Exit: (668.1743, 26.119962) ft
Entry: (64.7782, 68.739988) ft
Radius: 3,252.7096 ft
Center: (594.66289, 3,277.9988) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.83365	67.112052	0	99.93027	21.240835	0
Slice 2	94.94455	63.920716	0	292.98414	62.275701	0
Slice 3	113.75	61.049247	0	406.24977	86.351055	0
Slice 4	131.25	58.481716	0	441.52825	93.849727	0
Slice 5	148.74016	56.012616	0	481.05974	102.2524	0
Slice 6	166.22047	53.641614	0	524.90419	111.57183	0
Slice 7	185.80052	51.106784	0	533.3083	113.35818	0
Slice 8	207.48031	48.433757	0	503.64987	107.05408	0
Slice	229.1601	45.908359	0	458.91012	97.544357	0

9						
Slice 10	247.92316	43.83307	0	456.19187	96.966575	0
Slice 11	266.12194	41.940383	0	504.09792	107.14932	0
Slice 12	286.67316	39.919787	0	546.3351	116.12711	0
Slice 13	307.22439	38.030807	0	575.14288	122.25039	0
Slice 14	330	36.098713	0	635.17521	135.01066	0
Slice 15	355	34.154706	0	723.35494	153.75384	0
Slice 16	377.5	32.562044	0	775.09251	164.751	0
Slice 17	397.5	31.285641	0	793.79618	168.72659	0
Slice 18	418.125	30.100856	0	773.9553	164.50928	0
Slice 19	439.375	29.015508	0	714.54692	151.88164	0
Slice 20	462.32605	28.005771	0	662.57607	140.83489	0
Slice 21	478.57605	27.363733	0	636.00039	135.18606	0
Slice 22	487.40164	27.061877	0	616.58861	131.05995	0
Slice 23	496.15164	26.783548	0	595.10024	126.49246	0
Slice 24	510	26.406569	0	593.98945	126.25636	0
Slice 25	530	25.947359	0	605.35521	128.67222	0
Slice 26	550	25.611198	0	603.61083	128.30144	0
Slice 27	561.25	25.461033	0	598.45831	127.20624	0
Slice 28	574.36061	25.374161	0	586.14611	124.5892	0
Slice 29	598.41592	25.314199	0	553.49179	117.64831	0
Slice 30	622.8053	25.433783	0	501.16181	106.52523	0
Slice 31	643.29358	25.663306	0	354.76124	75.406829	0
Slice 32	659.88073	25.953639	0	119.69243	25.441412	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 132
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 12:09:07
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 12:09:08

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (123.479, 63.76457) ft
Left-Zone Right Coordinate: (227.80513, 50.55556) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.08249, 21.15087) ft
Right-Zone Right Coordinate: (865, 13.00926) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 21
F of S: 1.975
Volume: 5,909.8163 ft^3
Weight: 6,20,530.71 lbs
Resisting Moment: 5.24022e+008 lbs-ft
Activating Moment: 2.6533903e+008 lbs-ft
Resisting Force: 1,31,089.15 lbs
Activating Force: 66,377.43 lbs
F of S Rank: 1
Exit: (865, 13.009262) ft
Entry: (123.479, 63.764573) ft
Radius: 3,988.0222 ft
Center: (765.38773, 3,999.7873) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	131.7395	62.435189	0	28.917203	6.1465412	0
Slice 2	157.48031	58.409689	0	135.17541	28.73242	0
Slice 3	185.80052	54.121277	0	223.77008	47.5638	0
Slice 4	207.48031	50.997461	0	240.09656	51.034099	0
Slice 5	229.1601	47.995049	0	243.97193	51.857836	0
Slice 6	250.41474	45.167945	0	297.87852	63.316034	0
Slice 7	271.24423	42.511246	0	402.3366	85.519284	0
Slice 8	299.57949	39.103164	0	523.40875	111.25396	0
Slice	327.8456	35.853613	0	665.77327	141.51448	0

9						
Slice 10	352.8456	33.187542	0	826.9567	175.77507	0
Slice 11	377.5	30.686157	0	961.71939	204.41977	0
Slice 12	397.5	28.782454	0	1,044.7786	222.07456	0
Slice 13	418.125	26.927301	0	1,094.3894	232.61965	0
Slice 14	439.375	25.127091	0	1,109.7939	235.89397	0
Slice 15	466.25	23.033248	0	1,149.1507	244.25952	0
Slice 16	491.25	21.207992	0	1,196.7773	254.38286	0
Slice 17	515	19.661445	0	1,281.7412	272.4425	0
Slice 18	545	17.887591	0	1,414.2231	300.60239	0
Slice 19	561.25	16.993312	0	1,479.1795	314.40931	0
Slice 20	573.33333	16.406926	0	1,522.0623	323.52432	0
Slice 21	595	15.421331	0	1,592.6575	338.5298	0
Slice 22	616.66667	14.553775	0	1,650.8196	350.89255	0
Slice 23	631.25	14.023293	0	1,684.2883	358.00653	0
Slice 24	652.5	13.401519	0	1,530.2386	325.26226	0
Slice 25	676.25	12.766217	0	1,306.4275	277.68973	0
Slice 26	695.625	12.396853	0	1,137.6294	241.81059	0
Slice 27	721.875	12.024006	0	914.27691	194.33556	0
Slice 28	747.5	11.824724	0	735.4929	156.33384	0
Slice 29	772.5	11.790949	0	602.34529	128.03244	0
Slice 30	797.5	11.913898	0	452.51966	96.186024	0
Slice 31	816.67491	12.100402	0	331.75786	70.517311	0
Slice 32	833.76236	12.364801	0	220.36917	46.840914	0
Slice 33	854.58745	12.776306	0	75.327264	16.011304	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.1g) ADITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 112
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:28:57
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:28:58

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (63.93757, 68.79493) ft
Left-Zone Right Coordinate: (172.5, 58.05149) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (615.86238, 30.2933) ft
Right-Zone Right Coordinate: (775, 17.37037) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.187
Volume: 2,042.6351 ft^3
Weight: 2,14,476.68 lbs
Resisting Moment: 1.3418374e+008 lbs-ft
Activating Moment: 1.1309026e+008 lbs-ft
Resisting Force: 44,962.173 lbs
Activating Force: 37,894.569 lbs
F of S Rank: 1
Exit: (615.86238, 30.293297) ft
Entry: (63.93757, 68.794931) ft
Radius: 2,972.4794 ft
Center: (545.85626, 3,001.9482) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.203178	67.145142	0	99.770603	21.206896	0
Slice 2	94.734393	63.919113	0	291.73698	62.01061	0
Slice 3	113.75	61.057232	0	401.66861	85.377298	0
Slice 4	131.25	58.539073	0	431.74496	91.770224	0
Slice 5	148.74016	56.128323	0	465.19208	98.879629	0
Slice 6	166.22047	53.824605	0	502.08286	106.72101	0
Slice 7	183.09055	51.699453	0	506.69501	107.70135	0
Slice 8	199.35039	49.745565	0	479.68444	101.96008	0
Slice	215.61024	47.882465	0	443.44466	94.257073	0

9						
Slice 10	231.87008	46.109984	0	397.93307	84.583286	0
Slice 11	250.68978	44.179605	0	396.34762	84.246287	0
Slice 12	272.06934	42.124017	0	435.55319	92.579689	0
Slice 13	291.44434	40.389099	0	458.10562	97.373356	0
Slice 14	308.81478	38.948176	0	466.6107	99.181165	0
Slice 15	325.83333	37.634821	0	494.53013	105.11562	0
Slice 16	342.5	36.444839	0	542.37813	115.28603	0
Slice 17	359.16667	35.348969	0	580.58265	123.40665	0
Slice 18	376.04636	34.335516	0	599.41174	127.4089	0
Slice 19	393.13908	33.406816	0	598.487	127.21234	0
Slice 20	404.59272	32.828825	0	593.17653	126.08356	0
Slice 21	418.125	32.233509	0	552.20296	117.37436	0
Slice 22	439.375	31.395654	0	466.39544	99.135411	0
Slice 23	458.125	30.774884	0	397.35669	84.460771	0
Slice 24	474.375	30.339528	0	348.61595	74.100607	0
Slice 25	491.25	29.983313	0	287.71542	61.1558	0
Slice 26	510	29.701905	0	247.57082	52.622801	0
Slice 27	530	29.527924	0	228.44344	48.557152	0
Slice 28	550	29.48852	0	195.01344	41.451387	0
Slice 29	561.25	29.508934	0	171.67896	36.49149	0
Slice 30	571.39373	29.591819	0	146.13329	31.06159	0
Slice 31	589.18119	29.797875	0	95.49794	20.298714	0
Slice 32	606.96865	30.110407	0	33.68589	7.1601569	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 116
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:34:48
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:34:50

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (12.50934, 69.77761) ft
Left-Zone Right Coordinate: (254.09093, 47.77778) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (589.08127, 30.70373) ft
Right-Zone Right Coordinate: (842.5, 14.05093) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.158
Volume: 3,610.7035 ft^3
Weight: 3,79,123.86 lbs
Resisting Moment: 2.4705623e+008 lbs-ft
Activating Moment: 2.1340186e+008 lbs-ft
Resisting Force: 79,388.695 lbs
Activating Force: 68,574.668 lbs
F of S Rank: 1
Exit: (589.08127, 30.703735) ft
Entry: (12.50934, 69.777612) ft
Radius: 3,098.6679 ft
Center: (509.39642, 3,128.3469) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	20.841117	68.447329	0	120.44961	25.602355	0
Slice 2	37.50467	65.833232	0	356.46803	75.769618	0
Slice 3	54.168223	63.311957	0	582.88767	123.8966	0
Slice 4	73.125	60.563509	0	776.78514	165.11078	0
Slice 5	94.375	57.61651	0	935.5426	198.85572	0
Slice 6	113.75	55.054051	0	1,013.0533	215.33113	0
Slice 7	131.25	52.851749	0	1,011.625	215.02753	0
Slice 8	148.6073	50.76685	0	1,014.2657	215.58884	0
Slice	166.08761	48.768648	0	1,021.106	217.04278	0

9						
Slice 10	185.80052	46.641243	0	987.99473	210.00476	0
Slice 11	207.48031	44.441763	0	911.89127	193.82847	0
Slice 12	229.1601	42.396156	0	819.92759	174.28099	0
Slice 13	247.4981	40.775767	0	775.42675	164.82204	0
Slice 14	262.49429	39.540396	0	782.7471	166.37803	0
Slice 15	281.86929	38.066583	0	779.60609	165.71039	0
Slice 16	305.6231	36.409382	0	760.1463	161.57408	0
Slice 17	329.43801	34.932148	0	764.03496	162.40064	0
Slice 18	353.31404	33.635561	0	791.26702	168.189	0
Slice 19	366.37603	32.981533	0	800.30026	170.10907	0
Slice 20	377.5	32.503556	0	787.95221	167.48441	0
Slice 21	397.5	31.716164	0	755.53843	160.59465	0
Slice 22	414.9679	31.127132	0	698.51969	148.47494	0
Slice 23	429.90371	30.707806	0	619.97653	131.78008	0
Slice 24	443.68581	30.382232	0	540.76156	114.94242	0
Slice 25	458.125	30.113845	0	469.45295	99.785304	0
Slice 26	474.375	29.887552	0	398.12767	84.624649	0
Slice 27	491.25	29.744473	0	314.16885	66.778651	0
Slice 28	510	29.695178	0	249.05151	52.937533	0
Slice 29	530	29.76362	0	203.96363	43.353807	0
Slice 30	550	29.961161	0	145.21926	30.867306	0
Slice 31	561.25	30.113129	0	107.87799	22.930176	0
Slice 32	575.79063	30.418892	0	51.632713	10.974872	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 124
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 11:58:00
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 11:58:02

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (26.11806, 69.53568) ft
Left-Zone Right Coordinate: (117.5, 64.52381) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (599.7058, 30.54091) ft
Right-Zone Right Coordinate: (720, 20.87301) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.160
Volume: 3,200.073 ft^3
Weight: 3,36,007.66 lbs
Resisting Moment: 2.1789286e+008 lbs-ft
Activating Moment: 1.8789268e+008 lbs-ft
Resisting Force: 70,365.746 lbs
Activating Force: 60,678.037 lbs
F of S Rank: 1
Exit: (599.7058, 30.540907) ft
Entry: (26.11806, 69.535679) ft
Radius: 3,083.3321 ft
Center: (521.13552, 3,112.8718) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	35.213545	68.084118	0	131.42553	27.935358	0
Slice 2	53.404515	65.236642	0	388.47158	82.572184	0
Slice 3	73.125	62.280337	0	602.17975	127.99726	0
Slice 4	94.375	59.235052	0	770.81095	163.84093	0
Slice 5	113.75	56.583832	0	857.12082	182.18665	0
Slice 6	131.25	54.302118	0	863.51111	183.54495	0
Slice 7	148.74016	52.123329	0	873.8962	185.75237	0
Slice 8	166.22047	50.047136	0	888.31882	188.81799	0
Slice	180.80571	48.38521	0	878.13272	186.65287	0

9						
Slice 10	195.54233	46.791868	0	836.15371	177.72996	0
Slice 11	213.3254	44.955553	0	776.68496	165.08949	0
Slice 12	231.10847	43.223356	0	706.49221	150.16955	0
Slice 13	249.6875	41.527075	0	679.151	144.358	0
Slice 14	269.0625	39.876235	0	693.8774	147.48819	0
Slice 15	288.4375	38.348378	0	695.98812	147.93684	0
Slice 16	307.8125	36.94332	0	685.3649	145.67881	0
Slice 17	325.83333	35.74256	0	694.2128	147.55949	0
Slice 18	342.5	34.730039	0	724.28543	153.95162	0
Slice 19	359.16667	33.808066	0	744.89653	158.33264	0
Slice 20	377.5	32.903351	0	744.38912	158.22479	0
Slice 21	397.5	32.035692	0	720.48413	153.14363	0
Slice 22	420.45956	31.211006	0	643.42522	136.76425	0
Slice 23	441.70956	30.573994	0	535.98451	113.92702	0
Slice 24	458.125	30.194286	0	460.34063	97.848421	0
Slice 25	474.375	29.904974	0	395.86274	84.143223	0
Slice 26	491.25	29.696925	0	318.95458	67.79589	0
Slice 27	510	29.575995	0	261.55487	55.595204	0
Slice 28	530	29.568629	0	224.58062	47.736084	0
Slice 29	550	29.690998	0	173.83602	36.949987	0
Slice 30	561.25	29.800881	0	140.94796	29.959414	0
Slice 31	571.80145	29.97001	0	105.57273	22.440177	0
Slice 32	590.40435	30.331891	0	37.131759	7.8925989	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 128
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 12:05:03
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 12:05:05

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (64.7782, 68.73999) ft
Left-Zone Right Coordinate: (302.5, 43.96058) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (668.1743, 26.11996) ft
Right-Zone Right Coordinate: (752.5, 18.53703) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.272
Volume: 3,141.7559 ft^3
Weight: 3,29,884.37 lbs
Resisting Moment: 2.2633254e+008 lbs-ft
Activating Moment: 1.7789301e+008 lbs-ft
Resisting Force: 69,354.772 lbs
Activating Force: 54,512.07 lbs
F of S Rank: 1
Exit: (668.1743, 26.119962) ft
Entry: (64.7782, 68.739988) ft
Radius: 3,252.7096 ft
Center: (594.66289, 3,277.9988) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	74.83365	67.112052	0	99.110755	21.066641	0
Slice 2	94.94455	63.920716	0	290.58962	61.76673	0
Slice 3	113.75	61.049247	0	402.93378	85.64622	0
Slice 4	131.25	58.481716	0	437.92842	93.084559	0
Slice 5	148.74016	56.012616	0	477.16993	101.4256	0
Slice 6	166.22047	53.641614	0	520.72531	110.68358	0
Slice 7	185.80052	51.106784	0	529.14701	112.47367	0
Slice 8	207.48031	48.433757	0	499.82206	106.24046	0
Slice	229.1601	45.908359	0	455.54064	96.828152	0

9						
Slice 10	247.92316	43.83307	0	453.00369	96.288906	0
Slice 11	266.12194	41.940383	0	500.81558	106.45164	0
Slice 12	286.67316	39.919787	0	543.07801	115.43479	0
Slice 13	307.22439	38.030807	0	572.04107	121.59108	0
Slice 14	330	36.098713	0	632.17746	134.37347	0
Slice 15	355	34.154706	0	720.47911	153.14256	0
Slice 16	377.5	32.562044	0	772.51829	164.20383	0
Slice 17	397.5	31.285641	0	791.61466	168.26289	0
Slice 18	418.125	30.100856	0	772.28212	164.15363	0
Slice 19	439.375	29.015508	0	713.43494	151.64528	0
Slice 20	462.32605	28.005771	0	661.95747	140.7034	0
Slice 21	478.57605	27.363733	0	635.66693	135.11518	0
Slice 22	487.40164	27.061877	0	616.39746	131.01933	0
Slice 23	496.15164	26.783548	0	595.0392	126.47949	0
Slice 24	510	26.406569	0	594.08492	126.27665	0
Slice 25	530	25.947359	0	605.64027	128.73281	0
Slice 26	550	25.611198	0	604.04938	128.39466	0
Slice 27	561.25	25.461033	0	598.96479	127.3139	0
Slice 28	574.36061	25.374161	0	586.70719	124.70846	0
Slice 29	598.41592	25.314199	0	554.09879	117.77733	0
Slice 30	622.8053	25.433783	0	501.7374	106.64758	0
Slice 31	643.29358	25.663306	0	355.17395	75.494554	0
Slice 32	659.88073	25.953639	0	119.8361	25.471949	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 133
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 30-06-2020
Time: 12:10:32
File Name: Analysis.gsz
Directory: F:\LD\Project 2020\Project 0280\Additional trails\Without water table\
Last Solved Date: 30-06-2020
Last Solved Time: 12:10:34

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface
- Direction of movement: Left to Right

Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 12 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (123.479, 63.76457) ft
Left-Zone Right Coordinate: (227.80513, 50.55556) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (717.08249, 21.15087) ft
Right-Zone Right Coordinate: (865, 13.00926) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 21
F of S: 1.345
Volume: 5,909.8163 ft^3
Weight: 6,20,530.71 lbs
Resisting Moment: 5.2252713e+008 lbs-ft
Activating Moment: 3.8861096e+008 lbs-ft
Resisting Force: 1,30,716.39 lbs
Activating Force: 97,215.898 lbs
F of S Rank: 1
Exit: (865, 13.009262) ft
Entry: (123.479, 63.764573) ft
Radius: 3,988.0222 ft
Center: (765.38773, 3,999.7873) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	131.7395	62.435189	0	28.677133	6.0955129	0
Slice 2	157.48031	58.409689	0	133.98624	28.479656	0
Slice 3	185.80052	54.121277	0	221.70946	47.1258	0
Slice 4	207.48031	50.997461	0	237.79418	50.544713	0
Slice 5	229.1601	47.995049	0	241.55751	51.344633	0
Slice 6	250.41474	45.167945	0	294.95096	62.693762	0
Slice 7	271.24423	42.511246	0	398.49839	84.703447	0
Slice 8	299.57949	39.103164	0	518.59373	110.2305	0
Slice	327.8456	35.853613	0	659.9672	140.28036	0

9						
Slice 10	352.8456	33.187542	0	820.19501	174.33783	0
Slice 11	377.5	30.686157	0	954.41062	202.86624	0
Slice 12	397.5	28.782454	0	1,037.3732	220.50049	0
Slice 13	418.125	26.927301	0	1,087.2533	231.10283	0
Slice 14	439.375	25.127091	0	1,103.2572	234.50456	0
Slice 15	466.25	23.033248	0	1,143.3949	243.0361	0
Slice 16	491.25	21.207992	0	1,191.8133	253.32774	0
Slice 17	515	19.661445	0	1,277.4845	271.53772	0
Slice 18	545	17.887591	0	1,410.9446	299.90554	0
Slice 19	561.25	16.993312	0	1,476.5171	313.8434	0
Slice 20	573.33333	16.406926	0	1,519.8797	323.06041	0
Slice 21	595	15.421331	0	1,591.3563	338.25321	0
Slice 22	616.66667	14.553775	0	1,650.3862	350.80042	0
Slice 23	631.25	14.023293	0	1,684.4109	358.0326	0
Slice 24	652.5	13.401519	0	1,531.1107	325.44763	0
Slice 25	676.25	12.766217	0	1,307.8492	277.99193	0
Slice 26	695.625	12.396853	0	1,139.2651	242.15828	0
Slice 27	721.875	12.024006	0	915.94156	194.68939	0
Slice 28	747.5	11.824724	0	736.99956	156.65409	0
Slice 29	772.5	11.790949	0	603.60858	128.30096	0
Slice 30	797.5	11.913898	0	453.43941	96.381521	0
Slice 31	816.67491	12.100402	0	332.38578	70.650779	0
Slice 32	833.76236	12.364801	0	220.75165	46.922211	0
Slice 33	854.58745	12.776306	0	75.442184	16.035731	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (STATIC) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 139
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:09:12
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:09:15

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (18.45686, 69.67188) ft
Left-Zone Right Coordinate: (130, 62.93651) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (592.06419, 30.65802) ft
Right-Zone Right Coordinate: (702.5, 22.53968) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 2.137
Volume: 2,523.7124 ft³
Weight: 2,64,989.8 lbs
Resisting Moment: 1.370977e+008 lbs-ft
Activating Moment: 6,41,63,250 lbs-ft
Resisting Force: 46,408.804 lbs
Activating Force: 21,719.967 lbs
F of S Rank: 1
Exit: (592.06419, 30.658019) ft
Entry: (46.412826, 69.174884) ft
Radius: 2,941.2866 ft
Center: (525.44766, 2,971.1901) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.456413	67.870013	0	120.30106	21.212323	0
Slice 2	73.125	64.911505	0	339.75145	59.907348	0
Slice 3	94.375	61.683668	0	529.85058	93.426952	0
Slice 4	113.75	58.87253	0	633.74298	111.74599	0
Slice 5	131.25	56.452217	0	654.16915	115.34767	0
Slice 6	148.74016	54.140139	0	677.93354	119.53797	0
Slice 7	166.22047	51.93592	0	705.08795	124.32603	0
Slice 8	184.24265	49.776316	0	697.06822	122.91194	0
Slice 9	202.8067	47.66786	0	653.13487	115.1653	0

Slice 10	221.37075	45.678721	0	596.87821	105.24573	0
Slice 11	235.32639	44.250697	0	547.59414	96.555622	0
Slice 12	249.6875	42.875169	0	545.37752	96.164771	0
Slice 13	269.0625	41.115226	0	570.44418	100.5847	0
Slice 14	288.4375	39.484384	0	582.1521	102.64912	0
Slice 15	307.8125	37.982427	0	580.44939	102.34889	0
Slice 16	325.83333	36.696782	0	597.19578	105.30173	0
Slice 17	342.5	35.61058	0	634.1903	111.82486	0
Slice 18	359.16667	34.619371	0	661.25414	116.59695	0
Slice 19	377.5	33.643859	0	667.3018	117.66331	0
Slice 20	397.5	32.704795	0	650.04339	114.62019	0
Slice 21	412.4357	32.079592	0	617.18428	108.82624	0
Slice 22	425.52855	31.612539	0	558.67569	98.509597	0
Slice 23	441.84285	31.103312	0	477.9564	84.27661	0
Slice 24	458.125	30.685332	0	407.28899	71.816038	0
Slice 25	474.375	30.358206	0	346.75685	61.142589	0
Slice 26	491.25	30.11536	0	273.60106	48.243249	0
Slice 27	510	29.961097	0	219.84854	38.765229	0
Slice 28	530	29.924054	0	186.16164	32.825321	0
Slice 29	550	30.023009	0	138.13253	24.356492	0
Slice 30	561.25	30.121704	0	106.59098	18.794866	0
Slice 31	569.89105	30.248614	0	78.915313	13.914899	0
Slice 32	584.67314	30.509163	0	27.592527	4.865307	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 145
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:15:10
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:15:12

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (45.24923, 69.19557) ft
Left-Zone Right Coordinate: (169.96628, 58.33333) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (677.57683, 25.02025) ft
Right-Zone Right Coordinate: (770, 17.62963) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.572
Volume: 4,124.0179 ft³
Weight: 4,33,021.88 lbs
Resisting Moment: 2.5973905e+008 lbs-ft
Activating Moment: 1.0098199e+008 lbs-ft
Resisting Force: 75,996.411 lbs
Activating Force: 29,546.216 lbs
F of S Rank: 1
Exit: (677.57683, 25.02025) ft
Entry: (45.24923, 69.19557) ft
Radius: 3,405.8728 ft
Center: (597.74378, 3,429.9573) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	53.874615	67.800311	0	128.88347	22.725633	0
Slice 2	73.125	64.748668	0	357.38648	63.016879	0
Slice 3	94.375	61.504526	0	549.4937	96.890565	0
Slice 4	113.75	58.660589	0	656.84654	115.81977	0
Slice 5	131.25	56.19454	0	681.86995	120.23207	0
Slice 6	148.74016	53.822285	0	711.68291	125.4889	0
Slice 7	166.22047	51.543526	0	746.3297	131.59806	0
Slice 8	184.24422	49.291645	0	747.54301	131.812	0
Slice 9	202.8114	47.072334	0	714.72156	126.0247	0

Slice 10	226.0475	44.456674	0	657.00729	115.84811	0
Slice 11	250.28661	41.869901	0	644.0154	113.55729	0
Slice 12	270.85984	39.823126	0	688.88754	121.46946	0
Slice 13	291.43306	37.902363	0	720.80651	127.09764	0
Slice 14	309.60984	36.303552	0	738.88581	130.2855	0
Slice 15	330	34.647936	0	789.75893	139.25581	0
Slice 16	355	32.769045	0	871.30975	153.63542	0
Slice 17	377.5	31.227848	0	917.59553	161.79685	0
Slice 18	397.5	29.990872	0	931.95462	164.32874	0
Slice 19	418.125	28.840789	0	908.11764	160.12564	0
Slice 20	439.375	27.785078	0	845.16369	149.02516	0
Slice 21	458.125	26.957138	0	798.06945	140.72118	0
Slice 22	474.375	26.329284	0	769.81571	135.73928	0
Slice 23	491.25	25.761056	0	731.5532	128.99257	0
Slice 24	508.66276	25.260675	0	717.29025	126.47762	0
Slice 25	525.98829	24.851471	0	728.2317	128.4069	0
Slice 26	547.32553	24.481275	0	727.47693	128.27381	0
Slice 27	561.25	24.280235	0	722.63225	127.41956	0
Slice 28	572.03456	24.194866	0	713.8704	125.87461	0
Slice 29	591.10368	24.104304	0	692.48914	122.10452	0
Slice 30	610.17281	24.12051	0	659.73883	116.32976	0
Slice 31	627.35368	24.221783	0	621.0177	109.50218	0
Slice 32	645.64421	24.437977	0	454.53858	80.147416	0
Slice 33	666.93262	24.803972	0	153.76752	27.113362	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 153
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:22:09
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:22:11

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (52.05023, 69.07466) ft
Left-Zone Right Coordinate: (122.5, 63.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (735.31065, 19.42833) ft
Right-Zone Right Coordinate: (802.5, 15.94445) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 2.698
Volume: 5,514.8279 ft³
Weight: 5,79,056.93 lbs
Resisting Moment: 3.7647837e+008 lbs-ft
Activating Moment: 1.3955841e+008 lbs-ft
Resisting Force: 1,01,669.12 lbs
Activating Force: 37,688.274 lbs
F of S Rank: 1
Exit: (735.31065, 19.428332) ft
Entry: (52.05023, 69.074664) ft
Radius: 3,691.1885 ft
Center: (660.02613, 3,709.8491) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	57.275115	68.209859	0	80.150472	14.132691	0
Slice 2	73.125	65.633898	0	265.70381	46.85075	0
Slice 3	94.375	62.275059	0	469.80507	82.839309	0
Slice 4	113.75	59.318001	0	588.88164	103.83572	0
Slice 5	131.25	56.742089	0	625.22704	110.2444	0
Slice 6	148.74016	54.253121	0	667.03419	117.61613	0
Slice 7	166.22047	51.850824	0	714.34633	125.95853	0
Slice 8	184.01766	49.493146	0	729.57315	128.64343	0
Slice 9	202.13171	47.183051	0	712.41665	125.61828	0

Slice 10	225.59437	44.343432	0	674.53211	118.93821	0
Slice 11	249.72982	41.54782	0	681.12688	120.10105	0
Slice 12	269.18945	39.423492	0	742.91327	130.99565	0
Slice 13	288.56445	37.411839	0	793.84641	139.97654	0
Slice 14	307.85482	35.511788	0	834.02077	147.06036	0
Slice 15	330	33.465219	0	911.10112	160.65171	0
Slice 16	355	31.306599	0	1,021.6365	180.14208	0
Slice 17	377.5	29.502432	0	1,095.3307	193.13635	0
Slice 18	397.5	28.021738	0	1,135.2487	200.17497	0
Slice 19	418.125	26.610896	0	1,138.9426	200.82631	0
Slice 20	439.375	25.276807	0	1,105.5642	194.9408	0
Slice 21	466.25	23.786266	0	1,081.5113	190.69961	0
Slice 22	491.25	22.531498	0	1,068.8524	188.46752	0
Slice 23	510	21.724211	0	1,084.816	191.28232	0
Slice 24	530	20.964949	0	1,128.0501	198.90567	0
Slice 25	550	20.314256	0	1,159.7598	204.49694	0
Slice 26	561.25	19.982583	0	1,173.9282	206.99521	0
Slice 27	573.33333	19.694614	0	1,184.6797	208.891	0
Slice 28	595	19.249229	0	1,196.9107	211.04764	0
Slice 29	616.66667	18.931087	0	1,195.5096	210.80059	0
Slice 30	631.25	18.774585	0	1,188.367	209.54116	0
Slice 31	643.75	18.706767	0	1,081.6286	190.72031	0
Slice 32	661.2862	18.671183	0	869.28421	153.27826	0
Slice 33	676.2862	18.701555	0	681.22016	120.11749	0
Slice 34	695.83931	18.858357	0	454.28368	80.10247	0
Slice 35	722.08931	19.204897	0	154.56341	27.253699	0
Slice 36	735.15533	19.42517	0	1.1792786	0.20793863	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.05g) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 140
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:11:16
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:11:19

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (18.45686, 69.67188) ft
Left-Zone Right Coordinate: (130, 62.93651) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (592.06419, 30.65802) ft
Right-Zone Right Coordinate: (702.5, 22.53968) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 1.327
Volume: 2,523.7124 ft^3
Weight: 2,64,989.8 lbs
Resisting Moment: 1.3653473e+008 lbs-ft
Activating Moment: 1.0292743e+008 lbs-ft
Resisting Force: 46,218.752 lbs
Activating Force: 34,842.529 lbs
F of S Rank: 1
Exit: (592.06419, 30.658019) ft
Entry: (46.412826, 69.174884) ft
Radius: 2,941.2866 ft
Center: (525.44766, 2,971.1901) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.456413	67.870013	0	119.31337	21.038166	0
Slice 2	73.125	64.911505	0	336.96649	59.416283	0
Slice 3	94.375	61.683668	0	525.53726	92.666398	0
Slice 4	113.75	58.87253	0	628.64414	110.84692	0
Slice 5	131.25	56.452217	0	648.97925	114.43255	0
Slice 6	148.74016	54.140139	0	672.68201	118.61199	0
Slice 7	166.22047	51.93592	0	699.80989	123.39537	0
Slice 8	184.24265	49.776316	0	692.06489	122.02971	0
Slice	202.8067	47.66786	0	648.67893	114.3796	0

9						
Slice 10	221.37075	45.678721	0	593.05174	104.57102	0
Slice 11	235.32639	44.250697	0	544.27121	95.969698	0
Slice 12	249.6875	42.875169	0	542.31444	95.624667	0
Slice 13	269.0625	41.115226	0	567.62308	100.08726	0
Slice 14	288.4375	39.484384	0	579.67005	102.21147	0
Slice 15	307.8125	37.982427	0	578.37435	101.983	0
Slice 16	325.83333	36.696782	0	595.44258	104.99259	0
Slice 17	342.5	35.61058	0	632.68659	111.55972	0
Slice 18	359.16667	34.619371	0	660.03832	116.38256	0
Slice 19	377.5	33.643859	0	666.44155	117.51163	0
Slice 20	397.5	32.704795	0	649.56482	114.5358	0
Slice 21	412.4357	32.079592	0	616.96644	108.78783	0
Slice 22	425.52855	31.612539	0	558.66054	98.506927	0
Slice 23	441.84285	31.103312	0	478.12619	84.306548	0
Slice 24	458.125	30.685332	0	407.56953	71.865504	0
Slice 25	474.375	30.358206	0	347.09122	61.201547	0
Slice 26	491.25	30.11536	0	273.93804	48.302667	0
Slice 27	510	29.961097	0	220.16013	38.820171	0
Slice 28	530	29.924054	0	186.433	32.873167	0
Slice 29	550	30.023009	0	138.3306	24.391418	0
Slice 30	561.25	30.121704	0	106.73744	18.820691	0
Slice 31	569.89105	30.248614	0	79.02119	13.933568	0
Slice 32	584.67314	30.509163	0	27.627716	4.8715117	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 146
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:16:32
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:16:35

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (45.24923, 69.19557) ft
Left-Zone Right Coordinate: (169.96628, 58.33333) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (677.57683, 25.02025) ft
Right-Zone Right Coordinate: (770, 17.62963) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.484
Volume: 4,124.0179 ft^3
Weight: 4,33,021.88 lbs
Resisting Moment: 2.5885386e+008 lbs-ft
Activating Moment: 1.7438882e+008 lbs-ft
Resisting Force: 75,738.174 lbs
Activating Force: 51,024.966 lbs
F of S Rank: 1
Exit: (677.57683, 25.02025) ft
Entry: (45.24923, 69.19557) ft
Radius: 3,405.8728 ft
Center: (597.74378, 3,429.9573) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	53.874615	67.800311	0	127.82865	22.539639	0
Slice 2	73.125	64.748668	0	354.45369	62.499749	0
Slice 3	94.375	61.504526	0	544.98142	96.094928	0
Slice 4	113.75	58.660589	0	651.46597	114.87103	0
Slice 5	131.25	56.19454	0	676.30318	119.2505	0
Slice 6	148.74016	53.822285	0	705.93471	124.47534	0
Slice 7	166.22047	51.543526	0	740.41113	130.55446	0
Slice 8	184.24422	49.291645	0	741.74659	130.78994	0
Slice	202.8114	47.072334	0	709.32697	125.07348	0

9						
Slice 10	226.0475	44.456674	0	652.26154	115.01131	0
Slice 11	250.28661	41.869901	0	639.68039	112.79291	0
Slice 12	270.85984	39.823126	0	684.63002	120.71874	0
Slice 13	291.43306	37.902363	0	716.76445	126.38491	0
Slice 14	309.60984	36.303552	0	735.12962	129.62319	0
Slice 15	330	34.647936	0	786.2348	138.63441	0
Slice 16	355	32.769045	0	868.08391	153.06662	0
Slice 17	377.5	31.227848	0	914.81012	161.30571	0
Slice 18	397.5	29.990872	0	929.6664	163.92527	0
Slice 19	418.125	28.840789	0	906.42407	159.82702	0
Slice 20	439.375	27.785078	0	844.09931	148.83748	0
Slice 21	458.125	26.957138	0	797.47142	140.61573	0
Slice 22	474.375	26.329284	0	769.55198	135.69278	0
Slice 23	491.25	25.761056	0	731.59525	128.99998	0
Slice 24	508.66276	25.260675	0	717.57927	126.52859	0
Slice 25	525.98829	24.851471	0	728.71736	128.49253	0
Slice 26	547.32553	24.481275	0	728.15436	128.39326	0
Slice 27	561.25	24.280235	0	723.40509	127.55583	0
Slice 28	572.03456	24.194866	0	714.69184	126.01945	0
Slice 29	591.10368	24.104304	0	693.35534	122.25725	0
Slice 30	610.17281	24.12051	0	660.59145	116.4801	0
Slice 31	627.35368	24.221783	0	621.81145	109.64214	0
Slice 32	645.64421	24.437977	0	455.11675	80.249363	0
Slice 33	666.93262	24.803972	0	153.96378	27.147968	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 154
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:23:05
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:23:08

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (52.05023, 69.07466) ft
Left-Zone Right Coordinate: (122.5, 63.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (735.31065, 19.42833) ft
Right-Zone Right Coordinate: (802.5, 15.94445) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.526
Volume: 5,514.8279 ft^3
Weight: 5,79,056.93 lbs
Resisting Moment: 3.7525493e+008 lbs-ft
Activating Moment: 2.45955e+008 lbs-ft
Resisting Force: 1,01,339.8 lbs
Activating Force: 66,422.069 lbs
F of S Rank: 1
Exit: (735.31065, 19.428332) ft
Entry: (52.05023, 69.074664) ft
Radius: 3,691.1885 ft
Center: (660.02613, 3,709.8491) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	57.275115	68.209859	0	79.483726	14.015125	0
Slice 2	73.125	65.633898	0	263.45475	46.454181	0
Slice 3	94.375	62.275059	0	465.76483	82.126907	0
Slice 4	113.75	59.318001	0	583.75495	102.93175	0
Slice 5	131.25	56.742089	0	619.72548	109.27432	0
Slice 6	148.74016	54.253121	0	661.1491	116.57843	0
Slice 7	166.22047	51.850824	0	708.07671	124.85303	0
Slice 8	184.01766	49.493146	0	723.22133	127.52343	0
Slice	202.13171	47.183051	0	706.2814	124.53647	0

9						
Slice 10	225.59437	44.343432	0	668.85901	117.93789	0
Slice 11	249.72982	41.54782	0	675.66642	119.13822	0
Slice 12	269.18945	39.423492	0	737.315	130.00853	0
Slice 13	288.56445	37.411839	0	788.26308	138.99205	0
Slice 14	307.85482	35.511788	0	828.59428	146.10353	0
Slice 15	330	33.465219	0	905.77926	159.71332	0
Slice 16	355	31.306599	0	1,016.4626	179.22978	0
Slice 17	377.5	29.502432	0	1,090.5443	192.29238	0
Slice 18	397.5	28.021738	0	1,130.988	199.4237	0
Slice 19	418.125	26.610896	0	1,135.3934	200.20048	0
Slice 20	439.375	25.276807	0	1,102.8484	194.46193	0
Slice 21	466.25	23.786266	0	1,079.7263	190.38488	0
Slice 22	491.25	22.531498	0	1,067.8396	188.28893	0
Slice 23	510	21.724211	0	1,084.2886	191.18933	0
Slice 24	530	20.964949	0	1,127.9721	198.89191	0
Slice 25	550	20.314256	0	1,160.0978	204.55654	0
Slice 26	561.25	19.982583	0	1,174.4799	207.0925	0
Slice 27	573.33333	19.694614	0	1,185.4293	209.02316	0
Slice 28	595	19.249229	0	1,197.9502	211.23093	0
Slice 29	616.66667	18.931087	0	1,196.7337	211.01643	0
Slice 30	631.25	18.774585	0	1,189.6553	209.76832	0
Slice 31	643.75	18.706767	0	1,082.8681	190.93886	0
Slice 32	661.2862	18.671183	0	870.34226	153.46482	0
Slice 33	676.2862	18.701555	0	682.06759	120.26692	0
Slice 34	695.83931	18.858357	0	454.8488	80.202116	0
Slice 35	722.08931	19.204897	0	154.74713	27.286095	0
Slice 36	735.15533	19.42517	0	1.1804711	0.20814891	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.1g) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 141
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:12:28
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:12:31

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (18.45686, 69.67188) ft
Left-Zone Right Coordinate: (130, 62.93651) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (592.06419, 30.65802) ft
Right-Zone Right Coordinate: (702.5, 22.53968) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 0.960
Volume: 2,523.7124 ft^3
Weight: 2,64,989.8 lbs
Resisting Moment: 1.3597378e+008 lbs-ft
Activating Moment: 1.416916e+008 lbs-ft
Resisting Force: 46,029.391 lbs
Activating Force: 47,965.383 lbs
F of S Rank: 1
Exit: (592.06419, 30.658019) ft
Entry: (46.412826, 69.174884) ft
Radius: 2,941.2866 ft
Center: (525.44766, 2,971.1901) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	54.456413	67.870013	0	118.33373	20.86543	0
Slice 2	73.125	64.911505	0	334.20291	58.928991	0
Slice 3	94.375	61.683668	0	521.25306	91.910977	0
Slice 4	113.75	58.87253	0	623.57368	109.95286	0
Slice 5	131.25	56.452217	0	643.8113	113.5213	0
Slice 6	148.74016	54.140139	0	667.44493	117.68855	0
Slice 7	166.22047	51.93592	0	694.53833	122.46585	0
Slice 8	184.24265	49.776316	0	687.05952	121.14713	0
Slice	202.8067	47.66786	0	644.21352	113.59223	0

9						
Slice 10	221.37075	45.678721	0	589.21092	103.89378	0
Slice 11	235.32639	44.250697	0	540.93207	95.380919	0
Slice 12	249.6875	42.875169	0	539.23465	95.081617	0
Slice 13	269.0625	41.115226	0	564.78626	99.587056	0
Slice 14	288.4375	39.484384	0	577.17549	101.77161	0
Slice 15	307.8125	37.982427	0	576.29191	101.61581	0
Slice 16	325.83333	36.696782	0	593.68768	104.68316	0
Slice 17	342.5	35.61058	0	631.18692	111.29528	0
Slice 18	359.16667	34.619371	0	658.83238	116.16993	0
Slice 19	377.5	33.643859	0	665.59699	117.36271	0
Slice 20	397.5	32.704795	0	649.10665	114.45502	0
Slice 21	412.4357	32.079592	0	616.771	108.75337	0
Slice 22	425.52855	31.612539	0	558.66802	98.508246	0
Slice 23	441.84285	31.103312	0	478.31744	84.340271	0
Slice 24	458.125	30.685332	0	407.86931	71.918364	0
Slice 25	474.375	30.358206	0	347.44196	61.263391	0
Slice 26	491.25	30.11536	0	274.28783	48.364345	0
Slice 27	510	29.961097	0	220.48098	38.876746	0
Slice 28	530	29.924054	0	186.71042	32.922084	0
Slice 29	550	30.023009	0	138.53199	24.426928	0
Slice 30	561.25	30.121704	0	106.88595	18.846876	0
Slice 31	569.89105	30.248614	0	79.128403	13.952472	0
Slice 32	584.67314	30.509163	0	27.663293	4.8777849	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 147
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:17:52
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:17:54

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (45.24923, 69.19557) ft
Left-Zone Right Coordinate: (169.96628, 58.33333) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (677.57683, 25.02025) ft
Right-Zone Right Coordinate: (770, 17.62963) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.041
Volume: 4,124.0179 ft^3
Weight: 4,33,021.88 lbs
Resisting Moment: 2.5797306e+008 lbs-ft
Activating Moment: 2.4779565e+008 lbs-ft
Resisting Force: 75,481.342 lbs
Activating Force: 72,504.233 lbs
F of S Rank: 1
Exit: (677.57683, 25.02025) ft
Entry: (45.24923, 69.19557) ft
Radius: 3,405.8728 ft
Center: (597.74378, 3,429.9573) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	53.874615	67.800311	0	126.78367	22.355382	0
Slice 2	73.125	64.748668	0	351.54673	61.987174	0
Slice 3	94.375	61.504526	0	540.50507	95.305627	0
Slice 4	113.75	58.660589	0	646.12289	113.9289	0
Slice 5	131.25	56.19454	0	670.76907	118.27469	0
Slice 6	148.74016	53.822285	0	700.21329	123.46649	0
Slice 7	166.22047	51.543526	0	734.51258	129.51438	0
Slice 8	184.24422	49.291645	0	735.9616	129.76989	0
Slice	202.8114	47.072334	0	703.93467	124.12267	0

9						
Slice 10	226.0475	44.456674	0	647.50851	114.17322	0
Slice 11	250.28661	41.869901	0	635.33137	112.02606	0
Slice 12	270.85984	39.823126	0	680.35486	119.96492	0
Slice 13	291.43306	37.902363	0	712.70299	125.66877	0
Slice 14	309.60984	36.303552	0	731.35428	128.95749	0
Slice 15	330	34.647936	0	782.69353	138.00999	0
Slice 16	355	32.769045	0	864.84569	152.49563	0
Slice 17	377.5	31.227848	0	912.01907	160.81357	0
Slice 18	397.5	29.990872	0	927.37994	163.5221	0
Slice 19	418.125	28.840789	0	904.74056	159.53017	0
Slice 20	439.375	27.785078	0	843.05322	148.65303	0
Slice 21	458.125	26.957138	0	796.8978	140.51458	0
Slice 22	474.375	26.329284	0	769.31678	135.6513	0
Slice 23	491.25	25.761056	0	731.6688	129.01295	0
Slice 24	508.66276	25.260675	0	717.90147	126.5854	0
Slice 25	525.98829	24.851471	0	729.23653	128.58408	0
Slice 26	547.32553	24.481275	0	728.86367	128.51833	0
Slice 27	561.25	24.280235	0	724.20789	127.69739	0
Slice 28	572.03456	24.194866	0	715.54115	126.16921	0
Slice 29	591.10368	24.104304	0	694.24506	122.41413	0
Slice 30	610.17281	24.12051	0	661.46274	116.63373	0
Slice 31	627.35368	24.221783	0	622.61949	109.78461	0
Slice 32	645.64421	24.437977	0	455.70411	80.352929	0
Slice 33	666.93262	24.803972	0	154.16311	27.183117	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 155
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 01-07-2020
Time: 16:24:17
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Trail New\
Last Solved Date: 01-07-2020
Last Solved Time: 16:24:19

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (52.05023, 69.07466) ft
Left-Zone Right Coordinate: (122.5, 63.88889) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (735.31065, 19.42833) ft
Right-Zone Right Coordinate: (802.5, 15.94445) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.062
Volume: 5,514.8279 ft^3
Weight: 5,79,056.93 lbs
Resisting Moment: 3.7403789e+008 lbs-ft
Activating Moment: 3.523516e+008 lbs-ft
Resisting Force: 1,01,012.36 lbs
Activating Force: 95,156.45 lbs
F of S Rank: 1
Exit: (735.31065, 19.428332) ft
Entry: (52.05023, 69.074664) ft
Radius: 3,691.1885 ft
Center: (660.02613, 3,709.8491) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	57.275115	68.209859	0	78.823669	13.898739	0
Slice 2	73.125	65.633898	0	261.22776	46.061501	0
Slice 3	94.375	62.275059	0	461.76168	81.421043	0
Slice 4	113.75	59.318001	0	578.67091	102.03529	0
Slice 5	131.25	56.742089	0	614.26406	108.31133	0
Slice 6	148.74016	54.253121	0	655.29998	115.54707	0
Slice 7	166.22047	51.850824	0	701.83729	123.75285	0
Slice 8	184.01766	49.493146	0	716.89088	126.4072	0
Slice	202.13171	47.183051	0	700.15692	123.45656	0

9						
Slice 10	225.59437	44.343432	0	663.18358	116.93716	0
Slice 11	249.72982	41.54782	0	670.19291	118.17309	0
Slice 12	269.18945	39.423492	0	731.69678	129.01788	0
Slice 13	288.56445	37.411839	0	782.65409	138.00303	0
Slice 14	307.85482	35.511788	0	823.13835	145.1415	0
Slice 15	330	33.465219	0	900.42605	158.76941	0
Slice 16	355	31.306599	0	1,011.2586	178.31217	0
Slice 17	377.5	29.502432	0	1,085.7327	191.44398	0
Slice 18	397.5	28.021738	0	1,126.7101	198.66939	0
Slice 19	418.125	26.610896	0	1,131.8376	199.57351	0
Slice 20	439.375	25.276807	0	1,100.1389	193.98418	0
Slice 21	466.25	23.786266	0	1,077.9637	190.07408	0
Slice 22	491.25	22.531498	0	1,066.8625	188.11664	0
Slice 23	510	21.724211	0	1,083.805	191.10406	0
Slice 24	530	20.964949	0	1,127.9441	198.88697	0
Slice 25	550	20.314256	0	1,160.4892	204.62556	0
Slice 26	561.25	19.982583	0	1,175.0858	207.19934	0
Slice 27	573.33333	19.694614	0	1,186.2323	209.16476	0
Slice 28	595	19.249229	0	1,199.0397	211.42305	0
Slice 29	616.66667	18.931087	0	1,198.0012	211.23994	0
Slice 30	631.25	18.774585	0	1,190.9815	210.00217	0
Slice 31	643.75	18.706767	0	1,084.1396	191.16306	0
Slice 32	661.2862	18.671183	0	871.42391	153.65555	0
Slice 33	676.2862	18.701555	0	682.93213	120.41936	0
Slice 34	695.83931	18.858357	0	455.42434	80.303599	0
Slice 35	722.08931	19.204897	0	154.93412	27.319065	0
Slice 36	735.15533	19.42517	0	1.1816948	0.20836468	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (STATIC) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 172
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:35:07
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:35:09

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0, 70) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (308.88565, 43.45705) ft
Right-Zone Right Coordinate: (799.28578, 16.11111) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 1.530
Volume: 769.23933 ft³
Weight: 80,770.13 lbs
Resisting Moment: 1,85,08,366 lbs-ft
Activating Moment: 1,20,93,145 lbs-ft
Resisting Force: 14,055.392 lbs
Activating Force: 9,183.6472 lbs
F of S Rank: 1
Exit: (308.88565, 43.457048) ft
Entry: (75.309816, 68.051646) ft
Radius: 1,307.1235 ft
Center: (328.42237, 1,350.4345) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	79.021089	67.330274	0	49.12296	8.6617032	0
Slice 2	86.443635	65.909772	0	145.00986	25.569151	0
Slice 3	93.866181	64.533683	0	236.26325	41.659585	0
Slice 4	101.28873	63.201866	0	322.97174	56.948632	0
Slice 5	109.375	61.803326	0	384.47161	67.792718	0
Slice 6	118.125	60.346474	0	419.97984	74.053777	0
Slice 7	126.875	58.950548	0	449.43447	79.247423	0
Slice 8	135.625	57.61535	0	472.8654	83.378929	0
Slice 9	144.37008	56.341375	0	497.36479	87.698831	0

Slice 10	153.11024	55.128376	0	522.95815	92.211632	0
Slice 11	161.85039	53.975434	0	542.55932	95.667847	0
Slice 12	170.59055	52.882388	0	556.13459	98.061533	0
Slice 13	179.02559	51.883151	0	552.86798	97.485542	0
Slice 14	187.15551	50.973573	0	533.06759	93.994199	0
Slice 15	195.28543	50.11546	0	507.84933	89.547539	0
Slice 16	203.41535	49.308712	0	477.16711	84.137436	0
Slice 17	211.54528	48.553233	0	440.98184	77.756996	0
Slice 18	219.6752	47.848933	0	399.26449	70.401102	0
Slice 19	227.80512	47.19573	0	351.99871	62.06687	0
Slice 20	235.93504	46.593547	0	299.18287	52.754012	0
Slice 21	243.82698	46.057002	0	265.86692	46.879511	0
Slice 22	251.48094	45.583143	0	252.43473	44.511054	0
Slice 23	259.1349	45.154337	0	234.17371	41.291144	0
Slice 24	266.78886	44.77054	0	211.09557	37.221845	0
Slice 25	274.44282	44.431712	0	183.22162	32.306915	0
Slice 26	282.09679	44.137818	0	150.58222	26.551709	0
Slice 27	289.75075	43.888829	0	113.21571	19.962985	0
Slice 28	297.40471	43.684717	0	71.166778	12.548623	0
Slice 29	305.05867	43.525463	0	24.484331	4.3172481	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 175
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:40:48
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:40:51

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (43.54898, 69.2258) ft
Left-Zone Right Coordinate: (210, 52.98897) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (416.88264, 37.59744) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.813
Volume: 1,747.6993 ft³
Weight: 1,83,508.42 lbs
Resisting Moment: 6,58,59,865 lbs-ft
Activating Moment: 3,63,32,093 lbs-ft
Resisting Force: 32,054.192 lbs
Activating Force: 17,683.03 lbs
F of S Rank: 1
Exit: (416.88264, 37.597437) ft
Entry: (43.54898, 69.225797) ft
Radius: 2,043.0776 ft
Center: (401.9584, 2,080.6205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	48.286735	68.393083	0	77.218457	13.615697	0
Slice 2	57.762245	66.750626	0	229.20709	40.415395	0
Slice 3	69.583333	64.772975	0	376.56411	66.398413	0
Slice 4	83.75	62.488205	0	516.50209	91.073255	0
Slice 5	97.916667	60.305356	0	646.07031	113.91963	0
Slice 6	110.83333	58.399585	0	718.59766	126.70816	0
Slice 7	122.5	56.754326	0	735.74049	129.7309	0
Slice 8	134.16667	55.177603	0	745.98955	131.53808	0
Slice 9	145.82677	53.670066	0	758.8407	133.80409	0

Slice 10	157.48031	52.231487	0	774.31419	136.53248	0
Slice 11	169.13386	50.860834	0	782.91256	138.04861	0
Slice 12	180.68479	49.568851	0	769.54899	135.69225	0
Slice 13	192.13312	48.354227	0	734.26248	129.47029	0
Slice 14	203.58145	47.204784	0	692.17995	122.05	0
Slice 15	215.02978	46.120411	0	643.2585	113.42383	0
Slice 16	226.47811	45.101003	0	587.45729	103.58457	0
Slice 17	236.10113	44.289969	0	535.65796	94.450951	0
Slice 18	246.47002	43.478574	0	512.25106	90.323683	0
Slice 19	259.41007	42.532211	0	505.41312	89.11797	0
Slice 20	272.35011	41.668409	0	489.82685	86.369689	0
Slice 21	285.29016	40.887064	0	465.45619	82.072485	0
Slice 22	298.19514	40.189752	0	432.39003	76.242028	0
Slice 23	311.06505	39.575945	0	390.66581	68.884923	0
Slice 24	323.75	39.049954	0	363.66291	64.123584	0
Slice 25	336.25	38.609415	0	351.67034	62.008969	0
Slice 26	348.75	38.245475	0	331.49992	58.452381	0
Slice 27	361.25	37.958092	0	303.16742	53.456596	0
Slice 28	374.16667	37.74284	0	257.41939	45.389984	0
Slice 29	387.5	37.604965	0	193.75366	34.163998	0
Slice 30	400.83333	37.554114	0	120.97798	21.331682	0
Slice 31	412.19132	37.57394	0	41.157755	7.2572226	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 169
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:29:44
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:29:45

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (49.50489, 69.11991) ft
Left-Zone Right Coordinate: (215.61025, 52.22222) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (407.08425, 38.35643) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556
Point 29	80	55.55556

Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft²)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.768
Volume: 1,508.5209 ft³
Weight: 1,58,394.69 lbs
Resisting Moment: 5,45,10,253 lbs-ft
Activating Moment: 3,08,28,219 lbs-ft
Resisting Force: 27,654.252 lbs
Activating Force: 15,639.912 lbs
F of S Rank: 1
Exit: (407.08425, 38.356427) ft
Entry: (49.50489, 69.119914) ft
Radius: 1,959.6326 ft
Center: (395.56064, 1,997.9552) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	56.002445	67.976742	0	105.94307	18.680621	0
Slice 2	67.8125	65.932357	0	268.89561	47.413552	0
Slice 3	78.4375	64.159948	0	379.85681	66.979005	0
Slice 4	89.0625	62.447488	0	484.66607	85.459704	0
Slice 5	99.6875	60.794818	0	583.40159	102.86944	0
Slice 6	110.83333	59.126754	0	643.27503	113.42674	0
Slice 7	122.5	57.449253	0	663.69766	117.0278	0
Slice 8	134.16667	55.843285	0	676.92522	119.36018	0
Slice 9	145.82677	54.309495	0	692.45069	122.09774	0

Slice 10	157.48031	52.847634	0	710.29769	125.24465	0
Slice 11	169.13386	51.45664	0	720.97632	127.12758	0
Slice 12	181.46457	50.06398	0	707.05563	124.67299	0
Slice 13	194.47244	48.678173	0	667.54224	117.70571	0
Slice 14	207.48031	47.380095	0	618.86271	109.12219	0
Slice 15	220.48819	46.169572	0	560.94991	98.910603	0
Slice 16	233.49606	45.04644	0	493.74264	87.060149	0
Slice 17	245.53571	44.081652	0	456.9594	80.574271	0
Slice 18	256.60714	43.263083	0	451.9877	79.697626	0
Slice 19	267.67857	42.507541	0	440.34126	77.644045	0
Slice 20	278.75	41.814953	0	421.99556	74.409203	0
Slice 21	289.82143	41.185252	0	396.93286	69.989973	0
Slice 22	300.89286	40.618377	0	365.14377	64.384699	0
Slice 23	311.96429	40.114274	0	326.62843	57.593404	0
Slice 24	323.75	39.648722	0	300.62017	53.007447	0
Slice 25	336.25	39.230285	0	286.22966	50.470011	0
Slice 26	348.75	38.891693	0	263.33243	46.432612	0
Slice 27	361.25	38.632907	0	231.95334	40.899632	0
Slice 28	374.09738	38.451196	0	183.07928	32.281816	0
Slice 29	387.29212	38.351095	0	116.30234	20.507241	0
Slice 30	400.48687	38.339842	0	40.289457	7.1041184	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.05g) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 173
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:37:18
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:37:20

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0, 70) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (308.88565, 43.45705) ft
Right-Zone Right Coordinate: (799.28578, 16.11111) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 1.062
Volume: 769.23933 ft^3
Weight: 80,770.13 lbs
Resisting Moment: 1,84,02,265 lbs-ft
Activating Moment: 1,73,24,760 lbs-ft
Resisting Force: 13,975.063 lbs
Activating Force: 13,156.797 lbs
F of S Rank: 1
Exit: (308.88565, 43.457048) ft
Entry: (75.309816, 68.051646) ft
Radius: 1,307.1235 ft
Center: (328.42237, 1,350.4345) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	79.021089	67.330274	0	48.631196	8.5749919	0
Slice 2	86.443635	65.909772	0	143.52278	25.306938	0
Slice 3	93.866181	64.533683	0	233.79033	41.223542	0
Slice 4	101.28873	63.201866	0	319.55317	56.345846	0
Slice 5	109.375	61.803326	0	380.38071	67.071382	0
Slice 6	118.125	60.346474	0	415.5343	73.269908	0
Slice 7	126.875	58.950548	0	444.78047	78.426797	0
Slice 8	135.625	57.61535	0	468.15515	82.548385	0
Slice	144.37008	56.341375	0	492.68874	86.874318	0

9						
Slice 10	153.11024	55.128376	0	518.40819	91.409351	0
Slice 11	161.85039	53.975434	0	538.27598	94.912578	0
Slice 12	170.59055	52.882388	0	552.23746	97.374363	0
Slice 13	179.02559	51.883151	0	549.49247	96.890348	0
Slice 14	187.15551	50.973573	0	530.29242	93.504862	0
Slice 15	195.28543	50.11546	0	505.67105	89.16345	0
Slice 16	203.41535	49.308712	0	475.55588	83.853333	0
Slice 17	211.54528	48.553233	0	439.88471	77.563542	0
Slice 18	219.6752	47.848933	0	398.61024	70.28574	0
Slice 19	227.80512	47.19573	0	351.7041	62.014922	0
Slice 20	235.93504	46.593547	0	299.1599	52.749962	0
Slice 21	243.82698	46.057002	0	266.00205	46.903338	0
Slice 22	251.48094	45.583143	0	252.64724	44.548525	0
Slice 23	259.1349	45.154337	0	234.41809	41.334234	0
Slice 24	266.78886	44.77054	0	211.33014	37.263206	0
Slice 25	274.44282	44.431712	0	183.41322	32.340698	0
Slice 26	282.09679	44.137818	0	150.71046	26.57432	0
Slice 27	289.75075	43.888829	0	113.27663	19.973725	0
Slice 28	297.40471	43.684717	0	71.175519	12.550164	0
Slice 29	305.05867	43.525463	0	24.476779	4.3159165	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 176
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:42:35
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:42:37

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (43.54898, 69.2258) ft
Left-Zone Right Coordinate: (210, 52.98897) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (416.88264, 37.59744) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.193
Volume: 1,747.6993 ft^3
Weight: 1,83,508.42 lbs
Resisting Moment: 6,55,41,247 lbs-ft
Activating Moment: 5,49,46,524 lbs-ft
Resisting Force: 31,899.585 lbs
Activating Force: 26,743.183 lbs
F of S Rank: 1
Exit: (416.88264, 37.597437) ft
Entry: (43.54898, 69.225797) ft
Radius: 2,043.0776 ft
Center: (401.9584, 2,080.6205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	48.286735	68.393083	0	76.529024	13.494132	0
Slice 2	57.762245	66.750626	0	227.13937	40.0508	0
Slice 3	69.583333	64.772975	0	373.11949	65.791032	0
Slice 4	83.75	62.488205	0	511.75244	90.235763	0
Slice 5	97.916667	60.305356	0	640.17947	112.88091	0
Slice 6	110.83333	58.399585	0	712.1508	125.5714	0
Slice 7	122.5	56.754326	0	729.2779	128.59137	0
Slice 8	134.16667	55.177603	0	739.64454	130.41929	0
Slice	145.82677	53.670066	0	752.67029	132.71608	0

9						
Slice 10	157.48031	52.231487	0	768.37519	135.48528	0
Slice 11	169.13386	50.860834	0	777.32172	137.06279	0
Slice 12	180.68479	49.568851	0	764.49197	134.80056	0
Slice 13	192.13312	48.354227	0	729.88171	128.69784	0
Slice 14	203.58145	47.204784	0	688.50138	121.40137	0
Slice 15	215.02978	46.120411	0	640.28431	112.8994	0
Slice 16	226.47811	45.101003	0	585.16664	103.18067	0
Slice 17	236.10113	44.289969	0	533.90893	94.14255	0
Slice 18	246.47002	43.478574	0	510.92917	90.090599	0
Slice 19	259.41007	42.532211	0	504.51889	88.960293	0
Slice 20	272.35011	41.668409	0	489.33206	86.282445	0
Slice 21	285.29016	40.887064	0	465.31068	82.046828	0
Slice 22	298.19514	40.189752	0	432.52633	76.266062	0
Slice 23	311.06505	39.575945	0	391.00703	68.945089	0
Slice 24	323.75	39.049954	0	364.12578	64.205199	0
Slice 25	336.25	38.609415	0	352.19146	62.100858	0
Slice 26	348.75	38.245475	0	332.02297	58.544609	0
Slice 27	361.25	37.958092	0	303.63997	53.53992	0
Slice 28	374.16667	37.74284	0	257.79174	45.455639	0
Slice 29	387.5	37.604965	0	193.99351	34.206289	0
Slice 30	400.83333	37.554114	0	121.08999	21.351432	0
Slice 31	412.19132	37.57394	0	41.183146	7.2616997	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 170
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:32:28
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:32:29

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (49.50489, 69.11991) ft
Left-Zone Right Coordinate: (215.61025, 52.22222) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (407.08425, 38.35643) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.05
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 1.173
Volume: 1,508.5209 ft^3
Weight: 1,58,394.69 lbs
Resisting Moment: 5,42,39,840 lbs-ft
Activating Moment: 4,62,36,724 lbs-ft
Resisting Force: 27,517.461 lbs
Activating Force: 23,457.375 lbs
F of S Rank: 1
Exit: (407.08425, 38.356427) ft
Entry: (49.50489, 69.119914) ft
Radius: 1,959.6326 ft
Center: (395.56064, 1,997.9552) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	56.002445	67.976742	0	104.98545	18.511768	0
Slice 2	67.8125	65.932357	0	266.44173	46.980867	0
Slice 3	78.4375	64.159948	0	376.36104	66.362605	0
Slice 4	89.0625	62.447488	0	480.20422	84.672961	0
Slice 5	99.6875	60.794818	0	578.0717	101.92964	0
Slice 6	110.83333	59.126754	0	637.47479	112.40401	0
Slice 7	122.5	57.449253	0	657.83478	115.99402	0
Slice 8	134.16667	55.843285	0	671.13507	118.33922	0
Slice	145.82677	54.309495	0	686.79245	121.10004	0

9						
Slice 10	157.48031	52.847634	0	704.83098	124.28072	0
Slice 11	169.13386	51.45664	0	715.8214	126.21863	0
Slice 12	181.46457	50.06398	0	702.4463	123.86023	0
Slice 13	194.47244	48.678173	0	663.67082	117.02307	0
Slice 14	207.48031	47.380095	0	615.75555	108.57432	0
Slice 15	220.48819	46.169572	0	558.59697	98.495717	0
Slice 16	233.49606	45.04644	0	492.09984	86.770478	0
Slice 17	245.53571	44.081652	0	455.81271	80.37208	0
Slice 18	256.60714	43.263083	0	451.17291	79.553958	0
Slice 19	267.67857	42.507541	0	439.83954	77.555579	0
Slice 20	278.75	41.814953	0	421.77352	74.370051	0
Slice 21	289.82143	41.185252	0	396.94562	69.992223	0
Slice 22	300.89286	40.618377	0	365.33873	64.419076	0
Slice 23	311.96429	40.114274	0	326.94954	57.650025	0
Slice 24	323.75	39.648722	0	301.01338	53.076781	0
Slice 25	336.25	39.230285	0	286.64718	50.543632	0
Slice 26	348.75	38.891693	0	263.72476	46.50179	0
Slice 27	361.25	38.632907	0	232.27818	40.956911	0
Slice 28	374.09738	38.451196	0	183.30213	32.32111	0
Slice 29	387.29212	38.351095	0	116.41258	20.526679	0
Slice 30	400.48687	38.339842	0	40.315806	7.1087644	0

SLOPE STABILITY ANALYSIS WITH WATERTABLE (SEISMIC Kh=0.1g) ADDITIONAL TRAILS

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 174
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:39:29
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:39:31

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0, 70) ft
Left-Zone Right Coordinate: (300, 44.15771) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (308.88565, 43.45705) ft
Right-Zone Right Coordinate: (799.28578, 16.11111) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 26
F of S: 0.811
Volume: 769.23933 ft^3
Weight: 80,770.13 lbs
Resisting Moment: 1,82,96,473 lbs-ft
Activating Moment: 2,25,56,376 lbs-ft
Resisting Force: 13,894.975 lbs
Activating Force: 17,130.193 lbs
F of S Rank: 1
Exit: (308.88565, 43.457048) ft
Entry: (75.309816, 68.051646) ft
Radius: 1,307.1235 ft
Center: (328.42237, 1,350.4345) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	79.021089	67.330274	0	48.144316	8.489142	0
Slice 2	86.443635	65.909772	0	142.05249	25.047687	0
Slice 3	93.866181	64.533683	0	231.34681	40.792684	0
Slice 4	101.28873	63.201866	0	316.17445	55.750086	0
Slice 5	109.375	61.803326	0	376.33351	66.357752	0
Slice 6	118.125	60.346474	0	411.12845	72.493038	0
Slice 7	126.875	58.950548	0	440.15729	77.611606	0
Slice 8	135.625	57.61535	0	463.46382	81.721176	0
Slice	144.37008	56.341375	0	488.01899	86.050915	0

9						
Slice 10	153.11024	55.128376	0	513.85286	90.606124	0
Slice 11	161.85039	53.975434	0	533.97796	94.154722	0
Slice 12	170.59055	52.882388	0	548.31993	96.683598	0
Slice 13	179.02559	51.883151	0	546.09514	96.291307	0
Slice 14	187.15551	50.973573	0	527.49786	93.012106	0
Slice 15	195.28543	50.11546	0	503.47844	88.776834	0
Slice 16	203.41535	49.308712	0	473.93682	83.567849	0
Slice 17	211.54528	48.553233	0	438.78643	77.369886	0
Slice 18	219.6752	47.848933	0	397.96063	70.171197	0
Slice 19	227.80512	47.19573	0	351.4183	61.964528	0
Slice 20	235.93504	46.593547	0	299.14803	52.747869	0
Slice 21	243.82698	46.057002	0	266.14796	46.929066	0
Slice 22	251.48094	45.583143	0	252.86794	44.58744	0
Slice 23	259.1349	45.154337	0	234.66718	41.378156	0
Slice 24	266.78886	44.77054	0	211.56585	37.304768	0
Slice 25	274.44282	44.431712	0	183.60305	32.374172	0
Slice 26	282.09679	44.137818	0	150.83536	26.596343	0
Slice 27	289.75075	43.888829	0	113.33419	19.983876	0
Slice 28	297.40471	43.684717	0	71.182187	12.55134	0
Slice 29	305.05867	43.525463	0	24.468739	4.3144989	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 177
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:44:04
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:44:06

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (43.54898, 69.2258) ft
Left-Zone Right Coordinate: (210, 52.98897) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (416.88264, 37.59744) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 0.887
Volume: 1,747.6993 ft^3
Weight: 1,83,508.42 lbs
Resisting Moment: 6,52,23,754 lbs-ft
Activating Moment: 7,35,60,955 lbs-ft
Resisting Force: 31,745.541 lbs
Activating Force: 35,803.439 lbs
F of S Rank: 1
Exit: (416.88264, 37.597437) ft
Entry: (43.54898, 69.225797) ft
Radius: 2,043.0776 ft
Center: (401.9584, 2,080.6205) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	48.286735	68.393083	0	75.845158	13.373548	0
Slice 2	57.762245	66.750626	0	225.0877	39.689034	0
Slice 3	69.583333	64.772975	0	369.69883	65.187879	0
Slice 4	83.75	62.488205	0	507.02881	89.402859	0
Slice 5	97.916667	60.305356	0	634.30973	111.84592	0
Slice 6	110.83333	58.399585	0	705.71409	124.43644	0
Slice 7	122.5	56.754326	0	722.81251	127.45135	0
Slice 8	134.16667	55.177603	0	733.28407	129.29777	0
Slice	145.82677	53.670066	0	746.47333	131.62339	0

9						
Slice 10	157.48031	52.231487	0	762.4011	134.43188	0
Slice 11	169.13386	50.860834	0	771.69066	136.06988	0
Slice 12	180.68479	49.568851	0	759.39393	133.90164	0
Slice 13	192.13312	48.354227	0	725.46351	127.91879	0
Slice 14	203.58145	47.204784	0	684.79267	120.74742	0
Slice 15	215.02978	46.120411	0	637.29007	112.37143	0
Slice 16	226.47811	45.101003	0	582.86775	102.77531	0
Slice 17	236.10113	44.289969	0	532.16208	93.834533	0
Slice 18	246.47002	43.478574	0	509.62031	89.85981	0
Slice 19	259.41007	42.532211	0	503.6504	88.807154	0
Slice 20	272.35011	41.668409	0	488.87365	86.201615	0
Slice 21	285.29016	40.887064	0	465.20898	82.028895	0
Slice 22	298.19514	40.189752	0	432.70998	76.298445	0
Slice 23	311.06505	39.575945	0	391.39516	69.013527	0
Slice 24	323.75	39.049954	0	364.63232	64.294516	0
Slice 25	336.25	38.609415	0	352.75088	62.199498	0
Slice 26	348.75	38.245475	0	332.57679	58.642261	0
Slice 27	361.25	37.958092	0	304.13476	53.627165	0
Slice 28	374.16667	37.74284	0	258.17773	45.523699	0
Slice 29	387.5	37.604965	0	194.23984	34.249724	0
Slice 30	400.83333	37.554114	0	121.20406	21.371545	0
Slice 31	412.19132	37.57394	0	41.20885	7.2662321	0

SLOPE/W Analysis

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File Information

Created By: Admin
Last Edited By: Admin
Revision Number: 171
File Version: 8.3
Tool Version: 8.13.4.13430
Date: 13-07-2020
Time: 10:33:33
File Name: Analysis.gsz
Directory: G:\My Drive\AGS ENGINEERING\AGS 2020 ENG PROJECTS\0280-WS20 Richard Coba 39.553792, -107.345697 Glenwood Springs, CO\Slope Stability Analysis\Additional trails\Additional Trails\
Last Solved Date: 13-07-2020
Last Solved Time: 10:33:36

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
- Side Function
  - Interslice force function option: Half-Sine
- Lambda
  - Lambda 1: -1
  - Lambda 2: -0.8
  - Lambda 3: -0.6
  - Lambda 4: -0.4
  - Lambda 5: -0.2
  - Lambda 6: 0
  - Lambda 7: 0.2
  - Lambda 8: 0.4
  - Lambda 9: 0.6
  - Lambda 10: 0.8
  - Lambda 11: 1
- PWP Conditions Source: Piezometric Line
- Apply Phreatic Correction: No
- Use Staged Rapid Drawdown: No

Slip Surface

Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Optimization Maximum Iterations: 2,000
Optimization Convergence Tolerance: 1e-007
Starting Optimization Points: 8
Ending Optimization Points: 16
Complete Passes per Insertion: 1
Driving Side Maximum Convex Angle: 5 °
Resisting Side Maximum Convex Angle: 1 °

Materials

Silty gravel

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Clayey Silty Sand

Model: Mohr-Coulomb
Unit Weight: 105 pcf
Cohesion': 0 psf
Phi': 10 °
Phi-B: 0 °

Bedrock

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 28 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (49.50489, 69.11991) ft
Left-Zone Right Coordinate: (215.61025, 52.22222) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (407.08425, 38.35643) ft
Right-Zone Right Coordinate: (632.5, 30.03831) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 70) ft
Right Coordinate: (900, 10.55556) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
Coordinate 1	0	60.55556
Coordinate 2	482.5	27.41667
Coordinate 3	560	23.33333
Coordinate 4	875	10
Coordinate 5	900	10

Seismic Coefficients

Horz Seismic Coef.: 0.1
Ignore seismic load in strength: No

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	174.96063	57.77778
Point 3	240	48.88889
Point 4	317.5	42.77778
Point 5	367.5	40.55556
Point 6	407.5	38.33333
Point 7	450	35
Point 8	500	32.22222
Point 9	562.5	31.11111
Point 10	635	30
Point 11	682.5	24.44444
Point 12	735	19.44444
Point 13	810	15.55556
Point 14	870	12.77778
Point 15	900	10.55556
Point 16	140	61.66667
Point 17	0	70
Point 18	62.5	68.88889
Point 19	105	66.11111
Point 20	0	60.55556
Point 21	735	17.22222
Point 22	670	21.66667
Point 23	627.5	23.88889
Point 24	562.5	26.11111
Point 25	500	27.22222
Point 26	450	27.77778
Point 27	235	41.11111
Point 28	142.5	50.55556

Point 29	80	55.55556
Point 30	25	58.88889
Point 31	0	35
Point 32	270	25
Point 33	480	16.66667
Point 34	700	11.11111
Point 35	872.5	8.33333
Point 36	900	8.33333
Point 37	900	0

Regions

	Material	Points	Area (ft^2)
Region 1	Silty gravel	20,17,18,19,16,2,3,4,5,6,7,8,9,10,11,12,13,21,22,23,24,25,26,27,28,29,30	5,676.8
Region 2	Clayey Silty Sand	31,32,33,34,35,36,15,14,13,21,22,23,24,25,26,27,28,29,30,20	11,492
Region 3	Bedrock	1,31,32,33,34,35,36,37	17,437

Current Slip Surface

Slip Surface: 1
F of S: 0.875
Volume: 1,508.5209 ft^3
Weight: 1,58,394.69 lbs
Resisting Moment: 5,39,70,327 lbs-ft
Activating Moment: 6,16,45,229 lbs-ft
Resisting Force: 27,381.141 lbs
Activating Force: 31,274.924 lbs
F of S Rank: 1
Exit: (407.08425, 38.356427) ft
Entry: (49.50489, 69.119914) ft
Radius: 1,959.6326 ft
Center: (395.56064, 1,997.9552) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	56.002445	67.976742	0	104.03539	18.344247	0
Slice 2	67.8125	65.932357	0	264.00577	46.551341	0
Slice 3	78.4375	64.159948	0	372.88757	65.75014	0
Slice 4	89.0625	62.447488	0	475.76532	83.890262	0
Slice 5	99.6875	60.794818	0	572.76135	100.99328	0
Slice 6	110.83333	59.126754	0	631.68551	111.3832	0
Slice 7	122.5	57.449253	0	651.97096	114.96007	0
Slice 8	134.16667	55.843285	0	665.33207	117.31599	0
Slice	145.82677	54.309495	0	681.11081	120.09821	0

9						
Slice 10	157.48031	52.847634	0	699.33272	123.31123	0
Slice 11	169.13386	51.45664	0	710.63008	125.30326	0
Slice 12	181.46457	50.06398	0	697.80013	123.04099	0
Slice 13	194.47244	48.678173	0	659.76741	116.33479	0
Slice 14	207.48031	47.380095	0	612.62559	108.02242	0
Slice 15	220.48819	46.169572	0	556.23331	98.07894	0
Slice 16	233.49606	45.04644	0	490.45947	86.481238	0
Slice 17	245.53571	44.081652	0	454.68024	80.172394	0
Slice 18	256.60714	43.263083	0	450.38237	79.414564	0
Slice 19	267.67857	42.507541	0	439.3705	77.472874	0
Slice 20	278.75	41.814953	0	421.59026	74.337737	0
Slice 21	289.82143	41.185252	0	397.00048	70.001895	0
Slice 22	300.89286	40.618377	0	365.57618	64.460943	0
Slice 23	311.96429	40.114274	0	327.3108	57.713724	0
Slice 24	323.75	39.648722	0	301.44247	53.152441	0
Slice 25	336.25	39.230285	0	287.09453	50.622512	0
Slice 26	348.75	38.891693	0	264.13938	46.5749	0
Slice 27	361.25	38.632907	0	232.61757	41.016754	0
Slice 28	374.09738	38.451196	0	183.53256	32.361741	0
Slice 29	387.29212	38.351095	0	116.52549	20.546587	0
Slice 30	400.48687	38.339842	0	40.342574	7.1134843	0

GEOPHYSICAL

SETTING &

WATER WELL DETAILS

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

GLENWOOD MEADOWS HOUSING
WULFSOHN ROAD
GLENWOOD SPRINGS, CO 81601

TARGET PROPERTY COORDINATES

Latitude (North):	39.554395 - 39° 33' 15.82''
Longitude (West):	107.348062 - 107° 20' 53.02''
Universal Tranverse Mercator:	Zone 13
UTM X (Meters):	298257.4
UTM Y (Meters):	4380725.5
Elevation:	5915 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5957205 GLENWOOD SPRINGS, CO
Version Date:	2013
West Map:	5957249 STORM KING MOUNTAIN, CO
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
Not Reported	

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Paleozoic
System:	Ordovician
Series:	Lower Paleozoic
Code:	lPz *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Chilton

Soil Surface Texture: channery loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	channery loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 42.34 Min: 14.11	Max: 8.4 Min: 7.9
2	12 inches	22 inches	very channery sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 42.34 Min: 14.11	Max: 8.4 Min: 7.9
3	22 inches	59 inches	very cobbly sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 42.34 Min: 14.11	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: Begay

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42.34 Min: 14.11	Max: 8.4 Min: 7.9
2	9 inches	59 inches	stony sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42.34 Min: 14.11	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
E23	USGS40000208918	1/2 - 1 Mile East
G29	USGS40000208899	1/2 - 1 Mile East
G34	USGS40000208906	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CO7000000324417	1/4 - 1/2 Mile ENE
A2	CO7000000349413	1/4 - 1/2 Mile ENE
3	CO7000000166980	1/4 - 1/2 Mile WNW
A4	CO7000000258803	1/4 - 1/2 Mile ENE
5	CO7000000090604	1/4 - 1/2 Mile NE
6	CO7000000298041	1/2 - 1 Mile ENE
7	CO7000000150535	1/2 - 1 Mile NNW
B8	CO7000000365873	1/2 - 1 Mile WNW
B9	CO7000000133567	1/2 - 1 Mile WNW
B10	CO7000000313658	1/2 - 1 Mile WNW
B11	CO7000000393080	1/2 - 1 Mile WNW
C12	CO7000000150536	1/2 - 1 Mile NE
C13	CO7000000256265	1/2 - 1 Mile NE
B14	CO7000000256424	1/2 - 1 Mile WNW
15	CO7000000112971	1/2 - 1 Mile WNW
D16	CO7000000425543	1/2 - 1 Mile NW
E17	CO7000000299859	1/2 - 1 Mile East
D18	CO7000000011033	1/2 - 1 Mile NW
D19	CO7000000012473	1/2 - 1 Mile WNW
E20	CO7000000073001	1/2 - 1 Mile East
E21	CO7000000248384	1/2 - 1 Mile East
D22	CO7000000011034	1/2 - 1 Mile NW
24	CO7000000284603	1/2 - 1 Mile ENE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
25	CO7000000009536	1/2 - 1 Mile SSE
26	CO7000000160074	1/2 - 1 Mile SW
F27	CO7000000183771	1/2 - 1 Mile WNW
F28	CO7000000091690	1/2 - 1 Mile WNW
30	CO7000000010345	1/2 - 1 Mile East
H31	CO7000000092945	1/2 - 1 Mile NNE
H32	CO7000000322929	1/2 - 1 Mile NNE
33	CO7000000348987	1/2 - 1 Mile NNW
35	CO7000000150553	1/2 - 1 Mile NNE
36	CO7000000097341	1/2 - 1 Mile East
I37	CO7000000352550	1/2 - 1 Mile NW
38	CO7000000104162	1/2 - 1 Mile North
39	CO7000000011413	1/2 - 1 Mile ESE
J40	CO7000000253039	1/2 - 1 Mile NW
I41	CO7000000122552	1/2 - 1 Mile NW
J42	CO7000000071993	1/2 - 1 Mile NW
J43	CO7000000395992	1/2 - 1 Mile NW
J44	CO7000000429147	1/2 - 1 Mile NW
J45	CO7000000104686	1/2 - 1 Mile NW
K46	CO7000000229226	1/2 - 1 Mile North
K47	CO7000000229225	1/2 - 1 Mile North
K48	CO7000000229224	1/2 - 1 Mile North
K49	CO7000000229227	1/2 - 1 Mile North
K50	CO7000000469712	1/2 - 1 Mile North
K51	CO7000000313945	1/2 - 1 Mile North
K52	CO7000000229228	1/2 - 1 Mile North
I53	CO7000000122553	1/2 - 1 Mile NW
54	CO7000000012620	1/2 - 1 Mile NW
L55	CO7000000076247	1/2 - 1 Mile NE
L56	CO7000000321216	1/2 - 1 Mile NE
M57	CO7000000010707	1/2 - 1 Mile East
M58	CO7000000010708	1/2 - 1 Mile East
M59	CO7000000010709	1/2 - 1 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
ENE
1/4 - 1/2 Mile
Lower

CO WELLS **CO7000000324417**

CO DWR ID #:	Not Reported	Permit #:	36945-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	09/10/1999
Expiration Date:	12/10/1999	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

A2
ENE
1/4 - 1/2 Mile
Lower

CO WELLS **CO7000000349413**

CO DWR ID #:	Not Reported	Permit #:	36139-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	05/19/1999
Expiration Date:	08/19/1999	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

3
WNW
1/4 - 1/2 Mile
Lower

CO WELLS **CO7000000166980**

CO DWR ID #:	Not Reported	Permit #:	24572-F
Well Name:	Not Reported	Well Status:	Not Reported
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Commercial	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	12/31/1979

Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

A4
ENE **CO WELLS** **CO7000000258803**
1/4 - 1/2 Mile
Lower

CO DWR ID #:	Not Reported	Permit #:	221874-
Well Name:	MW 2	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	11/12/1999
Expiration Date:	11/12/2001	Construction Date:	09/15/1999
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	02/16/2000	Surface Elevation (ft):	5720
Well Depth (ft):	20	Top of First Perf Casing:	10
Base of Last Perf Casing:	20	Yield (gal/min):	0
Static Water Depth (ft):	17	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

5
NE **CO WELLS** **CO7000000090604**
1/4 - 1/2 Mile
Lower

CO DWR ID #:	Not Reported	Permit #:	221873-
Well Name:	MW 1	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	11/12/1999
Expiration Date:	11/12/2001	Construction Date:	05/12/1999
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	02/16/2000	Surface Elevation (ft):	5720
Well Depth (ft):	24	Top of First Perf Casing:	14
Base of Last Perf Casing:	24	Yield (gal/min):	0
Static Water Depth (ft):	18	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

6
ENE
1/2 - 1 Mile
Lower

CO WELLS **CO7000000298041**

CO DWR ID #:	Not Reported	Permit #:	21029-F
Well Name:	WEST GLEN #1	Well Status:	Permit Expired
Water Court Case #:	W2997	Parcel Size:	0
Well Use:	Domestic	Addtl Well Use:	Commercial
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	05/25/1976
Expiration Date:	05/25/1978	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5		
Comments:	X-refer case no. W2997, Abandoned by court 06/10/82. dmw 06/17/11		

7
NNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000150535**

CO DWR ID #:	Not Reported	Permit #:	9992-AD
Well Name:	MITCHELL-COOPER WELL NO. 2		
Well Status:	Application Denied	Water Court Case #:	79CW0381
Parcel Size:	0	Well Use:	Municipal
Addtl Well Use:	Not Reported	Special Use:	Not Reported
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0 acres	Yrly Appropriation:	0
Issue Date:	03/10/1983	Expiration Date:	Not Reported
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	45	Division:	5
Comments:	APPLICATION DENIED! X-refer case no. 79CW0381, dismissed & not decreed. dmw 06/16/11		

B8
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000365873**

CO DWR ID #:	Not Reported	Permit #:	53-GX
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	Not Reported

Expiration Date:	Not Reported	Construction Date:	06/26/2007
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	300	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5		
Comments:	Well located at 0120 Midland Ave Glenwood Springs		

B9
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000133567**

CO DWR ID #:	Not Reported	Permit #:	53-GX
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	01/02/2008
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	Property location: 0120 Midland Ave, Glenwood Springs, CO 81601		

B10
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000313658**

CO DWR ID #:	Not Reported	Permit #:	1-GX
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	07/21/2008
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B11
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000393080**

CO DWR ID #:	Not Reported	Permit #:	53-GX
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	01/02/2008
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	300	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5		
Comments:	Well located at 0120 Midland Ave Glenwood Springs		

C12
NE
1/2 - 1 Mile
Lower

CO WELLS **CO7000000150536**

CO DWR ID #:	Not Reported	Permit #:	154190--A
Well Name:	MARTIN WATER WELL NO. 1	Well Status:	Well Constructed
Water Court Case #:	W1609	Parcel Size:	0
Well Use:	Domestic	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	05/23/1989
Expiration Date:	Not Reported	Construction Date:	05/25/1989
Start Use Date:	Not Reported	Pump Install Date:	06/07/1989
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	66	Top of First Perf Casing:	36
Base of Last Perf Casing:	66	Yield (gal/min):	10
Static Water Depth (ft):	53	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	X-refer file no. 154190 & case no. W1609 (Martin Well no. 1), domestic an other beneficial purposes.		

C13
NE
1/2 - 1 Mile
Lower

CO WELLS **CO7000000256265**

CO DWR ID #:	Not Reported	Permit #:	154190-
Well Name:	MARTIN WATER WELL NO. 1	Well Status:	Well Abandoned
Water Court Case #:	W1609	Parcel Size:	0
Well Use:	Domestic	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	1.5	Issue Date:	05/23/1989

Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	03/03/1963	Pump Install Date:	Not Reported
Well Plug Date:	06/17/1989	Surface Elevation (ft):	0
Well Depth (ft):	20	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	15
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	X-refer file no. 154190-A & case no. W1609 (Martin Well no. 1), domestic an other beneficial purposes.		

B14
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000256424**

CO DWR ID #:	Not Reported	Permit #:	493-G
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	5.7399998
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Closed Loop Geothermal	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	07/26/2004
Expiration Date:	07/26/2005	Construction Date:	11/06/2004
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	275	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

15
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000112971**

CO DWR ID #:	Not Reported	Permit #:	2000026-AB
Well Name:	Not Reported	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/01/1995	Surface Elevation (ft):	0
Well Depth (ft):	35	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D16
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000425543**

CO DWR ID #:	Not Reported	Permit #:	166102-
Well Name:	MW-1	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	09/09/1992
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/01/1995	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

E17
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000299859**

CO DWR ID #:	Not Reported	Permit #:	27676-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	03/26/1996
Expiration Date:	06/26/1996	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

D18
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000011033**

CO DWR ID #:	Not Reported	Permit #:	166103-
Well Name:	MW-2	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	09/09/1992
Expiration Date:	Not Reported	Construction Date:	Not Reported

Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/01/1995	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

D19
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000012473**

CO DWR ID #:	Not Reported	Permit #:	170892-
Well Name:	MW-4	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	07/01/1993
Expiration Date:	07/01/1995	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/01/1995	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	MONITORING AND OBSERVATION WELL

E20
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000073001**

CO DWR ID #:	Not Reported	Permit #:	17-G
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	83CW0150	Parcel Size:	0
Well Use:	Geothermal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	01/21/1987
Expiration Date:	01/21/1988	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	2500
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5	Comments:	SEE 87CW208

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

E21
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000248384**

CO DWR ID #:	Not Reported	Permit #:	460-G
Well Name:	REDSTONE WELL	Well Status:	Well Constructed
Water Court Case #:	83CW0150	Parcel Size:	13.41
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	03/19/2004
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	155	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5		
Comments:	Type A-OS. Also Case Nos. 00CW171, 01CW162, 94CW253		

D22
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000011034**

CO DWR ID #:	Not Reported	Permit #:	166104-
Well Name:	MW-3	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	09/09/1992
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/01/1995	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

E23
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000208918**

Organization ID:	USGS-CO	Organization Name:	USGS Colorado Water Science Center
Monitor Location:	SC00608909BBA USGS 393313107200401		
Type:	Well	Description:	Not Reported
HUC:	14010005	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Leadville Limestone	Aquifer Type:	Not Reported
Construction Date:	19810101	Well Depth:	Not Reported

Well Depth Units:	Not Reported	Well Hole Depth:	155
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1984-11-12
Feet below surface:	-13.20	Feet to sea level:	Not Reported
Note:	Other conditions existed that would affect the measured water level.		

24
ENE **CO WELLS** **CO7000000284603**
1/2 - 1 Mile
Lower

CO DWR ID #:	Not Reported	Permit #:	36-G
Well Name:	DUNNING NO. 03	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Commercial	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	11/17/1987
Expiration Date:	11/17/1988	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

25
SSE **CO WELLS** **CO7000000009536**
1/2 - 1 Mile
Higher

CO DWR ID #:	Not Reported	Permit #:	19912-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	10/20/1992
Expiration Date:	01/18/1993	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

26
SW
1/2 - 1 Mile
Higher

CO WELLS **CO7000000160074**

CO DWR ID #:	Not Reported	Permit #:	50760-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	06/27/2012
Expiration Date:	09/25/2012	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	37
Division:	5	Comments:	3 holes - Location based upon UTM

F27
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000183771**

CO DWR ID #:	Not Reported	Permit #:	51379-MH
Well Name:	Not Reported	Well Status:	Well Abandoned
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	04/02/2013
Expiration Date:	07/01/2013	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	04/12/2013	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	20 holes - 51171 Hwy 6 & 24 - Glenwood Springs, CO		

F28
WNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000091690**

CO DWR ID #:	Not Reported	Permit #:	37534-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0

Yrly Appropriation:	0	Issue Date:	12/27/1999
Expiration Date:	03/27/2000	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

G29
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000208899**

Organization ID:	USGS-CO	Organization Name:	USGS Colorado Water Science Center
Monitor Location:	SC00608909BBD	Type:	Well
Description:	Not Reported	HUC:	14010005
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Alluvium and Terrace Deposits
Aquifer Type:	Not Reported	Construction Date:	19821001
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	78	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1984-11-12
Feet below surface:	12.11	Feet to sea level:	Not Reported
Note:	Not Reported		

30
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000010345**

CO DWR ID #:	Not Reported	Permit #:	37-G
Well Name:	DUNNING NO. 02	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Commercial	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	11/17/1987
Expiration Date:	11/17/1989	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

H31
NNE
1/2 - 1 Mile
Higher

CO WELLS **CO7000000092945**

CO DWR ID #:	Not Reported	Permit #:	37727-MH
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	02/09/2000
Expiration Date:	05/09/2000	Construction Date:	03/02/2000
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	436	Top of First Perf Casing:	136
Base of Last Perf Casing:	436	Yield (gal/min):	15
Static Water Depth (ft):	102	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

H32
NNE
1/2 - 1 Mile
Higher

CO WELLS **CO7000000322929**

CO DWR ID #:	Not Reported	Permit #:	36135-MH
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	05/10/1999
Expiration Date:	08/10/1999	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	Expired notice. Drillers log not submitted. dmw 04/17/11		

33
NNW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000348987**

CO DWR ID #:	Not Reported	Permit #:	39674-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	05/03/2001

Expiration Date:	08/03/2001	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

G34
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000208906**

Organization ID:	USGS-CO	Organization Name:	USGS Colorado Water Science Center
Monitor Location:	SC00608909BAC	Type:	Well
Description:	Not Reported	HUC:	14010005
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Alluvium and Terrace Deposits
Aquifer Type:	Not Reported	Construction Date:	19821001
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	84	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1984-11-12
Feet below surface:	8.05	Feet to sea level:	Not Reported
Note:	Not Reported		

35
NNE
1/2 - 1 Mile
Higher

CO WELLS **CO7000000150553**

CO DWR ID #:	Not Reported	Permit #:	131628-
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Irrigation	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	1 acres
Yrly Appropriation:	0	Issue Date:	07/25/1983
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	07/01/1948	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	140	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	15
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5		
Comments:	Registration of existing well. Limit to historic use prior May 8, 1972. dmw 06/14/11		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

36
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000097341**

CO DWR ID #:	Not Reported	Permit #:	108656-
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	5
Well Use:	Domestic	Addtl Well Use:	Stock
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 ACRES
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	UNKNOWN	Water District:	45
Division:	5	Comments:	Not Reported

I37
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000352550**

CO DWR ID #:	Not Reported	Permit #:	52468-MH
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	04/28/2014
Expiration Date:	07/27/2014	Construction Date:	05/07/2014
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	5719
Well Depth (ft):	34	Top of First Perf Casing:	14
Base of Last Perf Casing:	34	Yield (gal/min):	0
Static Water Depth (ft):	16	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5		
Comments:	OPS VARIANCE - 3 holes - 51171 Hwy 6 & 24 - Glenwood Springs, CO. Seven WCR received.		

38
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000104162**

CO DWR ID #:	Not Reported	Permit #:	236600-
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Irrigation	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	1 ACRES
Yrly Appropriation:	2.5	Issue Date:	10/16/2001
Expiration Date:	10/16/2003	Construction Date:	Not Reported

Start Use Date:	01/01/1952	Pump Install Date:	05/24/2002
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	220	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	15
Static Water Depth (ft):	197	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	72
Division:	5	Comments:	registration of existing well

39
ESE
1/2 - 1 Mile
Lower

CO WELLS **CO7000000011413**

CO DWR ID #:	Not Reported	Permit #:	78338-
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	W2718	Parcel Size:	0
Well Use:	Domestic	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	1 acres
Yrly Appropriation:	0	Issue Date:	03/24/1975
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	06/30/1953	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	40	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	15
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

J40
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000253039**

CO DWR ID #:	Not Reported	Permit #:	27302-F
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Municipal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	05/15/1984
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

I41
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000122552**

CO DWR ID #:	Not Reported	Permit #:	262669-
Well Name:	SP-1	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	04/06/2005
Expiration Date:	Not Reported	Construction Date:	10/30/2001
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	20	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

J42
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000071993**

CO DWR ID #:	Not Reported	Permit #:	27098-MH
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	12/01/1995
Expiration Date:	03/01/1996	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	no data

J43
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000395992**

CO DWR ID #:	Not Reported	Permit #:	27686-MH
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	03/26/1996
Expiration Date:	06/26/1996	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported

Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	no data

J44
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000429147**

CO DWR ID #:	Not Reported	Permit #:	36560-MH
Well Name:	Not Reported	Well Status:	Permit Expired
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	07/14/1999
Expiration Date:	10/08/1999	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	no data

J45
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000104686**

CO DWR ID #:	Not Reported	Permit #:	40184-MH
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	10/23/2001
Expiration Date:	01/23/2002	Construction Date:	10/30/2001
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	no data

K46
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000229226**

CO DWR ID #:	Not Reported	Permit #:	285768-
Well Name:	CHARO IRRIGATION WELL NO 2		

Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

K47
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000229225**

CO DWR ID #:	Not Reported	Permit #:	285767-
Well Name:	CHARO IRRIGATION WELL NO 1		
Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

K48
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000229224**

CO DWR ID #:	Not Reported	Permit #:	285766-
Well Name:	CHARO DOMESTIC WELL	Well Status:	Permit Extended
Water Court Case #:	Not Reported	Parcel Size:	12.51
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	05/24/2011
Expiration Date:	05/24/2017	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39

Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13

K49
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000229227**

CO DWR ID #:	Not Reported	Permit #:	285769-
Well Name:	CHARO GEOTHERMAL WELL NO 1		
Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

K50
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000469712**

CO DWR ID #:	Not Reported	Permit #:	285772-
Well Name:	CHARO GEO-REINJECTION WELL NO 2		
Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

K51
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000313945**

CO DWR ID #:	Not Reported	Permit #:	285770-
Well Name:	CHARO GEOTHERMAL WELL NO 2		
Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

K52
North
1/2 - 1 Mile
Higher

CO WELLS **CO7000000229228**

CO DWR ID #:	Not Reported	Permit #:	285771-
Well Name:	CHARO GEO-REINJECTION WELL NO 1		
Well Status:	Permit Extended	Water Court Case #:	Not Reported
Parcel Size:	12.51	Well Use:	Other
Addtl Well Use:	Not Reported	Special Use:	Monitoring Well
Primary Aquifer:	All Unnamed Aquifers	Addtl Aquifer:	Not Reported
Irrigation Area:	0	Yrly Appropriation:	0
Issue Date:	05/24/2011	Expiration Date:	05/24/2017
Construction Date:	Not Reported	Start Use Date:	Not Reported
Pump Install Date:	Not Reported	Well Plug Date:	Not Reported
Surface Elevation (ft):	0	Well Depth (ft):	0
Top of First Perf Casing:	0	Base of Last Perf Casing:	0
Yield (gal/min):	0	Static Water Depth (ft):	0
Groundwater Basin:	Not Reported	Mgmt District:	Not Reported
Water District:	39	Division:	5
Comments:	RULE 6.2.3 = LOCATION! Monitoring/Observation Hole. Tax #R530062 (totaling 12.51 acres). Phy address: 0325 Charo (aka Sunny Acres), GWS, CO 81601. dmw 05/14/13		

I53
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000122553**

CO DWR ID #:	Not Reported	Permit #:	262670-
Well Name:	MW-9	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers

Addtl Aquifer:	Not Reported	Irrigation Area:	0
Yrly Appropriation:	0	Issue Date:	04/06/2005
Expiration Date:	Not Reported	Construction Date:	10/30/2001
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	20	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

54
NW
1/2 - 1 Mile
Lower

CO WELLS **CO7000000012620**

CO DWR ID #:	Not Reported	Permit #:	21470-MH
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	09/10/1993
Expiration Date:	12/10/1993	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	45
Division:	5	Comments:	Not Reported

L55
NE
1/2 - 1 Mile
Higher

CO WELLS **CO7000000076247**

CO DWR ID #:	Not Reported	Permit #:	24229-F
Well Name:	Not Reported		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Municipal	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	07/17/1979
Expiration Date:	07/17/1980	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5	Comments:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

L56
NE
1/2 - 1 Mile
Higher

CO WELLS **CO7000000321216**

CO DWR ID #:	Not Reported	Permit #:	133311-
Well Name:	Not Reported	Well Status:	Well Constructed
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Household Use Only	Addtl Well Use:	Not Reported
Special Use:	Not Reported	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	Not Reported
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	12/31/1949	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	205	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	15
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	39
Division:	5	Comments:	Not Reported

M57
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000010707**

CO DWR ID #:	Not Reported	Permit #:	37725-M
Well Name:	MW-1		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	10/04/1990
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

M58
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000010708**

CO DWR ID #:	Not Reported	Permit #:	37726-M
Well Name:	MW-2		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	10/04/1990

Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

M59
East
1/2 - 1 Mile
Lower

CO WELLS **CO7000000010709**

CO DWR ID #:	Not Reported	Permit #:	37727-M
Well Name:	MW-3		
Well Status:	Permit Issued; Completion Status Unknown		
Water Court Case #:	Not Reported	Parcel Size:	0
Well Use:	Other	Addtl Well Use:	Not Reported
Special Use:	Monitoring Well	Primary Aquifer:	All Unnamed Aquifers
Addtl Aquifer:	Not Reported	Irrigation Area:	0 acres
Yrly Appropriation:	0	Issue Date:	10/04/1990
Expiration Date:	Not Reported	Construction Date:	Not Reported
Start Use Date:	Not Reported	Pump Install Date:	Not Reported
Well Plug Date:	Not Reported	Surface Elevation (ft):	0
Well Depth (ft):	0	Top of First Perf Casing:	0
Base of Last Perf Casing:	0	Yield (gal/min):	0
Static Water Depth (ft):	0	Groundwater Basin:	Not Reported
Mgmt District:	Not Reported	Water District:	38
Division:	5	Comments:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CO Radon

Radon Test Results

Zip	Total Sites	Avg	% sites<=4 pCi/L	% sites>4&<10 pCi/L	% sites>=10&<20 pCi/L	% sites>20 pCi/L
81601	16	5.04	56.25	37.50	0.00	6.25

Federal EPA Radon Zone for GARFIELD County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 81601

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	Not Reported	Not Reported	Not Reported	Not Reported
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	7.400 pCi/L	0%	100%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Riparian Vegetation Data
Source: Division of Wildlife
Telephone: 970-416-3360

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Colorado GIS Well Database
Source: Office of State Engineer, Division of Water Resources
Telephone: 303-866-3581
The GIS Well database includes all wells that the Division of Water Resources permits.

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Locations
Source: Department of Natural Resources
Telephone: 303-894-2100

RADON

State Database: CO Radon
Source: Department of Public Health & Environment
Telephone: 303-692-3090
Radon Study in Colorado

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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SOIL SURVEY

DATA

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

2—Arle-Ansari-Rock outcrop complex, 12 to 65 percent slopes

Map Unit Setting

National map unit symbol: jnxh
Elevation: 5,500 to 7,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Arle and similar soils: 45 percent
Ansari and similar soils: 35 percent
Rock outcrop: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arle

Setting

Landform: Alluvial fans, mountainsides
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 10 inches: very stony loam
H2 - 10 to 32 inches: very stony loam
H3 - 32 to 36 inches: weathered bedrock

Properties and qualities

Slope: 12 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Loamy Slopes (R048AY303CO)

Hydric soil rating: No

Description of Ansari

Setting

Landform: Alluvial fans, mountainsides
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 18 inches: stony loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 65 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Loamy Breaks (R048AY300CO)
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountainsides
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 65 percent
Depth to restrictive feature: 0 inches to paralithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

7—Ascalon-Pena complex, 6 to 25 percent slopes

Map Unit Setting

National map unit symbol: jnz8
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Ascalon and similar soils: 65 percent
Pena and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Alluvial fans, valley sides
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 30 inches: sandy clay loam
H3 - 30 to 60 inches: sandy clay loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Deep Loam (R048AY292CO)
Hydric soil rating: No

Description of Pena

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 6 inches: stony loam
H2 - 6 to 12 inches: very stony loam
H3 - 12 to 60 inches: very stony sandy loam

Properties and qualities

Slope: 6 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Loamy Slopes (R048AY303CO)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

8—Atencio-Azeltine complex, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: jnzd
Elevation: 5,000 to 7,000 feet
Farmland classification: Farmland of statewide importance

Map Unit Composition

Atencio and similar soils: 45 percent
Azeltine and similar soils: 45 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atencio

Setting

Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 11 inches: sandy loam
H2 - 11 to 23 inches: gravelly sandy clay loam
H3 - 23 to 28 inches: gravelly sandy loam
H4 - 28 to 60 inches: extremely cobbly sand

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Ecological site: Rolling Loam (R048AY298CO)

Hydric soil rating: No

Description of Azeltine

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 18 inches: gravelly sandy loam
H2 - 18 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: Rolling Loam (R048AY298CO)
Hydric soil rating: No

Minor Components

Gravel pits

Percent of map unit: 10 percent
Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

9—Badland

Map Unit Composition

Badland: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Badland

Setting

Landform: Mountainsides, drainageways

Landform position (three-dimensional): Mountainflank, base slope

Down-slope shape: Convex, concave

Across-slope shape: Convex, concave

Parent material: Soft sandstone and shale and/or soft shale and siltstone

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 1 to 99 percent

Depth to restrictive feature: 0 to 3 inches to paralithic bedrock

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8e

Hydrologic Soil Group: D

Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

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11—Begay sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: jnx6
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Begay and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Begay

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 10 inches: sandy loam
H2 - 10 to 60 inches: stony sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: Rolling Loam (R048AY298CO)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

15—Chilton channery loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: jnxb
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Chilton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chilton

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 13 inches: channery loam
H2 - 13 to 23 inches: very channery sandy loam
H3 - 23 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Rolling Loam (R048AY298CO)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

26—Farlow-Rock outcrop association, steep

Map Unit Setting

National map unit symbol: jnxq
Elevation: 8,000 to 10,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Farlow and similar soils: 65 percent
Rock outcrop: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Farlow

Setting

Landform: Mountainsides
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from limestone

Typical profile

H1 - 0 to 10 inches: channery loam
H2 - 10 to 35 inches: very channery loam
H3 - 35 to 42 inches: extremely flaggy loam
H4 - 42 to 46 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Shallow Subalpine (R048AY251CO)

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountainsides
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 0 inches to paralithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Dateman

Percent of map unit: 10 percent
Landform: Mountainsides
Landform position (three-dimensional): Mountainflank
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

34—Ildefonso stony loam, 25 to 45 percent slopes

Map Unit Setting

National map unit symbol: jny0
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Ildefonso and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ildefonso

Setting

Landform: Alluvial fans, valley sides, breaks
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Mixed alluvium derived from basalt

Typical profile

H1 - 0 to 8 inches: stony loam
H2 - 8 to 60 inches: very stony loam

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Ascalon

Percent of map unit: 5 percent
Hydric soil rating: No

Potts

Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

39—Jerry loam, 12 to 50 percent slopes

Map Unit Setting

National map unit symbol: jny5
Elevation: 7,000 to 9,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Jerry and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jerry

Setting

Landform: Mountainsides
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from basalt and/or alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 10 inches: clay loam
H3 - 10 to 40 inches: cobbly clay loam
H4 - 40 to 60 inches: cobbly clay

Properties and qualities

Slope: 12 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Brushy Loam (R048AY238CO)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

42—Lamphier loam, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: jny9
Elevation: 7,500 to 10,000 feet
Farmland classification: Not prime farmland

Map Unit Composition

Lamphier and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamphier

Setting

Landform: Mountainsides, fans
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 30 inches: loam
H2 - 30 to 60 inches: loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Almy

Percent of map unit: 10 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

58—Potts-Ildefonso complex, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: jnyv
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Potts and similar soils: 60 percent
Ildefonso and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Potts

Setting

Landform: Valley sides, alluvial fans, mesas
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from basalt and/or alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 28 inches: clay loam
H3 - 28 to 60 inches: loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Rolling Loam (R048AY298CO)
Hydric soil rating: No

Description of Ildefonso

Setting

Landform: Mesas, valley sides, alluvial fans
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from basalt and/or alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 8 inches: stony loam
H2 - 8 to 60 inches: very stony loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

59—Potts-Ildefonso complex, 25 to 45 percent slopes

Map Unit Setting

National map unit symbol: jnyw
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Potts and similar soils: 60 percent
Ildefonso and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Potts

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from basalt and/or alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 28 inches: clay loam
H3 - 28 to 60 inches: loam

Properties and qualities

Slope: 25 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Rolling Loam (R048AY298CO)
Hydric soil rating: No

Description of Ildefonso

Setting

Landform: Alluvial fans, valley sides
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from basalt and/or alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 8 inches: stony loam
H2 - 8 to 60 inches: very stony loam

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
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Rifle Area, Colorado, Parts of Garfield and Mesa Counties

66—Torriorthents-Camborthids-Rock outcrop complex, steep

Map Unit Setting

National map unit symbol: jnz4
Elevation: 5,000 to 8,500 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 80 to 105 days
Farmland classification: Not prime farmland

Map Unit Composition

Torriorthents, steep, and similar soils: 45 percent
Camborthids, steep, and similar soils: 20 percent
Rock outcrop, steep: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Torriorthents, Steep

Setting

Landform: Mountainsides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Stony, basaltic alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: variable
H2 - 4 to 30 inches: fine sandy loam
H3 - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 4 to 30 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Camborthids, Steep

Setting

Landform: Mountainsides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Stony, basaltic alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: variable
H2 - 4 to 30 inches: clay loam
H3 - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 65 percent
Depth to restrictive feature: 15 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Rock Outcrop, Steep

Setting

Landform: Mountainsides
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 0 inches to paralithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

67—Torriorthents-Rock outcrop complex, steep

Map Unit Setting

National map unit symbol: jnz5
Elevation: 5,800 to 8,500 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 80 to 105 days
Farmland classification: Not prime farmland

Map Unit Composition

Torriorthents, steep, and similar soils: 60 percent
Rock outcrop, steep: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Torriorthents, Steep

Setting

Landform: Mountainsides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank, base slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Parent material: Stony, basaltic alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: variable
H2 - 4 to 30 inches: fine sandy loam
H3 - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 4 to 30 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Rock Outcrop, Steep

Setting

Landform: Mountainsides
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 0 inches to paralithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

73—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 12, Sep 13, 2019

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

As the client of a consulting geotechnical engineer, you should know that site subsurface conditions cause more construction problems than any other factor. ASFE/the Association of Engineering Firms Practicing in the Geosciences offers the following suggestions and observations to help you manage your risks.

A GEOTECHNICAL ENG.NEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS Your geotechnical engineering report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. These factors typically include: the general nature of the structure involved, its size, and configuration; the location of the structure on the site; other improvements, such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask your geotechnical engineer to evaluate how factors that change subsequent to the date of the report may affect the report's recommendations.

Unless your geotechnical engineer indicates otherwise, do not use your geotechnical engineering report:

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL JUDGMENTS
Site exploration identifies actual subsurface conditions only at those points where samples are taken. The data were extrapolated by your geotechnical engineer who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates, Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations. you and your geotechnical engineer can work together to help minimize their impact. Retaining your geotechnical engineer to observe construction can be particularly beneficial in this respect.

- when the nature of the proposed structure is changed. for example, if an office building will be erected instead of a parking garage, or a refrigerated warehouse will be built instead of an unrefrigerated one;
- when the size, elevation. or configuration of the proposed structure is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership; or .for application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problems that may occur if they are not consulted after factors considered in their report's development have changed.

A REPORT'S RECOMMENDATIONS CAN ONLY BE PRELIMINARY
The construction recommendations included in your geotechnical engineer's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork, you should retain your geo- technical engineer to observe actual conditions and to finalize recommendations. Only the geotechnical engineer who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid and whether or not the contractor is abiding by applicable recommendations. The geotechnical engineer who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

SUBSURFACE CONDITIONS CAN CHANGE A geotechnical engineering report is based on conditions that existed at the time of subsurface exploration. Do not base construction decisions on a geotechnical engineering report whose adequacy may have been affected by time. Speak with your geotechnical consult- ant to learn if additional tests are advisable before construction starts. Note, too, that additional tests may be required when subsurface conditions are affected by construction operations at or adjacent to the site, or by natural events such as floods, earthquakes, or ground water fluctuations. Keep your geotechnical consultant apprised of any such events.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS
Consulting geotechnical engineers prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your geotechnical engineer prepared your report expressly for you and expressly for purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the geotechnical engineer. No party should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

GEOENVIRONMENTAL CONCERNS ARE NOT AT ISSUE
Your geotechnical engineering report is not likely to relate any findings, conclusions, or recommendations

about the potential for hazardous materials existing at the site. The equipment, techniques, and personnel used to perform a geoenvironmental exploration differ substantially from those applied in geotechnical engineering. Contamination can create major risks. If you have no information about the potential for your site being contaminated. you are advised to speak with your geotechnical consultant for information relating to geoenvironmental issues.

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION Costly problems can occur when other design profes- sionals develop their plans based on misinterpretations of a geotechnical engineering report. To help avoid misinterpretations, retain your geotechnical engineer to work with other project design professionals who are affected by the geotechnical report. Have your geotechnical engineer explain report implications to design professionals affected by them. and then review those design professionals' plans and specifications to see how they have incorporated geotechnical factors. Although certain other design professionals may be fam- iliar with geotechnical concerns, none knows 'as much about them as a competent geotechnical engineer.

BORING LOGS SHOULD NOT BE SEPARATED FROM THE REPORT Geotechnical engineers develop final boring logs based upon their interpretation of the field logs (assembled by site personnel) and laboratory evaluation of field samples. Geotechnical engineers customarily include only final boring logs in their reports. Final boring logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimize the possibility of contractors misinterpreting the logs during bid preparation. When this occurs. delays. disputes. and unanticipated costs ara the all-too-frequent result.

To minimize the likelihood of boring log misinterpretation, give contractors ready access to the complete geotechnical engineering report prepared or authorized for their use. (If access is provided only to the report prepared for you, you should advise contractors of the report's limitations. assuming that a contractor was not one of the specific persons for whom the report was prepared and that developing construction cost estimates was not one of the specific purposes for which it was prepared. In other words. while a contractor may gain important knowledge from a report prepared for another party, the contractor would be well-advised to discuss the report with your geotechnical engineer and to perform the additional or alternative work that the contractor believes may be needed to obtain the data specifically appropriate for construction cost estimating purposes.) Some clients believe that it is unwise or unnecessary to give contractors access to their geo- technical engineering reports because they hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems. It also helps reduce the adversarial attitudes that can aggravate problems to disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY Because geotechnical engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against geotechnical engineers. To help prevent this problem, geotechnical engineers have developed a number of clauses for use in their contracts, reports, and other documents. Responsibility clauses are not exculpatory clauses designed to transfer geotechnical engineers' liabilities to other parties. Instead, they are definitive clauses that identify where geotechnical engineers' responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your geotechnical engineering report. Read them closely. Your geotechnical engineer will be pleased to give full and frank answers to any questions.

RELY ON THE GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE Most ASFE-member consulting geotechnical engineering firms are familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a construction project, from design through construction. Speak with your geotechnical engineer not only about geotechnical issues, but others as well, to learn about approaches that may be of genuine benefit. You may also wish to obtain certain ASFE publications. Contact a member of ASFE of ASFE for a complimentary directory of ASFE publications.

ASFE

8811 Colesville Road/Suite G106/Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017

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PARTNER

July 6, 2021

Alex Levin
BLD Group
1500 Codova Road, Suite 300
Ft. Lauerdale, Florida 33316

Subject: **Response to Community Comments**
Glenwood Meadow
Glenwood Springs, Colorado 81601
Partner Project No. 21-306905.1

Dear Alex Levin:

Partner Assessment Corporation (Partner) is pleased to submit this letter to respond to comments from the community for the subject property.

Scope of Work

Partner's services included the review of documents from publicly available sources pertaining to site geologic conditions, as well as the provided reports issued for the site. A general list of site-specific documents reviewed is shown below:

- American Geoservices (AGS), Initial Geotechnical Evaluation Report – Glenwood Meadows No. 6 Housing, Wulfsohn Road and West Meadows, Glenwood Spring, dated July 22, 2020.
- BLD Group, Preliminary Plan Set for Glenwood Meadows Multi-family Housing (including Civil, Landscape, Architecture Drawings), 54 Pages, dated December 28, 2020.
- City of Glenwood Springs, Colorado – Memorandum of understanding, dated July 16, 2013
- HCE – Master Drainage Report for Glenwood Meadows, Master Drainage Plan Submittal, Revised May 24, 2002
- Lincoln – Devore Engineering and Geologists, Open-File Report 7810 – Geologic Hazard of the Glenwood Springs Metropolitan Area – Garfield County, Colorado – Prepared by, dated 1978
- Numerous/Other Geotechnical Consultants, Geotechnical Reports for surrounding projects: Lofts, Target, Etc.
- Partner Engineering and Science, inc. – Limited Geotechnical Evaluation / Peer Review, dated March 4, 2021
- Unknown Author – Untitled, unsealed topographic survey overlaid on aerial of the area, undated provided by Client
- V3 Consultants – Final Drainage Report for Glenwood Meadows Lots 1-10 and Tracts A, B, and C, Revised July 30, 2004

Response to Community Comments

Partner is pleased to provide the below responses to the transcribed and lettered comments issued by Glenwood Springs:

2.3 Please add a geologic hazards disclosure similar to the following: "This property is subject to geologic hazards per the adopted mapping by the City of Glenwood Springs. Hazards to note are _____. A final Geologic Hazard Report will be submitted upon application of a building permit

RESPONSE: The following text can be placed used as the "geologic hazard disclosure" requested in the comment above:

Per the General Geologic hazard map of the Glenwood Springs Metropolitan Area prepared by the Colorado Geologic Survey (CGS) this property is located within a zone with severe potential for hydrocompaction and related settlement hazards. In addition, the Map of Debris Fan Deposits and Hazards Property prepared by CGS shows that the property is also located within a debris fan with moderate hazard potential for damage to structures. Mitigation is recommended or major cleanup is probable. It is our understanding that a Geologic Hazard Report was submitted as a part of the original Meadows application and the recommended mitigation completed within the first phase of development. Special care should be taken during construction to maintain the mitigations completed during the first phase of development.

3.12 Full depth pavement will not be accepted in any areas that are deemed public ROW and possibly maintained by the City. Full depth asphalt is not recommended, it has shown not to be successful in other areas of the Glenwood Meadows Development.

RESPONSE: Alternative pavement sections for areas to be dedicated into right of way, will be provided in our final design geotechnical report. These will be based on traffic loads provided by the City of Glenwood Springs. The below table provides alternate sections as stated in the report by American Geoservices for use in non-right of way areas.

Paving Structural Sections

Pavement Sections		
Roadway Type	**Subgrade Preparation [a]**	**Pavement Section [b]**
Asphalt Parking Spaces	Proof rolled/Compacted Subgrade	3.5 in. asphalt / 6.0 in. Aggregate base
Asphalt Driveways	Proof rolled/Compacted Subgrade	4.5 in. asphalt / 6.0 in. Aggregate base

3.13 4.5" of asphalt over 6" of ABC for heavy traffic areas is not recommended, it has shown not to be successful in other areas of the Glenwood Meadows Development. Thicker asphalt and base course sections have shown promise in stability and longevity.

RESPONSE: The response to comment 3.12 provides pavement sections as stated in the report by American Geoservices in our Response to Community Comments dated June 16, 2021 is for use in non-right of way areas and intended for initial planning purposes. Alternative pavement sections for areas to be dedicated into right of way and/or heavy traffic loading, will be provided in our final design geotechnical report. These will be based on the traffic loads provided by the City of Glenwood Springs.

3.14 The Geotech report notes that asphalt overlays should be completed every 5-6 years on asphalt sections of pavement. What does the Geotech considered an appropriate overlay material and thickness being that overlay is a generic term.

RESPONSE: As the new geotechnical engineer of record, we do not agree with the above statement. It is our experience that properly designed pavements should have a 20-year design life. We recommend regular maintenance consisting of cleaning and sealing cracks and re-coating paved surfaces on a roughly 5-year interval.

3.1 On page 20 of 30, under surface drainage the report states under bullet point 2 that landscaping of gravel adjacent to buildings should have a minimum slope of 6 inches in 5 feet (or 10%), but in bullet point 5, it states that landscaped areas within 10 feet of the foundation should be sloped at a minimum of 8%. This is inconsistent.

RESPONSE: As the new geotechnical engineer of record, we recommend that structures or site features that are not a part of the surface water drainage system should not be exposed to surface water flows, standing water, or water infiltration. In general, roof drains and scuppers, exterior slabs, pavements, landscaping, etc. should be constructed to drain water away from structures and foundations. The purpose of this is to reduce the opportunity for water damage, erosion, and/or altering of structural soil properties by wetting. In general, a 5 percent or more slope away from foundations, structural fills, slopes, structures, etc. should be maintained for 10 feet, per the International Building Code. 2% slopes can be used, where hardened surfaces, such as concrete or asphalt are placed up to the edge of structure. Our final design report for the project will update this information.

3.2 In general full-depth asphalt is not recommended in this area. As you can see from the meadows Development, it has not performed well over time and meeting subgrade requirements with the native soil is challenging. As these roadways are private and will remain private, the city does not have a requirement for the asphalt within the development, but will require any patches in City ROW to meet the requirements of the City's Engineering Standards. a. The report provides a recommendation for a full-depth asphalt section, but Figure 17 does not provide an exhibit of that section.

RESPONSE: We do not recommend the use of full depth asphalt for this project, please see updated pavement recommendations provided in our response to comment 3.12

3.5 After review of the soils report it seems that there are risks associated with the site that the report did not review in detail due to those risks not being part of the consultant's scope of services. See comments in the inherent risks section that are labelled "outside scope of services" and owner is completely responsible for taking all risks associated with any future potential for instability at the site or in the site vicinity area type comments.

RESPONSE: As the new engineer of record, we will fully address this in our updated report.

3.6 No topographic slopes were labeled thus these comments are generic. Geotech report calls for no structures within 25' of a crest of a slope that is 2.5:1. The lower row of structures appears to be within 25' of a crest of a slope, but the slopes below are not labeled for verification of the report note.

RESPONSE: Our review of the report indicates that no structures are to be within 25 feet of a crest of slope that is STEEPER than 2.5:1 (horizontal to vertical). Upon review, the slopes in that area are not steeper than 2.5:1.

3.11 Contractor should confirm the trenching backfill material that is acceptable in this area, previous potions of the development have utilized gravel materials, which has caused underground water to use the trenches as river passages and flood manhole locations during certain times of the year.

RESPONSE: Trenching backfill for City of Glenwood or private utility lines should be completed according to the specifications of the owner. In the even that the utility owner has specifications that differ from the preferences of the City of Glenwood, that matter should be addressed, directly between those parties. For private plumbing under the discretion of the geotechnical engineer, we recommend pipe bedding and shading consists of roadway aggregate base material, and that trench backfill consists of soil with less than 50% retained the No. 4 sieve and less than 35% retained on the ¾ inch sieve. Backfill soil should also contain 12 % to 75% fines and have a liquid limit less than 50. This information will be provided in our updated geotechnical design report.

Closing

Partner does not guarantee the future performance of the building, pavements, flatwork, or other site features related to geotechnical conditions. Soil samples were not obtained under this scope of work, and we have formulated our opinion based on our background research. Our document review and geologic research study made a good-faith effort to review readily available documents that we could access and were aware of at the time, as listed in this letter. We are not able to guarantee that we have discovered, observed, and reviewed all relevant site documents and conditions.

We appreciate the opportunity to be of service during this phase of the work.

Sincerely,

COLORADO LICENSED MATTHEW MARCUS 0053050 PROFESSIONAL ENGINEER

Matthew Marcus, PE, PG
Technical Director – Geotechnical Engineering

Andrew J. Atry, PE*
Project Engineer

**Licensed in California*

PRELIMINARY DRAINAGE REPORT

FOR

GLENWOOD MEADOWS MULTI-FAMILY PHASE 1

GLENWOOD SPRINGS, COLORADO

PREPARED FOR:

BLD Group, LLC.
1500 Cordova Rd. Suite 300
Fort Lauderdale, FL 33316

PREPARED BY:

High Country Engineering, Inc.
1517 Blake Avenue, Suite 101
Glenwood Springs, CO 81601
(970) 945-8676

December 8, 2020
Revised June 25, 2021

HCE JOB NUMBER: 2201044.00

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2. Soils Map
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APPENDICES:

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B. Glenwood Meadows Master Drainage Study 2004
C. Proposed Conditions Drainage Map – Glenwood Meadows Multi-Family
D. Proposed Hydrologic Calculations

Engineers Certification

I hereby affirm that this report and the accompanying plans for the Phase 1 of Glenwood Meadows Multi-Family was prepared by me (or under my direct supervision) for the owners thereof in accordance with the provisions of the City of Glenwood Springs Stormwater, Drainage, Water Quality and Erosion Control Chapter and approved variances and exceptions listed thereto. I understand that it is the policy of the City of Glenwood Springs that the City of Glenwood Springs does not and will not assume liability for drainage facilities designed by others.



License No._____
Licensed Professional Engineer, State of Colorado

I. GENERAL LOCATION AND DESCRIPTION

A. Location

The site, located within the Glenwood Meadows development, is platted as Lots 11C-B and 11C-C of the Glenwood Meadows No. 6 Subdivision, which is located within Section 8, Township 6 South, Range 89 West, of the 6th Principal Meridian, in the City of Glenwood Springs, Colorado. The proposed site is located on the south side of Wulfsohn Road across from the existing Target and Lowe's commercial sites. The major drainage way downstream of the site is the Colorado River which is approximately 1,700 feet north of the site. A Vicinity Map has been included in **Exhibit 1**.

B. Description of Existing Property

The property is approximately 49.54 acres in size. The site slopes downward from southwest to northeast at approximately 15-pecrent towards Wulfsohn Road. The site receives offsite drainage from undeveloped drainage basins uphill to the southwest. The existing site is undeveloped consisting of scrub oak and juniper and native vegetation ground cover. There are existing debris flow ponds uphill of the development that serve to capture both offsite debris flow events and drainage attenuation in non-debris flow events.

C. Proposed Improvements

The proposed development consists of 13 multi-unit apartment buildings, a club house, roadways, parking areas, sidewalks and landscaping. Amenities include a playground, outdoor fitness area, basketball court, community patios, community garden, dog park and outdoor yoga area. Phase 1 consists of 13 apartment buildings, a club house and amenities.

D. Soils Description

Per the NRCS Web Soil Survey, there are two soil unit types within the property:
11 – Begay sandy loam, 6 to 12 percent slopes, well drained, low runoff, high permeability and low water storage capacity, hydrologic soil group (HSG) "A".
15 – Chilton channery loam, 12 to 25 percent slopes, well drained, low runoff, moderately high to high permeability and low water storage capacity, HSG "A".

Under the Glenwood Meadows Master Drainage Plan completed in 2004, the NRCS classified onsite soils to be HSG "C" and "D" at that time. The NRCS has subsequently reclassified onsite soils to HSG "A" since the Master Drainage Plan was completed. The upgraded soil types from HSG "C and "D" to "A" represents a conservative modeling for the regional drainage facilities in-place.

Additional soils information and a soils map can be referenced in **Exhibit 2**.

A site specific geotechnical investigation has been performed by Partner Engineering and Science. Generally subsurface conditions consist of a native debris fan deposit composed

of medium dense to dense mixtures of sands, silt, gravel, cobble and occasional boulders and extends to depths of 100-125 feet. Groundwater was not encountered during exploration. The geotechnical investigation may be referenced as a stand-alone document for reference as necessary.

E. Major Drainage Way Planning and Influential Parameters

The proposed site is located within FEMA's Flood Insurance Rate (FIRM) Maps 0802051431B, effective date January 3, 1986, and 0802051432B, effective date January 3, 1986. According to both maps, the site is located in Zone D which is designated as areas of undetermined, but possible flood hazards. Both FEMA FIRM Maps can be referenced in **Exhibit 4**.

F. Master Drainage Plan

The site is located within the Glenwood Meadows development and is subject to the requirements and recommendations of the Glenwood Meadows Master Drainage Plan completed by High Country Engineering, project no. 2000031.00-0316 dated May 6, 2004. The Master Drainage Plan can be referenced in **Appendix B**.

G. Effects of Adjacent Drainage Issues

The existing offsite debris flow ponds uphill of the site intercept drainage and debris flows prior to reaching the site. The debris pond outlet structures are currently piped through the proposed development and will be modified accordingly to accommodate the proposed grading and site improvements. There are small offsite drainage basins below the debris ponds that will produce limited offsite drainage onto the site.

All drainage from impervious areas of the proposed site will be collected and routed to Glenwood Meadows stormwater conveyance facilities. To our knowledge there are currently no adverse drainage impacts on adjacent properties from this site. There are no wetlands or irrigation ditches present on the site.

II. Drainage Basins and Sub-basins

B. Sub-Basin Description

The analyzed proposed drainage basins correspond to the proposed basins delineated in the project location within the Glenwood Meadows Master Drainage Study. The existing drainage pattern from the site is from southwest to northeast toward to Wulfsohn Road.

Runoff from proposed parking areas and roadways is to be routed to inlets via curb and gutter and collected with proposed storm sewer systems. Runoff from the proposed buildings is to be collected within roof drain leaders and piped to proposed storm sewer systems. Piping roof drainage instead of surface discharging will reduce the adverse effects of introducing surface drainage back onto the moderately sloped site where there's the potential for

scouring and erosion.

The proposed storm sewers will connect to the existing storm sewers serving the debris ponds and ultimately routing to existing Glenwood Meadows storm sewer at Wulfsohn Road. The existing debris pond outlet storm sewer will be modified to accommodate the proposed site plan and grade modifications and maintain conveyance of the debris pond discharge and proposed runoff.

III. DRAINAGE DESIGN CRITERIA

A. Criteria

This drainage study was prepared in conformance with Chapter 4 – Stormwater; of the City of Glenwood Springs engineering standards. Proposed improvements include development disturbance of approximately 17.3 acres, thus this site is subject to "Major Drainage Report" requirements.

This site is subject to the Glenwood Meadows Master Drainage Plan. This site is required to meet or exceed the post development drainage requirements of that study. The site improvements are located within drainage basins PR-J and PR-R of the master drainage plan, and shall not exceed the post development drainage conditions as summarized in Table 1. A copy of the Master Drainage Plan can be referenced in **Appendix B**.

Table 1 – Master Drainage Plan Post-Development Requirements

BASIN	AREA (AC)	CN	Q_{25}	Q_{100}
PR-J	20.96	86	24.1	33.19
PR-R	20.87	88	28.03	37.60
PR-B	18.49	85	22.05	30.85
PR-DD	3.37	84	3.73	5.29

The site has been analyzed for the post-development drainage conditions using HydroCAD. Post development drainage characteristics are summarized in Table 2 below. Proposed drainage basins correspond to the delineated drainage basins from the Master Drainage Study.

Table 2 –Post-Development Drainage Conditions

BASIN	AREA (AC)	CN	Q_{25}	Q_{100}
PR-J	20.96	68	3.28	8.83
PR-R	20.87	57	0.19	1.30
PR-B	18.49	49	0.00	0.10
PR-DD	3.37	49	0.00	0.02

Post-development hydrologic calculations can be referenced in **Appendix D**.

IV. DRAINAGE FACILITY DESIGN

A. General Concept

Runoff from the site shall be collected within a proposed storm sewer system and routed to the existing Glenwood Meadows storm sewer system. Stormwater management for the development is to be performed by the existing regional detention ponds located northwest and east of Target as outlined in the Master Drainage Plan.

B. Proposed Drainage Basin Description

The current drainage pattern onsite generally slopes from southwest to northeast and surface discharges to existing catch basins along the south side of Wulfsohn Road.

The site has been analyzed as four proposed basins; PR-B, PR-DD, PR-J and PR-R respectively. The proposed basin delineation is corresponds with the basin boundaries from the Master Drainage Plan. A proposed drainage conditions map, PRDR can be referenced in **Appendix C.**

Basin PR-B comprises the western portion of the access drive connection to Wulfsohn Road. Ground cover consists of asphalt road, concrete sidewalk and undisturbed open space. Runoff from the open space drains to the existing swale south of Wulfsohn road at design point 4. Runoff from the proposed road is collected within a proposed storm sewer and piped east to the existing regional storm sewer at design point 3.

Basin PR-DD consists of a portion of the west access drive connection to Wulfsohn Road. Ground cover consists of asphalt road, concrete sidewalk and undisturbed open space. Runoff from the open space drains to a proposed storm sewer south of the access road and is piped to the regional storm sewer at design point 3. Runoff from the proposed road is collected within a proposed storm sewer at Wulfsohn Road and piped east to the existing regional storm sewer at design point 3.

Basin PR-J comprises approximately the western half of the development. Ground cover consists of the asphalt roads and parking areas, proposed buildings, concrete sidewalks, developed park space, pervious landscaping and undisturbed open space areas. Runoff is split to the northwest and southeast via sheet flow and curb and gutter channel flow. A proposed storm sewer collects all development drainage from the basin and connects to the existing debris pond storm sewer "1B". The basin discharges at design point 1 within the existing storm sewer at Wulfsohn Road, and ultimately discharges to the regional detention pond located northwest of Target.

Basin PR-R comprises approximately the eastern half of the development. Ground cover consists of the asphalt roads and parking areas, proposed buildings, concrete sidewalks, pervious landscaping and undisturbed open space areas. Runoff drains to the southeast via sheet flow and curb and gutter channel flow. A proposed storm sewer collects all

development drainage from the basin and connects to the existing debris pond storm sewer "1C". The basin discharges at design point 2 within the existing storm sewer at Wulfsohn Road, and ultimately discharges to the regional detention pond located east of Target.

V. CONCLUSION

This drainage report has been prepared in accordance with the City of Glenwood Springs requirements, and the Glenwood Meadows Master Drainage Plan requirements. The proposed development shall utilize best management practices, (BMPs), both for construction and long-term to minimize erosion and promote stabilization. Temporary construction BMPs may include sediment control fence, straw bales, erosion control logs, inlet protection and vehicle tracking control. Long-term control includes the existing Glenwood Meadows stormwater management facilities. The proposed drainage design should be effective in providing the required conveyance for stormwater drainage to the existing facilities.

VI. REFERENCES

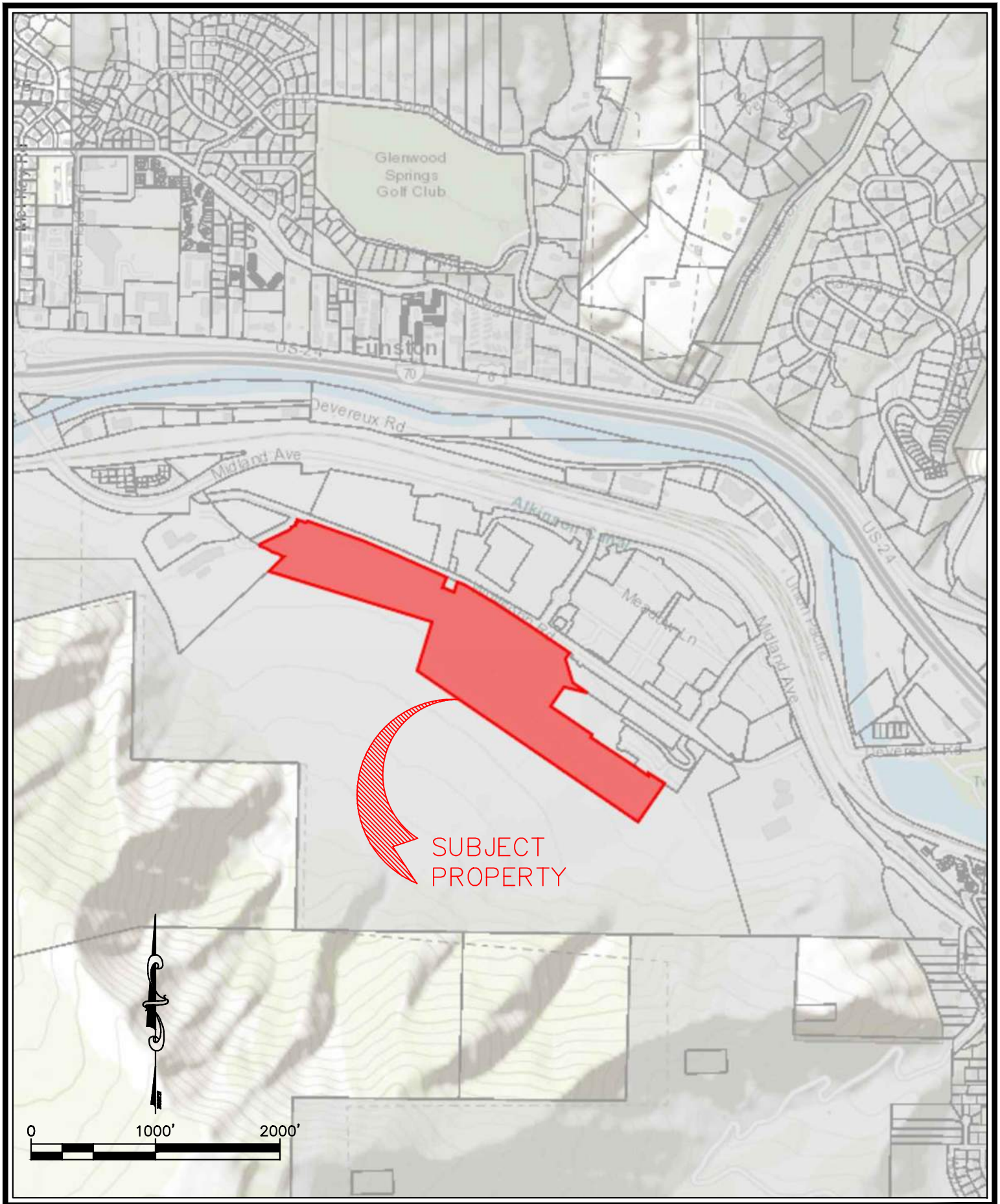
United States Department of Agriculture, Soil Conservation Service: Rifle Area, Colorado, Parts of Garfield and Mesa Counties

National Oceanic and Atmospheric Administration, Atlas of the Western United States, Volume 111, Precipitation-Frequency Atlas.

Natural Resources Conservation Service, Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55) June 1986.

EXHIBIT 1

VICINITY MAP



HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP LLC
GLENWOOD SPRINGS, CO

MEADOWS MULTI-FAMILY

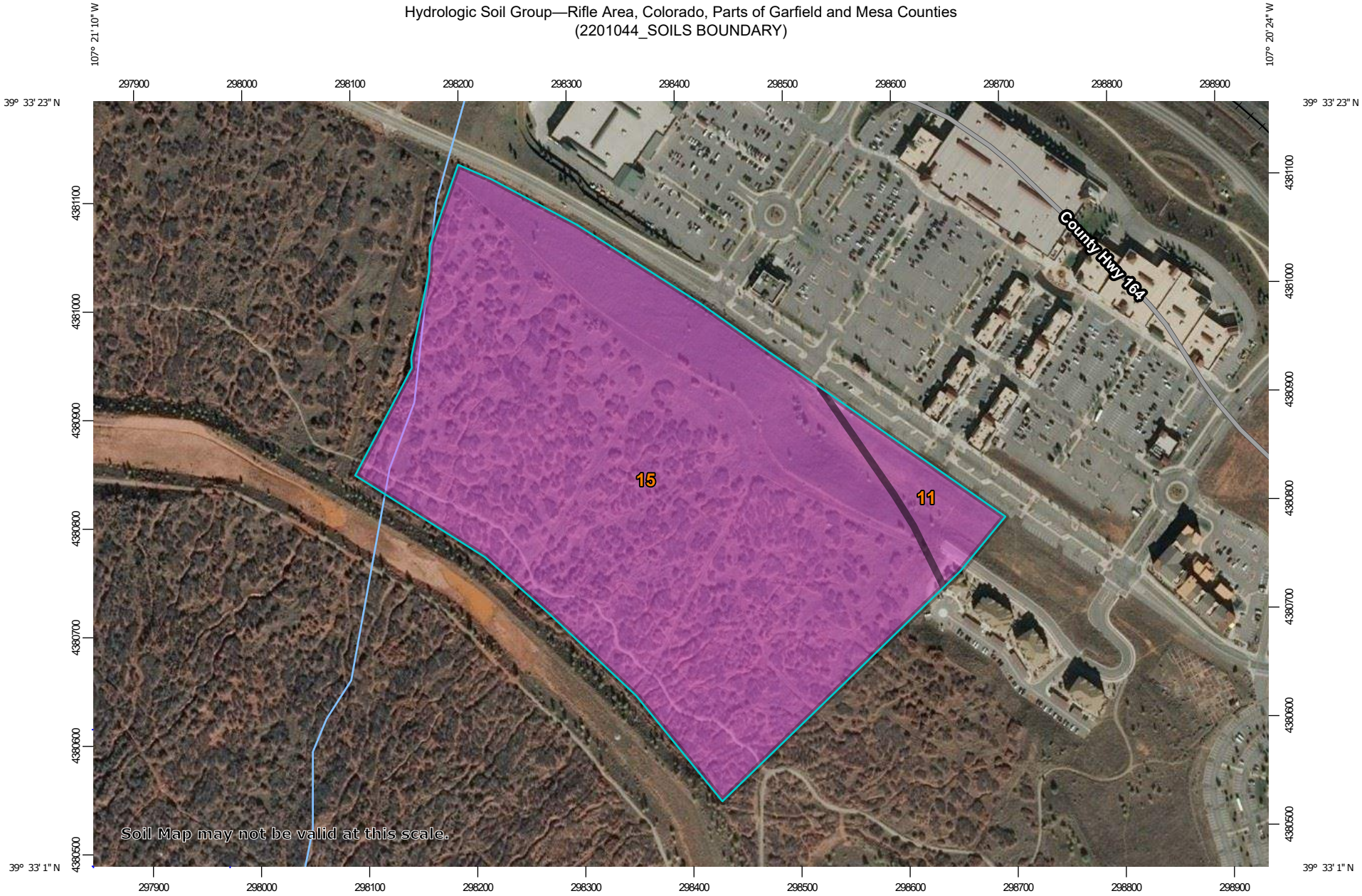
VICINITY MAP

DRAWN BY: MGG	SCALE: 1" = 1000'
CHECKED BY: MGG	PROJECT NO: 2201044.00
DATE:	PAGE:
FILE:	

EXHIBIT 2

SCS SOILS MAP

Hydrologic Soil Group—Rifle Area, Colorado, Parts of Garfield and Mesa Counties
(2201044_SOILS BOUNDARY)



Map Scale: 1:4,970 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 13, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 24, 2015—Nov 2, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11	Begay sandy loam, 6 to 12 percent slopes	A	2.1	4.9%
15	Chilton channery loam, 12 to 25 percent slopes	A	39.8	95.1%
Totals for Area of Interest			**41.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

11—Begay sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: jnx6
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Begay and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Begay

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 10 inches: sandy loam
H2 - 10 to 60 inches: stony sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R048AY298CO - Rolling Loam

Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 13, Jun 5, 2020

Rifle Area, Colorado, Parts of Garfield and Mesa Counties

15—Chilton channery loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: jnxb
Elevation: 5,000 to 6,500 feet
Farmland classification: Not prime farmland

Map Unit Composition

Chilton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chilton

Setting

Landform: Valley sides, alluvial fans
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 13 inches: channery loam
H2 - 13 to 23 inches: very channery sandy loam
H3 - 23 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R048AY298CO - Rolling Loam

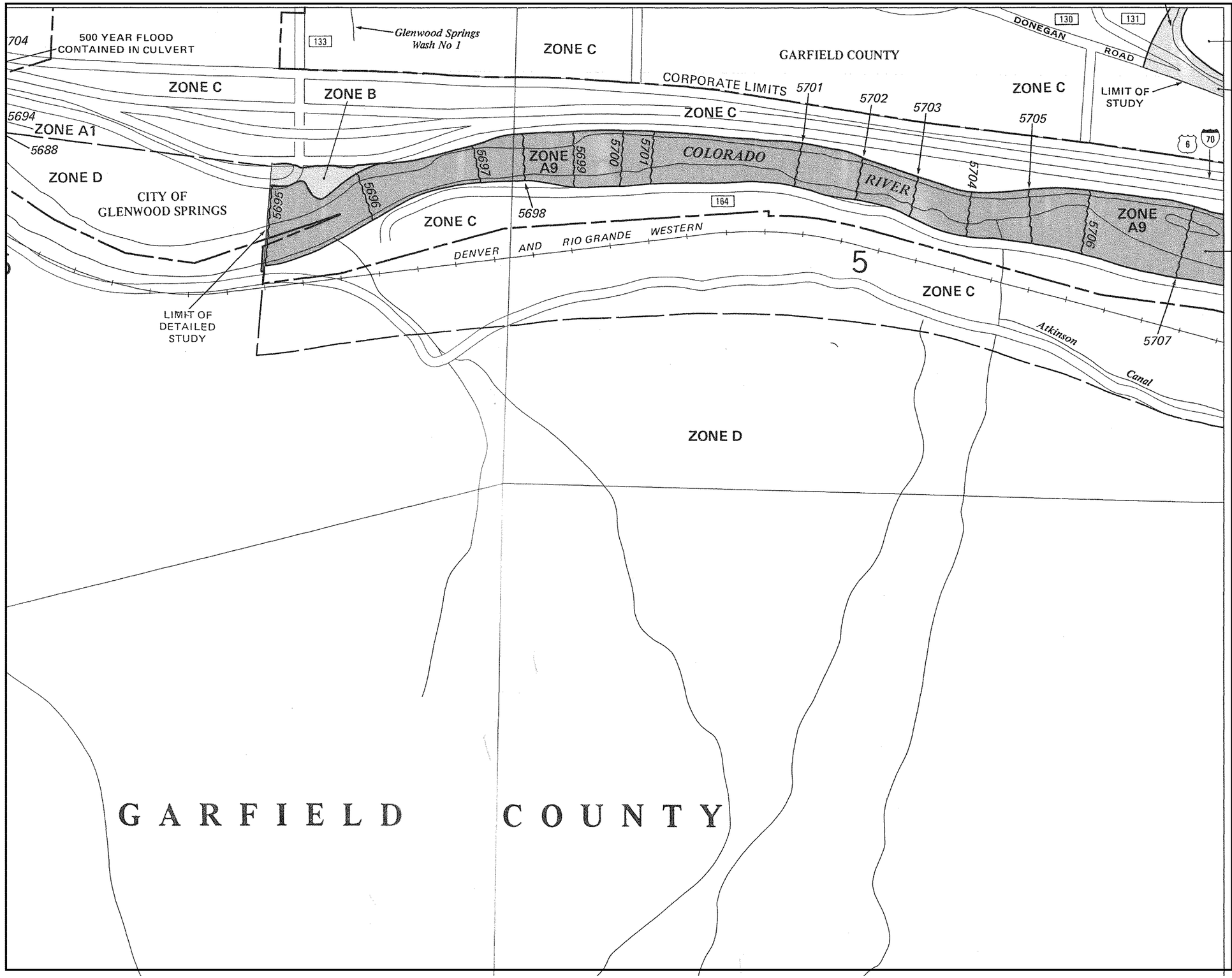
Hydric soil rating: No

Data Source Information

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
Survey Area Data: Version 13, Jun 5, 2020

EXHIBIT 3

FEMA FIRM MAPS



APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

GARFIELD COUNTY, COLORADO
(UNINCORPORATED AREAS)

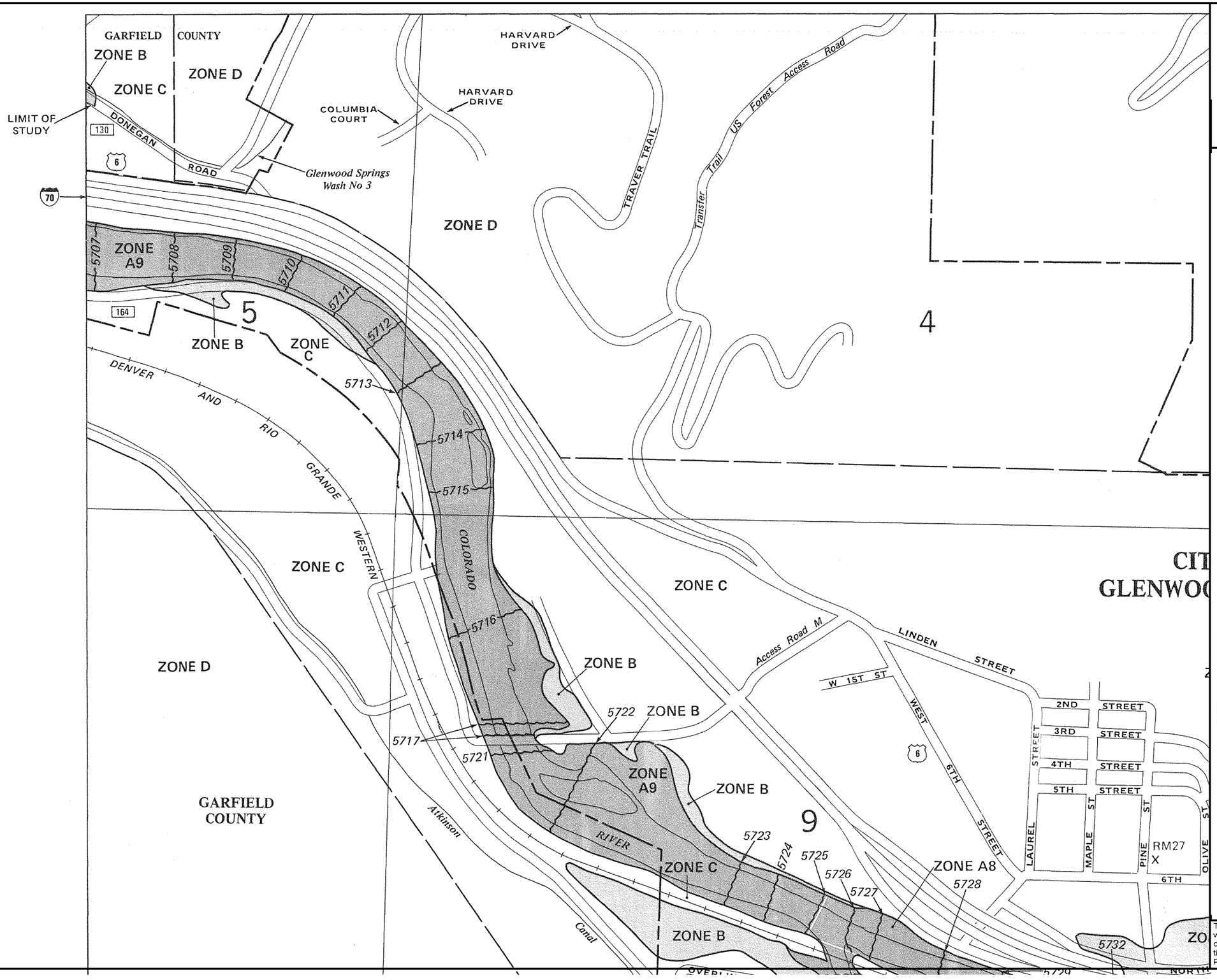
PANEL 1431 OF 1900
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
080205 1431 B

MAP REVISED:
JANUARY 3, 1986

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

GARFIELD COUNTY, COLORADO
(UNINCORPORATED AREAS)

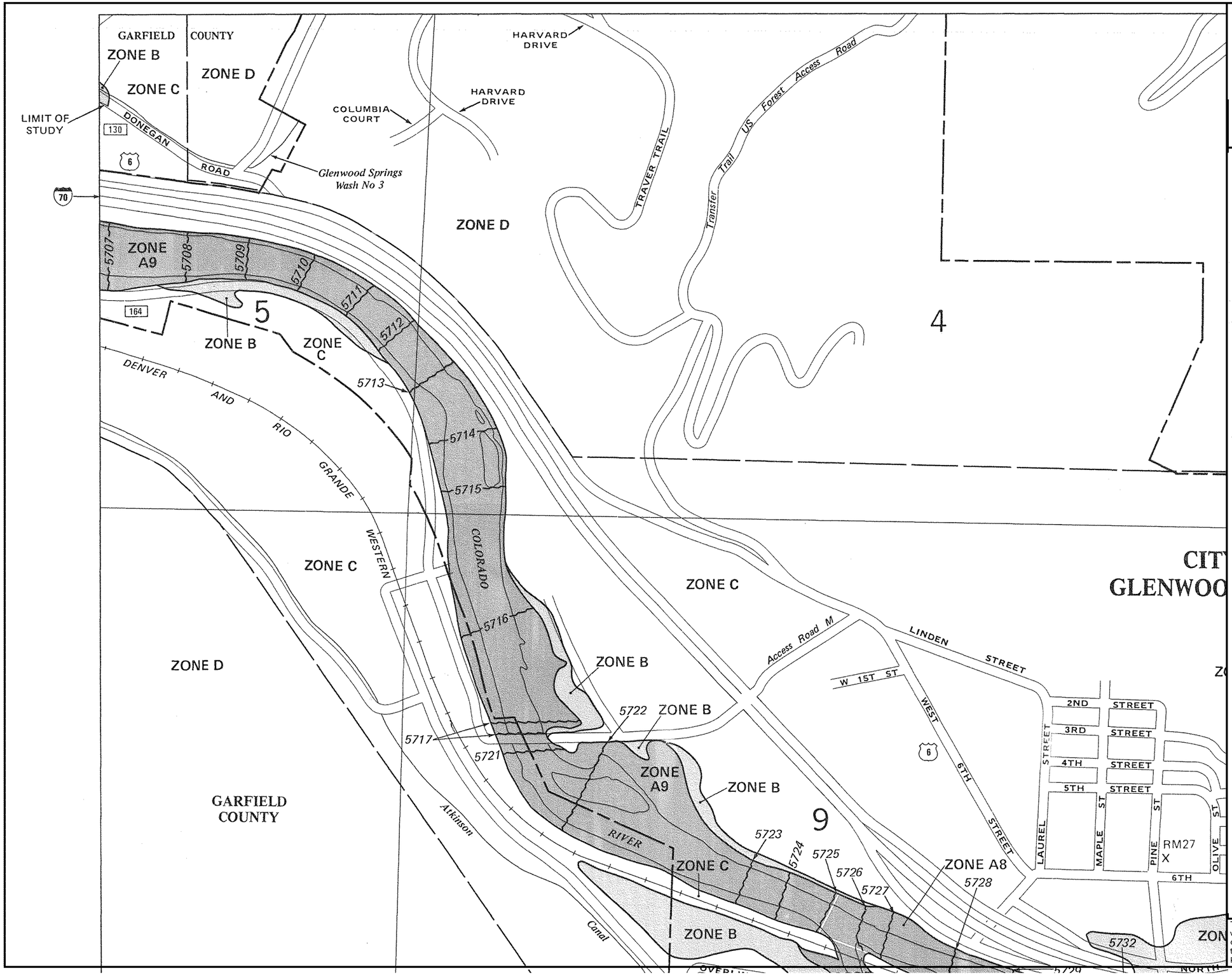
PANEL 1432 OF 1900
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
080205 1432 B

MAP REVISED:
JANUARY 3, 1986

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE IN FEET

500 0 500

KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	ZONE B
Zone Designations	ZONE A1 / ZONE A5
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7X
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; depths are shown, or areas of 100-year alluvial fan flooding, depths and velocities shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX A

NOAA ATLAS 14 – RAINFALL DATA

NOAA Atlas 14, Volume 8, Version 2
Location name: Glenwood Springs, Colorado, USA*
Latitude: 39.5531°, Longitude: -107.3464°
Elevation: 5922.12 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.123** (0.097-0.159)	**0.177** (0.140-0.229)	**0.263** (0.206-0.341)	**0.331** (0.258-0.431)	**0.420** (0.313-0.563)	**0.485** (0.354-0.663)	**0.548** (0.385-0.770)	**0.608** (0.409-0.882)	**0.683** (0.442-1.02)	**0.736** (0.466-1.13)
10-min	**0.180** (0.142-0.233)	**0.260** (0.205-0.336)	**0.385** (0.302-0.499)	**0.484** (0.378-0.632)	**0.615** (0.458-0.825)	**0.711** (0.518-0.971)	**0.802** (0.564-1.13)	**0.890** (0.599-1.29)	**1.00** (0.647-1.50)	**1.08** (0.682-1.66)
15-min	**0.220** (0.174-0.284)	**0.317** (0.250-0.410)	**0.469** (0.369-0.609)	**0.591** (0.461-0.771)	**0.750** (0.558-1.01)	**0.867** (0.632-1.18)	**0.978** (0.688-1.38)	**1.09** (0.731-1.58)	**1.22** (0.789-1.83)	**1.32** (0.832-2.02)
30-min	**0.294** (0.232-0.379)	**0.414** (0.326-0.535)	**0.601** (0.472-0.780)	**0.748** (0.584-0.976)	**0.939** (0.698-1.26)	**1.08** (0.784-1.47)	**1.21** (0.847-1.69)	**1.33** (0.893-1.92)	**1.48** (0.954-2.21)	**1.58** (1.00-2.43)
60-min	**0.389** (0.307-0.503)	**0.513** (0.405-0.664)	**0.708** (0.556-0.919)	**0.862** (0.673-1.12)	**1.06** (0.790-1.42)	**1.21** (0.879-1.64)	**1.34** (0.944-1.88)	**1.47** (0.991-2.13)	**1.63** (1.05-2.44)	**1.74** (1.10-2.68)
2-hr	**0.485** (0.387-0.618)	**0.613** (0.489-0.782)	**0.815** (0.648-1.04)	**0.975** (0.770-1.25)	**1.18** (0.892-1.56)	**1.34** (0.985-1.80)	**1.48** (1.05-2.05)	**1.62** (1.10-2.31)	**1.79** (1.17-2.63)	**1.90** (1.22-2.88)
3-hr	**0.567** (0.456-0.717)	**0.685** (0.550-0.867)	**0.873** (0.698-1.11)	**1.02** (0.813-1.31)	**1.22** (0.930-1.60)	**1.37** (1.02-1.83)	**1.51** (1.08-2.07)	**1.65** (1.13-2.34)	**1.82** (1.20-2.67)	**1.94** (1.25-2.92)
6-hr	**0.740** (0.602-0.923)	**0.843** (0.685-1.05)	**1.01** (0.820-1.27)	**1.16** (0.930-1.45)	**1.36** (1.05-1.77)	**1.51** (1.15-2.01)	**1.67** (1.22-2.28)	**1.84** (1.28-2.59)	**2.06** (1.38-2.99)	**2.23** (1.45-3.30)
12-hr	**0.921** (0.758-1.13)	**1.05** (0.864-1.29)	**1.27** (1.04-1.56)	**1.45** (1.18-1.80)	**1.72** (1.35-2.21)	**1.93** (1.48-2.52)	**2.14** (1.58-2.88)	**2.37** (1.67-3.29)	**2.67** (1.81-3.83)	**2.91** (1.91-4.24)
24-hr	**1.12** (0.934-1.36)	**1.29** (1.07-1.56)	**1.57** (1.30-1.91)	**1.81** (1.49-2.21)	**2.15** (1.72-2.74)	**2.43** (1.89-3.14)	**2.72** (2.03-3.61)	**3.02** (2.16-4.14)	**3.43** (2.35-4.85)	**3.76** (2.49-5.39)
2-day	**1.35** (1.14-1.62)	**1.54** (1.30-1.84)	**1.87** (1.57-2.24)	**2.15** (1.80-2.59)	**2.57** (2.07-3.22)	**2.90** (2.28-3.70)	**3.25** (2.46-4.26)	**3.62** (2.62-4.89)	**4.14** (2.86-5.76)	**4.54** (3.05-6.41)
3-day	**1.52** (1.29-1.79)	**1.74** (1.47-2.05)	**2.11** (1.78-2.50)	**2.43** (2.04-2.90)	**2.89** (2.34-3.58)	**3.25** (2.57-4.10)	**3.64** (2.77-4.71)	**4.04** (2.93-5.39)	**4.59** (3.19-6.32)	**5.02** (3.39-7.02)
4-day	**1.65** (1.41-1.94)	**1.89** (1.62-2.23)	**2.29** (1.95-2.71)	**2.64** (2.23-3.13)	**3.12** (2.55-3.85)	**3.51** (2.79-4.39)	**3.91** (2.99-5.02)	**4.32** (3.15-5.73)	**4.89** (3.42-6.68)	**5.33** (3.61-7.40)

7-day	**2.01** (1.73-2.33)	**2.26** (1.95-2.63)	**2.69** (2.31-3.14)	**3.06** (2.61-3.58)	**3.57** (2.94-4.34)	**3.98** (3.19-4.91)	**4.39** (3.39-5.57)	**4.83** (3.55-6.31)	**5.41** (3.82-7.30)	**5.86** (4.01-8.04)
10-day	**2.31** (2.01-2.67)	**2.58** (2.24-2.98)	**3.03** (2.62-3.50)	**3.41** (2.93-3.96)	**3.95** (3.27-4.75)	**4.37** (3.53-5.34)	**4.80** (3.73-6.04)	**5.25** (3.89-6.80)	**5.86** (4.16-7.83)	**6.33** (4.35-8.60)
20-day	**3.17** (2.80-3.60)	**3.51** (3.09-3.98)	**4.06** (3.56-4.63)	**4.53** (3.94-5.18)	**5.17** (4.34-6.11)	**5.68** (4.64-6.82)	**6.19** (4.86-7.64)	**6.71** (5.02-8.54)	**7.40** (5.31-9.72)	**7.93** (5.52-10.6)
30-day	**3.89** (3.46-4.38)	**4.31** (3.82-4.85)	**4.99** (4.41-5.63)	**5.55** (4.87-6.30)	**6.32** (5.33-7.38)	**6.90** (5.68-8.20)	**7.48** (5.91-9.13)	**8.06** (6.08-10.1)	**8.82** (6.36-11.5)	**9.40** (6.58-12.4)
45-day	**4.82** (4.31-5.37)	**5.36** (4.79-5.98)	**6.23** (5.55-6.97)	**6.93** (6.13-7.79)	**7.86** (6.67-9.07)	**8.55** (7.07-10.0)	**9.22** (7.33-11.1)	**9.87** (7.48-12.3)	**10.7** (7.76-13.7)	**11.3** (7.97-14.8)
60-day	**5.62** (5.06-6.22)	**6.29** (5.65-6.96)	**7.33** (6.56-8.14)	**8.16** (7.26-9.10)	**9.24** (7.86-10.6)	**10.0** (8.32-11.7)	**10.8** (8.59-12.9)	**11.5** (8.72-14.1)	**12.3** (8.97-15.7)	**12.9** (9.16-16.8)

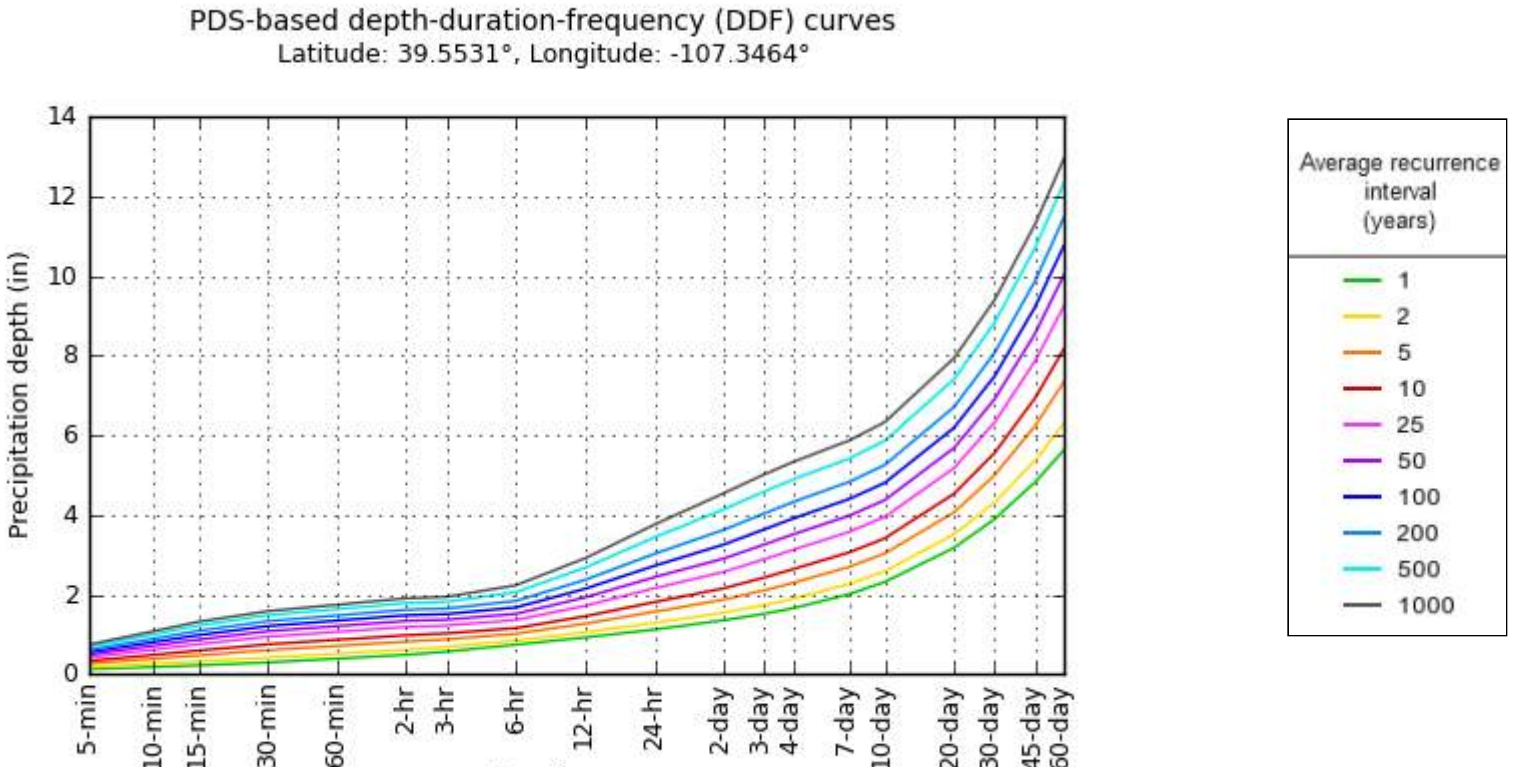
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

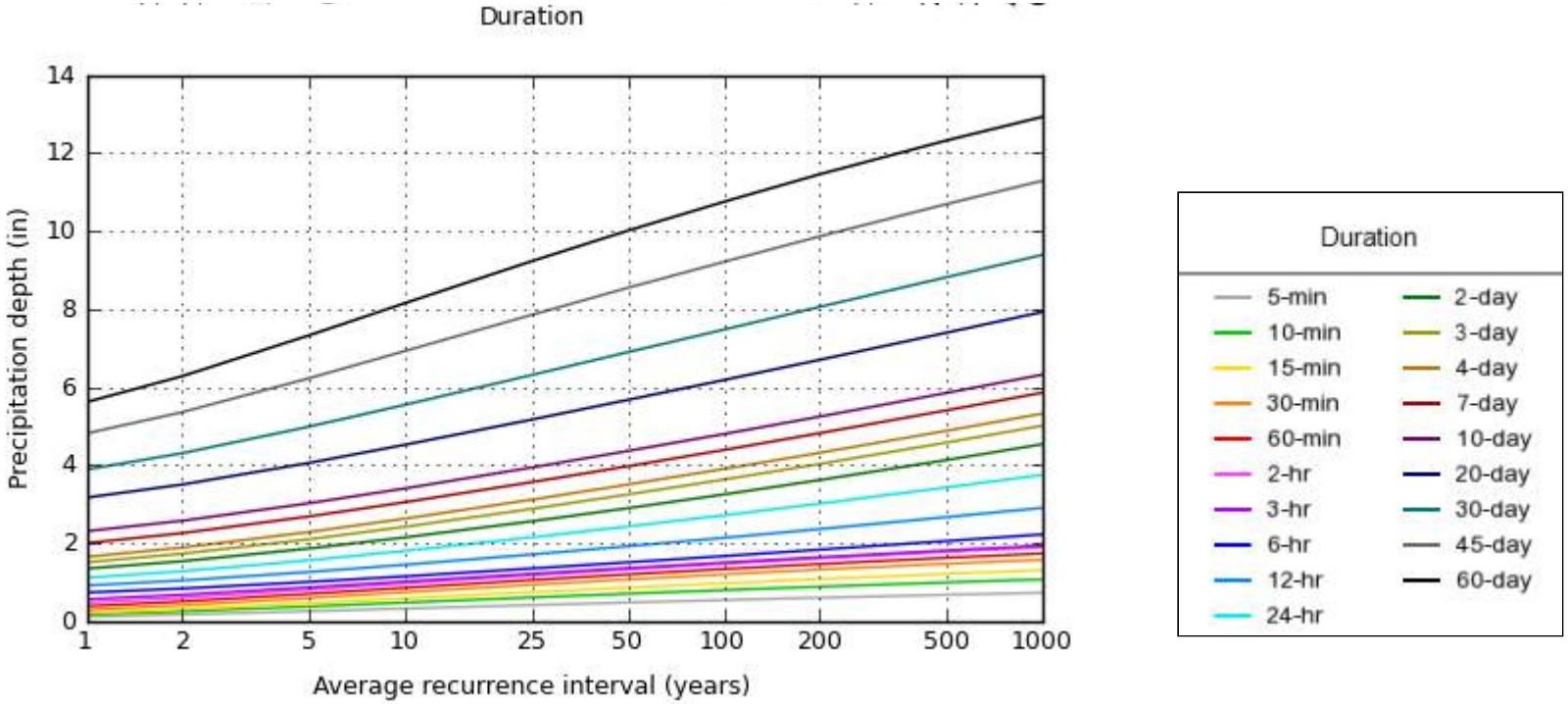
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical





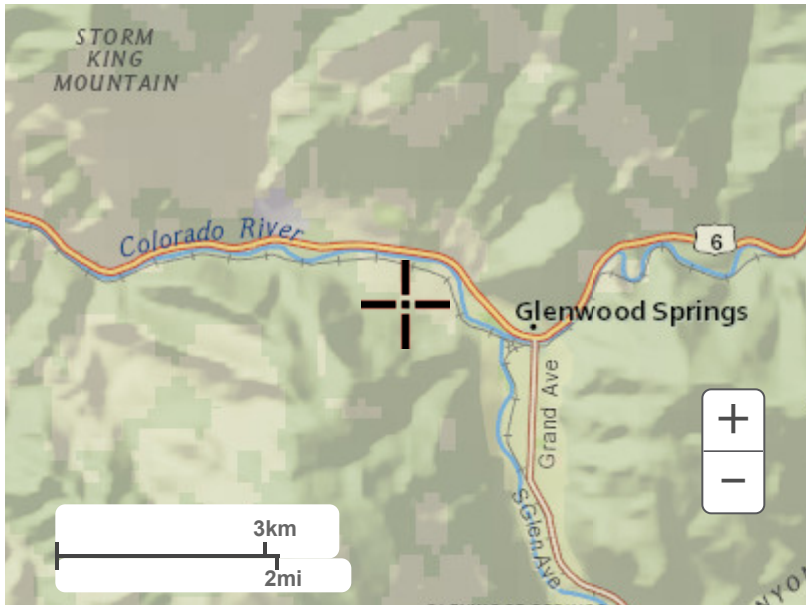
NOAA Atlas 14, Volume 8, Version 2

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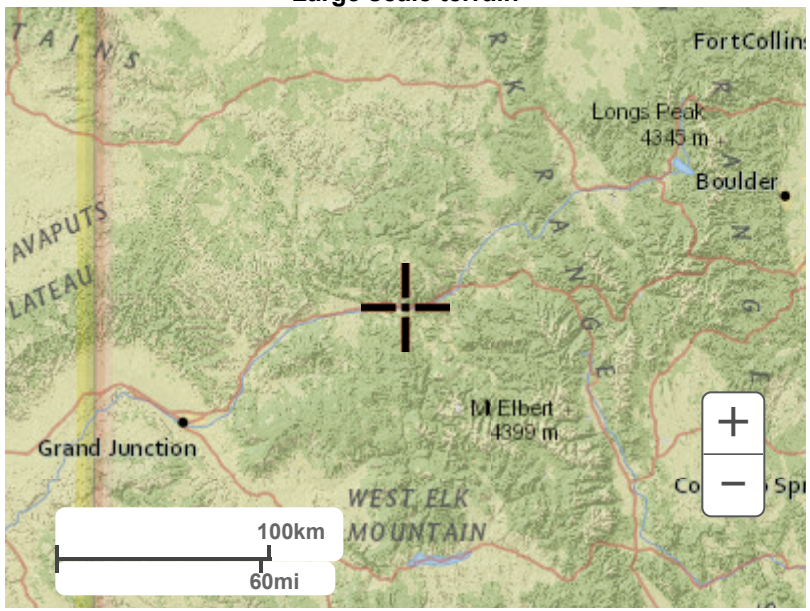
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Maps & aerials

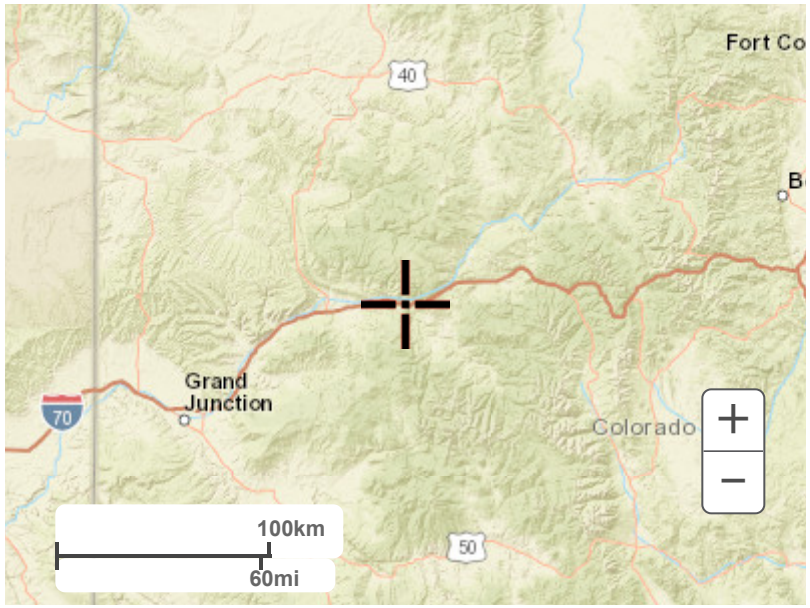
Small scale terrain



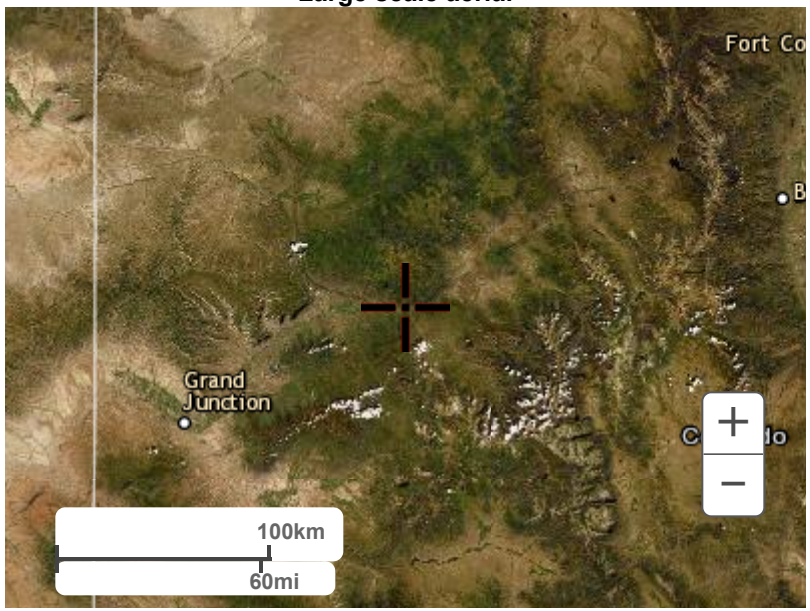
Large scale terrain



Large scale map



Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX B

PROPOSED CONDITIONS DRAINAGE MAP – GLENWOOD MEADOWS MASTER DRAINAGE STUDY

CIVIL ENGINEERING

LAND SURVEYING

An Employee-Owned Company

MASTER DRAINAGE REPORT

FOR

GLENWOOD MEADOWS

GLENWOOD SPRINGS, COLORADO

MASTER DRAINAGE PLAN SUBMITTAL

HCE JOB NO. 2000031.00 x 0316
FILE: K:\WP\2000\031\master drainage report.doc

REVISED: MAY 24, 2002
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DRAWINGS: Vicinity Map
Soil Survey Map
FEMA Floodplain Map
Pondpack Routing Map – Historic and Proposed
Historic Drainage Conditions
Proposed Grading and Drainage Plans

APPENDIX: Historic Flow Calculations - PONDPACK
Proposed Flow Calculations - PONDPACK
Culvert Calculations
Area Calculations

roximately 345 acres located
icinity Map, **Figure 1**. The
development, 33.3 acres of

l development. This project
are multiple off-site basins
ated, and potentially subject

n the Appendix. A 25-year,
year, 24-hour event was used
s Regulations. The design
24-hour storm flows under
nd 2) pass the 100-year, 24-
sting drainage structures and
s of basins and channels to
opments. This analysis does
rge rates but instead limits
ures.

y 5750 feet along Midland
t an elevation of 7500 feet is
ood events (below 7500 feet)
drainage basins should be
ysis was performed using the
historically designated flood

basin was delineated from
umbers range from 70-77,
as shown in Table 1. These
unt the vegetation that was
of 2002. Pre-fire conditions
present when the existing

INTRODUCTION

The proposed Glenwood Meadows is a planned unit development of app
along Midland Avenue in West Glenwood Springs. See the enclosed V
development will consist of approximately 36.8 acres of commercial
mixed use, 10.7 acres of hospitality, and 54.2 acres of residential.

The Colorado River is located to the north and northeast of the propose
is not affected by the 100 year floodplain of the Colorado River. There
that drain to the site from the south. These basins are steep, non-veget
to mitigatable debris flow events.

DESIGN CRITERIA

The stormwater flow calculations for the off-site basins are provided i
24-hour storm event has been adopted for the minor storm and the 100-
for the major event in accordance with the City of Glenwood Spring
criteria used for this study will be as follows: 1) pass the 25-year,
Midland Avenue through existing and proposed drainage structures, a
hour storm flows under the Railroad and Devereux Road through the ex
3) control the release rate from potential debris flow events in a serie
provide protection to the downstream residential and commercial devel
not limit the development to release stormwater at historical discha
discharge rates from the site to the capacities of the downstream struc

EXISTING CONDITIONS

The existing site varies in elevation from 7900 feet to approximatel
Avenue. Stream gage record analysis in western Colorado indicates tha
approximately the dividing elevation between rainfall derived critical fl
and snowmelt derived events (above 7500 feet). Based on this, the
considered as governed by rainfall runoff. Therefore the hydrology anal
SCS method. There is no future development on the site that lies in a
prone area according to FEMA floodplain maps (**Figure 3**).

Sixteen historic drainage basins were analyzed in this report. Each
existing culverts along Midland Avenue (**Figure 4**). The curve n
representing woods, juniper and brush and moderately steep slopes,
curve numbers represent pre-fire conditions and do not take into acc
destroyed on the steep portions of the drainage basins in Coal Seam Fir
were analyzed in order to represent the historic conditions that wer

Table 1. Historic Basin Characteristics

Basin	Area	Curve Number
D1	7.79	77
D2	18.45	77
DE3	21.69	77
E4	85.30	77
E5	84.41	75
F6	36.15	77
F7	6.39	74
F8	9.19	74
P-A	11.19	74
F9	8.33	73
F10	10.20	71
F11	6.43	71
F12	18.53	70
F13	70.17	71
G	121.69	73
H	16.81	77

Historically, as shown in Table 2, the existing conditions have a total flowrate to Midland Avenue of 454.75 during the 100-year storm and the combined culverts that drain the site have a total full flow capacity of 830.12 cfs. (Note: Culvert 16 is for the Atkinson Canal, not storm drainage.)

Table 2. Historic Runoff

Design Point	Basin #	Culvert	Size (in)	Capacity (cfs)	Historic Flow (cfs)	
					25 Year	100 Year
1	D1	1	18	11.4	4.75	7.55
2	D2	2	18	12.47	11.06	17.35
3	DE3	3	48	109.0	12.54	19.75
4	E-4	4	48	96.0	49.35	77.69
5	E-5	5	48	121.5	38.24	63.50
6	F-6	6	48	134.0	21.13	33.34
7	F-7	7	18	13.90	2.92	4.82
8	F-8	8	18	13.4	4.07	6.83
9	P-A	9	18	13.75	4.70	8.02
4	F-9	10	18	13.95	2.97	5.26
12	F-10	11	18	11.83	5.23	9.62
	F-11	12	18	9.83		
	F-12	13	18	11.71		
10	F-13, ex-G	14	30	46.78	66.76	119.67
15	G	15	(2) 29x42	126.8	47.06	82.03
16	H	16	48	0	0	0
Total				**746.32**	**270.25**	**454.75**

PROPOSED CONDITIONS

Stormwater runoff and debris flows from offsite contributing drainage basins south of the proposed development will be captured in one of four debris flow ponds and released at a controlled rate utilizing proposed outfall structures. Discharge from the ponds shall be conveyed to the development through open channels to a series of proposed storm drains under Wolfsohn Road. Off-site flows will be combined with on-site flows and conveyed through the development in a series of proposed storm sewers that shall discharge to Midland Avenue. There are 15 existing culverts conveying stormwater runoff under Midland Avenue (excluding culvert #16). The existing culverts have adequate capacity to convey the 25-year storm event under Midland Avenue except for a pair of 18-inch pipes that should be replaced with a 48-inch culvert and the existing 30" replaced with a 48" culvert. The runoff shall then be conveyed to one of five culverts under the Railroad to Devereux Road. The runoff will pass under Devereux Road and discharge to the Colorado River. The historic drainage pattern will be maintained with the developed drainage flow.

Each parcel inside the property will be required to evaluate their site-specific design to ensure they meet or exceed the requirements of this study and the City of Glenwood Springs Development Code. All inlets shall be per CDOT standards. All piping material for storm drains shall be either RCP or ADS-N12 (or approved equal).

In addition to this study, each parcel will be required to implement best management practices and erosion control measures to reduce stormwater sediment and pollutant transport to downstream sources. Water quality measures are the responsibility of individual lot owners and may include detaining the 2 year storm (the water quality capture volume) and/or providing baffled oil skimmers or vortechnics systems to reduce potential pollutants. Erosion control measure should include the following: geo-textile mats or riprap for open channels with high flow velocities (greater than 5 feet per second) or slopes at or greater than 2:1, straw bales for channels and swales, and silt fencing for grading. See the City of Glenwood Springs Development Code for additional Best Management Practices.

PROPOSED OFFSITE CONTRIBUTING DRAINAGE BASINS

There are fourteen offsite drainage basins to the south of the proposed development as shown on the proposed Grading and Drainage Plan (**Figure 5**). They consist of SCS hydrologic Type C & D soils (**Figure 2**). Due to the Coal Seam Fire of 2002, the majority of the vegetation on the site has been destroyed. This has increased the potential for a debris flow, and increased the runoff rate on the site. A curve number of 91 was utilized for those drainage basins that were considered to be potential major debris generators due to their steepness and their lack of vegetation (0-5% vegetation) resulting from the Fire. Curve numbers for the remaining off-site basins were determined based upon the apparent re-growth of vegetation since the Fire.

PROPOSED OFFSITE NON-CONTRIBUTING BASINS

There are seven offsite drainage basins to the north of the proposed development as shown on the proposed Grading and Drainage Plan (**Figure 5**). These basins are located between Midland Avenue and the Railroad tracks and between the Railroad tracks and Devereux Road. The runoff from these basins has been combined with the runoff from the development to ensure that the drainage

structures located under the Railroad tracks and Devereux Road are adequate to handle the additional discharge from these drainage basins.

PROPOSED ONSITE DRAINAGE BASINS

There are twenty on-site drainage basins as shown on the proposed Grading and Drainage Plan **(Figure 5)**. They consist of SCS hydrologic Type C & D soils (**Figure 2**). The development will consist of approximately 36.8 acres of commercial development, 33.3 acres of mixed use, 10.7 acres of hospitality, and 54.2 acres of residential. The developed drainage basins have corresponding developed curve numbers as shown in **Table 3**.

Table 3. Proposed Basin Characteristics

Basin	Area	Curve Number	Basin	Area	Curve Number
*OS-1	39.27	91	PR-C	1.63	92
*OS-2	52.11	91	PR-DD	3.37	84
*OS-4	49.58	91	PR-E	25.80	92
*OS-5	14.93	88	PR-J	20.96	86
*OS-6	56.73	91	PR-L	23.26	92
*OS-7	11.3	88	PR-R	20.87	88
*OS-8	10.45	88	PR-M	16.07	92
*OS-9	7.13	88	PR-Q	11.30	92
*OS-11	22.31	91	PR-P	6.55	88
*OS-12	7.60	91	PR-S	5.01	78
PR-24	65.39	84	PR-T	6.79	88
PR-28	16.55	84	PR-U	8.54	91
PR-AA	7.73	92	COMM	63.43	70
PR-A	15.23	92			
PR-A	21.42	92			
PR-BB	10.67	85			
PR-B	18.49	85			
PR-D	3.52	84			

*Basins that are considered debris flow generators in the calculations due to grade and vegetation.

DEBRIS FLOW PONDS

Debris flow ponds have been placed just south of the proposed development in order to contain the debris flow before it enters the developed portions of the site. These ponds will serve a dual purpose as they will also act to attenuate storm water discharge during non-debris flow events. The total required volume for each debris flow pond can be seen in **Table 4**. The required pond volume is determined by applying a bulking factor to the runoff for the 100-year storm event for those drainage basins that are considered to be debris flow generators then adding the runoff for the 100-yr storm event from those drainage basins that do not generate debris flows. The bulking factor for debris flows is used to account for the additional material that could be accumulated during a debris flow event.

In this analysis a bulking factor of 2.4 was utilized with a solids concentration of 50%. Greater

solids concentrations are considered to be landslides and do not behave as a flowing liquid. Approximately 50% of the solids in the debris flow are greater than 6 inches in diameter. These large particles present the most concern to the proposed residential and commercial structures downstream of the debris flow ponds. Therefore the debris flow ponds are sized to capture the solids in excess of 6-inches in diameter plus an equivalent amount of stormwater runoff produced during the 100-year storm event.

$$\text{Volume}_{\text{stormwater}} * 2.4 = \text{Volume}_{\text{stormwater+debris}}$$

$$\text{Required Detention Volume} = (\text{Volume}_{\text{stormwater+debris}}) * 50\%$$

All grading on the site, including the debris flow ponds, shall have maximum slopes of 2:1 (H:V), with slopes of 2:1 being armored. Due to high velocities through the proposed channels, erosion control measures must be taken. The ponds shall have a maximum depth of 10-feet. The bottom of the ponds up to the 10 year water surface elevations shall be lined with bentonite per the Geotechnical Engineer's recommendations. The outlets will be 12" ADS-N12 with 8" diameter orifice plates installed on the ends. The ponds will also have a standpipe located within the berm in the event of clogging.

Table 4. Required Debris Flow Pond Volumes

Debris Flow Pond	Required Volume (ac-ft)
MOC	6.28
Pond 1	31.37
Pond 2	2.20
Pond 3	9.71

Debris Flow Pond MOC

A portion of the offsite and open space area drains to the existing MOC debris flow pond indicated by the MOC Design Point in the calculations. This runoff was accounted for previously by the MOC drainage report. This pond will capture the debris flow from basins OS-11 and OS-12 and the runoff from basin PR-28. A portion of the runoff that historically went to the MOC debris flow basin will instead be captured by Pond 1, reducing the required size of the MOC debris flow basin from 8.02 ac-ft to 6.28 ac-ft. The existing MOC pond currently encroaches onto the residential neighborhood. The MOC pond could be reduced in size in order to contain it within the city property because the required volume for the MOC pond will be reduced to less than the existing ponds volume. The MOC pond has two outlet structures, one at the east end and one at the west end of the existing structure. If a portion of the pond is removed, the pond would need to be regraded such that all of the drainage would go to the west end of the pond requiring some redesign of that outlet structure.

Debris Flow Pond #1

Debris Flow Pond 1 requires a volume of 31.37 ac-ft for debris flow and runoff detention of which 19.491 ac-ft will be used for stormwater only during the 100-year event. This pond will capture the debris flow from basins OS-1, OS-2, OS-4, OS-5, OS-8, OS-9 and the runoff from basin PR-24. This pond has 3 outlet structures designed to convey a portion of the runoff to Design Points 5, 6,

and 12. The proposed debris flow pond has a combined discharge rate for the three outlet structures of 7.1 cfs for the 25-year storm event and 8.86 cfs for the 100-year storm event.

Debris Flow Pond #2
Debris Flow Pond 2 requires a volume of 2.20 ac-ft for debris flow and runoff detention of which 0.948 ac-ft will be used for stormwater only during the 100-year event. This pond will capture the debris flow from basins OS-7 and the runoff from PR-T. This pond will replace the berm along the southwest side of the Community Center. The proposed debris flow pond has a discharge rate of 1.41 cfs for the 25-year storm event and 1.69 cfs for the 100-year storm event.

Debris Flow Pond #3
Debris Flow Pond 3 requires a volume of 9.71 ac-ft for debris flow and runoff detention of which 6.488 ac-ft will be used for stormwater only during the 100-year event. This pond will capture the debris flow from basin OS-6 and the runoff from PR-U. The proposed debris flow pond has a discharge rate of 2.34 cfs for the 25-year storm event and 2.79 cfs for the 100-year storm event.

DESIGN POINTS

DP 3
Design Point 3 is an existing 48" culvert with a capacity of 71 cfs. It has the capacity to convey the 100-year flow of 36.17 cfs contributed from basins PR-AA and PR-BB under Midland Avenue.

DP 4
Design Point 4 is an existing 48" CMP culvert with a capacity of 96 cfs that passes under Midland Avenue (Midland Culvert No. 4). It has the capacity to convey the 100-year flow released from Detention Pond 4. Basin PR-D and PR-DD flow along the path of the historic basin E-5; this basin historically outfalls into an existing pond constructed by CDOT. This pond has no outlet structures and High Country was unable to obtain any design information on this pond, therefore we do not recommend the use of this pond. The proposed basin PR-D bypasses this pond and discharges to Pond 4 which outfalls to Design Point 4.

Detention Pond 4 is a proposed 0.763 ac-ft volume pond required for runoff detention. This pond will capture a portion of the discharge from Debris Flow Pond 1 (outlet 1A), OS-1, and basins PR-A, PR-B, PR-D, PR-24a and PR-DD. This pond is required in order to convey the 100-year flow under the railroad and Devereux Road and has a discharge rate of 45.44 cfs for the 25-year storm event and 62.37 cfs for the 100-year storm event.

DP 5
Design Point 5 is an existing 48" culvert with a capacity of 122 cfs. It has the capacity to convey the 100-year flow of 4.07 cfs contributed from basin PR-C under Midland Avenue.

DP 6
Design Point 6 is an existing 48" culvert with a capacity of 134 cfs. It has the capacity to convey the 100-year flow of 86.59 cfs contributed from a portion of the discharge from Pond 1 (outlet 1B) and basins PR-E, PR-J, PR-24b and OS-2 under Midland Avenue.

DP 10
Design Point 10 includes an existing 18" CMP culvert and an existing 30" CMP culvert with a total

capacity of 58.49 cfs that pass under Midland Avenue. These culverts will convey the 25-year flow of 55.52 cfs from Ponds 2 and 3 and basins PR-U, PR-S, OS-6, OS-7, PR-Q, PR-P, PR-M, PR-T, and the Community Center. The 100-year flow of 84.03 cfs will overtop Midland Avenue at this point. Thus, we recommend replacing the 30" CMP with a 48" culvert that has the capacity 106 cfs.

DP 12

Design Point 12 includes two existing 18" culverts with a total capacity of 21.5 cfs that pass under Midland Avenue. These culverts are unable to convey the 25-year flow under Midland Avenue. These culverts should be replaced with one 48" culvert under Midland Avenue capable of carrying the flow from a portion of the discharge from Pond 1 (outlet 1C) and basins Pr-L, Pr-R, OS-4, PR-24C, OS-5, OS-8, and OS-9. It will have the capacity to convey the 100-year flow of 88.82 cfs contributed by these basins. The proposed culvert under Midland will be able to convey the 100-year flow released at this point to Railroad Culvert RR3.

DP's RR1 and DR1

Design Points RR1 and DR1 are existing 48" culverts that pass under the railroad and Devereux Road with capacities of 100 and 170 cfs respectively. The Design Point RR1 collects flow from Design Points 5 & 4 and conveys the flow under the railroad and to Design Point DR1 culvert which conveys the flow under Devereux Road. Both Design Point RR1 and DR1 culverts have the capacity to convey the 100-year flows of 67 and 97 cfs.

DP's RR2 and DR2

Design Points RR2 and DR2 are existing 48" culverts that pass under the railroad and Devereux Road with capacities of 95 and 110 cfs respectively. The Design Point RR2 collects flow from Design Point 6 and conveys the flow under the railroad and to Design Point DR2 culvert which conveys the flow under Devereux Road. Both Design Points RR2 and DR2 culverts have the capacity to convey the 100-year developed flows of 88 and 88 cfs respectively.

DP's RR3 and DR3

Design Points RR3 and DR3 are existing 48" culverts that pass under the railroad and Devereux Road with capacities of 124 and 132 cfs respectively. The Design Point RR3 collects flow from Design Point 12 and conveys the flow under the railroad and to Design Point DR3 culvert which conveys the flow under Devereux Road. Both Design Points RR3 and DR3 culverts have the capacity to convey the 100-year flow of 91 and 104 cfs respectively.

DP RR4

Design Point RR4 is an existing 48" culvert that passes under the railroad and discharges into the Colorado River. The culvert has a capacity of 124 cfs. The Design Point RR4 collects flow from Design Point 10 and conveys the flow under the railroad. Design Point RR4 culvert has the capacity to convey the 100-year flow of 85 cfs.

DP RR5

Design Point RR5 is an existing 42" culvert that passes under the railroad and Devereux Road and discharges into the Colorado River. The culvert has a capacity of 71 cfs. The Design Point RR4 collects flow from Design Point 3 and conveys the flow under the railroad. Design Point RR5 culvert has the capacity to convey the 100-year flow of 36 cfs.

TABLE 5 CULVERT SUMMARY

Design Point	Culvert No.	Pipe Size	Inv. In	Inv. Out	Length of Pipe	Pipe Slope (ft/ft)	Culvert Capacity (cfs)	25 year Historic Flow	100 year Historic Flow	25 Year Proposed Flow	100 Year Proposed Flow	Additional Culvert (cfs)	100YR Stormwater Detention Required (ac ft)
Midland Avenue Culverts													
	1	18	5755.24	5751.10	73.05	0.057	11.40	4.75	7.55				
	2	18	5751.52	5747.30	66.65	0.063	12.47	11.06	17.35				
3	3	42	5761.06	5749.47	63.15	0.184	109.00	12.54	19.75	26.98	36.17		
4	4	48	5759.25	5744.81	121.79	0.119	96.00	49.35	77.69	45.44	62.37		
													Pond 1a + 4=
5	5	48	5764.13	5746.84	125.46	0.138	121.50	38.24	63.50	3.17	4.07		4.937 + 0.763
6	6	48	5746.11	5744.48	101.66	0.016	134.00	21.13	33.34	65.74	86.59		
	7	18	5744.34	5742.27	67.44	0.031	13.90	2.92	4.82				Pond 1b =
	8	18	5746.18	5743.28	75.15	0.039	13.40	4.07	6.83				6.19
12	9	18	5743.19	5741.00	70.02	0.031	13.75	4.70	8.02	67.98	88.82		
	10	18	5739.96	5737.86	74.59	0.028	13.95	2.97	5.26				
	11	18	5736.51	5735.58	66.01	0.014	11.83	5.23	9.62			25 yr overtops	Pond 1c=
	12	18	5737.54	5736.71	78.86	0.011	9.83					48"	8.364
10	13	18	5738.94	5738.60	82.92	0.004	11.71	4.52	8.99	62.40	84.03	100-yr overtops -48"	Pond 2 + Pond 3
	14	30	5741.80	5740.62	80.48	0.015	46.78	66.76	119.67				0.948+6.488
	15	(2) 29x42	5760.31	5756.08	68.16	0.062	126.80	47.06	82.03				
	16	48	5763.63	5763.68	144.67		83.80	11.02	17.02				Atkinson Canal
Railroad Culverts													
RR1	RR1	48	5725.94	5719.83	118.25	0.052	100.00	87.59	141.19	48.77	67.32		
RR2	RR2	48	5726.8	5718.17	168.28	0.052	95.00	24.05	38.16	66.46	87.89		
RR3	RR3	48	5727.12	5722.89	329.23	0.013	122.00	14.00	24.47	68.83	90.53		
RR4	RR4	54	5728.31	5723.33	257.02	0.091	124.00	21.00	41.49	62.73	84.72		
RR5	RR5	42	5728.2	5723.89	118	0.037	71.00			27.73	37.76		
RR6	RR6	42	5728.3	5727.81	63	0.008	87.00						
Devereaux Road Culverts													
DR1	DR1	48	5694	5691.87	40	0.053	169.59	44.83	141.75	50.12	70.08		
DR2	DR2	48	5707.44	5705	70	0.035	110.00	26.62	41.77	69.16	93.31		
DR3	DR3	48	5715.42	5713.46	40	0.049	132.09	12.34	22.56	72.56	98.13		

* Culvert numbers 1-16 are located on Midland Avenue.
* Culvert numbers RR1-RR6 are located underneath the railroad.
* Culvert number DR1-DR3 are located underneath Devereaux Road.
* Design Point 4 and 5 continue to Design Point RR1 and DR1
* Design Point 6 continues to Design Point RR2 and DR2.
* Design Point 12 continues to Design Point RR3 and DR3.
* Design Point 10 continues to Design Point RR4.
* Design Point 3 continues to Design Point RR5.

CONCLUSION

The master drainage plan for Glenwood Meadows recommends many types of drainage improvements and structures, all of which will act together to convey expected surface runoff across the site while mitigating impacts to expected building types or the environment. The historic debris flow potential will be reduced significantly with the proposed debris flow ponds and the potential for downstream affects due to the debris flow will be greatly reduced. The proposed stormwater discharge for the 25-year storm event can be conveyed under Midland Avenue. The 100-year storm event can be conveyed under the Railroad and Devereux Road utilizing on-site detention.

REFERENCES

1. United States Geological Survey Magnitude and Frequency of Flood in the Western United States, Part 9, Colorado River Basin, 1966.

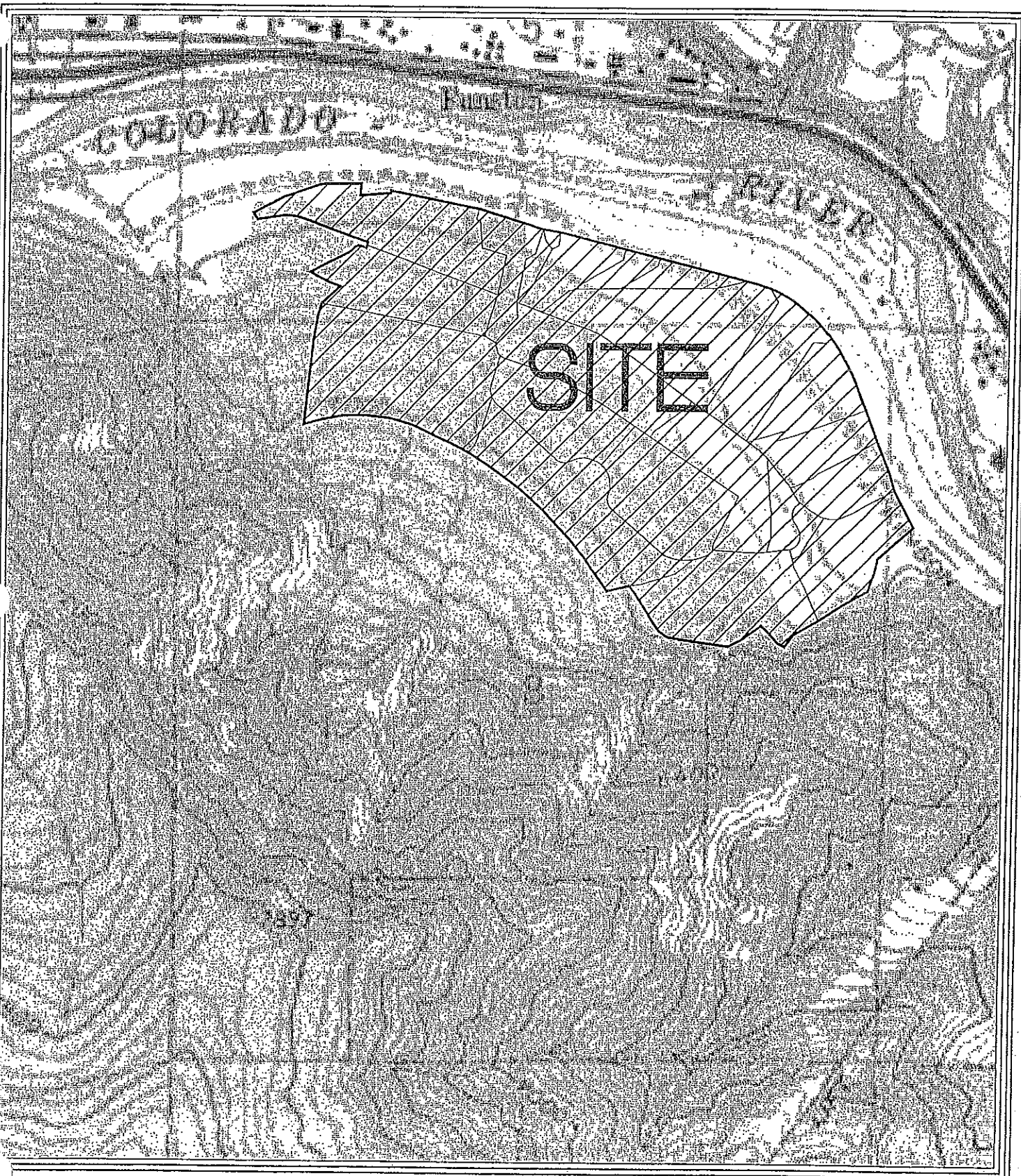
2. National Oceanic and Atmospheric Administration: Precipitation-Frequency Atlas of the Western United States, Volume III-Colorado. Silver Springs, MD 1973.

3. United States Department of Agriculture, Soil Conservation Service: Soil Survey of Aspen-Gypsum Area, Colorado, Parts of Eagle, Garfield, and Pitkin Counties, May 1992.

4. Hydrologic Analysis and Design, Richard H. McCuen: Prentice-Hall, Inc., 1989.

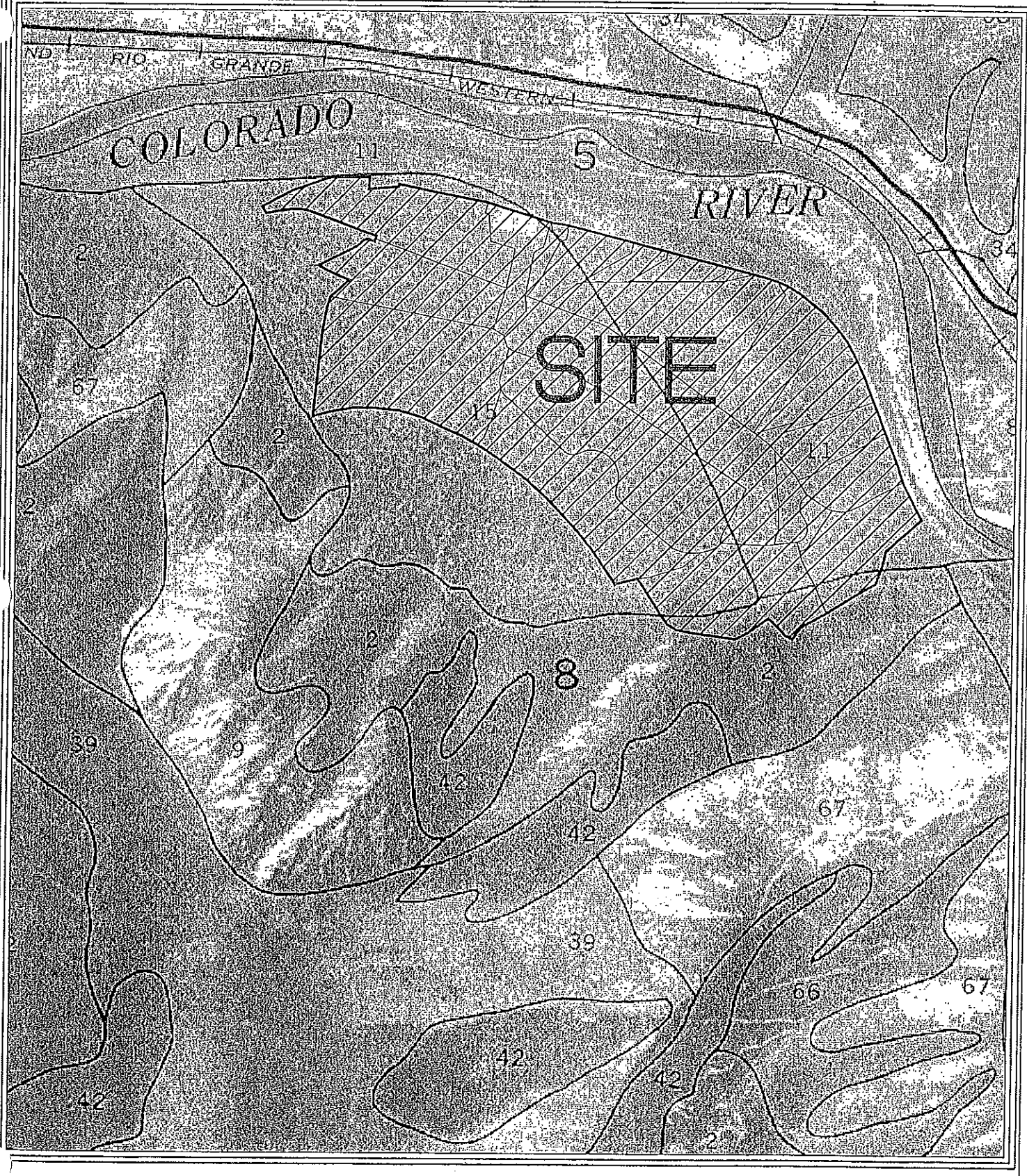
REFERENCE MATERIAL

VICINITY MAP



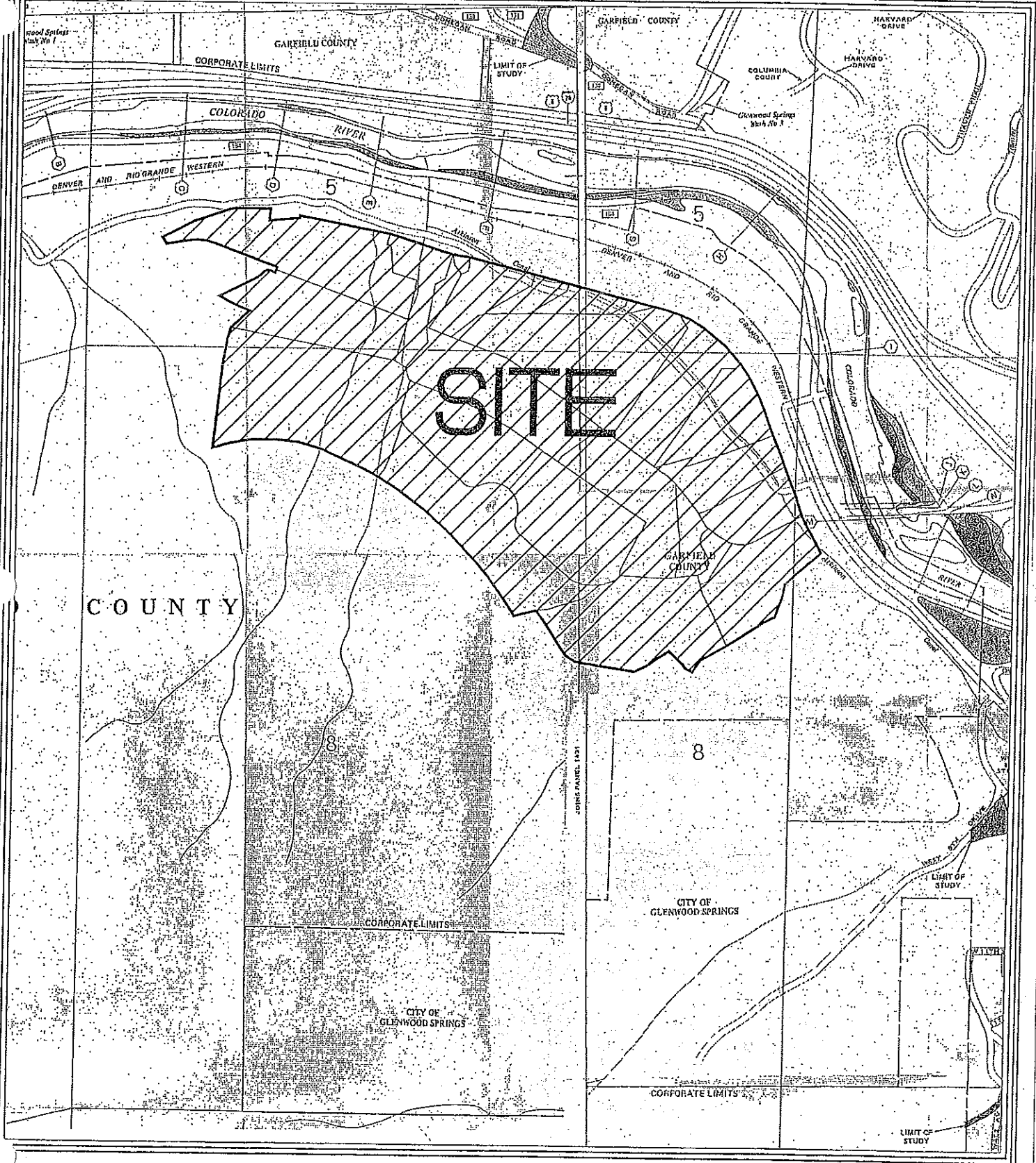
HIGH COUNTRY ENGINEERING, INC. 923 COOPER AVENUE GLENWOOD SPRINGS, CO 81601 (970) 945-8676 VICINITY-01.DWG	GLENWOOD MEADOWS, LLC GLENWOOD SPRINGS, CO GLENWOOD MEADOWS VICINITY MAP FIGURE 1	1" = 2000'			
		DES. JMW	CK.	FILE NO.	SHEET 1
		DR. JMW	DATE 5/9/02	2000031.01	OF 1

SCS SOILS MAP

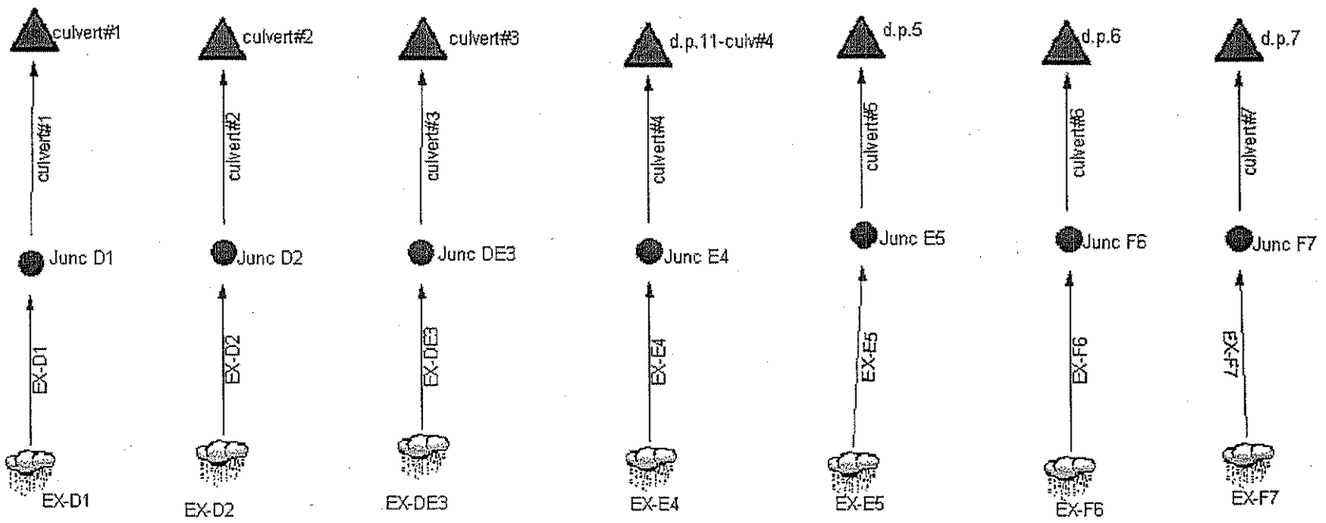


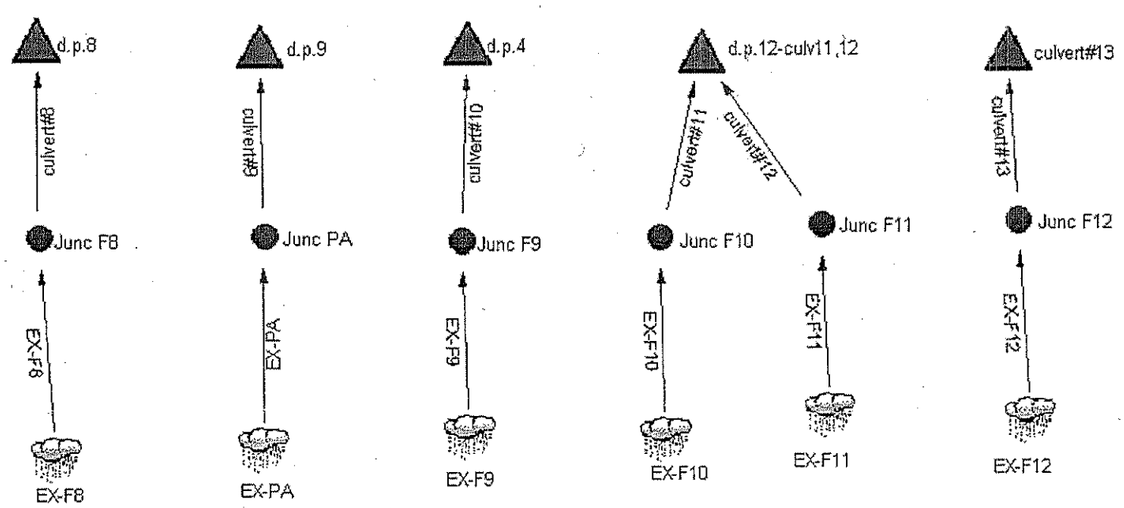
HIGH COUNTRY ENGINEERING, INC. 923 COOPER AVENUE GLENWOOD SPRINGS, CO 81601 (970) 945-8676 SCS-02.DWG	GLENWOOD MEADOWS, LLC GLENWOOD SPRINGS, CO GLENWOOD MEADOWS SCS SOILS MAP FIGURE 7	1" = 2000'			
		DES. JMW	CK.	FILE NO.	SHEET 1
		DR. JMW	DATE 5/9/02	2000031.01	OF 1

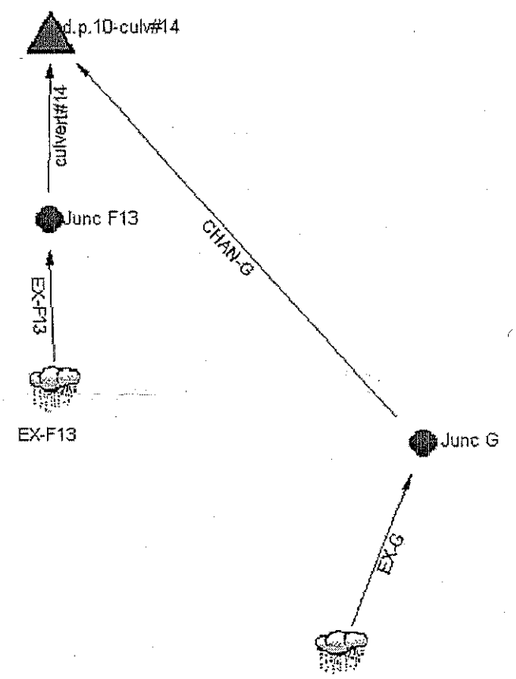
FEMA FLOODPLAIN MAP



HIGH COUNTRY ENGINEERING, INC. 923 COOPER AVENUE GLENWOOD SPRINGS, CO 81601 (970) 945-8676	GLENWOOD MEADOWS, LLC GLENWOOD SPRINGS, CO GLENWOOD MEADOWS FEMA FLOODPLAIN MAP	1" = 2000'		
fema-02	FIGURE 3	DES. JMW	CK.	FILE NO. 2000031.01
		DR. JMW	DATE 5/9/02	SHEET 1 OF 1



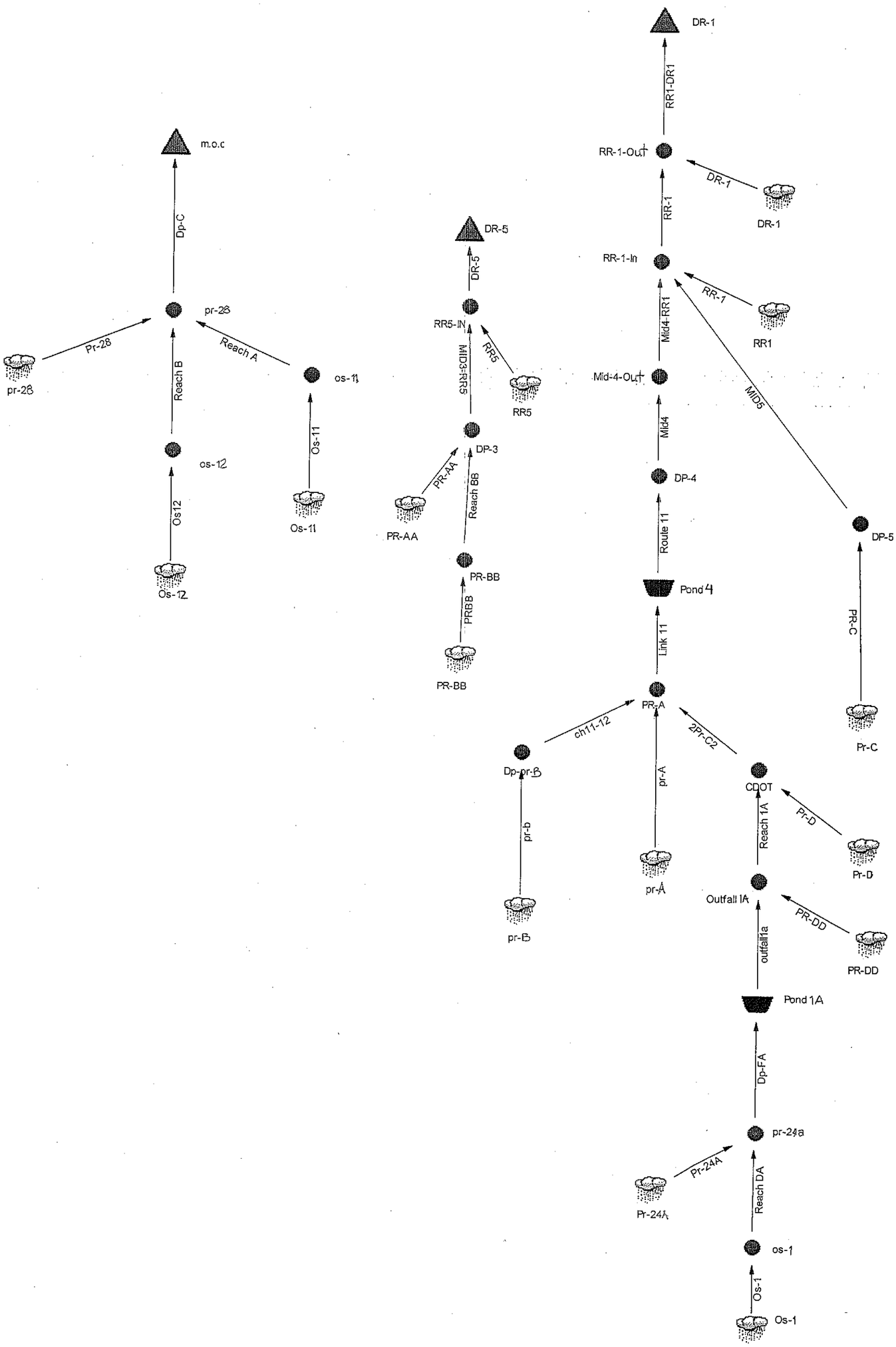




HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE,
SUITE 101
GLENWOOD SPRINGS, CO 81601
PH.(970) 945-8676
FX.(970) 945-2555
14 INVERNESS DRIVE EAST,
SUITE D136
ENGLEWOOD, CO 80112
PH.(303) 925-0554
FX.(303) 925-0547

GLENWOOD SPRINGS, CO
GLENWOOD MEADOWS
POND PACK ROUTING
EXISTING CONDITIONS

SCALE: N.T.S.			PONDP.DWG
DES. JRR	CK: LAH	FILE NO.	SHEET
DR. JRR	DATE: 1/25/04	2031027.00	1



HIGH COUNTRY ENGINEERING, INC.

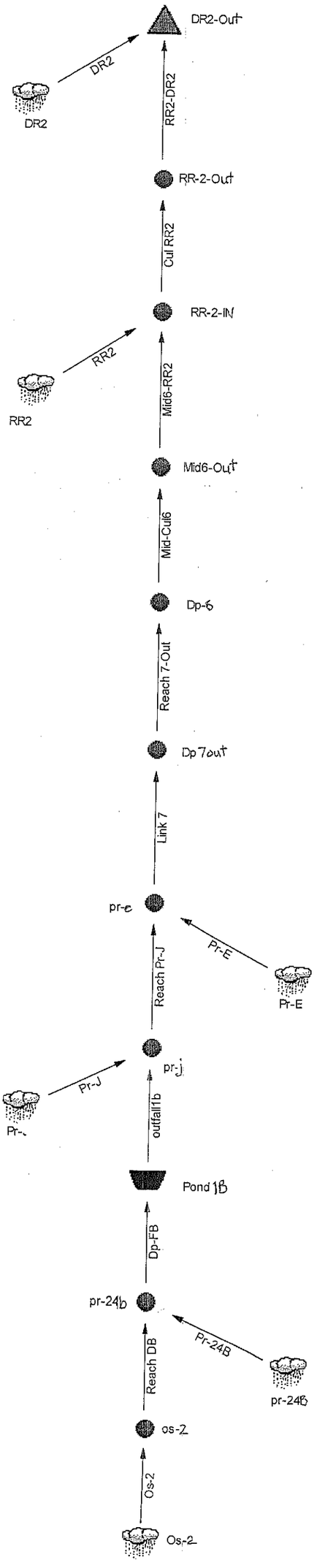
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GLENWOOD SPRINGS, CO
GLENWOOD MEADOWS
POND PACK ROUTING

SCALE: N.T.S.		PONDPACK	
DES. LAH	CK: LAH	FILE NO.	SHEET
DR. LAH	DATE: 5/5/04	2000031.00	1

Packet Page 1087



HIGH COUNTRY ENGINEERING, INC.

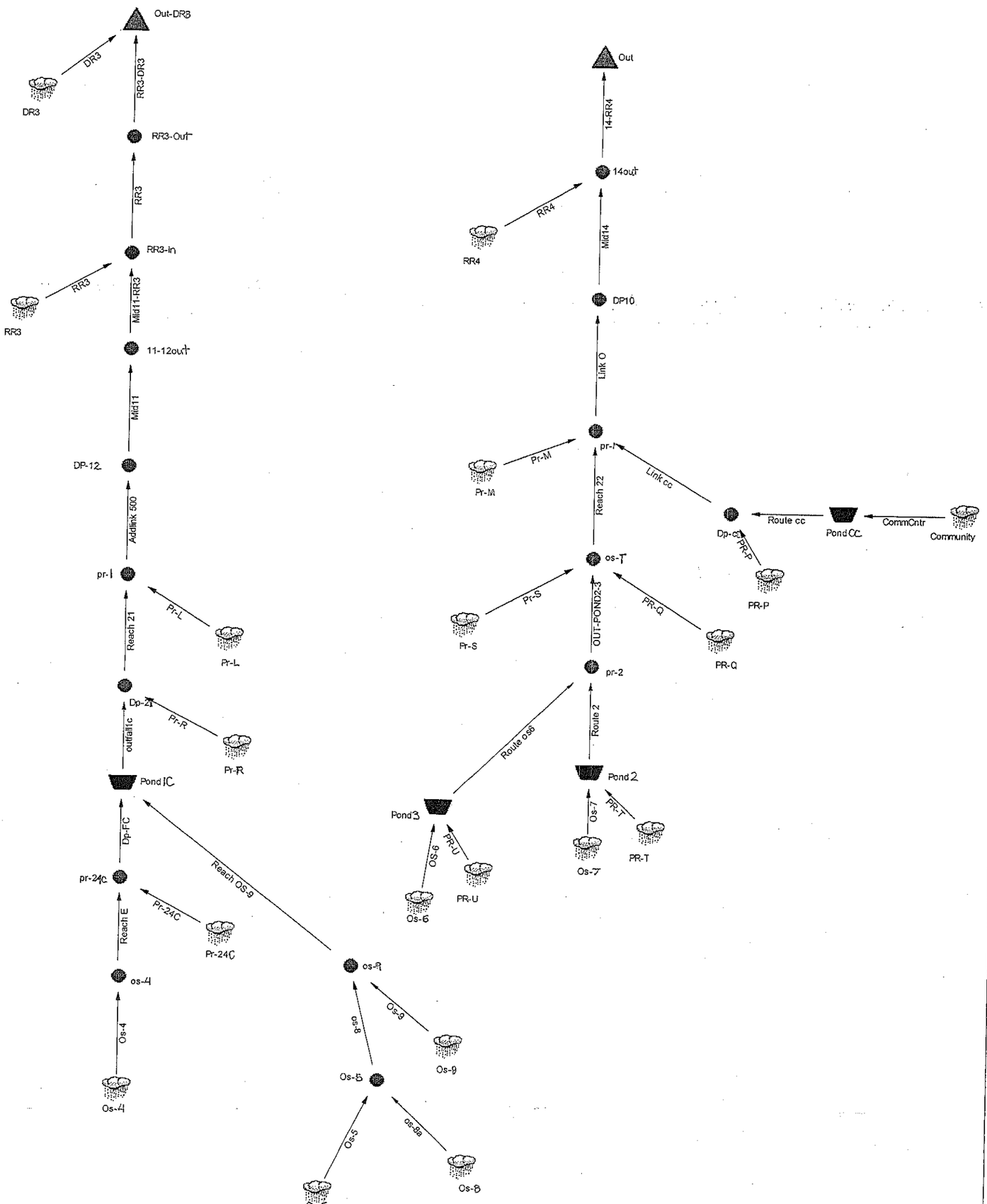
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GLENWOOD SPRINGS, CO
GLENWOOD MEADOWS
POND PACK ROUTING

SCALE: N.T.S.		PONDPACK	
DES. LAH	CK: LAH	FILE NO.	SHEET
DR. LAH	DATE: 5/5/04	2000031.00	2

Packet Page 1088



HIGH COUNTRY ENGINEERING, INC.

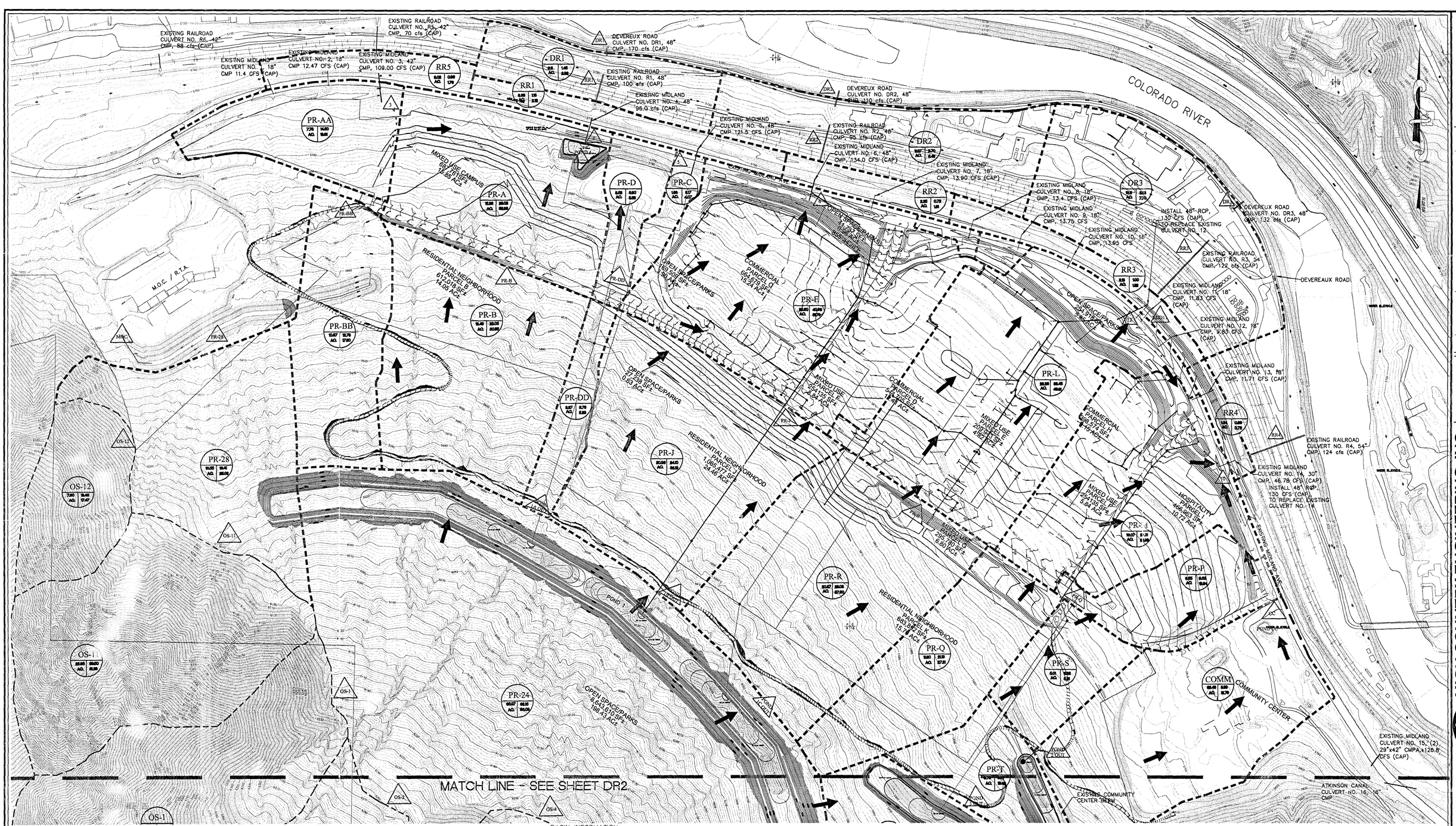
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PH.(970) 945-8676
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FX.(303) 925-0547

GLENWOOD SPRINGS, CO
GLENWOOD MEADOWS
POND PACK ROUTING

SCALE: N.T.S.			PONDPACK
DES. LAH	CK: LAH	FILE NO.	SHEET
DR. LAH	DATE: 5/5/04	2000031.00	3

Packet Page 1089



*BASINS THAT ARE CONSIDERED DEBRIS FLOW GENERATORS IN THE CALCULATIONS DUE TO GRADE AND VEGETATION.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)

1 inch = 200 ft.

LEGEND

- PROPOSED CULVERTS
- PROPOSED DESIGN POINT
- PROPOSED ROADWAY GRADES
- PROPOSED CURB INLET
- PROPOSED STORM PIPES
- OFFSITE DRAINAGE BASINS
- OFFSITE BASIN BOUNDARY
- ONSITE BASIN BOUNDARY
- CONTOUR 2'
- CONTOUR 10'
- PROPOSED DRAINAGE BASINS
- PROPOSED CONTOUR 2'
- PROPSED CONTOUR 10'
- FLOW DIRECTION

OS-0: 0.00 AC, 0.00 C — AREA IN ACRES — FLOW RATE (25 YR, 100 YR)

P-0: 0.00 AC, 0.00 C — AREA IN ACRES — FLOW RATE (25 YR, 100 YR)

BASIN INFORMATION

DEVELOPED

Basin	Area (ac)	C	Q_{25}	Q_{100}	Basin	Area (ac)	C	Q_{25}	Q_{100}	Basin	Area (ac)	C	Q_{25}	Q_{100}
*OS-1	39.27	91	69.53	90.29	PR-BB	10.67	85	12.73	17.80	RR1	3.62	71	1.15	2.12
*OS-2	52.11	91	97.03	112.96	PR-B	18.49	85	22.05	30.85	RR2	2.26	71	0.72	1.31
*OS-4	49.58	91	82.17	106.63	PR-D	3.52	84	3.90	5.53	RR3	3.13	71	1.00	1.82
*OS-5	14.93	88	21.93	29.50	PR-C	1.63	92	3.17	4.07	RR4	1.24	71	0.39	0.72
*OS-6	60.87	91	100.99	131.25	PR-DD	3.37	84	3.73	5.29	RR5	3.02	71	0.96	1.76
*OS-7	9.36	88	13.75	18.50	PR-E	25.60	92	40.36	51.79					
*OS-8	9.51	88	13.97	18.79	PR-J	20.96	86	24.10	33.19	DR1	6.11	69	1.45	2.92
*OS-9	4.76	88	7.02	9.45	PR-L	23.26	92	38.45	49.31	DR2	11.37	69	2.70	5.43
*OS-11	22.36	91	39.50	51.29	PR-R	20.87	88	28.03	37.60	DR3	16.11	69	3.83	7.70
*OS-12	7.60	91	13.46	17.47	PR-M	16.07	92	27.21	34.98					
					PR-Q	11.30	92	21.19	27.21					
PR-24	65.97	84	68.16	96.09	PR-P	6.55	88	9.62	12.94					
PR-28	16.55	84	16.41	23.08	PR-S	5.01	78	3.32	5.21					
					PR-T	6.76	88	9.97	13.42					
PR-AA	7.73	92	14.50	18.61	PR-U	8.54	91	15.12	19.63					
PR-A	15.23	92	28.02	35.99	COMM	63.43	70	8.89	18.79					

DESIGN POINT INFORMATION

DESIGN POINT	CONTRIBUTING BASINS	Q25	Q100
COMM	COMMUNITY CENTER	8.89	18.79
RR5	PR-AA, PR-BB, RR5	27.73	37.76

DESIGN POINT INFORMATION

DESIGN POINT	CONTRIBUTING BASINS	Q25	Q100
3	PR-AA, PR-BB	26.98	36.17
4	OS-1, PR-24A, PR-D, PR-DD, PR-A, PR-B	45.44	62.37
5	PR-C	3.17	4.07
6	OS-2, PR-24B, PR-J, PR-E	65.74	86.59
12	OS-4, PR-24C, PR-R, PR-L, OS-5, OS-8, OS-9	67.98	88.82
10	PR-U, OS-6, OS-7, PR-T, PR-S, PR-Q COMM., PR-P, PR-M	62.40	84.03
PR-BB	PR-BB	12.73	17.80

DESIGN POINT INFORMATION

DESIGN POINT	CONTRIBUTING BASINS	Q25	Q100
PR-B	PR-B	22.05	30.85
PR-DD	OS-1, PR-24A, PR-DD	4.68	6.60
PR-28	OS-11, OS-12 PR-28	66.94	88.95
PR-J	OS-2, PR-24C, PR-J	25.52	34.93
PR-R	OS-4, PR-24C, PR-R OS-5, OS-8, OS-9	28.03	37.60
PR-Q	PR-U, OS-6, OS-7, PR-T, PR-S, PR-Q	26.30	34.87
RR1	OS-1, PR-24A, PR-D, PR-DD, PR-A, PR-B, RR1	48.77	67.32

DESIGN POINT INFORMATION

DESIGN POINT	CONTRIBUTING BASINS	Q25	Q100
RR2	OS-2, PR-24B, PR-J, PR-E, RR2	66.46	87.89
RR3	OS-4, PR-24C, PR-R, PR-L, OS-9 OS-5, OS-8, RR3	68.83	90.53
RR4	PR-U, OS-6, OS-7, PR-T, PR-S, PR-Q COMM., PR-P, PR-M RR4	62.73	84.72
DR1	OS-1, PR-24, PR-D, PR-C, PR-A, PR-B, RR1	50.12	70.08
DR2	OS-2, PR-24, PR-J PR-K, PR-E, RR2	69.16	93.31
DR3	OS-4, PR-24, PR-Q, PR-R, PR-L, OS-1, OS-5, OS-8, OS-9	72.56	98.13

NO.	DATE	REVISION	BY
1	12/24/03	REVISIONS PER CITY COMMENTS	
2	2/27/04	REVISIONS TO DRAINAGE BASINS	

CALL UTILITY NOTIFICATION CENTER OF COLORADO 1-800-922-1987 OR 534-0700 IN METRO DENVER

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

DRAWN BY: LAH
CHECKED BY: LAH
DATE: 5/6/04
FILE: DR-01-05-03-04

HIGH COUNTRY ENGINEERING, INC.
14 INVERNESS DRIVE EAST, STE F-120, ENGLEWOOD, CO 80112
PHONE (303) 925-0544 FAX (303) 925-0547
1517 BLAKE AVENUE, STE 101, GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 FAX (970) 945-2555
WWW.HCENG.COM

GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS
MASTER DRAINAGE PLAN
PROPOSED CONDITIONS

PROJECT NO. 2000031.0316

DR1



*BASINS THAT ARE CONSIDERED DEBRIS FLOW GENERATORS IN THE CALCULATIONS DUE TO GRADE AND VEGETATION.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)

1 inch = 200 ft.

LEGEND

- PROPOSED CULVERTS
- PROPOSED DESIGN POINT
- PROPOSED ROADWAY GRADES
- PROPOSED CURB INLET
- PROPOSED STORM PIPES
- OFFSITE DRAINAGE BASINS (OS-0; Q25 AC. / Q100 AC.; AREA IN ACRES; FLOW RATE: Q25 YR, Q100 YR)
- OFFSITE BASIN BOUNDARY
- ONSITE BASIN BOUNDARY
- CONTOUR 2'
- CONTOUR 10'
- PROPOSED DRAINAGE BASINS (P-0; Q25 AC. / Q100 AC.; AREA IN ACRES; FLOW RATE: Q25 YR, Q100 YR)
- PROPOSED CONTOUR 2'
- PROPOSED CONTOUR 10'
- FLOW DIRECTION

BASIN INFORMATION

BASIN	AREA	CURVE NUMBER	BASIN	AREA	CURVE NUMBER	BASIN	AREA	CURVE NUMBER
*OS-1	39.27	91	PR-A	21.42	92	PR-S	5.40	78
*OS-2	52.11	91	PR-B	26.19	85	OS-T	2.50	92
*OS-4	49.58	91	PR-C	1.69	92	OS-U	1.10	92
*OS-5	14.93	88	PR-D	6.55	92	COMM	63.43	70
*OS-6	56.73	91	PR-E	22.09	92	RR1	3.63	71
*OS-7	11.30	88	PR-J	10.41	86	RR2	2.25	71
*OS-8	10.45	88	PR-K	11.16	85	RR3	3.13	71
*OS-9	7.13	88	PR-L	20.63	92	RR4	1.24	71
*OS-11	22.31	91	PR-M	5.23	92	DR1	6.11	69
*OS-12	7.60	91	PR-N	3.21	92	DR2	11.37	69
PR-20	13.03	84	PR-O	5.10	92	DR3	16.11	69
PR-23	13.19	82	PR-P	6.14	92			
PR-24	65.39	84	PR-Q	10.77	85			
PR-28	16.55	84	PR-R	9.19	88			

DESIGN POINT INFORMATION

DESIGN POINT	Q25	Q100
POND 1A OUTLET	1.99	2.43
POND 1B OUTLET	2.31	2.79
POND 1C OUTLET	2.80	3.64
POND 2 OUTLET	1.41	1.69
POND 3 OUTLET	2.34	2.79
POND 4 OUTLET	45.44	62.37

DESIGN POINT INFORMATION

DESIGN POINT	CONTRIBUTING BASINS	Q25	Q100
OS-1	OS-1	69.53	90.29
OS-2	OS-2	87.03	112.96
OS-4	OS-4	82.17	106.63
OS-5	OS-5	21.93	29.50
OS-8	OS-8	13.97	18.79
OS-9	OS-9	7.02	9.45
OS-6	OS-6	100.99	131.25
OS-7	OS-7	13.75	18.50

CALL UTILITY NOTIFICATION CENTER OF COLORADO 1-800-922-1987 OR 534-0700 IN METRO DENVER

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

NO.	DATE	REVISION	BY
1	12/24/03	REVISIONS PER CITY COMMENTS	
2	2/27/04	REVISIONS TO DRAINAGE BASINS	

DRAWN BY: LAH
CHECKED BY: LAH
DATE: 5/6/04
FILE: DR01-05-03-04

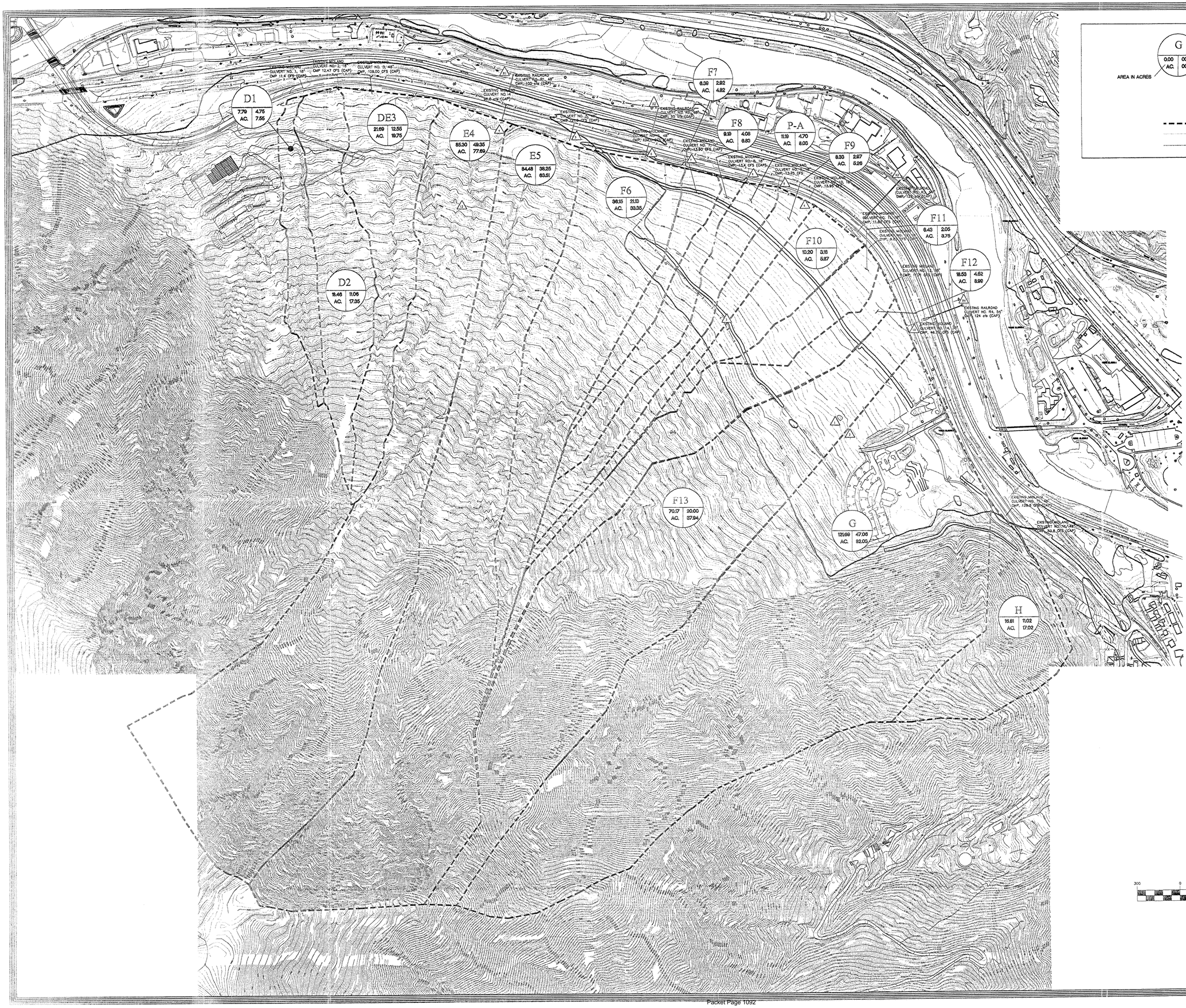
HIGH COUNTRY ENGINEERING, INC.
14 INVERNESS DRIVE EAST, STE F-120, ENGLEWOOD, CO 80112
PHONE (303) 925-0544 FAX (303) 9250547
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WWW.HCENG.COM

GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MASTER DRAINAGE PLAN PROPOSED CONDITIONS

PROJECT NO. 2000031.0316

DR2



LEGEND

- G — 0.00 AC. | 00.00 AC. — AREA IN ACRES / FLOW RATE (25 YR, 100 YR) — EXISTING DRAINAGE BASINS
- EXISTING DESIGN POINT
- EXISTING STORM PIPES
- EXISTING BASIN BOUNDARY
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR

BASIN	AREA	CURVE NUMBER
D1	7.79	77
D2	18.45	77
DE3	21.69	77
E4	85.30	77
E5	84.41	75
F6	36.15	77
F7	6.39	74
F8	9.19	74
P-A	11.19	74
F9	8.33	73
F10	10.20	71
F11	6.43	71
F12	18.53	70
F13	70.17	71
G	121.69	73
H	16.81	77

NORTH

GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)
1 inch = 300 ft.

NO	DATE	REVISION	BY
2	2/27/04	REVISIONS TO DRAINAGE BASINS	JRR

DES JRR
DR JRR
CK LAH
DATE 09/19/03
FILE HIST_01

HIGH COUNTRY ENGINEERING, INC.
557 BLACK AVENUE, STE 101
GLENWOOD SPRINGS, CO 81601
PH:(970) 945-3976
FX:(970) 945-3585
14 INVERNESS DRIVE EAST, STE D-136
ENGLEWOOD, CO 80112
PH:(303) 925-0554
FX:(303) 925-0547

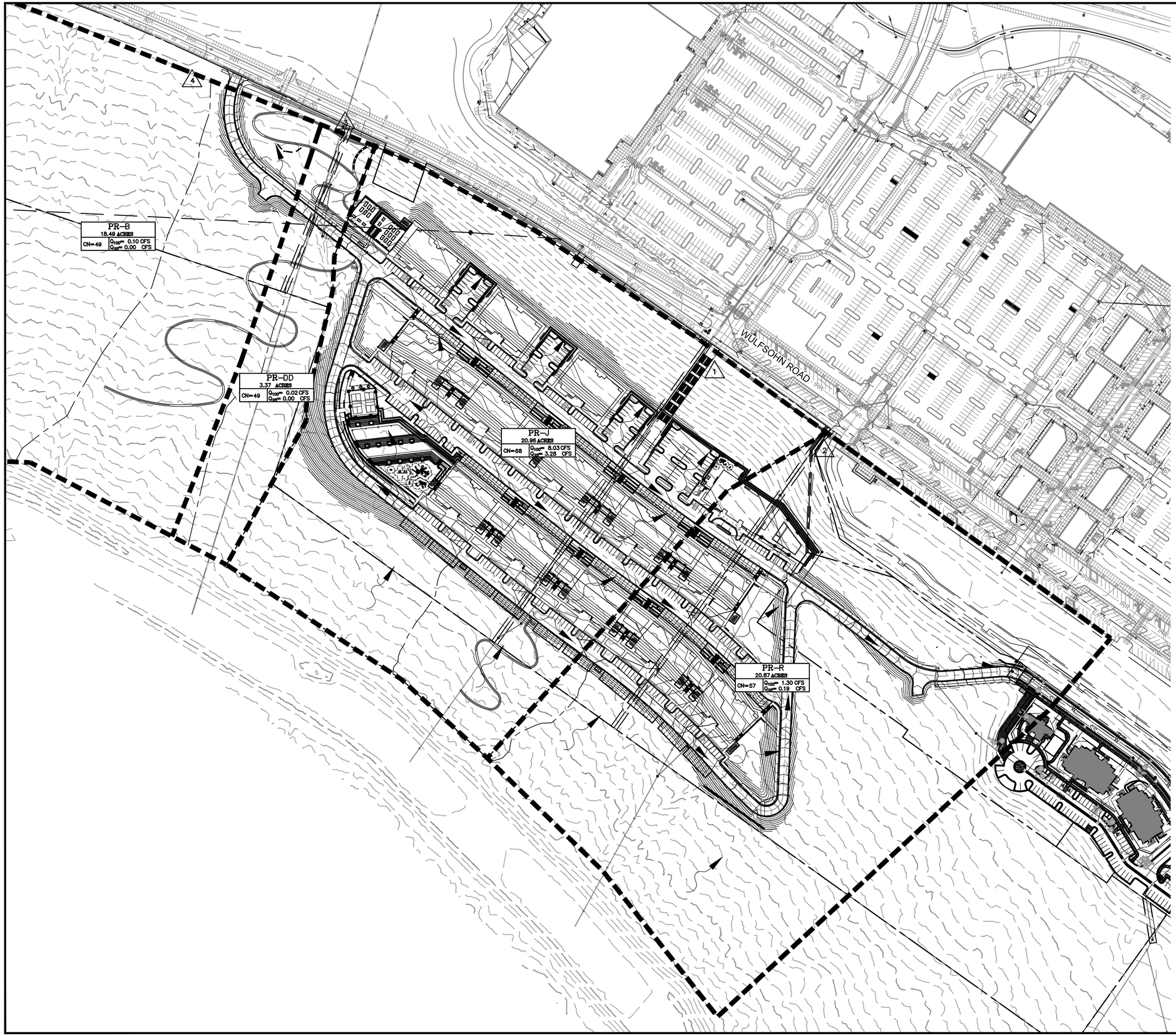
GLENWOOD SPRINGS
GLENWOOD MEADOWS
HISTORIC FLOW CONDITIONS

PROJECT NO
200031.01

SHEET H1

APPENDIX C

PROPOSED CONDITIONS DRAINAGE MAP – GLENWOOD MEADOWS MULTI-FAMILY



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

- EXISTING PROPERTY BOUNDARY
- 8010 EXISTING MAJOR CONTOUR
- 8008 EXISTING MINOR CONTOUR
- 8160 PROPOSED MAJOR CONTOUR
- 8158 PROPOSED MINOR CONTOUR
- OFFSITE DRAINAGE BASIN BOUNDARY
- EXISTING DRAINAGE BASIN BOUNDARY
- PROPOSED DRAINAGE BASIN BOUNDARY

EX-1	PR-1
## ACRES	### ACRES
CN=##	Q_{100}=#.## CFS Q_{25}=#.## CFS
	CN=0.##

DRAINAGE BASIN ID
DRAINAGE BASIN SIZE (ACRES)
CN= RUNOFF CURVE NUMBER
Q_{100}=100 YEAR RUNOFF FLOW (CFS)
Q_{25}=25 YEAR RUNOFF FLOW (CFS)

DRAINAGE FLOW PATTERN

1 DESIGN POINT

DESIGN POINTS

1 **DESIGN POINT 1: RECEIVES CHANNEL FLOW (PIPE) FROM BASIN PR-J.**

2 **DESIGN POINT 2: RECEIVES CHANNEL FLOW (PIPE) FLOW FROM BASIN PR-R.**

NOTES:

1. A SITE SPECIFIC GEOTECHNICAL REPORT WAS COMPLETED FOR GLENWOOD MEADOWS NO. 6 HOUSING, CITY OF GLENWOOD SPRINGS, COLORADO BY AMERICAN GEOSERVICES, DATED JULY 22, 2002, JOB NUMBER 0280-WS2020.
2. THE ENTIRE SITE IS LOCATED WITHIN ZONE D ON THE FIRM MAPS 0802051431B AND 0802051432B.
3. EXISTING SURVEY INFORMATION COMPLETED BY TUTTLE SURVEYING SERVICES.
4. PROPOSED BASIN DELINEATION FROM GLENWOOD MEADOWS MASTER DRAINAGE REPORT COMPLETED BY HIGH COUNTRY ENGINEERING, INC. (PROJECT NO. 2000031) DATED MAY 6, 2004.

COLORADO 811
CALL BEFORE YOU DIG
Utility Notification Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	6/25/21	MAJOR SITE / ARCH. REVIEW #3 DRAFT	

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE:
SCALE 1" = 100'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

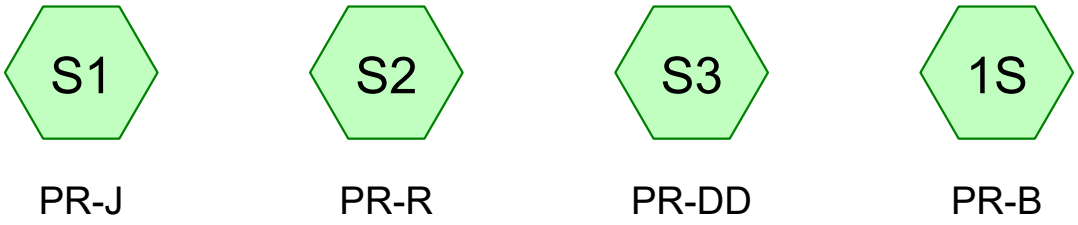
PROPOSED DRAINAGE BASIN MAP

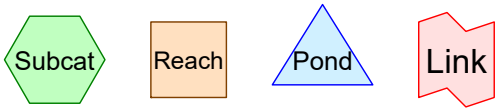
PROJECT NO.
2201044.00

PRDR

APPENDIX D

PROPOSED HYDROLOGIC CALCULATIONS





Routing Diagram for 220100-Proposed

Prepared by HydroCAD SAMPLER 1-800-927-7246 www.hydrocad.net, Printed 6/25/2021

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.458	98	Impervious (1S, S1, S2, S3)
46.792	48	Oak-aspen, fair, HSG B (1S, S1, S2, S3)
4.441	49	Open space, fair, HSG A (S1, S2)
63.691	**58**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.441	HSG A	S1, S2
46.792	HSG B	1S, S1, S2, S3
0.000	HSG C	
0.000	HSG D	
12.458	Other	1S, S1, S2, S3
63.691		**TOTAL AREA**

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PR-B Runoff Area=18.490 ac 1.24% Impervious Runoff Depth=0.00"
Flow Length=976' Slope=0.1609 '/' Tc=16.1 min CN=49 Runoff=0.00 cfs 0.000 af

Subcatchment S1: PR-J Runoff Area=20.961 ac 40.75% Impervious Runoff Depth>0.22"
Flow Length=2,082' Tc=16.8 min CN=68 Runoff=3.28 cfs 0.384 af

Subcatchment S2: PR-R Runoff Area=20.871 ac 17.23% Impervious Runoff Depth>0.04"
Flow Length=1,765' Tc=16.3 min CN=57 Runoff=0.19 cfs 0.069 af

Subcatchment S3: PR-DD Runoff Area=3.369 ac 2.67% Impervious Runoff Depth=0.00"
Flow Length=1,000' Tc=16.6 min CN=49 Runoff=0.00 cfs 0.000 af

Total Runoff Area = 63.691 ac Runoff Volume = 0.452 af Average Runoff Depth = 0.09"
80.44% Pervious = 51.233 ac 19.56% Impervious = 12.458 ac

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Summary for Subcatchment 1S: PR-B

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

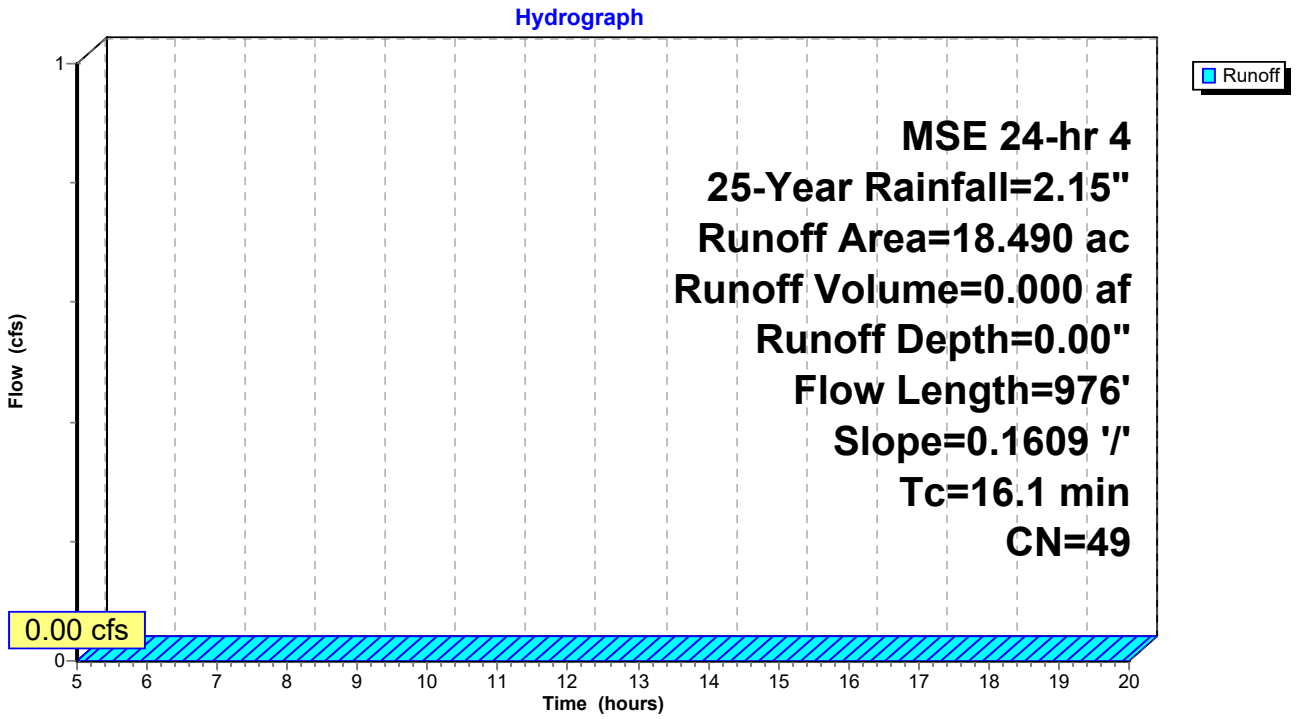
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=2.15"

	Area (ac)	CN	Description
*	18.260	48	Oak-aspen, fair, HSG B
*	0.230	98	Impervious
	18.490	49	Weighted Average
	18.260		98.76% Pervious Area
	0.230		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.1609	0.35		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.7	676	0.1609	6.46		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.1	976	Total			

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Subcatchment 1S: PR-B



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Summary for Subcatchment S1: PR-J

Runoff = 3.28 cfs @ 12.34 hrs, Volume= 0.384 af, Depth> 0.22"

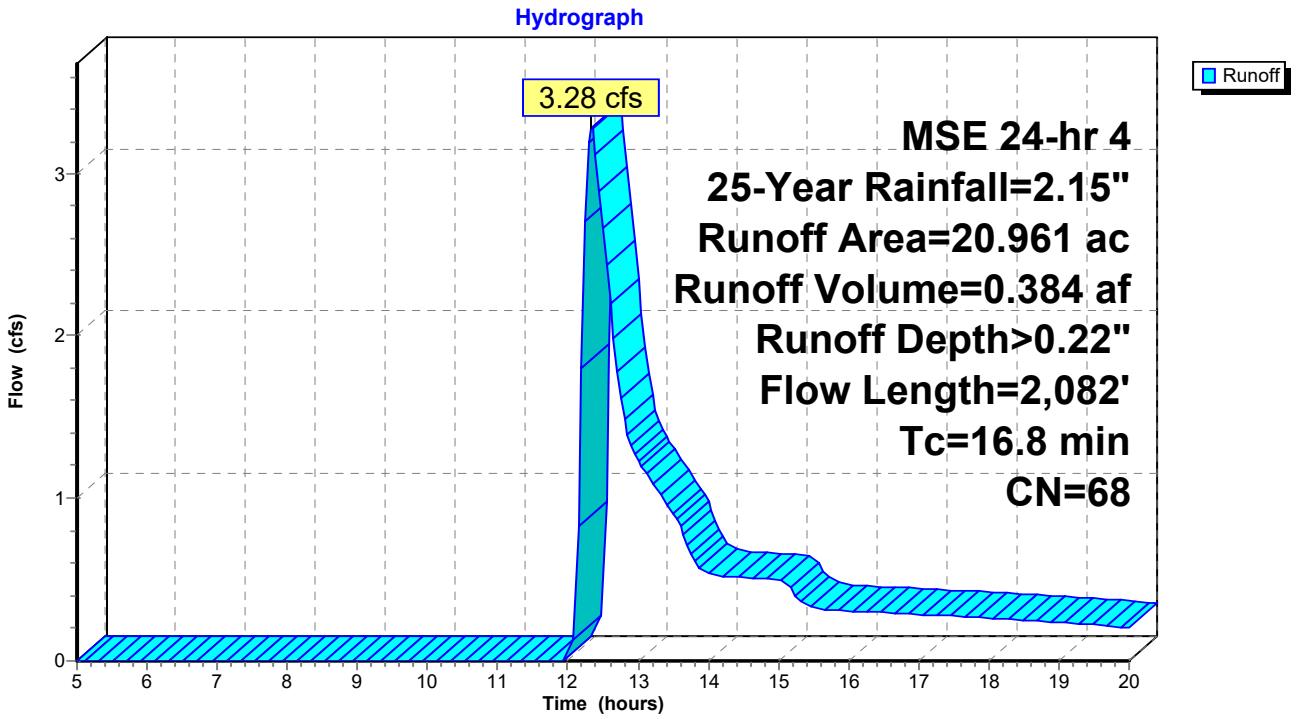
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=2.15"

	Area (ac)	CN	Description
*	10.013	48	Oak-aspen, fair, HSG B
*	2.407	49	Open space, fair, HSG A
*	8.541	98	Impervious
	20.961	68	Weighted Average
	12.420		59.25% Pervious Area
	8.541		40.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	300	0.1682	0.35		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.0	326	0.0680	5.29		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	1,456	0.0840	14.24	11.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	2,082	Total			

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Subcatchment S1: PR-J



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Summary for Subcatchment S2: PR-R

Runoff = 0.19 cfs @ 13.39 hrs, Volume= 0.069 af, Depth> 0.04"

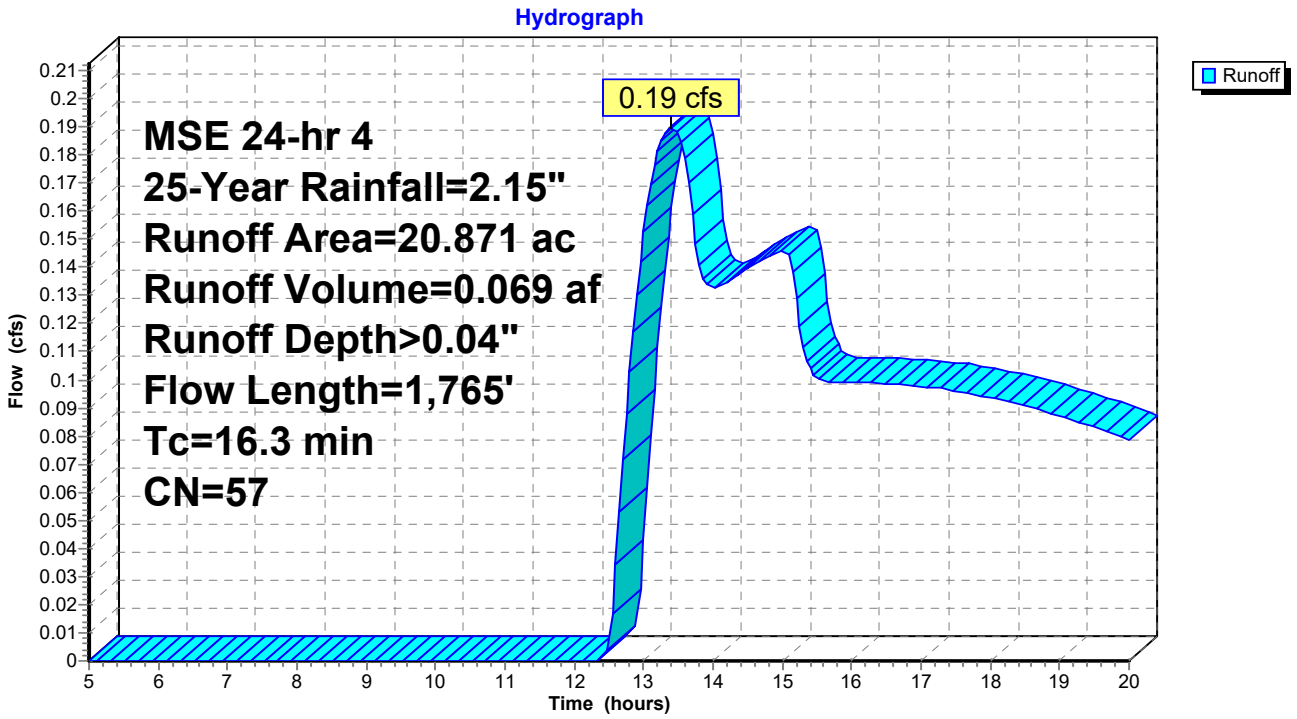
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=2.15"

	Area (ac)	CN	Description
*	15.240	48	Oak-aspen, fair, HSG B
*	2.034	49	Open space, fair, HSG A
*	3.597	98	Impervious
	20.871	57	Weighted Average
	17.274		82.77% Pervious Area
	3.597		17.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	300	0.1570	0.34		**Sheet Flow,** Range n= 0.130 P2= 1.29"
0.3	106	0.0650	5.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,359	0.0980	15.38	12.08	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.3	1,765	Total			

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Subcatchment S2: PR-R



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Summary for Subcatchment S3: PR-DD

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

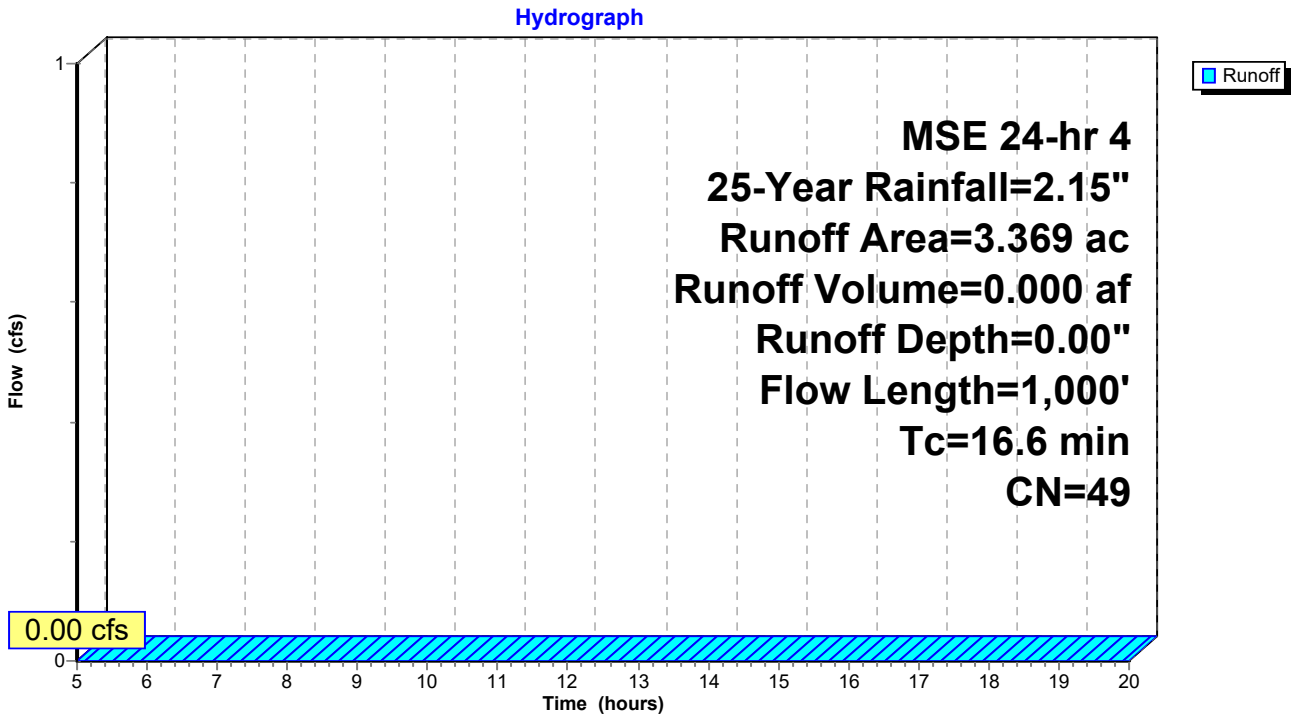
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=2.15"

	Area (ac)	CN	Description
*	3.279	48	Oak-aspen, fair, HSG B
*	0.090	98	Impervious
	3.369	49	Weighted Average
	3.279		97.33% Pervious Area
	0.090		2.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	300	0.1518	0.34		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.9	700	0.1506	6.25		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.6	1,000	Total			

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Subcatchment S3: PR-DD



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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PR-B Runoff Area=18.490 ac 1.24% Impervious Runoff Depth>0.03"
Flow Length=976' Slope=0.1609 '/' Tc=16.1 min CN=49 Runoff=0.10 cfs 0.043 af

Subcatchment S1: PR-J Runoff Area=20.961 ac 40.75% Impervious Runoff Depth>0.45"
Flow Length=2,082' Tc=16.8 min CN=68 Runoff=8.83 cfs 0.782 af

Subcatchment S2: PR-R Runoff Area=20.871 ac 17.23% Impervious Runoff Depth>0.15"
Flow Length=1,765' Tc=16.3 min CN=57 Runoff=1.30 cfs 0.254 af

Subcatchment S3: PR-DD Runoff Area=3.369 ac 2.67% Impervious Runoff Depth>0.03"
Flow Length=1,000' Tc=16.6 min CN=49 Runoff=0.02 cfs 0.008 af

Total Runoff Area = 63.691 ac Runoff Volume = 1.086 af Average Runoff Depth = 0.20"
80.44% Pervious = 51.233 ac 19.56% Impervious = 12.458 ac

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Summary for Subcatchment 1S: PR-B

Runoff = 0.10 cfs @ 15.05 hrs, Volume= 0.043 af, Depth> 0.03"

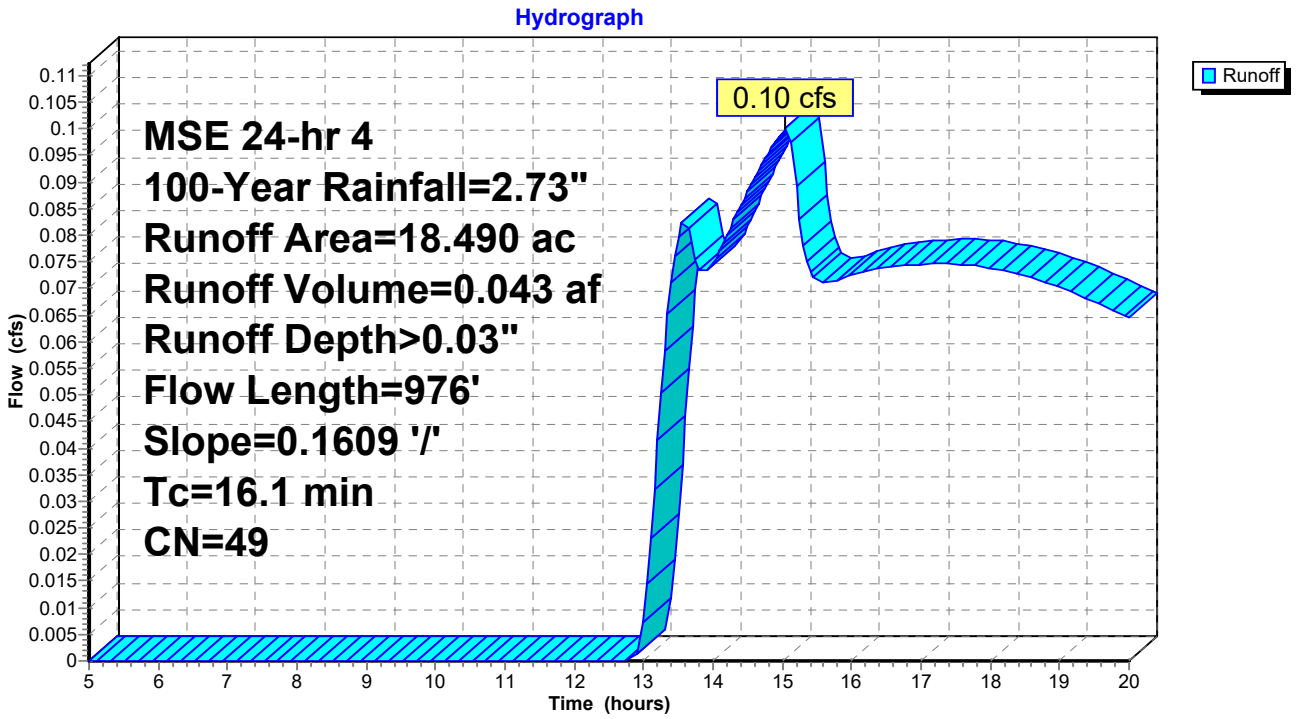
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=2.73"

	Area (ac)	CN	Description
*	18.260	48	Oak-aspen, fair, HSG B
*	0.230	98	Impervious
	18.490	49	Weighted Average
	18.260		98.76% Pervious Area
	0.230		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.1609	0.35		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.7	676	0.1609	6.46		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.1	976	Total			

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Subcatchment 1S: PR-B



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Summary for Subcatchment S1: PR-J

Runoff = 8.83 cfs @ 12.30 hrs, Volume= 0.782 af, Depth> 0.45"

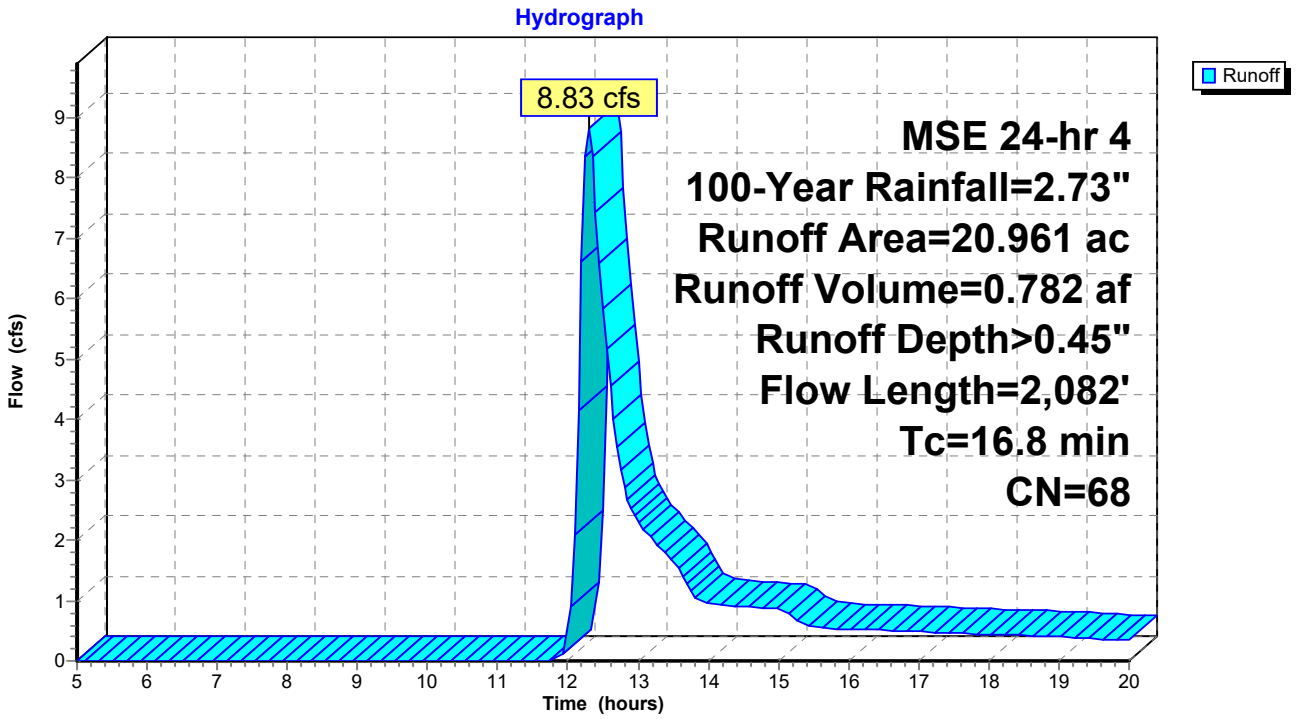
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=2.73"

	Area (ac)	CN	Description
*	10.013	48	Oak-aspen, fair, HSG B
*	2.407	49	Open space, fair, HSG A
*	8.541	98	Impervious
	20.961	68	Weighted Average
	12.420		59.25% Pervious Area
	8.541		40.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	300	0.1682	0.35		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.0	326	0.0680	5.29		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	1,456	0.0840	14.24	11.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	2,082	Total			

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Subcatchment S1: PR-J



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Summary for Subcatchment S2: PR-R

Runoff = 1.30 cfs @ 12.50 hrs, Volume= 0.254 af, Depth> 0.15"

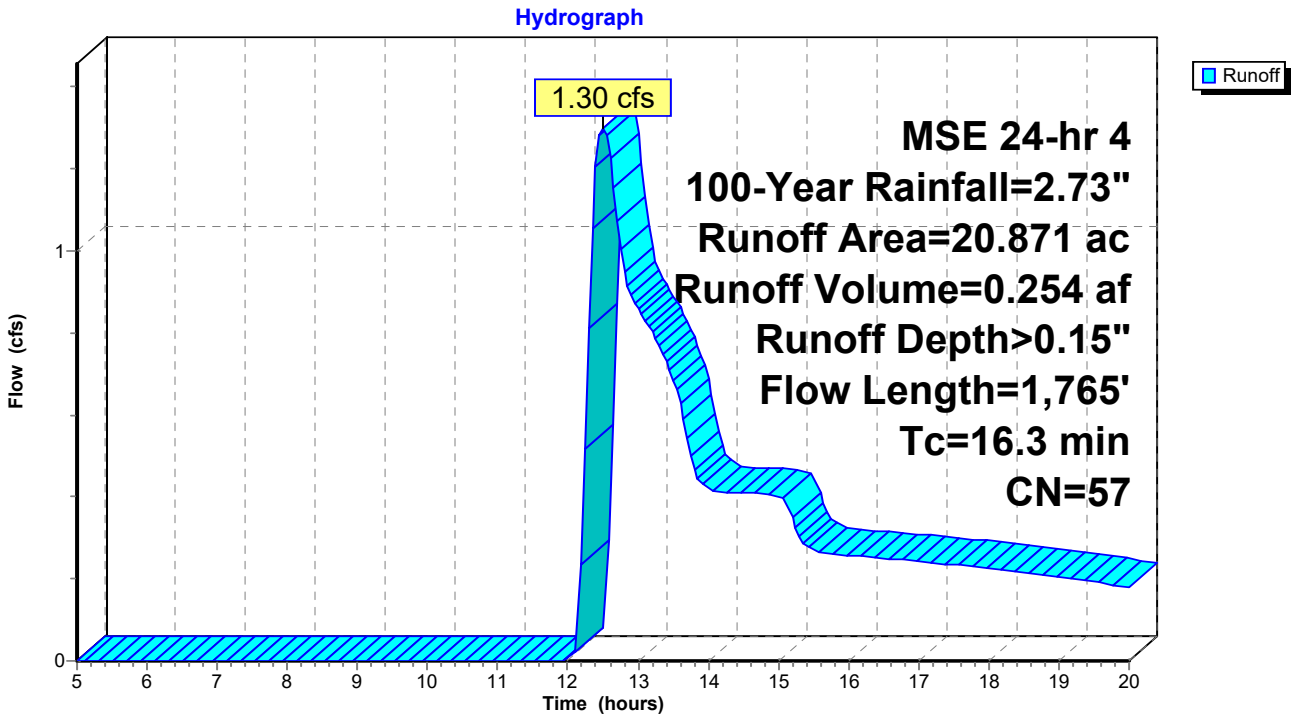
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=2.73"

	Area (ac)	CN	Description
*	15.240	48	Oak-aspen, fair, HSG B
*	2.034	49	Open space, fair, HSG A
*	3.597	98	Impervious
	20.871	57	Weighted Average
	17.274		82.77% Pervious Area
	3.597		17.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	300	0.1570	0.34		**Sheet Flow,** Range n= 0.130 P2= 1.29"
0.3	106	0.0650	5.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,359	0.0980	15.38	12.08	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.3	1,765	Total			

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Subcatchment S2: PR-R



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Summary for Subcatchment S3: PR-DD

Runoff = 0.02 cfs @ 15.05 hrs, Volume= 0.008 af, Depth> 0.03"

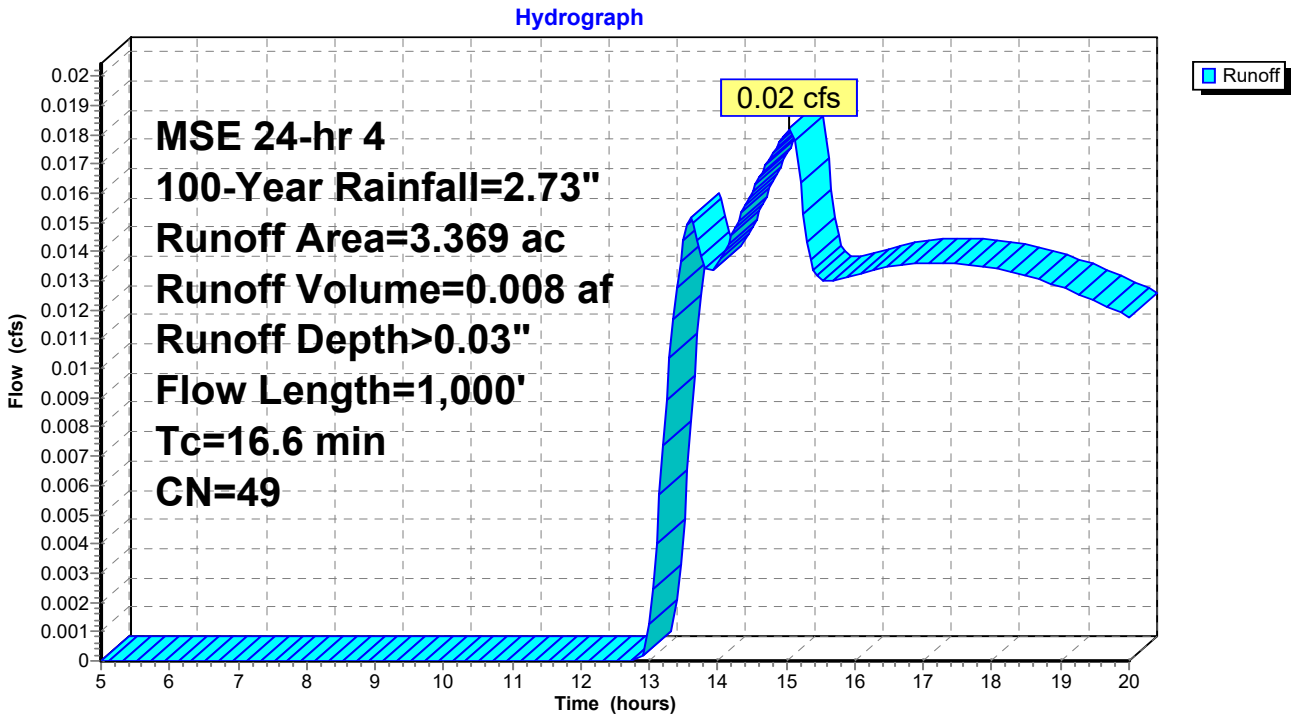
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=2.73"

	Area (ac)	CN	Description
*	3.279	48	Oak-aspen, fair, HSG B
*	0.090	98	Impervious
	3.369	49	Weighted Average
	3.279		97.33% Pervious Area
	0.090		2.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	300	0.1518	0.34		**Sheet Flow,** Range n= 0.130 P2= 1.29"
1.9	700	0.1506	6.25		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.6	1,000	Total			

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Subcatchment S3: PR-DD



Chad J. Lee, Esq.
Telephone (970) 945-6546
clee@balcombgreen.com

December 28, 2020

Via Electronic Submission:
Trent Hyatt, Planning Director
City of Glenwood Springs
Community Development Department
101 West 8th Street
Glenwood Springs, CO 81601
trent.hyatt@cogs.us

Re: ***Glenwood Meadows – Phase 1***
Applications for a Major Site Architectural Review and Minor Subdivision

Dear Trent:

BLD Group, LLC ("Applicant") is proud to present the enclosed Major Site/Architectural Review application for a 14 building apartment complex ("Application") within the Residential-High Zone District of Glenwood Meadows. This Application is for 300 units, ranging from studio to three bedroom apartments focused on 27 acres and designed specifically to conform Design Guidelines within Glenwood Meadows. The original Glenwood Meadows approvals authorize and anticipate 475 housing units in this zone district given its proximity to retail, recreation, and public transit, not to mention Glenwood's persistent shortage of attainable housing to meet the needs of local employers. This Application conforms with the permitted 300 commercial apartment units within Glenwood Meadows residential zone district. Indeed, our Comprehensive Plan "strongly encourage[s] the development of the planned residential component for Glenwood Meadows, including live-work housing, apartments, etc." (Pg. 77, emphasis added). This Application represents the majority of the planned residential component of Meadows. We look forward to working with your team throughout the Site/Architectural Review process.

I. Existing Approvals and Conditions

This Application is for a 300 unit apartment complex located on approximately 27.5 acres of Lot 11C-B (Parcel No. 218508141003) and Lot 11C-C (Parcel No. 218508141002), GM Subdivision No. 6 (the "Property"). The Property consists of portions of the 49.414 acre Residential-High Zone District land owned by Glenwood Meadows, LLC. Applicant is under contract to purchase the Property. We are also preparing an application for Minor Subdivision to create one additional lot, the general configuration of which is shown on the Site Plan in this Application. We anticipate filing the subdivision application within the next month. This Application is for major site/architectural review of the apartment complex envisioned by the Meadows approvals.

As you know, the Glenwood Meadows development is on 345 acres of land west of downtown. The Glenwood Meadows property was annexed into the City of Glenwood Springs in 2002 following a three year application process. Two hundred and ten acres of land was dedicated by the developer of Glenwood Meadows to the City as public open space. The vast majority of this dedicated public open space is located just behind and adjacent to this project.

Throughout the three year approval and annexation process, impacts of housing and other approved uses and densities within Glenwood Meadows were considered and mitigated, including traffic, water and sewer facilities, debris flow mitigation, and on and off-site pedestrian flow and connections. The Applicant is fully committed to paying the City's current impact fees, which were specifically quantified by the City to offset the impacts of development on the City's infrastructure.

During the Meadows annexation and zoning process, City Staff and City Council also implemented an exhaustive process to establish guidelines and enhanced zoning to ensure that the development of Glenwood Meadows achieves the highest quality of development standards. The Glenwood Meadows Annexation and Development Agreement codifies those standards, including in a Zoning and Development plan which governs development of the Property. (See, Annexation and Development Agreement Glenwood Meadows, LLC Annexation, recorded December 6, 2002 as Reception No. 816083 ("ADA")). Pursuant to the ADA, the Property was zoned R-3, the most flexible and intense residential zone district. In 2018, the City's R-3 District was re-zoned to RH (Residential High). Multi-family use is a permitted use in the RH District.

The ADA, together with subsequent amendments, set forth specific entitlements regarding density of the various zone districts and parcels within Glenwood Meadows. The ADA contemplated full residential build out of the planned residential component of the Meadows and specifically entitles this parcel for up to 475 residential units, no more than 300 of which were permitted as commercial apartments. (See ADA § 9(c); Fourth Amendment to ADA[1] § I(A)(iii)). This application is for the remaining 300 commercial apartments envisioned within the RH District of Glenwood Meadows.

II. Need for Housing / Consistency with Comprehensive Plan

The multi-family represented by this Application is a key component to the overall Glenwood Meadows development as contemplated by City Council in the 2002 ADA. It allows for the overall balance of the approved mixed-use, master planned community and specifically reacts to one of the most important issues facing our community – the need for a diverse stock of housing. Over the past 15 years, various strategic documents prepared by professional City planners after substantial public participation have expressed the importance of creating more and diverse housing for Glenwood's workforce. But for the vast majority of this period, policy and land use approvals did not keep up with demand. As a result, until a couple years ago, Glenwood was one of the slowest growing municipalities in eastern Garfield County despite a huge pent-up demand for housing.

As a result, despite a recent uptick of approved residential projects, Glenwood still needs housing, specifically the rental housing proposed in this Application. In 2005, Glenwood commissioned a Housing Study, which found that over the next 10 years, 2,885 units would need to be added to Glenwood's Housing inventory, including 1,295 rental units. Less than 10% of this goal was achieved by 2015. In 2010, Glenwood's Strategic Housing Plan again affirmed the desperate need for local housing, including both "catch up" and "keep up" needs. "Catch-up", of course, being housing needed to catch up to the current deficient housing conditions, and "keep up" generally defined as housing needed to keep up with future demand in relation to job and population growth. The current pandemic has only amplified the need for rental housing to house our growing workforce and maintain a healthy community.

[1] Fourth Amendment to Annexation and Development Agreement Glenwood Meadows LLC Annexation, recorded April 10, 2015 as Reception No. 861345.

Our Comprehensive Plan recognizes that "to create a more sustainable community, it is necessary to increase the supply of housing relative to employment. Doing so would increase affordable housing options for employees of Glenwood Springs businesses." (Page 71). Additionally, "[D]ue to the physical limitations to growth and the approaching built-out nature of the community, there are few large tracts of land left to develop, and some may not be suitable for housing. Therefore, it will be important to take advantage of every opportunity to increase the supply of housing in general…." (Page 76, emphasis added).

Indeed, the Comprehensive Plan speaks specifically to this Application when one of the stated goals of our community is to:

> ***"Strongly encourage the development of the planned residential component for Glenwood Meadows, including live-work housing, apartments, etc."*** (Page 77, emphasis added).

This Application is the majority of the planned residential component of Glenwood Meadows. This Application represents one of the final and perhaps most important pieces of the planned residential components of Glenwood Meadows. As a result, the Comprehensive Plan "strongly encourages" this Application.

III. Summary of Proposed Development

This project was designed to fit neatly within all requirements of the ADA and City Code, including all design guidelines set forth in the ADA. One of the main reasons this Property was planned for residential development is its location within Glenwood Meadows in proximity to public transit, retail, and recreation and open space amenities, all of which make this a desirable location to increase the City's attainable housing stock and diversify the housing options within the City limits.

Primary access to the site will be on the east side of the property, continuing up from East Meadows Drive past the existing Glenwood Greens development. A secondary access point is provided on the west side of the property, closer to the West Glenwood Park and Ride. A pedestrian access point will be located across from the intersection of Wulfsohn Road and West Meadows Drive.

One main consideration for the layout was to limit the amount of earthmoving on the site and to the extent possible, work with the existing site grading conditions as prioritized by the ADA. This is a priority in the ADA itself. The hillside on the north of the site, sloping up from Wulfsohn Road, is shown as un-disturbed from its current condition. The lowest tier of buildings will be situated at the top of this existing slope. The site will be terraced above this point where the existing slope is more moderate. There are three tiers of buildings. The lower tier incudes the clubhouse and three multi-family buildings. The middle and upper tiers have five multifamily buildings each. The tiers will connected by a well-designed internal network of sidewalks, paths and open space.

The architecture has been specifically designed to meet the design guidelines of the ADA. A total of 14 buildings are being proposed for the site, including a neighborhood clubhouse building and 13 residential apartment buildings that make up the 300 housing units. There are three types of buildings in order to provide diversity in the style and form of the architecture as required in the ADA. The total number of units per building type are 168 units, 60 units and 72 units respectively. The maximum length of the buildings will be 125 feet per the design standards in the ADA. The minimum spacing between the

buildings ranges from 40-60 feet with common open space surrounding the buildings. The buildings have been designed to work with the existing slope conditions, with approximately 10' of grade taken up within the footprint of the 3 story buildings. The maximum building height is approximately 35' and will not exceed the Maximum building height of 40'.

The Application also includes all required parks, amenities, and open space required by the ADA. These parks, amenities, and open space within the subject property are intended to be enjoyed by residents of the apartment complex. There are two one-acre parks as required in the ADA, generally located on the west side of the development. The first one acre park is adjacent to the secondary access road and lower tier of housing. The amenities in this park are designed for passive recreation and include a soft surface trail that leads from the sidewalk along Wulfsohn Road through the park leading to a proposed new connecting trail from the south side of the park to the Wulfsohn Mountain Trail Network. In addition to the trail, the park includes park benches, picnic tables and a community garden with raised planter boxes.

The second park is located between the middle and upper tiers of housing. The park has been terraced to create three level areas for more active recreation. Park amenities include two pickle ball courts, a flexible open space, a playground with play equipment, park benches, picnic tables, seating areas and shade trees. A second proposed trail connection to the Wulfsohn Mountain Trail Network is located on the upper street in the center of the development.

Additional community and open space amenities will be located throughout the neighborhood. The covered parking area on the lower and middle tiers will include roof deck patios with common gathering areas and amenities such as grills, fire tables, seating areas, umbrellas or shade structures and outdoor furniture. A neighborhood club house is another amenity space that will include a fitness center, gathering space, an outdoor pool and a day care center and associated outdoor play area. Consistent with the ADA's preferred community amenities, this Application includes an outdoor swimming pool, for Glenwood's seemingly increasingly hot summers, and to provide residents an alternative to Glenwood's busy indoor community center pool (See ADA, Page 71, recommending swimming pools as outdoor amenities). The pool will be engineered to ensure solid foundation, as well as monitored for leakage. Additional common open space is located throughout the neighborhood including in between the building units and at the ends of the middle and upper tiers of housing.

IV. Approval Criteria (070.060.050(a)(6))

The review criteria for a major site/architectural plan review is contained in in Subsection 070.060.050(a)(6), and set forth below.

a. The site/architectural plan is consistent with the general purpose and intent of this Code;

This Application is consistent with the general purpose and intent of the Code, including RH District, the intent of which is to accommodate various housing types ranging from single family detached on small lots to multifamily dwellings. This Application is for multifamily dwellings in the RH District on a parcel specifically contemplated for up to 300 multifamily units within Glenwood Meadows.

b. The site/architectural plan is consistent with the dimensional, design, development, and all other standards of this Code;

This Application is consistent with the Design Guidelines of the Glenwood Meadows ADA.

c. The site/architectural plan is consistent with any previously approved plat, PUD, or any other precedent land use approval; and

The Glenwood Meadows ADA entitled this property for up to 475 residential units, including up to 300 commercial apartments. This application is for 300 commercial apartments, and is otherwise consistent with prior land use approvals, including the Glenwood Meadows ADA.

d. The site/architectural plan is consistent with the Comprehensive Plan and other adopted City policies and plans.

One of the stated goals in our Comprehensive Plan is to "[S]trongly encourage the development of the planned residential component for Glenwood Meadows, including live-work housing, apartments, etc." (Page 77, emphasis added). This Application is the vast majority of the remaining planned residential component of Glenwood Meadows. This application is not only consistent with our Comprehensive Plan, our Comprehensive Plan explicitly and "strongly" encourages development of this apartment complex.

V. Conclusion

This Application represents a critical housing element envisioned in 2002 in the Glenwood Meadows ADA, and re-affirmed in our 2010 Comprehensive Plan. The Application is designed specifically to all standards within the ADA and the City Code. The project will include studio to three bedroom units, within walking distance of Glenwood Springs Community Center, public transit systems, and the shops and restaurants within Glenwood Meadows. Together with the Lofts and Glenwood Green, this project will create the level of vibrancy, community, and character originally envisioned within Glenwood Meadows. Residents of these units will enjoy an attainable, livable, small-town friendly living experience with easy access to employment and recreation within Glenwood Springs, and throughout the Roaring Fork Valley.

Sincerely,

BALCOMB & GREEN, P.C.

By:_____
Chad J. Lee, Esq.

Encl: Appendix A: Development Team
Appendix B: Submittal Materials

Appendix A: Development Team

Applicant:	BLD Group, LLC c/o Greg Baumann 1500 Cordova Road, Suite 300 Ft. Lauderdale, FL 33316 gbaumann@bldgroup.com	Engineer:	Michael Grzesiak, P.E. High Country Engineering 1517 Blake Avenue, Suite 100 Glenwood Springs
Landscape Architect:	Jennifer DiCuollo, P.L.A. DHM Design 311 Main Street, Suite 102 Carbondale, CO 81623 jdicuollo@dhmdesign.com	Legal:	Chad J. Lee, Esq. Balcomb & Green, P.C. 818 Colorado Avenue Glenwood Springs, CO 81601 clee@balcombgreen.com
Architect:	Richard Coba BLD Group, LLC 1500 Cordova Road, Suite 300 Ft. Lauderdale, FL 33316 rcoba@bldgroup.com		

Appendix B: Submittal Materials

Enclosed within this Application are the following materials:

1. Planning Application
2. Warranty Deed
3. Proof of Public Notice / Neighborhood Meeting Materials
4. Project Description / Narrative re: Compliance with Meadows and City Standards
5. Complete Plan Set
   a. Civil Sheet Set
   b. Landscape Sheet Set
   c. Architecture Sheet Set
6. Traffic Impact Statement
7. Geotechnical Report
8. Preliminary Drainage Study
   a. Preliminary Grading Plan
9. Preliminary Utility Report
   a. Preliminary Utility Plan

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY REPORT

PREPARED FOR:

BLD GROUP
1500 Cordova Road, Suite 300
Fort Lauderdale, FL 33316

Prepared By:

HIGH COUNTRY ENGINEERING, INC.
1517 Blake Avenue, Suite 101
Glenwood Springs, CO 81601
(970) 945-8676

HCE Project No. 2201044.00

December 10, 2020
Revised: July 2, 2021

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INTRODUCTION

Location

The subject property is located within the Glenwood Meadows development, is platted as Lots 11C-B and 11C-C of the Glenwood Meadows No. 6 Subdivision, in the City of Glenwood Springs, Colorado. The proposed site is located on the south side of Wulfsohn Road across from the existing Target and Lowe's commercial sites.

Existing Land Use

The parcel is approximately 49.54 acres in size. The existing lot consists of undeveloped open space. To the north the site is bordered by Wulfsohn Road and The Lofts residential development. To the west, south and east is undeveloped property owned by the City of Glenwood Springs. Access to the development is proposed by extension of Flat Tops View Drive to the east, and connection to Wulfsohn Road at an existing curb cut to the west.

Proposed Land Use

Proposed development consists of thirteen multi-unit residential apartment buildings and a clubhouse. Additional improvements include asphalt parking areas and roadways, sidewalks, site amenities such as pickleball courts, park areas, dog walks, hiking trails and open space areas.

WASTEWATER SYSTEM

Sanitary Sewer System

An existing sanitary sewer main is located east of the site within Flat Tops View Drive right-of-way and will serve the proposed development. The connection to this main will be an existing sanitary manhole currently located northwest as an extention off the terminus of Flat Tops View Drive. An 8-inch gravity sewer main is proposed to the site up the proposed road connecting to Flat Tops View Drive. Three roads are proposed to serve the apartment buildings within the development; a lower, middle, and upper road. Generally the profile

grade of the roads falls to the southeast. Two runs of sanitary main are proposed to serve the development; one run along the lower road which will serve eight apartment buildings and club house, and one run along the middle road which will serve the remaining five apartment buildings.

The proposed development has and will have minimal system flows and the proposed sanitary system will serve residential uses. A single service is proposed for each building. For calculation purposes, each unit has been considered a single-family residence. In total the system demand has been analyzed for 300 single-family residences. Effluent flows are estimated to be 84,000 gallons per day, with a peak flow of 210,000 gallons per day. These flows will be conveyed by 8" diameter main pipes, and 6" diameter building service pipes. At maximum capacity the pipes are under 80% capacity. Sanitary sewer demand calculations can be referenced in **Appendix A.**

WATER DISTRIBUTION

Water Distribution

The development will be served by connecting to existing water mains located to the northwest within Wulfsohn Road, and east within Flat Tops View Drive. An existing watermain stub is located at the terminus of Flat Tops View Drive. A loop will be completed by running 8-inch Class 52 Ductile Iron Pipe main through the site. This loop will connect to the existing Wulfsohn Road main by installing a new tee, route southeast up the lower road, through the site and connect to the Flat Tops View Drive stub east of the parcel. Additional loops will tee off the lower main, run up and through the middle and upper roads of the development. The propose 8-inch line provides system demand and fire flows to the development. Water demand calculations can be referenced in **Appendix A**, water line sizing calculations can be referenced in **Appendix B**.

System Demand

Glenwood Springs Municipal Code section 080.060.020 classifies multi-family residential units the greater of 0.25 EQR per bedroom or 0.06 EQR per 100 square feet, not to exceed

1.00 EQR. Assuming a demand of 1 EQR being the equivalent of 350 gpd and a 16-hour day for 300 multi-family residential units and other uses, the Average Daily Demand for the phase I development will be 59,850 gallons per day (62 gpm). Peak hour would typically be 4 times the average daily demand or 249.4 gpm. The overall 249 gpm will be used for determination of service sizes and demand on top of fire flows, which is the more conservative approach.

DRY UTILITIES

Electric

The point of contact for electrical service is Doug Hazzard with the City of Glenwood Springs Electric Department (970-384-6353).

A proposed underground electric line is to be installed along the south side of the access road connecting to Flat Tops View Drive. This line will connect to the existing line on the adjacent lot 11C-C. This line will serve as the main electric supply for the Glenwood Meadows Multi-Family development. The developer will contract with the City of Glenwood Springs Electric Department for costs associated with extending the electric utility to the site.

Gas

A proposed gas line is to be installed along the south side of the access road connecting to Flat Tops View Drive. This line will connect to the existing line on the adjacent lot 11C-C. This line will serve as the main electric supply for the Glenwood Meadows Multi-Family development. The contractor will contract with Black Hills Energy for gas service extension.

Cable

A proposed cable line is to be installed along the north side of the access road connecting to Wulfsohn Road. This line will serve as the main feed for the development. The point of

contact for Comcast Cable Television service is (970-945-7292). The contractor will contract with Comcast Cable for cable tv service extension.

Telecommunications

The point of contact for Telecommunications service is Michael Gardner with City of Glenwood Springs broadband.

A proposed telecommunications line is to be installed along the north side of the access road connecting to Wulfsohn Road. This line will serve as the main feed for the development. The contractor will contract with the City of Glenwood Springs broadband for telecommunications service extension.

CONCLUSION

Water and Sewer

This report and the associated plans identify the proposed water, sewer and dry utility layouts for the proposed Glenwood Meadows Multi-Family development. The proposed onsite sanitary sewer will provide adequate capacity to serve the proposed residential development. The existing water main within Flat Tops View Drive will provide adequate water service to meet the domestic water demands and fire flows required when construction is completed. All lots will be required to meet building code requirements when constructing the final water system for each building.

Dry Utilities

Dry utilities to service the site are to be installed along the south side of the connection to Flat Tops View Drive, and the north side of the connection to Wulfsohn Road. This includes gas, electric, telephone and cable to all buildings within the development.

REFERENCES

International Fire Code: International Code Council. International Conference of Building Officials, Whittier, CA, 2009.

Uniform Building Code: International Conference of Building Officials. Whittier, CA, 2009.

APPENDIX A

GLENWOOD MEADOWS MULTI-FAMILY

ESTIMATED WATER/SEWER REQUIREMENTS

Date: 7/2/2021
HCE Project No: 2201044.00
By: MGG

WATER (OVERALL DEVELOPMENT)			NOTE
Total EQR's	171		1
Average Daily Domestic Demand @ 350 GPD/EQR	59,850	GPD	
Fire Flow Required	1,500	GPM	2
Max. Day (Average Daily x 2.0)	119,700	GPD	
Peak Flow (Average Daily x 2.5)	149,625	GPD	
Max. Day Demand	**1,625**	**GPM**	3,4

SANITARY SEWER (OVERALL DEVELOPMENT)			
Domestic Average Day Use	47,880.0	GPD	5
Peak Flow (Average Daily x 2.5)	119,700.0	GPD	
Peak Flow (CFS)	**0.185**	**CFS**	

Notes

1) EQR calculation based on B&G system improvement fees EQR calculation
2) 2 hour minimum duration.
3) 1 day calculated as 16 hours.
4) Fire flow included for 1 building in max day demand
5) Calculated as 80% of average daily domestic water demand

GLENWOOD MEADOWS - PHASE I				
EQR Calculation				
MULTI-FAMILY RESIDENTIAL UNITS	**QUANTITY**	**AREA (SF)**	**EQR/100-SF**	**TOTAL**
STUDIO	42	593	0.06	14.94
1 BEDROOM (B-2)	42	711	0.06	17.92
1 BEDROOM (B-1)	60	704	0.06	25.34
2 BEDROOM (C-2)	42	1109	0.06	27.95
2 BEDROOM (C-1)	72	1126	0.06	48.64
3 BEDROOM	42	1269	0.06	31.98
NON-RESIDENTIAL	**QUANTITY**		**EQR**	**TOTAL**
SANDWICH/COFFE SHOP W/DISHWASHER	1		0.65	0.65
CLUBHOUSE AND DAYCARE CENTER	1		2.10	2.10
SWIMMING POOL	1 EQR/25,000 GALLONS			1.00
HOT TUB	0.20 EQR/500 GALLONS			0.40
			TOTAL EQR	**170.92**

Notes

1) EQR values per City of Glenwood Springs Municipal Code Section 080.060.020 - Classification

APPENDIX B

Channel Report

8-IN SANITARY

Circular

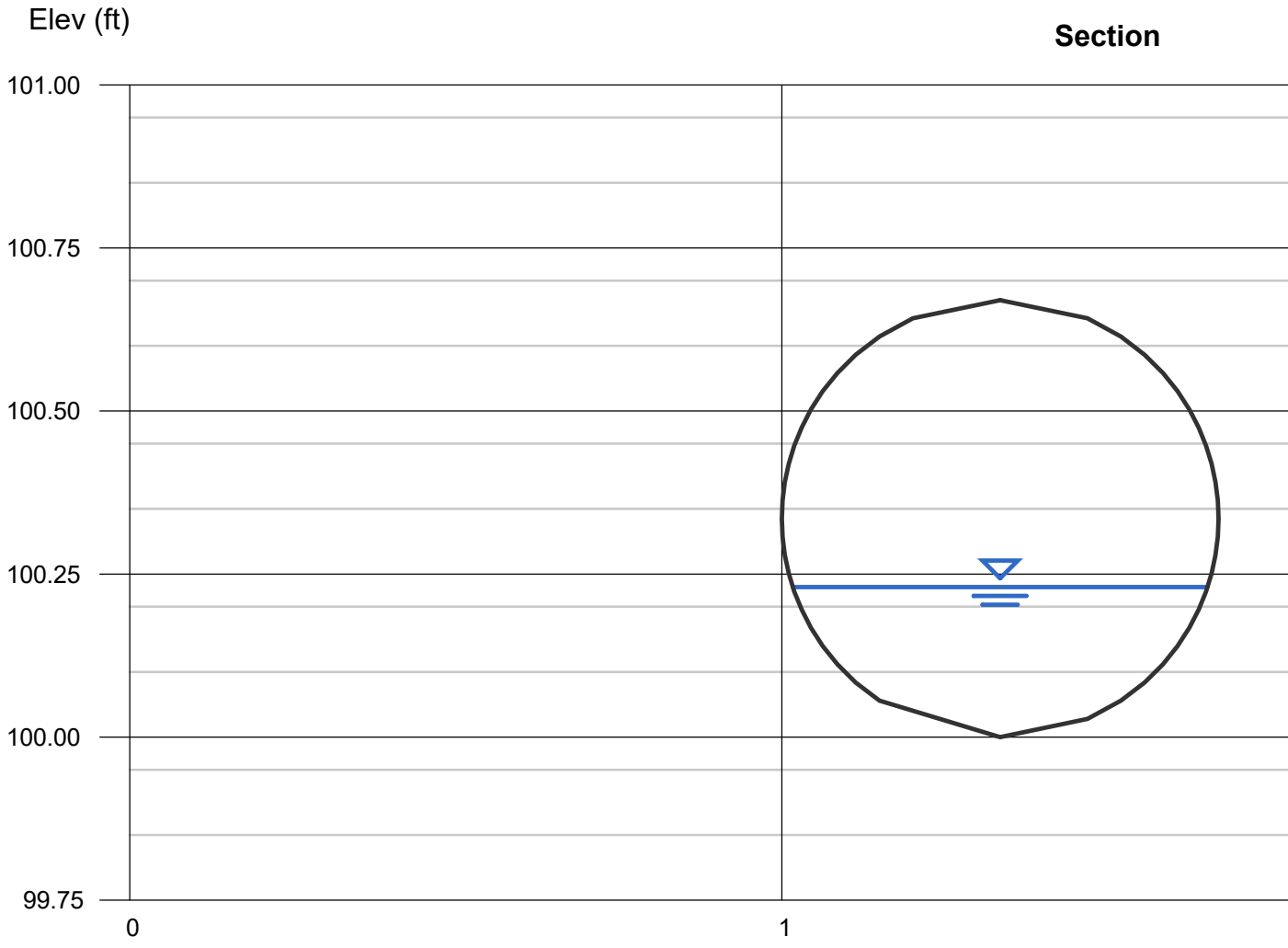
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.40
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.19

Highlighted

Depth (ft)	= 0.23
Q (cfs)	= 0.190
Area (sqft)	= 0.11
Velocity (ft/s)	= 1.76
Wetted Perim (ft)	= 0.84
Crit Depth, Yc (ft)	= 0.20
Top Width (ft)	= 0.64
EGL (ft)	= 0.28



Depth	Q	Area	Veloc
(ft)	(cfs)	(sqft)	(ft/s)
0.07	0.016	0.018	0.88
0.13	0.069	0.051	1.35
0.20	0.152	0.089	1.70
0.27	0.261	0.132	1.98
0.34	0.390	0.177	2.20
0.40	0.522	0.221	2.36
0.47	0.650	0.264	2.46
0.54	0.757	0.302	2.50
0.60	0.825	0.334	2.47
0.67	0.774	0.353	2.20

Wp	Yc	TopWidth	Energy
(ft)	(ft)	(ft)	(ft)
0.43	0.06	0.40	0.08
0.62	0.12	0.54	0.16
0.78	0.18	0.61	0.25
0.92	0.24	0.66	0.33
1.06	0.29	0.67	0.41
1.19	0.34	0.66	0.49
1.33	0.38	0.61	0.56
1.48	0.41	0.54	0.63
1.68	0.43	0.40	0.70
2.10	0.42	0.00	0.74

Main - Fire & Domestic		
HAZEN-WILLIAMS EQUATION, CIRCULAR PIPE		
From	Wulfsohn Rd	
To	Highest Bldg Service Tee	
Input Data		
Pressure 1	95.00	psi
Elevation 1	5849.22	ft
Elevation 2	5941.43	ft
Roughness Coefficient	150	
Diameter	8	in
Flow	1749	gpm
Length	1165	feet
Results		
Elevation Head	92.21	ft
Friction Loss	45.97	ft
Velocity	11.16	fps
Total Head Loss	**138.18**	**ft**
Pressure Loss	**59.83**	**psi**
Pressure 2	**35.17**	**psi**

Highest Bldg - Fire & Domestic Service		
HAZEN-WILLIAMS EQUATION, CIRCULAR PIPE		
From	Service Tee	
To	Highest Bldg Service Tee	
Input Data		
Pressure 1	35.17	psi
Elevation 1	5941.43	ft
Elevation 2	5942.43	ft
Roughness Coefficient	150	
Diameter	6	in
Flow	1749	gpm
Length	65	feet
Results		
Elevation Head	1	ft
Friction Loss	10.41	ft
Velocity	19.84	fps
Total Head Loss	**11.41**	**ft**
Pressure Loss	**4.94**	**psi**
Pressure 2	**30.23**	**psi**

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

WULFSOHN RD.

CONNECT TO EXISTING WATERMAIN PER CITY OF GLENWOOD SPRINGS STANDARDS

INSTALL NEW MANHOLE ON EXISTING STORM SEWER

249.15'–12" HDPE @ 0.45%

EXISTING CURB CUT TO BE REMOVED

24.88'–12" HDPE @ 0.40%

12.19'–15" HDPE @ 19.23%

CONNECT TO EXISTING STORM SEWER STRUCTURE

116.60'–15" HDPE @ 17.79%

24.00'–12" HDPE @ 1.00%

141.58'–12" HDPE @ 6.97%

62.32'–12" HDPE @ 3.62%

24.00'–12" HDPE

95.95'–12" HDPE @ 9.05%

118.56'–12" HDPE @ 10.77%

63.43'–12" HDPE @ 2.24%

51.17'–12" HDPE @ 4.12%

14.00'–12" HDPE @ 2.00%

229.99'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 2.00%

229.98'–12" HDPE @ 0.75%

14.00'–12" HDPE @ 5.70%

EXISTING 24" STORM PIPE "1B"

INSTALL MANHOLE ON EXISTING STORM SEWER

144.48'

134.80'–12" HDPE @ 4.27%

333.20'–12" HDPE @ 1.09%

400.00'–8" PVC @ 1.10%

333.20'–12" HDPE @ 1.09%

227.44'–8" PVC @ 1.10%

8" D.I.P. WATER MAIN

SAN–MH8

SAN–MH7

57.58'

11.0' TYP. 10. MIN.

6" PVC SANITARY SERVICE, TYP.

6" D.I.P. WATER SERVICE, TYP.

SAN–MH4

260.75'–8" PVC @ 1.66%

135.66'–4" HDPE @ 5.00%

56.04'–12" HDPE @ 6.00%

135.99'–12" HDPE @ 5.00%

COMBINED FIRE/DOMESTIC WATER SERVICE CONNECTIONS TO BE NFPA24 COMPLIANT, TYP.

EXISTING STORM SEWER TO BE ABANDONED/REMOVED

INSTALL MANHOLE ON EXISTING STORM SEWER

LEGEND

EXISTING	PROPOSED
STORM MANHOLE	WATER SHUTOFF VALVE
SANITARY CLEAN–OUT	WATER VALVE
SANITARY MANHOLE	TEE W/THRUST BLOCK
FIRE HYDRANT	BEND W/THRUST BLOCK
WATER VALVE	FIRE HYDRANT
WATER MANHOLE	INLET
GAS METER	CURB INLET
TELEPHONE PEDESTAL	STORM MANHOLE
LIGHT POLE	SANITARY CLEANOUT
UTILITY POLE	CABLE MANHOLE
SIGN	ELECTRIC VAULT
	ELECTRIC TRANSFORMER

	EXISTING	PROPOSED
BOUNDARY		
RIGHT–OF–WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5–8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALIMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.
4. ALL COMBINED FIRE/DOMESTIC WATER SERVICES SHALL BE NFPA24 COMPLIANT.
5. PUBLICLY DEDICATED UTILITIES SHALL HAVE UTILITY EASEMENT FOR ACCESS AND MAINTENANCE.
6. ALL FIRE HYDRANTS TO HAVE 15' EASEMENT FOR ACCESS AND MAINTENANCE.

COLORADO 811 CALL BEFORE YOU DIG Utility Notification Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE: 7/1/2021
FILE: SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 · FAX (970) 945-2555
WWW.HCENG.COM

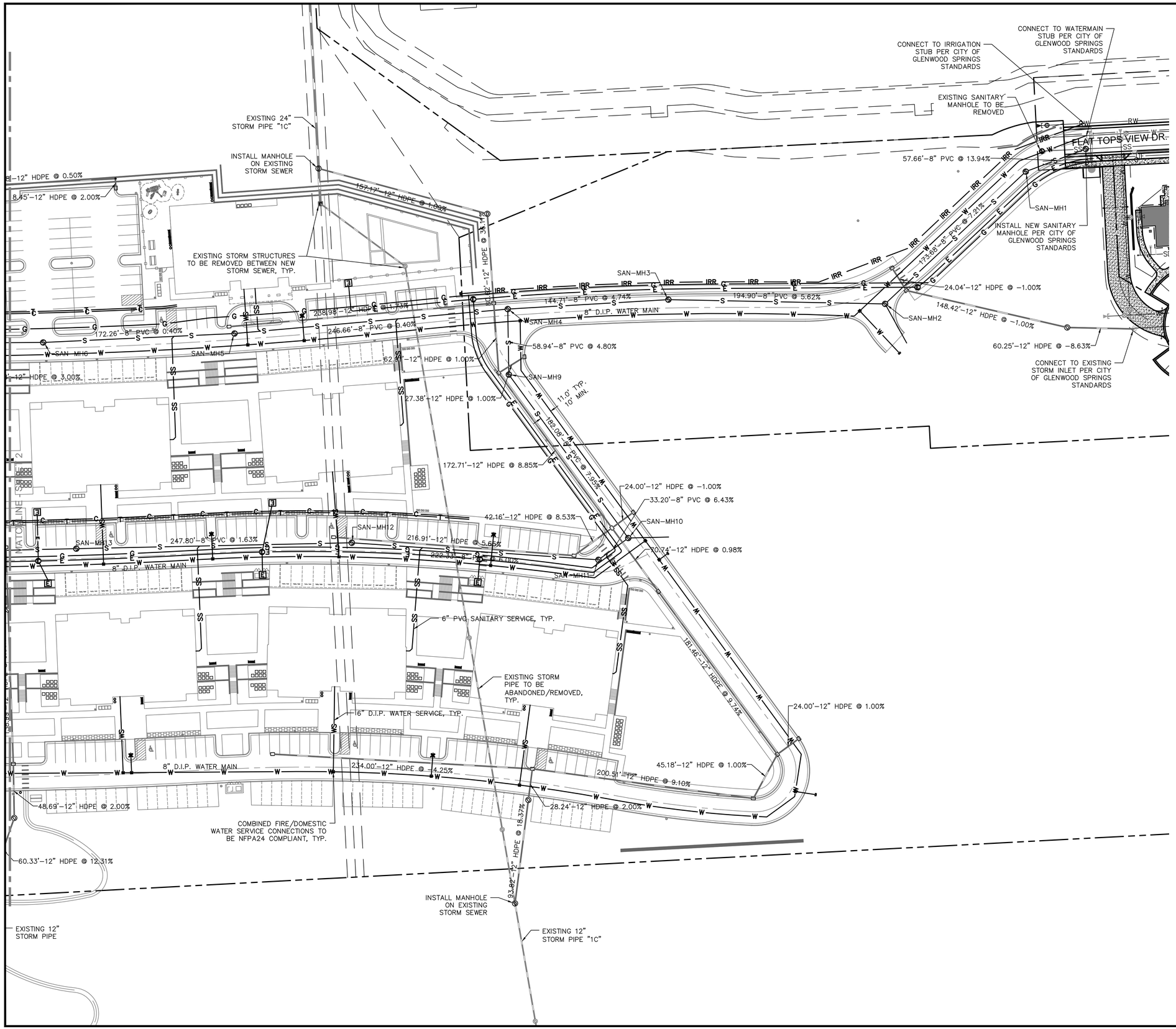
GLENWOOD MEADOWS MULTI-FAMILY

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

PRELIMINARY UTILITY PLAN
SHEET 1

PROJECT NO.
2201044.00

UT1



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

	EXISTING	PROPOSED
	STORM MANHOLE	WATER SHUTOFF VALVE
	SANITARY CLEAN-OUT	WATER VALVE
	SANITARY MANHOLE	TEE W/THRUST BLOCK
	FIRE HYDRANT	BEND W/THRUST BLOCK
	WATER VALVE	FIRE HYDRANT
	WATER MANHOLE	INLET
	GAS METER	CURB INLET
	TELEPHONE PEDESTAL	STORM MANHOLE
	LIGHT POLE	SANITARY MANHOLE
	UTILITY POLE	SANITARY CLEANOUT
	SIGN	CABLE MANHOLE
		ELECTRIC VAULT
		ELECTRIC TRANSFORMER
BOUNDARY		
RIGHT-OF-WAY		
EASEMENT		
STRUCTURE		
ASPHALT		
GRAVEL		
CONCRETE		
RETAINING WALL		
CENTERLINE ROAD		
CURB AND GUTTER		
FLOWLINE		
PAVEMENT STRIPING		
WATER MAIN	W	W
WATER SERVICE		WS
SEWER MAIN	SS	S
SEWER SERVICE	SS SS	SS SS
OVERHEAD ELECTRIC	OE	
ELECTRIC	E	E
CATV	CTV	C
TELEPHONE	T	T
GAS	G	G
STORM SEWER		

NOTES

1. SURVEY COMPLETED BY TUTTLE SURVEYING SERVICES. REFER TO ALTA/ASCM LAND TITLE SURVEY DATED 10/08/20 FOR EXISTING CONDITIONS INFORMATION. DATE OF SURVEY SEPTEMBER 5-8, 2020.
2. BASIS OF BEARINGS: #5 REBAR WITH ALIMINUM CAP LS #5933 AT THE SOUTHEASTERLY, A FOUND #5 REBAR WITH ALUMINUM CAP L.S. 25954 FOUND AT THE NORTHEASTERLY CORNER OF SUBJECT LOT 1A, USING A BEARING OF N00°21'00"E BETWEEN THE TWO DESCRIBED MONUMENTS.
3. CONTOUR INFORMATION OBTAINED FROM US GEOLOGICAL SURVEY 2017 DATA, STATE PLANE NAD 83 CENTRAL ZONE. FIELD VERIFICATION MAY BE NECESSARY IN AREAS CRITICAL TO DESIGN.
4. ALL COMBINED FIRE/DOMESTIC WATER SERVICES SHALL BE NFPA24 COMPLIANT.
5. PUBLICLY DEDICATED UTILITIES SHALL HAVE UTILITY EASEMENT FOR ACCESS AND MAINTENANCE.
6. ALL FIRE HYDRANTS TO HAVE 15' EASEMENT FOR ACCESS AND MAINTENANCE.

COLORADO 811 CALL BEFORE YOU DIG Utility Notification Center of Colorado

NO.	DATE	REVISION	BY
1	12/11/20	MAJOR SITE / ARCH. REVIEW	MGG
2	1/22/21	MAJOR SITE / ARCH. REVIEW #2	MGG
3	7/2/21	MAJOR SITE / ARCH. REVIEW #3	MGG

DRAWN BY: MGG
CHECKED BY: MGG
DATE:
FILE: SCALE 1" = 40'

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 FAX (970) 945-2555
WWW.HCENG.COM

BLD GROUP, LLC.
GLENWOOD SPRINGS, CO

GLENWOOD MEADOWS MULTI-FAMILY

PRELIMINARY UTILITY PLAN SHEET 2

PROJECT NO.
2201044.00

UT2

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ANNEXATION AND DEVELOPMENT AGREEMENT{PRIVATE}
GLENWOOD MEADOWS, LLC ANNEXATION

THIS ANNEXATION AND DEVELOPMENT AGREEMENT ("Agreement") is made and entered into this 18 day of September, 2002, by and between the CITY OF GLENWOOD SPRINGS, COLORADO, a Colorado municipal corporation (hereinafter "City"), and GLENWOOD MEADOWS, LLC, a Colorado limited liability company, its successors, assigns, and its legal or other representatives (hereinafter collectively "Owner");

W I T N E S S E T H:

WHEREAS, Owner owns approximately three hundred forty-five (345) acres of real property currently located in unincorporated Garfield County, Colorado, and more particularly described on Exhibit A, attached hereto and incorporated herein by this reference (hereinafter "Property"), which Property shall be known as "Glenwood Meadows"; and

WHEREAS, Owner and City entered into that certain Pre-Annexation Agreement concerning the Property dated August 20, 1999 and subsequently amended by instrument dated January 12, 2000 (as amended, the "PAA"); and

WHEREAS, in February, 2000, Owner filed with the City Clerk a petition and request for annexation of the Property into the City; and

WHEREAS, a duly noticed public hearing was held on March 2, 2000, whereat the City adopted a Resolution finding said petition and request to be in substantial compliance with the statutory requirements for annexation of the Property to the City; and

WHEREAS, Owner applied to the City for approval of certain Planned Unit Development zoning for the Property in March, 2000 (Zoning Application #42-99), which zoning application was subsequently withdrawn by Owner at a public hearing before the City Council on November 15, 2000; and

WHEREAS, upon the request of the City, approximately 4.63 acres of the Property was approved for annexation and zoning as C-1 Limited Commercial (the "MOC Entrance Parcel") and is subject a separate Annexation Agreement between the Owner and City; and

WHEREAS, on September 19, 2001 (Zoning Application #59-01) Owner submitted an application to the City for approval of a zoning plan for the Property which included C-1 Limited Commercial, C-2 Core Commercial, C-4 Resort Commercial and R-3 Residential zoning districts for the portions of the Property not intended for public dedication (any portion of the Property intended for public dedication pursuant to this Agreement and the instruments incorporated herein may be zoned under the same application and review process as HP Hillside Preservation) as more fully described upon Exhibit B attached hereto and by this reference incorporated herein (the "Zoning Map"); and

WHEREAS, on March 21, 2002, the Owner did amend its original February, 2000 Annexation Petition to reflect the distinct characteristics of the Property subject to this Agreement and the MOC Entrance Parcel; and

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WHEREAS, on March 21, 2002 a Public Hearing was held pursuant to C.R.S. Section 31-12-109, as amended, at which public hearing it was determined that the annexation petition had satisfied all requirements of C.R.S. Section 31-12-101 et. Seq.; and

WHEREAS, on July 18, 2002 the City Council of the City of Glenwood Springs ("Council") did adopt Ordinance No. , Series of 2002, and Ordinance No. , Series of 2002, which respectively approved the Owner's petition and request for annexation of the Property and approved the Owner's application for municipal zoning of the Property; and

WHEREAS, during the public review of the annexation and zoning processes, the parties hereto have agreed to amend and eliminate the provisions of the prior PAA and to set forth and memorialize all agreements regarding the annexation, zoning and development of the Property in the instant Agreement; and

WHEREAS, the City and Owner desire to enter into this Agreement to set forth their agreements in writing concerning the terms and conditions of annexation of the Property to the City, the zoning of the Property under the City's Municipal Code and the adopted Zoning and Development Plan (Exhibit C attached hereto and by this reference incorporated herein), as well as the other conditions of the development of the Property as hereinafter described; and

WHEREAS, Owner intends to submit its development proposal to the City for subdivision review and approval and to construct the development in phases which correspond to the Zoning Plan parcels, it being understood that nothing herein shall confer upon Owner any other or further rights not expressly contained herein or by instruments incorporated herein.

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City and Owner agree as follows:

1. Purpose. The purpose of this Agreement is to set forth the terms and conditions of the annexation of the Property to the City, and the zoning and development of the Property in the City. Except as expressly provided for herein to the contrary, all conditions herein are in addition to any and all requirements concerning annexation and development contained in the Municipal Code of the City of Glenwood Springs, Colorado (hereinafter "Municipal Code"), the Municipal Annexation Act of 1965, as amended at C.R.S. §31-12-101 et seq., and other applicable laws.

Except as expressly provided herein to the contrary, the complete execution, delivery and recording of this Agreement shall render null and void the PAA between these same parties. Furthermore, and except as expressly stated otherwise herein, all terms and conditions of the following agreements, contracts and documents shall remain in full force and effect:

(i) Midland Avenue Right Of Way Extension Agreement, dated September 20, 1994;

(ii) Community Center Acquisition and Exchange Agreement, dated March 16, 1999;

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(iii) Municipal Operations Facility Site Acquisition Agreement, dated December 27, 1999

(iv) MOC Water and Sewer Fee Credits Assignment and Bill of Sale, dated January 17, 2000;

(v) MOC Entrance Parcel Annexation and Development Agreement.

2. Zoning Characteristics/Constraints/Requirements. The Zoning and Development Plan attached hereto as Exhibit C (the "Plan") shall govern the development of the Property. Any and all future site planning, whether in the form of an application for planned unit development, major or minor subdivision, major or minor development permit approval or any other form requiring the review and approval of the City, shall, as an element of its application for approval and review, evidence, to the satisfaction of the applicable City department, commission and/or City Council, compliance with the criteria and conditions of the Plan, as said Plan relates to such development application and the underlying Municipal Code requirements. All zoning and development hereunder is deemed to require the application of the more stringent of either (i) the Municipal Code or (ii) the Plan. An applicant may seek relief from specific elements of the Plan and/or the Municipal Code only through appropriate variance processes outlined in the City of Glenwood Springs Municipal Code.

Owner shall, within ninety (90) days after the mutual execution of this Agreement, submit a surveyed zoning map to the City. Such surveyed zoning map shall include legal descriptions for each of the twelve (12) zoning parcels (Parcels A through L, inclusive) identified by Exhibits B and C attached hereto. The City's Community Development Director and the City Attorney shall review such descriptions and, if generally consistent with the representations and approvals of the annexation and zoning public processes, shall approve the same. The City shall incorporate the surveyed zoning map into the Citywide zone district designation mapping and maintain an accurate and current copy thereof in accordance with State and local laws.

Prior to or contemporaneous with the first subdivision and/or development application for the Property, the Owner shall submit an overall geologic hazards map and mitigation plan of the Property to the City Engineer for his review and approval, which approval shall not be unreasonably withheld. The City shall incorporate the approved overall geologic hazards map and mitigation plan into the Citywide mapping and maintain an accurate and current copy thereof in accordance with applicable laws.

Prior to the first subdivision and/or development application for the Property, the Owner shall submit a Master Grading Plan and Master Drainage Plan for the development areas of the Property to the City Engineer. Said plans shall be consistent with the requirements of the Colorado Geologic Survey's letter dated October 23, 2001 and maintained on file with the City. Upon approval of said plans, Owner may apply for a grading permit to commence the preparation of all or part of the Property scheduled for development under the Plan. Based upon the detailed requirements and master planning of the Property as set forth herein and upon the Zoning and Development Plan attached hereto, such grading permit request may be granted by the City in advance of site specific development plans for an individual Parcel of the Property and may include certain off-site earth work, including, without limitation, (i) the "rough grading" of certain areas, as directed by the City, of Parcel L for said area's future use as active park facilities, and (ii) the

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construction of debris mitigation structures within Parcel L as more fully described in Section 14 hereinbelow. All Master Grading Plans, Master Drainage Plans and grading permit requests shall include revegetation plans acceptable to the City Engineer and City Planning Department. At a minimum said revegetation plans shall incorporate grass, forb and shrub species into any debris flow mitigation structure development in a manner beneficial to wildlife for forage and cover and shall adequately address erosion control.

Prior to the first subdivision and/or development application for the Property, the Owner shall submit a Master Utility Plan for the development areas of the Property to the City Engineer. The City shall incorporate the Master Utility Plan into the Citywide mapping and maintain an accurate and current copy thereof in accordance with State and local laws and with City policy.

3. Non-Specific Assessments/Credits/Fees-in-Lieu of School Land Dedication

a. Non-Specific Assessments/Credit. Any future impact fees, surcharges, special permit fees, special taxes or assessments, development fees or tap fees, and other items not addressed by this Agreement shall be exacted uniformly and non-discriminatorily on the Property and as exacted throughout the City. Notwithstanding the foregoing, nothing herein affects or shall affect the City's ability to exact impact fees for different facilities from certain residents or as to certain geographical areas. Owner shall receive full credit against any such future imposition for the full costs of all improvements, dedications, or payments made with respect to the matters to which such imposition relates. For example, in the event of a City's imposition of a fee for pedestrian trail facilities, Owner would be entitled to credit for the costs of all such trail improvements (as properly evidenced by invoices for design and construction) and dedications of land for trails (the value of which shall be established by the same appraisal mechanism described in Section 13.c. below) Owner had made up to that point in time on or concerning the Property.

Owner's credit for such costs shall include all costs incurred with respect to the applicable on-site or off-site improvements or dedications, including without limitation, all land costs (based upon the value of such land as vacant land, agricultural land or land for commercial or residential development, whichever is applicable, at the time the final plat for such land is approved), construction and construction management costs (excluding Owner's profit), and design, legal, consulting, and financing costs for the land so dedicated or on which the applicable improvements are constructed.

Notwithstanding the foregoing, Owner shall not receive credit as against such costs for the value of water rights dedicated or otherwise transferred to the City or the ownership shares of the attendant Atkinson ditch structure, both as more fully described by Section 11 hereinbelow. Further, in the case of an imposition of general applicability to provide general fund revenues, Owner shall not be entitled to credit against any impact fees or general assessments.

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Except with respect to Parcel I as identified on Exhibits B and C hereof, Glenwood Meadows, its successors and assigns, shall not be required to pay any future Traffic/Transportation Impact Fee established by the City subsequent to the execution and recordation of this Agreement. The City and Glenwood Meadows have established the full and complete obligations of Glenwood Meadows with respect to on-site and off-site traffic/transportation improvements and financial contributions as set forth by Section 12 hereinbelow.

Owner does own, and the City acknowledges and ratifies such ownership herein, certain water and sewer system "Fee Credits" (specifically, 135 sewer system improvement fee credits and 135 water system improvement fee credits) arising from Owner's prior transfer to the City of certain lands for development of the Municipal Operations Center (see instruments dated December 27, 1999 "Municipal Operations Facility Site Acquisition Agreement" and January 17, 2000 "Assignment and Bill of Sale"). Owner and City shall maintain accurate records regarding Owner's use of such Fee Credits as the Property is developed.

b. Fee-in-Lieu of School Land Dedication. Owner shall pay and the City shall accept fees in lieu of land dedication for the benefit of schools in the RE-1 School District (the "District") pursuant to Ordinance No. 34 Series of 1999 and Municipal Code Section 070.030.150. D.; or any amended version thereof in force and effect at the time of the final development permit approval of a given portion of the Property by the City. Such fees shall be applicable to the number of units proposed for all residential phases scheduled for development and shall be payable upon the issuance of a building permit for a residential dwelling unit. Owner shall have the right to seek relief from the obligation to pay such school impact fees for any "affordable housing dwelling units" or "employee housing dwelling units" provided by Owner or its assignees within the Property.

c. Credit to Owner for Actual Development of Public Facilities. Owner is specifically entitled to a credit against any City parkland improvement fee or similar fees if eventually implemented and which would be otherwise applicable to development on the Property as follows:

(i) the value of land dedicated to public use and the costs of construction of pedestrian and bicycle trails within the Property as more fully described by Section 13(a) and 13 (b) below;

(ii) the value of land dedicated to public use and the costs of construction or Owner's contributions to the costs of construction of pedestrian and bicycle trails outside the boundaries of the Property as more fully described by Section 13(c) below;

(iii) the value of any "rough grading" performed by Owner, its successors and assigns, as requested by the City pursuant to the provisions of Section 15 below; and

(iv) the value of land, if any, dedicated by the Owner to the City for public use and enjoyment as open space, active parklands and passive parklands in

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Parcel L, which lands represent a dedication in excess of the quantity of such lands otherwise required to be dedicated in support of the development on the Property.

Owner shall not be entitled to any credit against such fees for the development of commonly owned open spaces and recreation facilities within the development of Parcels A through K.

4. Conditions Precedent.

a. The provisions of this Annexation Agreement shall not be effective until the following conditions have been satisfied in full:

(1) Final approval has occurred as follows:

(a) For the purposes of this Agreement, final approval occurs on the thirtieth (30th) day following the effective date of the latest of the motion, ordinance and/or resolution by which the City Council (hereinafter "Council") approves:

(i) This Agreement;

(ii) The formal annexation of the Property to the City;

(iii) The zoning for the Property as C-1 Limited Commercial, C-2 Core Commercial, C-4 Resort Commercial, R-3 Residential and HP Hillside Preservation; and

(2) Owner and City have mutually executed and delivered this Agreement for recordation with the Garfield County Clerk and Recorder.

b. If any legal proceedings, referenda, or elections are commenced regarding any of the items specified in Section 4(a) hereinabove, and in accordance with the City's Municipal Charter, but are not favorably concluded within fifteen (15) months thereafter (subject to each party's obligations pursuant to Section 5 below), this Agreement may be terminated by either party upon written notice to the other.

c. If none of the actions addressed in Section 4(b) above is taken or commenced within such thirty (30) days, or if an election is called pursuant to said Section 4(b) and ratification thereafter made by the voters of the City, then Final Approval shall occur upon conclusion of the election.

5. Cooperation in Defending Legal Challenges. If any legal or equitable action or other proceeding is commenced by a third party: (a) within one (1) year after the Final Approval, challenging the validity of the annexation of the Property into the City or the City's zoning of the Property or the City's execution and delivery of this Agreement, Owner and the City shall defend

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such action or proceeding; or (b) subsequent to such one-year period, challenging the validity of any provision of this Agreement (other than as set forth in clause (a) above), Owner and the City agree to cooperate in defending such action or proceeding, and in connection with any such action or proceeding, the City shall bear its own expenses and Owner shall bear Owner's expenses. Unless the City and Owner otherwise agree, each party shall select its own legal counsel to represent it in connection with any such action or proceeding.

6. Interim Use of Available Raw Water During Site Development. The parties agree that the developer of the Property may utilize the Atkinson Canal and associated water rights being dedicated to the City for dust mitigation and site preparation during the grading and construction activities on the Property. If the developer elects to so utilize the water structures and water rights, all cost, including but not limited to construction, maintenance and legal fees associated with such use shall be borne exclusively by said developer.

7. Deannexation. The provisions of this Agreement, as well as acceptable City zoning of the Property, are material considerations of Owner's agreement to annex the Property to the City. Therefore, in the event (a) the City fails to perform under the terms of this Agreement, or (b) Owner is unable to obtain, either before or after annexation proceedings are complete, C-1 Limited Commercial, C-2 Core Commercial, C-4 Resort Commercial and R-3 Residential zoning and/or subdivision and/or development approval (subject to limitations herein set forth) which it in its sole discretion finds acceptable, Owner and the City stipulate and agree, pursuant to C.R.S. §31-12-501, that it shall be in the best interest of the City that the Property be de-annexed from the City. In such event, the City agrees that it shall initiate de-annexation proceedings, and to take all steps necessary to effect the de-annexation. The City further acknowledges and agrees that de-annexation is not prohibited by the City Charter or Municipal Code and ordinances, and that the City will not amend its ordinances to preclude a de-annexation permitted hereunder. The parties' right to de-annex shall be in addition to those rights set forth in Section 4, above. Upon the de-annexation of the Property from the municipal boundaries and specific jurisdiction of the City, the City agrees that it shall convey, assign, transfer and quitclaim to Owner, its successors and assigns, any and all land and water rights (the public dedication of which is more fully described by Section 11 hereof) previously dedicated by Owner hereunder to the City for the public use and benefit.

8. Owner Representations. All representations of Owner set forth in its annexation petition, annexation plat, public hearings on the application for C-1 Limited Commercial, C-2 Core Commercial, C-4 Resort Commercial and R-3 Residential zone district classification, the Zoning and Development Plan and mapping and related documents shall, if accepted by the City, be considered incorporated into this Agreement as if set forth in full herein. Notwithstanding their incorporation by reference, the City makes no representations about the accuracy of such documents.

9. Site Planning/Density Limits/Plats/Subdivision Improvements Agreements. The City and Owner agree to the following terms and conditions regarding site planning, vested rights, subdivision improvements agreements (hereinafter "SIAs") or development permit agreements (hereinafter, "Development Permits") and plat recordation:

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a. Site Planning. Unless otherwise mutually agreed upon by the parties, Owner shall develop the property in eleven (11) distinct phases; each of which shall correspond, according to the surveyed zoning map described by Section 2 hereinabove, to one of the zoning parcels (A through K) generally set forth by Exhibit B and Exhibit C (hereinafter, a "Parcel" or the "Parcels"). One or more zone parcels may be commenced as a single phase of site specific planning and development, provided the developer thereof complies with all obligations of each parcel's development; to wit, the timing and amount of applicable Off-Site Transportation Improvements (Section 12 hereof), the Geotechnical Mitigation requirements (including debris flow detention facility extensions) (Section 14 hereof) and all other applicable fees and conditions of development associated with each zoning parcel. During any planned unit development ("PUD") review process, subdivision process, development permit process or other development process, Owner shall submit to the City a final plat for each encompassed Parcel, which plat shall correspond to and indicate the proposed plan of development in each Parcel of the Property (the "final plat"), which shall include, at a minimum, the intended locations and densities of such development. The parties agree that the final plat shall be recorded promptly following approval.

The City and Owner agree that, together with the application for the first subdivision and/or development on the Property, except the subdivision and or development of Parcel I, and otherwise regardless of which zoning parcel or phase is involved, an element of the approval of the final plat thereof shall be the public dedication to the City, either by such plat or by separate conveyance instrument, of the HP Hillside Preservation (Parcel L) lands. It is further agreed that such conveyance shall and does provide part of the consideration herein agreed to and accepted by the parties as support for Owner's enforceable vested rights as further described and defined in Section 10 hereinbelow. It is also agreed that the dedication and conveyance of other, future public lands and facilities (such as publicly dedicated streets and utility easements) will occur in conjunction with future subdivision and/or development application approvals.

b. Infrastructure Easements. Regardless of Owner's schedule, Owner agrees to provide infrastructure for roads, water and sewer facilities, electrical and natural gas service, and other facilities and services as mutually agreed upon by Owner and the City Engineer to serve the Property adequately during the period(s) between development of parcels. Such infrastructure shall be provided at Owner's expense, and shall be reviewed and subject to approval by the City. Owner will loop water or sewer lines or provide other stand-alone features of such infrastructure, all as approved by the City engineer, to accomplish this goal. The City shall accept easements for such public facilities pending the actual and final public dedication of the same upon the final platting of the affected Parcel(s).

c. Density Cap. Notwithstanding the zoning designation of the Property as: (i) a C-1 Limited Commercial zoning district (Parcels A, C, D and H on the Plan) or C-2 Core Commercial zoning district (Parcels E, F and G on the Plan), Owner agrees that it shall not plan, develop, construct or sell more than 490,000 total square feet of

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commercial space (exclusive of any development which may occur within that area of the C-4 Resort Commercial zone district identified as "Hospitality" [Parcel I on the Plan], the density maximums of which are separately limited by the City's Municipal Code) within the Property; and (ii) an R-3 Residential zoning district (Parcels B, J and K of the Plan), Owner agrees not to plan, develop, construct or sell more than 475 residential dwelling units (subject to the provisions of Section 9(c)(i) below) within Parcels B, J and K.

(i) *Specific Housing Agreements between Owner and City.* The Owner and its successors-in-interest shall comply with the City's community housing requirements contained in Ordinance #24, Series of 2001, Inclusionary Residential Requirements for Affordable Housing and the applicable Guidelines, as contained in Resolution #2001-16. Glenwood Meadows further agrees that a minimum of twenty (20) dwelling units shall be developed on the Property and shall be located within the mixed-use Parcels E, F and G. Finally, the City and Owner agree that no more than three hundred (300) of the total residential dwelling units permitted hereunder shall be commercial apartment rentals as "apartments" are now or may hereafter be defined in the City's Municipal Code.

(ii) *Limitation.* The foregoing density limits shall not apply to portions of the Property conveyed to or developed as (i) governmental services facilities (including a public school district facility) or (ii) non-governmental, non-profit health and human services facilities. Except as expressly provided herein to the contrary, proposed land uses which exceed the maximum density limits established hereby and reiterated by the incorporated Zoning and Development Plan shall require the written mutual execution of a specific amendment to this Agreement. No such amendment shall be valid unless approved at a duly and properly noticed, public hearing before both the City's Planning & Zoning Commission and the Glenwood Springs City Council on the question.

d. SIAs/Development Permits and Plat Recordation. The City and Owner shall, following Council approval of the final plat of one or more of the Parcels of the Property's development, but before the final plat is recorded, negotiate acceptable terms of a separate subdivision improvements agreement ("SIA") for the Parcel(s) scheduled to proceed to development. The City shall authorize the Mayor to execute the SIA for the Parcel(s) following final plat approval. The City shall further authorize the Mayor to execute the SIAs for subsequent Parcel(s), subject to the foregoing:

i. No SIA for any Parcel shall be recorded until all necessary documents in support of that Parcel, including a financial guarantee acceptable to the City, updated cost estimates for public improvements, and an updated title commitment, all pursuant to the Municipal Code (the "Financial Items") have been provided to the City and approved by City staff. For purposes of this Agreement, both (i) Off-Site Transportation Improvements in

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accordance with the provisions of Section 12 hereinbelow and the Glenwood Meadows' Transportation Improvements Plan and (ii) Geotechnical mitigation requirements applicable to a given phase of development (including debris flow detention structure extensions) in accordance with the provisions of Section 14.a. hereinbelow, shall be deemed included within the definition of "Financial Items" requiring review and approval of the City's Community Development Director prior to recordation of the final plat of a given approved phase of development. Upon the City's receipt of the Financial Items, no public hearing shall be necessary if all City review departments approve the Financial Items without imposing conditions thereon and without recommending or requesting a public hearing. Nevertheless, the SIA for each phase of the Property's development shall be subject to Council review and approval at a regular Council meeting. Promptly following final approval and execution, the City shall record the SIA for the Parcel(s), which will thereafter proceed to be developed.

ii. The parties agree that any filing or other numbers which appear on the final plat for the various phases of development of the Property are for reference and identification purposes only and have no bearing on the sequence in which the Property may be developed.

iii. Owner may only sell lots on the Property located within a Parcel:

A. which includes within its final plat and design an identification of the lot(s) to be sold;

B. for which an SIA designating said lots has been executed and recorded; and

C. for which acceptable financial guarantees have been posted to secure construction of improvements.

In the absence of a specific "subdivision" request, the Financial Items and other obligations required hereunder may be enforced by the City through conditions of Major Development Permitting or other similar and enforceable mechanics.

e. Compliance With Agreement and Subsequent Obligations. Owner's compliance with all requirements of this Agreement, the Plan, the Municipal Code and other governing documents incorporated herein or as part of the zoning approval process, including future SIA/Development Permit instruments, is a condition of subdivision and/or major development permit approval. Notwithstanding the foregoing or Section 10 hereinbelow, nothing herein shall constitute a guarantee, covenant or agreement that the City shall approve such application(s) in the event of non-compliance.

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10. Vested Rights. In order to allow Owner a reasonable opportunity to develop the Property in accordance with this Agreement, the Zoning and Development Plan, the Final Approval and in consideration of the substantial public dedications of land as described herein and upon the attachments hereto, the development rights and uses approved thereby shall, to the extent allowed by law, constitute a "site specific development plan" under C.R.S. §§24-68-101 et seq., as amended. Subject to Owner's satisfactory completion of Parcel phases of development pursuant to this Agreement, the site specific development plan shall be vested in Owner under the following conditions:

a. The site specific development plan shall be vested for a period of ten (10) years, beginning on the date the final plat of the first phase of development on the Property is recorded (the "Vested Period"). The Property as to which rights have been vested shall be immune from changes in the City's land use regulations for the duration of the Vested Period, subject to the below provisions.

b. After the Vested Period expires, this Agreement shall be deemed terminated and of no further force or effect as to such phase; provided, however, that such termination shall not affect (a) annexation to and zone district designations of the Property in the City; (b) any common-law vested rights obtained prior to such termination; (c) any right arising from City permits, approvals or other entitlements for the Property which were granted or approved prior to, concurrently with, or subsequently to the approval of this Agreement; (d) any continuing obligations of Owner regarding providing services or facilities to such phase, performing covenants implied within this Agreement, or other Owner responsibilities under this Agreement, which shall survive termination; or (e) any rights of the City relating in any way to Owner's performance or nonperformance hereunder.

c. Notwithstanding the foregoing, if Owner does not complete the items listed and intended for each phase within the time period allotted for construction of such phase pursuant to an applicable SIA, the Vested Period as to all uncompleted work on the Property in connection with the subject phase(s) shall expire, vested rights as to such uncompleted work shall be extinguished, and this Agreement shall terminate in favor of the provisions of the applicable SIA. "Completion" for the purpose of this paragraph shall mean that all work for such phase shall have been performed, submitted to the City for approval, and finally approved pursuant to applicable City subdivision and platting requirements, and that Owner properly posted financial guarantees acceptable to the City to assure completion of that phase's improvements within the time period allotted by the subject SIA.

d. Except in instances of force majure, the requirements of federal or state law, cases of preemption or other superior jurisdictional mandate, the City shall not initiate any zoning or land use action which would alter, impair, prevent, diminish, impose a moratorium on development, or otherwise unreasonably delay any of Owner's rights set forth in this Agreement or Owner's plans for development or zoning, as approved by the City.

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e. Notwithstanding the foregoing, the establishment of vested property rights under this Agreement shall not prevent the City from enacting and enforcing regulations of general applicability (including, but not limited to, building, fire, plumbing, electrical and mechanical codes, including the preliminary plat and final plat subdivision requirements under the Municipal Code and other City ordinances), except where the approved plans for development of the Property or state or federal regulations provide otherwise, as all of such regulations exist on the date of this Agreement or may be enacted or amended after the date of this Agreement.

11. Water Rights Dedication and Ditch Structure Conveyance. At or before the time the recordation of the final plat for the first phase of subdivision and/or development (whereupon the land zoned as HP Hillside Preservation shall be dedicated to the City for public use and enjoyment as open space, active park lands and passive park lands), but in no event later than six (6) months after the mutual execution of this Agreement, Owner shall convey by special warranty deed to the City, free and clear of all liens and encumbrances (but subject to the provisions of Section 6 hereinabove), water rights acceptable to the City, as determined by mutual agreement to be satisfactory to provide a secure, legal water supply for appropriate useful application within the proposed development contemplated by this Agreement and the Plan; provided, however, Owner's obligations in this regard shall be limited to the historic water rights owned by Owner and used on the Property. Prior to dedication, the Owner and City shall agree to the maximum needs of the contemplated uses. The water rights dedicated shall be those historically associated with the subject Property and more specifically known as priorities 105A, 107A, 228 and 594 as decreed in Case Nos. 1056, 1225, 1338 and 4033 respectively. The Owner may retain water rights which exceed the needs described above, provided that the water rights retained are junior in priority to those dedicated and that any change in the point of diversions downstream of the point of diversion utilized to service the annexed Property. In addition, the Owner hereby agrees not to oppose any application by the City for an alternate point of diversion for the dedicated water rights in order to better serve the Property and the City's needs. Owner shall be entitled to sever and maintain ownership of those water rights not necessary for the City to offset the future use on the Property. Owner shall be solely responsible for the costs associated with any legal proceedings, including those related to approval of an augmentation plan or request for change in use, arising from the retention by Owner of any portion of its present water rights. By this conveyance, Owner shall fully satisfy any and all water rights dedication requirements of the City for annexation and development of the Property as set forth in the Municipal Charter and Municipal Code and as approved by the City Council.

As an element of the consideration hereunder, Owner agrees to assign one hundred percent (100%) of its ownership interest in and to the Atkinson Canal Company to the City contemporaneous with the dedication of water rights described by this Section 11. Such assignment shall include, without limitation, all right, title and interest of the Atkinson Canal Company in any agreements, contracts, easements, rights-of-way and other appurtenant benefits.

Owner, as an element of its Master Drainage Plan and its Master Utility Plan, shall at Owner's sole cost, design a raw water irrigation system, acceptable to the City Engineer, serving the Property and adjacent City-owned lands (i.e. Community Center, MOC Site and the Parcel L property). The City shall be the owner of any such raw water irrigation system and shall pay for the

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costs associated with construction of the same. Upon the City's development of a raw water irrigation system, all development within the Property shall be required to purchase such taps and pay such other fees as are generally applied to the system's use.

12. Off-Site Traffic Improvements Obligations. As an element of the City's approval of (i) Owner's Petition for Annexation, (ii) Owner's Application for Zoning and (iii) acceptance of this Agreement, the Owner has agreed to make certain improvements to the surrounding transportation system and to cooperate financially with the City on specified future transportation system improvements as described herein:

(a) As a specific requirement of any application for a Parcel's subdivision and/or development, the Owner shall calculate the estimated number of daily trips attributable to the site specific development's intended uses and provide the City with a complete copy of said calculations for the City's records.

(b) Owner shall cooperate with the City to obtain a CDOT Access Permit on behalf of, and in the name of the City. The City shall be provided a copy of any Access Permit granted hereunder. Said Access Permit shall describe the nature and impacts of construction and improvements affecting the Interstate 70/Midland Avenue right-of-way areas. Owner shall pay the costs of the Access Permitting process and shall comply with the terms associated therewith.

(c) Owner shall be responsible for the design and, upon approval of the City Engineer, the construction of improvements at the intersection of Midland Avenue and Eighth Street. Said improvements shall accommodate existing and anticipated traffic as described by the Owner's Transportation Improvements Plan through intersection modification, grade modification and/or signalization. Owner and or its assigns shall be responsible for all costs of administration, design and actual construction of the approved improvements; the City shall be responsible for all necessary costs of right-of-way acquisition for the approved improvements. The improvements contemplated hereby shall be completed prior to or contemporaneous with the issuance of a final and permanent certificate of occupancy by the City's Building Department for any structure within the first Parcel of commercial and/or residential development (exclusive of any proposed subdivision and development on Parcel I). Provided, however, Owner may apply for and obtain subdivision and/or development permit approval for development on the Property in advance of the actual construction of the improvements herein described; provided however that (i) the obligation to complete the improvement is included in the Financial Items of the respective SIA(s) (see Section 9(d) above) and thereby, the performance secured, and (ii) no permanent certificate of occupancy for any structure on Parcels A, B, C, D, E, F, G, H, J or K shall be issued until the completion of said improvements; provided, however, in the event circumstances warrant, the Owner may apply for relief from the constraints of this Section 12(c) by application to the City Council. Any such relief shall be within the sole and exclusive discretion of the

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City Council and may be subjected to such other conditions, as determined by the City Council at that time.

(d) Owner shall be responsible for the design and, upon approval of the Colorado Department of Transportation ("CDOT") and the City Engineer, the construction of two (2) roundabouts or other acceptable and approved improvements at the Interstate 70 and Midland Alternate Route highway interchange at Exit 114. Said improvements shall accommodate a potential full interchange at the North and at the South sides of said Exit 114. Owner and or its assigns shall be responsible for all costs of administration, design and actual construction of the approved improvements; the City shall be responsible for all necessary costs of right-of-way acquisition for the approved improvements. The improvements contemplated hereby shall be completed prior to or contemporaneous with the issuance of a final and permanent certificate of occupancy by the City's Building Department for any structure within the first Parcel of commercial and/or residential development (exclusive of any proposed subdivision and development on Parcel I). Provided, however, Owner may apply for and obtain subdivision and/or development permit approval for development on the Property in advance of the actual construction of the improvements herein described; provided however that (i) the obligation to complete the improvement is included in the Financial Items of the respective SIA(s) (see Section 9(d) above) and thereby, the performance secured, and (ii) no permanent certificate of occupancy for any structure on Parcels A, B, C, D, E, F, G, H, J or K shall be issued until the completion of said improvements; provided, however, in the event circumstances warrant, the Owner may apply for relief from the constraints of this Section 12(d) by application to the City Council. Any such relief shall be within the sole and exclusive discretion of the City Council and may be subjected to such other conditions, as determined by the City Council at that time.

The Owner and the City have agreed to jointly pursue the recovery of any funds which may be available from CDOT or other sources to reimburse the parties for the capital costs associated with the improvements contemplated by this Section 12(d). In the event the Owner and City are able to recapture any such funds within ten (10) years of the anniversary of this Agreement, Owner or its successors and assigns shall be entitled to recover therefrom only the amount of the actual costs of design, engineering and construction for the subject off-site transportation improvement project. All other recaptured funds, regardless of their source, shall be paid to the City and applied to other City transportation improvements.

(e) Owner shall, at the earlier of either (i) the completion of seventy-five percent (75%) of the total commercial square footage approved hereunder, or (ii) upon the request of the City Engineer following the commencement of actual construction and development on the Property (such request being evidenced by

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documentation of escalating traffic counts along the Midland Avenue corridor which the City Engineer has then determined warrants the improvement of the width of the Midland Avenue Alternate Route), pay all costs of administration, design and construction for the four-laning of the section of the Midland Avenue Alternate route from the present Community Center access point at Wulfsohn Road westerly to the present MOC access point at Wulfsohn Road, inclusive. Owner's responsibility for the four-laning of said section of the Midland Avenue Alternate Route is contingent upon the City's assumption of the obligation to simultaneously pay all of the costs for the administration and design of four lanes on two (2) other sections of the Midland Avenue corridor, to wit: (i) the section form the Colorado River to Wulfsohn Road at the present MOC access point and (ii) the section from Wulfsohn Road at the present Community Center access point to the Eighth Street and Midland intersection. Owner shall contribute to City twenty-five percent (25%) of the actual construction costs for these improvements. The City shall not attribute any financial responsibility for right-of-way acquisition for the improvements hereunder to the Owner. In the event the City Engineer has not required the four-laning of these sections of the Midland Avenue corridor prior to the Owner's commencement of any part of the final twenty-five (25%) of the total approved commercial square footage on the Property, the Owner may estimate, subject to the reasonable approval of the City Engineer, the costs of all improvements contemplated hereby and pay to the City as full and final discharge of Owner's obligations under this Section 12(e) its proportionate share of the estimated costs (i.e. 100% of the costs of the four-lane construction of Midland Avenue Alternate Route adjacent and contiguous to the Property and 25% of the costs of the four-lane construction of Midland Avenue Alternate Route at the two (2) non-adjacent, non-contiguous sections as described herein).

(f) Owner shall be responsible for one hundred percent (100%) of the costs associated with the design and construction of one new access point from the Property to Midland Avenue. The design of any such access point and roadway intersection shall require the prior approval of the City Engineer. Owner shall be responsible for one hundred percent (100%) of the costs associated with the design and construction of a new limited purpose (i.e. an unsignalized right-turn-in/right-turn-out only) access point from the Property to Midland Avenue. The design of any such secondary access point and roadway intersection shall require the prior approval of the City Engineer. Any new access points contemplated by this Section 12 (f) shall, as an element of their design and construction, incorporate a pedestrian grade separation, the design for which shall be subject to the review and approval of the City Engineer. The City may, upon the request of Owner, waive this pedestrian grade-separation obligation if the City has determined that a westward extension of the City-wide or regional trail system is not anticipated.

The City and Owner hereby agree that in the event a city-wide off-site transportation improvement fee program of general applicability within the City's municipal limits shall be hereafter duly

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adopted by the City, said program of general applicability shall apply only to the development of Parcel I on the Plan.

Owner's contribution to the construction and land dedication for on-site pedestrian and bicycle trail connections, including the costs incurred in developing grade-separated crossings, shall be credited to Owner, its successors and assigns, against any other applicable fee(s) now in the Municipal Code or hereafter adopted by the City for the express purpose of improving trails and similar parkland facilities. The Owner shall be responsible for providing to the City copies of all applicable cost records for such expenditures.

13. On-Site Pedestrian/Off-Site Pedestrian Commitments, Transportation Demand Management Commitment; and Transit Commitments. The following commitments regarding pedestrian and bicycle trails development are intended to be exclusive of obligations by the Owner or a future developer with respect to sidewalks and other connections which are distinctly required by the Zoning Plan, the City Code or other applicable requirements.

a. On-Site Hard Trail. The City and Owner have agreed that the City Rivertrail system shall be continued across the Property. Owner has agreed to design and build such a Rivertrail extension as set forth hereby in phases which correspond to the sections of such trail affected by the site specific development of the Parcels of the Property. Upon completion of any phase or section of the Rivertrail, the Owner or its successor-in interest shall dedicate a permanent easement for the Rivertrail's public use, benefit and maintenance using specific, as-built legal descriptions for such transfer of interest. Therefore, within any Parcel of the Property burdened by the existing thirty foot (30') wide underground Public Utility Easement granted by Owner to the City by that certain instrument dated August 8, 2000 (being, specifically, Parcels A, C, D, E, H and I), which Parcel is the subject of application for site specific development, the design and construction of the Rivertrail extension shall be included within such application and planning in a manner substantially in compliance with the City adopted Rivertrail Standards and at a minimum shall be designed in a quality similar to comparable existing Rivertrail improvements in the City. The estimated costs therefor shall be included in the Financial Items accompanying any approval of the Parcel's development. In the event the City desires to proceed with the design and construction of the Rivertrail extension on Parcels of the Property in advance of Owner's application for development on such Parcel(s), then at the time Owner or its successors do develop such Parcel(s), it shall be required, as a Financial Item of approval, to reimburse the City for its actual design and construction costs associated with said Rivertrail extension as determined on a per linear foot basis.

b. On-Site Soft Trail. The City and Owner have agreed that, in conjunction with Owner's development of any section of the debris flow mitigation structures as described in Section 14 hereinbelow, and whether the actual approved location of said debris flow mitigation structure is within the Parcel L lands or within portions of the Parcels B, J or K lands, that Owner or its successors-in-interest shall design

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and construct a "Soft Trail" (i.e. no asphalt or concrete) within, on or near the subject debris flow mitigation structure. The design characteristics of the Soft Trail shall, at a minimum, conform to the design characteristics of other City-owned soft trail systems within the City. In the event the City, at the time of the application for development requiring the construction of a section of the debris flow mitigation structures, determines that such a Soft Trail is, at that time, inconsistent with the City's goals, policies and plans for the public use and benefit of the Parcel L lands, then it may direct the Owner to eliminate the Soft Trail development from said application for development.

c. Off-Site Rivertrail Contribution. The City and Owner have agreed that Owner shall be responsible for contributing fifty percent (50%) of the actual costs of constructing the section of the City Rivertrail system, or other City-adopted pedestrian connection, from the existing Community Center access point at Wulfsohn Road (commencing at Owner's eastern boundary of Parcel I) to the intersection of Eighth Street and Midland Avenue. In no event shall Owner's obligation hereunder exceed the lesser amount of either (i) fifty percent (50%) of the actual construction costs of such off-site trail project as are presently set forth by that certain Pedestrian Feasibility Study dated March 6, 2002 and conducted by OTAK on behalf of the City (the "Study"), which Study estimates a total cost for the City-adopted Alternate B solution at $1,055,000.00 or (ii) fifty percent (50%) of the actual construction costs of such off-site trail project as determined upon completion of said project, regardless of the estimates set forth in the Study (each of the two foregoing limitations upon Owner's financial obligations are further subject to any credits for land dedication as set forth hereafter). Owner owns a 100% undivided interest in certain, presently unincorporated land situate on the northeastern boundary of the Midland Avenue Right-of-Way (commonly known and referred to as the "Wulfsohn East" parcel). Owner has agreed to grant the City an above ground permanent easement for the use of a part of the Wulfsohn East parcel for purposes of providing a safe and beneficial connection from the area of the Community Center to existing City pedestrian corridors. The value of the land dedicated to the City on the Wulfsohn East parcel, by easement or otherwise as hereafter agreed by the parties, shall be deducted from Owner's financial contribution obligations pursuant to this Section 13(c). The "value" shall include any diminution of the value of Owner's other land within the Wulfsohn East parcel, if any. In the event the parties are unable to agree as to the value of Owner's land contribution hereunder, each party shall engage a qualified, licensed appraiser to research and analyze such value. The value shall then be permanently established by the average of the two (2) appraisals. The City agrees that it shall be solely and exclusively responsible for the design and construction of the pedestrian improvements contemplated hereby and shall use all reasonable means to construct the same prior to the commencement of development on the Property; provided, however, that the City further agrees that it shall not unreasonably withhold any subsequent Permits or other development approvals based upon the City's inability to timely complete such trail/pedestrian path construction.

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d. West Property Park and Ride Land Reservation. Owner has agreed to reserve from development, for a period not to exceed five (5) years after the mutual execution of this Agreement, a section of land, not to exceed two and one-half (2.5) acres in size at the west end of Parcel A on the Property (hereafter, the West Park and Ride Site"), for the possible acquisition by the City or other appropriate governmental entity through purchase, exchange or other mutually agreeable mechanism of transfer, for the express use of such West Park and Ride Site as a public park-and-ride/transit facility. In the event the City, or other appropriate governmental authority as assignee of the City's rights hereunder, does not notify Owner or its successors and assigns in writing, on or before the established deadline described immediately above, of its intention to exercise the acquisition of the West Park and Ride Site, Owner shall be relieved from any obligation hereunder to further reserve the Site. In determining the price of the West Park and Ride Site, the parties shall either (i) agree to a price, or (ii) each party shall retain the services of a qualified, licensed Colorado real estate appraiser to appraise the value of the land as such land was zoned immediately prior to the annexation of the Property (Garfield County zone district A/R/R/D), with such value escalated for the passage of time during the reservation period at a rate equal to the published Denver/Boulder Consumer Price Index established as of the date of final annexation and adjusted annually on each anniversary thereof; the average of the appraised value by each appraiser shall be deemed the purchase price for the governmental acquisition of the West Park and Ride Site.

e. East Property Transit Center. This Agreement shall obligate the Owner and/or eventual developer of the land within Parcel I of the Property to negotiate in good faith, at the time of site specific development application, for the dedication to the City of an adequate land area, not to exceed one (1) acre, and location therefor for the City or its agent's development of a transit center facility and attendant parking area. In the event the City and Owner are unable to reach agreement as to the location, size and dedication of such a transit facility and parking area within the proposed development of Parcel I, then, upon the approval of a site specific development proposal for Parcel I, the Owner or is successors and assigns shall make a mandatory contribution to the City in an amount equal to the value of one (1) acre of land within said Parcel I as determined by mutual agreement or as determined by the average of two appraisals; one such appraisal shall be commissioned by the City and one such appraisal shall be commissioned by the Owner, its successors and assigns. In the event the parties do agree on a mutually acceptable size and location for the transit center and parking area, the City shall accept transfer of the site following the issuance of appropriate development approvals and the City shall accept sole and exclusive responsibility for the costs of designing and constructing the facility. The City agrees that any such development of a public transit center and parking area shall comply with all applicable underlying design criteria established by this Agreements and the exhibits hereto in addition to any applicable Municipal Code requirements.

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14. Public Improvements/Geotechnical Mitigation Improvements and Maintenance Obligations. All public improvements required by the Plan, including the development of internal public streets and public utility line extensions, shall be included and subject to performance and financial guarantee requirements referenced in the respective SIA(s)/Development Permit(s). Additionally, at the time a final plat is recorded, Owner shall commit to the dedication, conveyance and assignment to the City all public improvements within the subject phase, together with any land, by deed or easement instrument acceptable to the City, necessary to accommodate such public improvements, and shall, upon completion and acceptance by the City of said public improvements, so dedicate, convey and assign the same in perpetuity. Finally, Owner shall dedicate or convey such public improvements by bill of sale or special warranty deed, free and clear of any liens or encumbrances which would prevent the City from using said public improvements or associated land for their intended purposes.

a. Specific Geotechnical Mitigation Improvements Obligations. All land use and development undertaken on the Property shall comply with the recommendations and requirements of both the Geotechnical Analysis Summary prepared by High Country Engineering, dated September 17, 2001, as amended, and the Drainage Summary prepared by High Country Engineering, dated September 17, 2001, as amended; both of which were reviewed by the office of the Colorado Geological Survey and were incorporated into the City's approval of the Plan. Copies of each report are maintained in the records of the City. More specifically, any application for development of any phase of development on the Property shall, at a minimum, comply with the following conditions and recite the same as a plat note on the recorded plat instrument:

"Foundation/Grading Requirements. Preliminary soils investigations encountered low density and compressible silty sand and gravel debris fan deposits. These soils are hydro-compressive and tend to settle under load when wetted. Subsurface wetting is likely to occur as the result of surface runoff, irrigation and leaky utilities, therefore measures to mitigate settlement shall be required as a part of the site development. Foundation and grading requirements are as follows:

a. Foundations for the site may include driven or drilled pile, reinforced mat, spread footings placed on either pre-wetted soils or structural backfill.
b. Site Grading shall be performed prior to building pad and foundation construction. Site grading and building pad construction should be performed as early as possible to allow for settlement.
c. The ground surface should be sloped at a minimum of 5% for the first ten feet away from foundations in all directions in unpaved areas and 2.5% in paved areas.
d. The Owner shall be responsible for submitting an engineer certified soils report that includes a section on paving requirements. The soils report should include moisture and compaction requirements, excavation and backfill requirements, evaluation of swell and consolidation potential, slope stability and foundation recommendations for structures. The pavement section of the report should include traffic loadings, sub-grade preparation and pavement recommendations. This report must be submitted

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and approved prior to beginning either foundation construction or roadway/parking lot construction.

Surface/Subsurface Drainage Requirements.

Downspouts and drains should discharge outside the limits of the backfill.
Landscape requiring irrigation should be placed a minimum of ten feet from foundation walls.
An under-drain system will be required for all below-grade construction.

Utility Construction

a. Wet utilities will be required to utilize restrained joints throughout the project limits.

Debris Flow Mitigation

a. It is anticipated that the project area will be developed in phases. Each individual phase will be required to construct debris flow mitigation measures in accordance with the Debris Flow Mitigation Plan prepared for the entire development and as approved by the City Engineer. In the event the City desires to proceed with the design and construction of a portion or all of the structures required by the Debris Flow Mitigation Plan, as may be amended from time to time with the approval of the City, upon the lands identified as Parcel L of the Property in advance of Owner's application for development, then at the time Owner or its successors do develop such any Parcel(s) which would have required, as an element of development the construction of such debris flow mitigation structures, such Owner or its successor shall be required, as a Financial Item of approval, to reimburse the City for its actual construction costs associated with said debris flow mitigation structure(s), together with interest on such costs, from the time expended by the City to the time of such reimbursement, at a rate equal to the local construction price index.

b. Debris flow mitigation measures for the project include diversion ditches, berms and debris detention basins located along the southwest perimeter of the property.

c. The Owner's Association or a special district will be responsible for maintenance of the debris flow mitigation measures. Maintenance should include removal of debris following an event and routine mowing.

d. The Owner's Association or a special district will be responsible for irrigation of the slopes until permanent vegetation has been established.

Rockfall

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a. Rockfall hazards are limited to those areas identified in the Geologic and Preliminary Geotechnical Investigation Glenwood Meadows Glenwood Springs, Colorado prepared by CTL Thompson dated February 1, 2000. There is not a potential rockfall hazard associated with the development of this Property. The only rockfall hazard identified for the area is to the west of the land zoned for future development near the existing City Municipal Operations Center site."

Additionally, as an element of Owner's obligation to submit a Master Drainage Plan and a Master Debris Flow Mitigation Plan as set forth under Section 2 hereinabove, such plans submitted to the City shall specifically include (i) an analysis of acceptable outfall corridors from the low points in all identified detention basins, (ii) an analysis of the preferred routes for such flows from the basins to be conveyed through the Property to existing or improved drainage facilities along the north boundary of the Property, and (iii) an analysis of the capacity of the aforementioned existing or improved drainage facilities and related conveyance structures which are intended to deliver excess moisture to the Colorado River. All of the foregoing data shall be reviewed and approved by the City Engineer prior to the issuance of any building permit on the Property.

15. Open Space and Park Land Dedication. In full and complete compliance with relevant park land public dedication and open space public dedication requirements referenced in the Municipal Code, Owner will dedicate the area zoned as HP Hillside Preservation, shown on the Plan as Parcel L, to the City at final plat recordation for the first phase of land use on the Property. Neither the Owner nor its successors-in-interest shall be required by the City to develop any portion of the publicly dedicated lands for active recreation purposes, except as may be otherwise hereafter agreed as an element of the development of Parcel K of the Property's development (Owner or its assigns shall "rough grade" the area of Parcel L, adjacent to said Parcel K and the City's Community Center, for no more than two (2) baseball/softball fields, upon the direction of the City if such direction is provided to Owner prior to commencement of Owner's initial grading for the development of Parcel K of the Property). In partial consideration of the dedication of the Parcel L lands, the City has agreed to plan and develop a permanent water source retention structure for the benefit of indigenous wildlife; such structure shall be developed by the City, subject to the necessary appropriation of funding, following the dedication of the Parcel L land by Owner. The City agrees that its acceptance of the dedication of such lands shall be deemed a "governmental use" (as defined by the Glenwood Springs' Municipal Charter) of the same and thereby prohibits the City from conveying any of the publicly dedicated property to a third party without first submitting the matter to an election of the City's voters. Nothing contained herein is intended to limit or prevent the City from developing some or all of the public dedication lands for the use and benefit of the public as the City may deem appropriate and advisable in the future.

The City shall convey to the Owner or its successors-in-interest in providing, at the time of actual dedication of the HP zoned lands, a mutually acceptable, non-specific, easement for the development within the publicly dedicated land of (i) the geotechnical mitigation structures to be constructed and maintained by the Owner, or a special district established by Owner and assigned such responsibility, pursuant to the general description of such structures set forth by the Zoning and

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Development Plan application materials provided by High Country Engineering, and maintained in the records of the City, (ii) any reasonable and necessary street and utility easements (i.e. for the connection of Wulfsohn Road between Parcels A and C as set forth by the Plan) and (iii) any reasonable and necessary street or public utility easements connecting Wulfsohn Road to Parcel K of the Property, which streets and/or utility easements shall require the review and approval of the City Council. The actual location of such geotechnical mitigation structures shall require the prior approval of the City, which approval shall not be unreasonably withheld. After completion of the actual construction of such geotechnical mitigation structures and any features attendant thereto (i.e. a Soft Trail), an amended permanent easement, complete with as-built legal descriptions, shall be excecuted by the parties and recorded in the Garfield County Clerk and Recorder's Office.

All "commonly-owned" parklands and open space within the Parcels A through K, shall be owned and maintained by the Owner and/or the developer thereof, its successors, an association or a special district.

16. Establishment of Special District(s) and Owners' Association/Downtown Development Authority Incorporation Petition.

(a) Owner agrees that it shall undertake the establishment of a drainage and erosion control special district for the purposes of managing and maintaining in perpetuity all Property drainage and debris flow mitigation functions. The City agrees to join such district to the extent of the City's proportional ownership of land and improvements on the Property which benefit from the geotechnical protections of said structures.

(b) Owner agrees to form, or have formed, a property owners' association as soon as practicable and agrees to include the City, upon the City's written request, as a third party beneficiary with respect to the association's enforcement of Covenants, Conditions, Restrictions, Declarations or other regulations governing the property owners or common areas within the Property, including but not limited to the ability to impose assessments or penalties for noncompliance therewith. At a minimum, the formed association shall include within in its adopted Covenants, Conditions and Restrictions, the recommendations of the Colorado Division of Wildlife ("CDOW") as set forth by letter dated October 1, 2001 and maintained on file with the City; provided, however, neither the Owner nor any association hereafter formed, shall be responsible for any land dedications or indemnification as referenced in said CDOW letter. In the absence of the prior formation of a special district responsible for the maintenance of debris flow mitigation structures within the Property, either (i) the Owner or (ii) such a property association shall be formed with the specific responsibility for such maintenance obligations.

(c) Owner agrees that within one (1) year after the effective date of annexation of the Property to the City as described by Section 4 hereof, but in no event later than the filing of the first application for subdivision and/or development, Owner or its successor-in-interest shall petition for inclusion within the boundaries of the Glenwood

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Springs Downtown Development Authority (hereafter, the "DDA"). The DDA shall, at its discretion, forward such petition to the City Council for approval or disapproval, in whole or in part, of the request for inclusion. This provision in no way obligates the City to include any or all of the Property in the boundaries of the DDA. Should the City choose not to include all or any part of the Property in the boundaries of the DDA at the time of initial petition by Owner for inclusion, the City shall not be precluded from consideration of the same matter at some point in the future.

17. Provisions Exclusive. The City and Owner acknowledge and agree that this Agreement contains all basic requirements of Owner concerning the provision of water and sewer service to the property, potential joint development of a raw water irrigation system, public open space dedication, and public park land dedication, utilities, infrastructure, water rights dedications and other matters expressly addressed under this Agreement. Additional reasonable specifications and regulations may be imposed by the City upon Owner during the subdivision or development approval processes with regard to these enumerated items as well as other items, as appropriate.

18. Breach by Owner; City's Remedies. In the event of any default or breach by Owner of any term, condition, covenant or obligation under this Agreement, the Owner shall be notified immediately in writing. The City may take such action as it deems necessary to protect the public health, safety, and welfare; to protect lot buyers and builders, and to protect the citizens of the City from any and all damages and/or injury to persons and/or property. The City's remedies include:

a. The refusal to issue to Owner any building permit or certificate of occupancy; provided, however, that this remedy shall not be available to the City until after the affidavit described in subparagraph b. below has been recorded. This remedy shall not affect sales to bona fide purchasers nor be applied to bona fide purchasers;

b. The recording with the Garfield County Clerk and Recorder of an affidavit, approved in writing by the City Attorney and signed by the City Manager or his designee, stating that the terms and conditions of this Agreement have been breached by Owner. At the next scheduled Council meeting, the Council shall either approve the filing of said affidavit or direct the City Manager to file an affidavit stating that the breach, or default, has been cured. Upon the recording of such an affidavit, no further lots or parcels may be sold within the Property until the default has been cured. The execution and filing of an affidavit by the City Manager or his designee and approved by the Council stating that the default has been cured shall remove this restriction;

c. A demand that the security given for the completion of the public improvements be paid or honored;

d. The refusal to consider further development plans within the Property; and/or

e. Any other remedy available at law or in equity.

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Unless necessary to protect the immediate health, safety, and welfare of the City or City residents, the City shall provide Owner thirty (30) days' written notice of its intent to take any action under this paragraph during which thirty-day period Owner may cure the breach described in said notice and prevent further action by the City. Furthermore, unless an affidavit as described in this paragraph has been recorded with the Garfield County Clerk and Recorder, any person dealing with Owner shall be entitled to assume that no default by Owner has occurred hereunder unless a notice of breach has been served upon Owner as described above, in which event Owner shall be expressly responsible for informing any such third party of the claimed default by the City.

19. Breach By City; Owner's Remedies.

a. A "breach" or "default" by the City under this Agreement shall be defined as:

i. any zoning or land use action by the City which would alter, impair, prevent, diminish, impose a moratorium on development, or unreasonably delay the development or use of the Property as set forth in the Zoning and Development Plan, and specifically excluding any non-discriminatory regulatory actions, inaction, or circumstances beyond the reasonable control of the City; or

ii. the City's failure to fulfill or perform any material obligation of the City contained in this Agreement.

b. If any default by the City under this Agreement is not cured as described herein, Owner shall have the right to pursue the defaulting party's remedies allowable by Colorado law, subject to the limitations herein. Although C.R.S. Sections 24-68-101 et seq. allow for certain monetary damages in the event of City breach or default, Owner's sole remedies hereunder shall be to enforce the City's obligations under this Agreement by an action for any available equitable remedy, including, without limitation, specific performance or mandatory or prohibitory injunction. Each remedy provided for in this Agreement is cumulative and is in addition to every other remedy provided for in this Agreement.

20. Miscellaneous.

a. Expenses. The costs and expenses associated with the recordation of this Agreement shall be paid by Owner.

b. Waiver of Defects. By executing this Agreement, Owner waives all objections it may have concerning defects, if any, in the formalities whereby it is executed, or concerning the power of the City to impose conditions on Owner as set forth herein, and concerning the procedure, substance, and form of the ordinances or resolutions adopting this Agreement.

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c. Final Agreement. This Agreement supersedes and controls all prior written and oral agreements and representations of the parties regarding annexation and zoning of the Property and is the total integrated agreement between the City and Owner as to those limited matters.

d. Modifications. This Agreement shall not be amended, except by subsequent written agreement of the City and Owner.

e. Captions. The captions in this Agreement are inserted only for convenience and in no way define, limit, or prescribe the scope or intent of this Agreement or any part thereof.

f. Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, successors, and assigns. Further, the terms and conditions of this Agreement shall constitute a covenant running with the land.

g. Invalid Provision. If any provisions of this Agreement shall be determined to be void by any court of competent jurisdiction, then such determination shall not affect any other provision hereof, all of which other provisions shall remain in full force and effect. It is the intention of the parties hereto that, if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning which renders it valid.

h. Governing Law. The laws of the State of Colorado shall govern the validity, performance, and enforcement of this Agreement. Should either party institute legal suit or action for enforcement of any obligation contained herein, it is agreed that the venue of such suit or action shall be in Garfield County, Colorado.

i. Attorneys' Fees; Survival. Should this Agreement become the subject of litigation between the City and Owner, the prevailing party shall be entitled to attorneys' fees and costs of suit actually incurred, including expert witness fees. All rights concerning remedies and/or attorneys' fees shall survive any termination of this Agreement.

j. Authority. Each person signing this Agreement represents and warrants that he, she or they is/are fully authorized to enter into and execute this Agreement, and to bind the party represented to the terms and conditions hereof.

k. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all of which, when taken together, shall be deemed one and the same instrument.

l. Notice. All notices required under this Agreement shall be in writing and shall be hand-delivered or sent by facsimile transmission or registered or certified mail, return receipt requested, postage prepaid, to the addresses of the parties herein set forth. All notices by hand delivery shall be effective upon receipt. All facsimile transmissions shall be effective upon transmission receipt. All notices by mail shall be considered effective seventy-two (72) hours after deposit in the United States mail with the proper address as set forth below. Either party by notice so given may change the address to which future notices shall be sent.

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Notice to City:

City of Glenwood Springs
Michael Copp, City Manager
806 Cooper Avenue
Glenwood Springs, CO 81601

With copy to:

Teresa Williams, Esq.
City Attorney
806 Cooper Avenue
Glenwood Springs, CO 81601

Notice to Owner:

Glenwood Meadows, L.L.C.
Attn: Robert Macgregor
525 East Cooper
Aspen, CO 81611

With copy to:

Thomas J. Hartert, Esq.
802 Grand Avenue, Suite 303
Glenwood Springs, CO 81601

m. Nothing contained herein, or in any Exhibit hereto, shall affect or impair the City's powers of eminent domain or other similar authority.

n. Gender. Whenever the context shall require, the singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

WHEREFORE, the parties hereto have executed duplicate originals of this Agreement on the day and year first written above.

CITY OF GLENWOOD SPRINGS, COLORADO

By _____
Donald L. Vanderhoof, Mayor

ATTEST:

_____
Robin Clemons, City Clerk

COLORADO

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GLENWOOD MEADOWS, L.L.C., a Colorado limited liability company

By _____
Robert Duncan Macgregor as President of Dunrene Management, Inc., the Manager

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Acknowledged, subscribed, and sworn to before me this 23rd day of August, 2002, by Donald Vanderhoof, as Mayor, and by Robin S. Clemons, as Clerk, on behalf of the City of Glenwood Springs, Colorado.

WITNESS my hand and official seal.

My Commission expires: MY COMMISSION EXPIRES 11/28/2005

Notary Public
Laura Gately

NOTARY PUBLIC STATE OF COLORADO

STATE OF COLORADO)
) ss.
COUNTY OF GARFIELD)

Acknowledged, subscribed, and sworn to before me this 18th day of September 2002, by Robert Duncan Macgregor as President of Dunrene Management, Inc., the Manager of Glenwood Meadows, L.L.C.

WITNESS my hand and official seal.

My Commission expires: 10/26/2005.

Notary Public
Barbara P. Kozelka

NOTARY PUBLIC BARBARA P. KOZELKA STATE OF COLORADO

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LIST OF EXHIBITS

Exhibit A	Property Description (from Annexation Plat – 345 acres)
Exhibit B	Zoning Map
Exhibit C	Zoning and Development Plan

EXHIBIT "A"

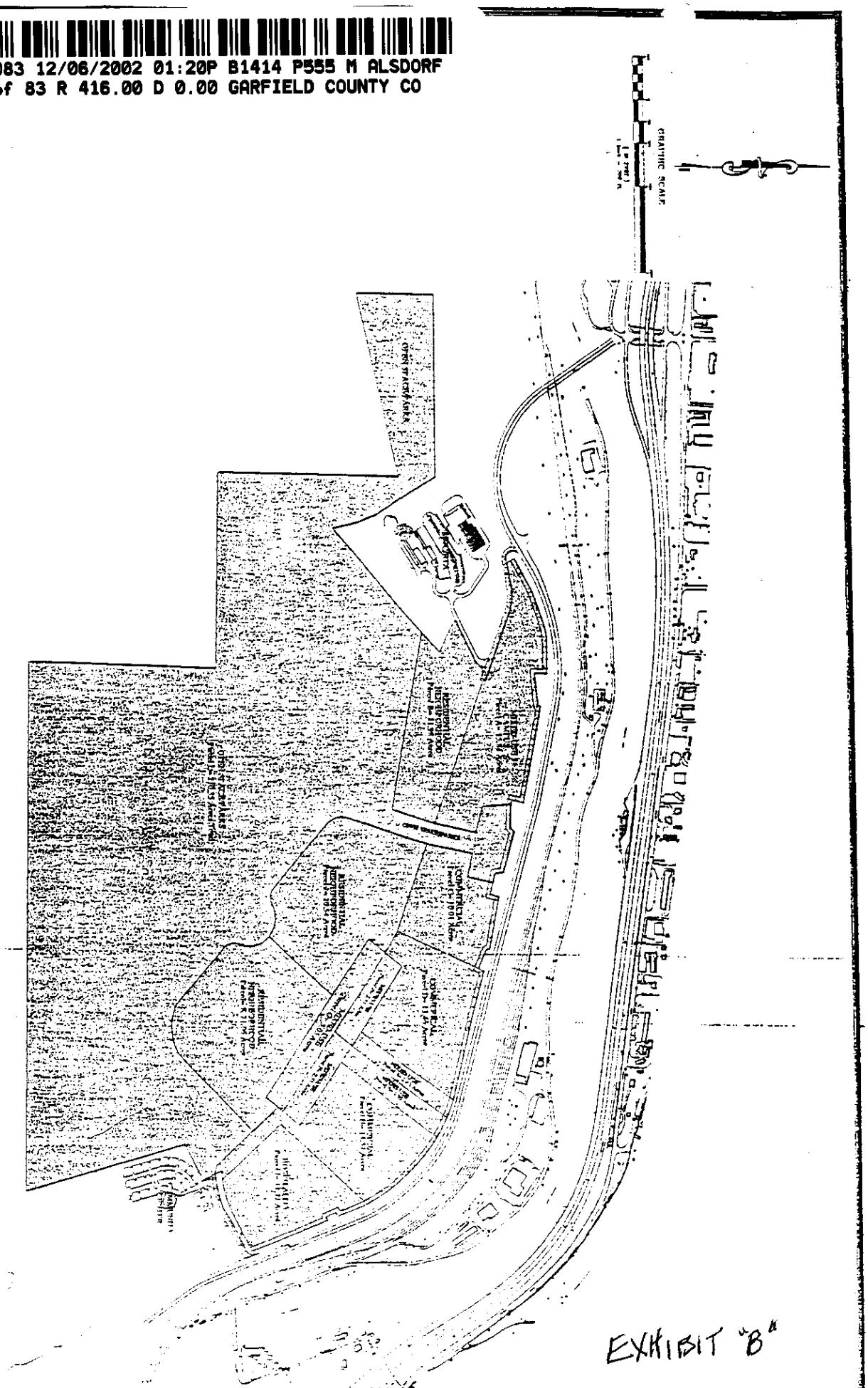
ANNEXATION DESCRIPTION

A PARCEL OF LAND SITUATED IN THE S1/2S1/2 OF SECTION 5, THE SE1/4SE1/4 OF SECTION 6, THE NE1/4NE1/4 OF SECTION 7, THE N1/2 OF SECTION 8 AND THE NW1/4NW1/4 OF SECTION 9, TOWNSHIP 6 SOUTH, RANGE 89 WEST OF THE SIXTH PRINCIPAL MERIDIAN; SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 5, THE POINT OF BEGINNING; THENCE S75°55'37"W A DISTANCE OF 1316.16 FEET; THENCE N01°07'55"E A DISTANCE OF 582.46 FEET; THENCE N90°00'00"E A DISTANCE OF 1265.15 FEET; THENCE S30°38'55"E A DISTANCE OF 522.34 FEET; THENCE S19°31'13"E A DISTANCE OF 160.53 FEET; THENCE S12°53'54"E A DISTANCE OF 181.17 FEET; THENCE N47°17'45"E A DISTANCE OF 1171.28 FEET; THENCE ALONG THE ARC OF A NON-TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 1260.00 FEET AND A CENTRAL ANGLE OF 10°27'43", A DISTANCE OF 230.07 FEET (CHORD BEARS N65°22'14"W 229.75 FEET); THENCE N63°26'47"E A DISTANCE OF 283.45 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 137.50 FEET AND A CENTRAL ANGLE OF 24°20'19", A DISTANCE OF 58.41 FEET (CHORD BEARS N51°16'35"E 57.97 FEET); THENCE N63°30'55"E A DISTANCE OF 61.83 FEET; THENCE S70°03'24"E A DISTANCE OF 42.54 FEET; THENCE N19°56'36"E A DISTANCE OF 75.00 FEET; THENCE N70°03'24"W A DISTANCE OF 522.96 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 337.50 FEET AND A CENTRAL ANGLE OF 28°23'27", A DISTANCE OF 167.24 FEET (CHORD BEARS N84°15'08"W 165.53 FEET); THENCE S81°33'05"W A DISTANCE OF 198.69 FEET; THENCE ALONG THE ARC OF A NON-TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 1260.00 FEET AND A CENTRAL ANGLE OF 01°42'55", A DISTANCE OF 37.72 FEET (CHORD BEARS N31°49'38"W 37.72 FEET); TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY OF MIDLAND AVENUE; THENCE N62°28'35"E ALONG SAID RIGHT-OF-WAY A DISTANCE OF 262.30 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N70°48'52"E A DISTANCE OF 233.79 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 400.00 FEET AND A CENTRAL ANGLE OF 19°48'21", A DISTANCE OF 138.27 FEET (CHORD BEARS N80°43'04"E 137.58 FEET); THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S89°22'47"E A DISTANCE OF 220.22 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S04°05'51"W A DISTANCE OF 84.94 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S88°21'25"E A DISTANCE OF 29.12 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N84°12'24"E A DISTANCE OF 200.33 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N13°23'18"E A DISTANCE OF 18.04 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S79°22'12"E A DISTANCE OF 693.85 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S15°25'14"W A DISTANCE OF 81.35 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S72°50'58"E A DISTANCE OF 30.90 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S87°49'17"E A DISTANCE OF 164.69 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N47°19'34"E A DISTANCE OF 37.65 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S74°59'10"E A DISTANCE OF 294.83 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S08°06'53"E A DISTANCE OF 62.58 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S77°46'27"E A DISTANCE OF 150.75 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N14°20'16"E A DISTANCE OF 62.19 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S79°08'31"E A DISTANCE OF 369.05 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S18°40'31"E A DISTANCE OF 29.17 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S66°03'20"E A DISTANCE OF 143.01 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N25°40'28"E A DISTANCE OF 42.89 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S74°19'33"E A DISTANCE OF 339.00 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S76°23'22"E A DISTANCE OF 559.87 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1190.00 FEET AND A CENTRAL ANGLE OF 53°10'47", A DISTANCE OF 1104.51 FEET (CHORD BEARS S48°18'54"E 1065.29 FEET); THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S21°43'32"E A DISTANCE OF 179.06 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S68°16'28"W A DISTANCE OF 31.36 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S23°26'58"E A DISTANCE OF 78.05 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY N68°16'28"E A DISTANCE OF 29.01 FEET; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S21°43'32"E A DISTANCE OF 613.97 FEET; THENCE LEAVING SAID RIGHT-OF-WAY S62°49'19"W 292.63 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 760.00 FEET AND A CENTRAL ANGLE OF 24°24'13", A DISTANCE OF 323.70 FEET (CHORD BEARS S75°01'26"W 321.26 FEET); THENCE S27°10'41"E 147.90 FEET; THENCE S62°49'19"W A DISTANCE OF 281.27 FEET; THENCE S16°27'24"E A DISTANCE OF 1206.11 FEET; THENCE N89°15'16"W A DISTANCE OF 3719.58 FEET; THENCE N01°13'52"E A DISTANCE OF 1360.08 FEET; THENCE N88°45'05"W A DISTANCE OF 1367.66 FEET; THENCE N01°04'56"E A DISTANCE OF 1369.90 FEET; TO THE POINT OF BEGINNING; SAID PARCEL CONTAINING 344.473 ACRES, MORE OR LESS.

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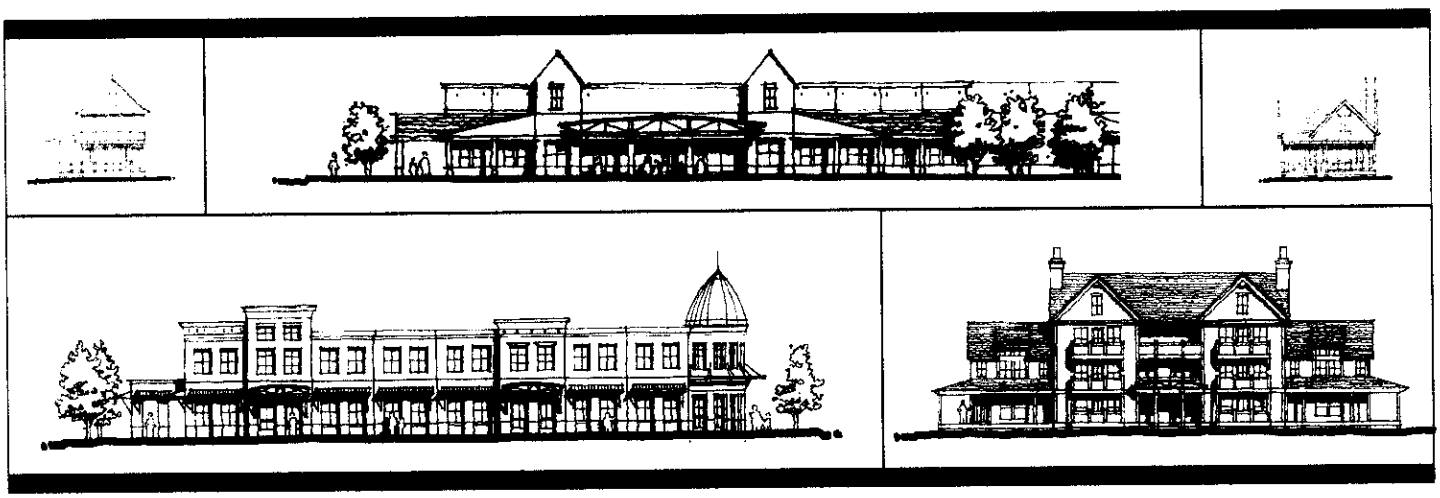
CLEANWOOD MEADOWS
ANNEXATION PARCEL MAP

HIGH COUNTRY ENGINEERING, INC.

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ZONING AND DEVELOPMENT PLAN

GLENWOOD MEADOWS



Glenwood Meadows, LLC

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I. Introduction

A. PROJECT BACKGROUND

Glenwood Meadows is an approximately 345-acre parcel of unincorporated land surrounded on three sides by the municipal limits of Glenwood Springs, Colorado ("City"). The Midland Alternate Route, a 100 foot wide public right-of-way, serves as the northern border to the site and two new City facilities are under construction on the east and west ends; a new community center to the east of Glenwood Meadows and a municipal operations facility to the west of the site. While Red Mountain serves as a backdrop to the site on the south, it is not owned by or a part of the Glenwood Meadows' zoning application and development plan. The subject property, which is owned by Glenwood Meadows, L.L.C. was historically referred to as the "Wulfsohn" property.

Glenwood Meadows is situated west of the core of Downtown Glenwood Springs and directly across the Colorado River from the significant neighborhoods and commercial operations of West Glenwood. Glenwood Meadows and the City's Community Center are highly visible from Interstate 70, the primary entry point to the City from both the east and the west. Despite its juxtaposition with the City, Exit 114 to Interstate 70, the Midland Alternate Route and the two City facilities mentioned, Glenwood Meadows currently resides in the jurisdiction of Garfield County, Colorado. Prior to the completion of the Midland Alternate Route and the City's adoption of its Land Use Plan, annexation of the land was not feasible.

When the oil shale industry collapsed in the early 1980's, the then owner of the site, Union Oil Company, considered various development options. In the mid-1980s, Union Oil Company and the City of Glenwood embarked on negotiations for the joint development of the site as a municipal golf course, residential and commercial venture. The efforts failed, as did two subsequent attempts to pass open space and recreation tax measures aimed at the City's ability to purchase portions of the site.

In 1996, Glenwood Land Company, LLC purchased the property from the Union Oil Company. Approximately two years later Glenwood Meadows, LLC, the current owner of the property, acquired the land. Shortly thereafter, Glenwood Meadows undertook a land exchange with the City of Glenwood Springs, which provided the city with 37.24 acres for use as a Community Center. The city subsequently annexed the Community Center site and has provided a public access point to the property, which is currently under construction. This access point will be shared when the remaining property is developed. In early 2000, the City of Glenwood Springs and Glenwood Meadows undertook another land transaction by which the city acquired an additional 35.57 acres for development of a Municipal Operations Center (MOC). The MOC site was thereafter annexed and the City created a second public access point to Glenwood Meadows, which is also under construction. In addition to the City development of the MOC facility, the site west of Glenwood Meadows is also planned to provide the base operational facility for the newly organized Rural Transportation Authority ("RTA").

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Regardless of how Glenwood Meadows is developed (i.e. for residential, commercial, mixed-use purposes, through the jurisdiction of either Garfield County or the City), Glenwood Meadows is entitled to use both City developed access points as well as two other access points along the Midland Route. Further, Glenwood Meadows has legal rights to utilize the City's municipal sewer and potable water systems.

For the past two years the City and Glenwood Meadows have mutually expressed their desire to annex the land to the City and to subject the property to stringent criteria which would result in the highest quality of future development specifically planned to address the present and future needs of the community as a whole. Through extensive discussions with City staff, it was determined that seeking "enhanced" traditional zoning for the property (traditional zoning with additional development standards and more restrictive uses) would be a more effective tool than the P.U.D. process to achieve the highest quality of future development. This decision was based on the fact that through the traditional zoning process; additional development standards and use restrictions could be applied to traditional zone districts in order to achieve a high level of development quality without the unnecessary analytical and administrative confusion of a cumbersome P.U.D. process. This Zoning Plan, together with the associated Annexation and Development Agreement and the additional information provided represents the culmination of these efforts.

B. STATEMENT OF PURPOSE AND INTENT

This Zoning Plan is intended to serve as a supporting document for the accompanying Annexation Agreement in order to establish appropriate zoning for the 12 individual development parcels within the overall site. In addition, the Zoning Plan establishes standards for the property to ensure that future planning and construction quality remains high, regardless of the phasing of development on different parcels. The following goals serve as the basis for this Zoning Plan and development standards. The goals were identified during an unprecedented and invaluable public hearing process, through community meetings dating back to the original adoption of the City's Comprehensive and Land Use Plans, during work sessions with City staff, citizen committees, the Planning Commission, and City Council members as items to be addressed by this Zoning Plan.

Land Use

- *Promote Glenwood Springs as the governmental hub and the local/tourism service center of the Roaring Fork and Colorado River Valleys.*
- *Establish Glenwood Meadows not as a development, but as a new Glenwood Springs neighborhood with housing opportunities, jobs, shopping, hospitality, and recreation.*
- *Enhance the City's Community Center project through placement of adjacent zoning for uses that include active and passive open areas as well as for tourism and hospitality.*

Development Quality

- *Preserve, maintain, and enhance the visual qualities of the west entrance to Glenwood Springs.*
- *Focus neighborhood retail around pedestrian-oriented streets to break up larger commercial uses.*
- *Provide development standards that supplement from the City's standard development regulations, encouraging creative, quality design.*

Housing

- *Provide a mix of housing types and densities within the Glenwood Meadows neighborhood.*

Open Space and Natural Amenities

- *Balance the quantity of development on the site with the natural characteristics of the site.*
- *Maximize dedicated open space and integrate open space corridors throughout the Glenwood Meadows neighborhood, minimizing impacts to existing site vegetation.*

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Transportation

- *Encourage the allocation of future traffic west of the core Downtown and provide a West Glenwood mass transit option.*
- *Promote directed investment, through any development, aimed at the restoration and enhancement of the City's transportation infrastructure through adoption of an Off-Site Transportation Improvements Fee Program.*

C. RELATIONSHIP TO GLENWOOD SPRINGS COMPREHENSIVE PLAN

Vision

The Glenwood Springs Comprehensive Plan provides the community with a tool for managing its long-term growth and character. Ensuring that the goals and ideals of the Comprehensive Plan were addressed was a critical component of this zoning plan. The following excerpt from the City's Vision Statement outlined in the Comprehensive Plan echoes the overall development vision for Glenwood Meadows.

> *"The City of Glenwood Springs desires to maintain its small town character and preserve its cultural and natural resources...to achieve directed and balanced development, social and economic diversity and address its transportation needs."*

Maintaining Small Town Character

Today, the City consists of a series of individual neighborhoods. While these neighborhoods vary in their size, appearance, and mix of uses, they all function as part of the greater community; each providing different types of housing, shops, employment, and recreational opportunities. This proposed zoning plan focuses on establishing Glenwood Meadows as a new and independent neighborhood that contributes to the small-town character of Glenwood Springs and community need for housing and commercial services. Keeping this appealing character and scale in mind, the plan is focused around a central retail core designed to invoke an intimate, pedestrian-oriented feeling enhanced by plazas, seating areas, and public art. These smaller retail uses will flank the center's two regional commercial anchors along Market Street and Wulfsohn Road, helping to create a more inviting and active space. Other spaces along Wulfsohn will provide offices and additional neighborhood-type retail to serve the adjacent neighborhoods, which will provide a variety of housing types and prices, ranging from apartments to town homes, duplexes, and single-family homes. The plan has been designed so that none of the residences are located farther than ¼ mile away from the retail core, which will give the neighborhood a friendly, walk able scale similar to that found in many of Glenwood's existing neighborhoods. A small employment campus will also contribute to the "small town" feeling of the neighborhood, providing the opportunity for individuals to live near their jobs, reducing commute time and local traffic. Hospitality uses are located across from the new Community Center where both will be easily accessed by adjoining neighborhoods and downtown. Each of the uses identified in the proposed zoning plan has been specified within the Land Use Plan as an appropriate "Regional Use", as designated for the Glenwood Meadows site.

Preserving Natural Resources

Another core community value that has been integrated into the development plan is the careful treatment of the site's natural resources. In fact, approximately 215 acres, or +/- 62 percent of the site will be dedicated as open space and parkland, providing recreational opportunities, such as hiking trails or a public golf venue. The public dedication of this significant parcel of land is specifically designed to provide direct public access to the area through sections of major contiguity with existing publicly owned property at the Community Center and MOC sites. The dedication land

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also specifically provides direct connection to the surrounding BLM land adjacent to it in compliance with the direction of the Glenwood Springs Comprehensive Plan.

The site's topography and dramatic Red Mountain backdrop make it highly visible from major roadways, such as I-70, State Highway 6&24 and the Midland Alternate Route as each enters Glenwood Springs from the east and west. Glenwood Meadows is also visible from other areas of Glenwood Springs where a higher elevation provides a birds-eye vantage of the site. A thick Gambel Oak stand, which blankets the upper 2/3's of the site providing scenic value and wildlife habitat, is another of the site's significant natural features. Each of these factors was given strong consideration in the development of the proposed zoning plan. As a result, the residential neighborhoods at the southern edge of the site have been focused below the 6000-foot Urban Development Boundary contour. Not only does this protect the scenic quality of the site, but also leaves much of the Gambel Oak stand intact.

Addressing Transportation Needs

Transportation is another component of the Land Use Plan that was an important consideration during the development of the zoning plan. The plan strives to provide a mix of uses within a walk able proximity of one another to minimize short automobile trips. However, it is acknowledged that some uses, such as the retail and employment components will draw from a more regional customer base, generating additional trips along the Midland Alternate Route. Perhaps more significant, though, is that the location of the site on the western fringe of Glenwood Springs will be serving a market that currently must travel through downtown along the often congested Grand Avenue to reach similar uses on the south side of town, or even further south in neighboring communities, potentially minimizing the need for many of these cross-town trips. The project will provide funding for several necessary road improvements along the Midland Alternate Route that will result in improved future traffic conditions. The specifics of this are addressed in the Annexation Agreement. With these proposed road improvements, an efficient traffic flow would be maintained. In addition, the compact form of the development plan was conceived with the intention of being able to efficiently incorporate future bus service and future regional rail connections into the community. The plan provides the flexibility, not to exceed 2.5 acres, at the west end of Parcel A for the construction of a park and ride/transit facility. The park and ride would be complemented by the site's retail uses and the potential for limited shared parking where appropriate.

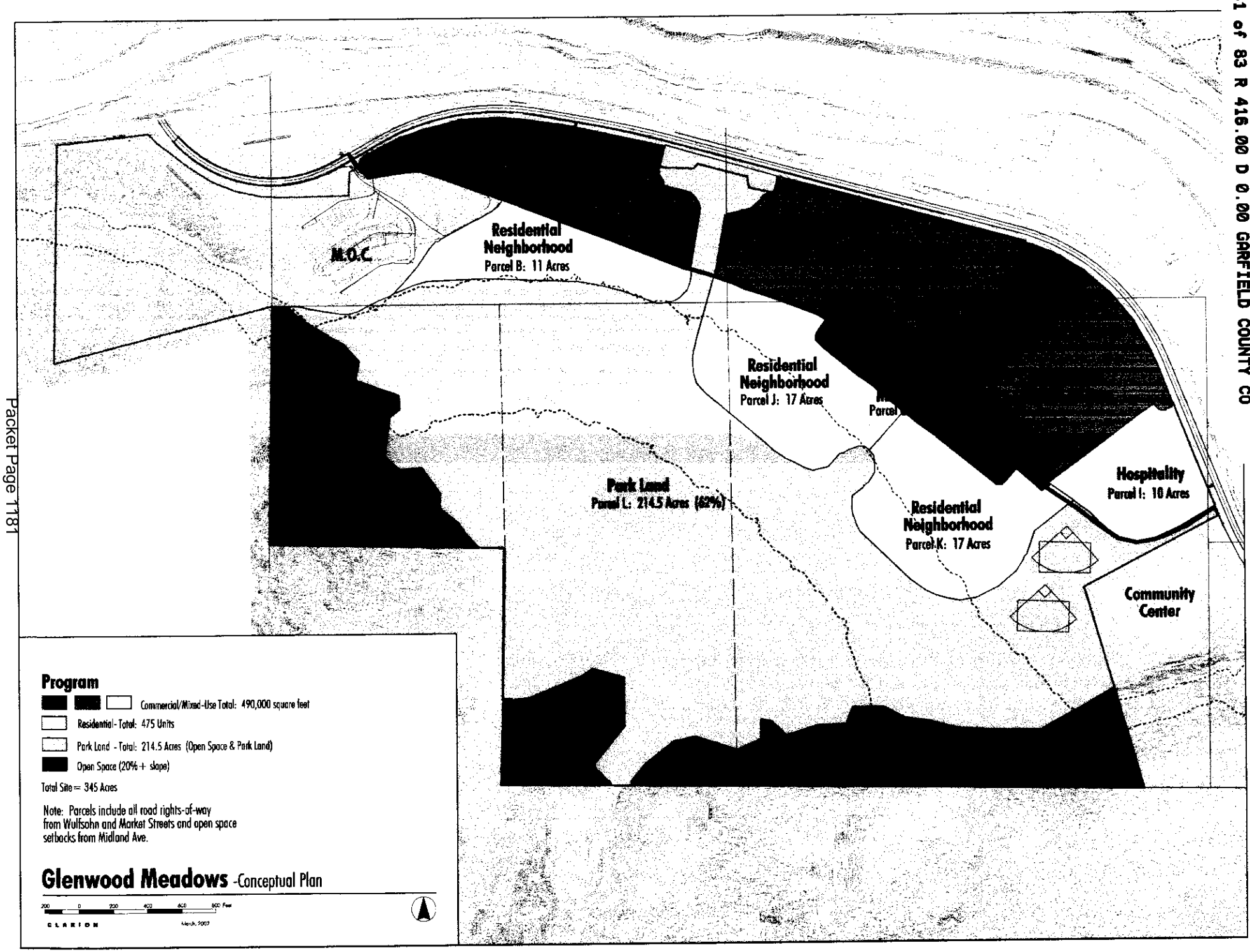
II. Authority

These standards shall apply to all property contained within the approved Glenwood Meadows Annexation Plat and the Annexation Agreement. The regulations and requirements shall become the governing standards for review, approval, and modification of all development activities occurring on the Glenwood Meadows site. Provisions of this guide shall prevail and govern the development of Glenwood Meadows superseding existing zoning ordinances. The proposed zoning regulations and design standards are intended to be more restrictive than the underlying Municipal Code standards. The Glenwood Springs zoning ordinance shall apply where the provisions of this guide do not address a specific subject.

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III. Zoning Map

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IV. Zoning Districts

There are 12 distinct parcels within Glenwood Meadows. Each of these parcels falls within one of 5 zoning categories according to the City of Glenwood's Zoning Ordinance: Multi-family Residential District (R-3), Limited Commercial District (C-1), Core Commercial District (C-2), Resort District (C-4), and Hillside Preservation (HP). The actual boundaries of the parcels may be modified during the preliminary and final design of each area, prior to approval by the City. A table of prohibited uses for each zone district is provided in the Appendix of this document.

The following table provides a brief summary of each zoning category as it applies to individual parcels identified on the zoning map on the following page:

Parcel	Zoning	Acreage	Percentage
A (Mixed-Use Campus)	C-1	20	6%
B (Residential Neighborhood)	R-3	11	3.25%
C (Commercial)	C-1	11	3.25%
D (Commercial)	C-1	12	3%
E (Mixed-Use)	C-2	7.5	2%
F (Mixed-Use)	C-2	7	2%
G (Mixed-Use)	C-2	5	1.5%
H (Commercial)	C-1	13	4%
I (Hospitality)	C-4	10	3%
J (Residential Neighborhood)	R-3	17	5%
K (Residential Neighborhood)	R-3	17	5%
L (Open Space)	HP	214	62%
TOTAL:		345	
Residential Total: 475 units Commercial Total: 490,000 square feet			

*Acreages are subject to change upon completion of final legal descriptions.

*Parcels include all road-rights-of way and open space setbacks from Midland Avenue.

V. General Development Standards

A. GENERAL INTENT

The intent of these General Development Standards is to establish an indigenous style and high level of development quality for Glenwood Meadows that is derived from and builds upon established neighborhoods in Glenwood Springs. These standards set the framework for a new, mixed-use neighborhood that strives to incorporate the most desirable features of Glenwood's most appreciated areas, such as the downtown core and it's attractive, pedestrian-friendly residential neighborhoods. In order to identify these desirable features, existing neighborhoods and developments throughout Glenwood Springs and the Western Slope were evaluated and "dissected" for successful site and building design elements. The result of this evaluation are these standards for character defining features such as appropriate building mass, scale, and materials based on lessons learned, both positive and negative. The standards also establish a cohesive pedestrian and vehicular circulation network within and between neighborhoods, a unified landscape theme for streetscapes and common open space areas, and general standards for parking, and signage. These standards have been developed to provide an additional level of quality to Glenwood Meadows, not required within the City Code, and will be applied *in addition to* those existing standards.





B. APPLICABILITY

These General Development Standards shall apply to *all* development within Glenwood Meadows, including C-1 (Commercial), C-2 (Mixed Use), C-4 (Hospitality), and R-3 (Mixed-Use Campus and Residential Neighborhoods). *These standards shall be applied in addition to standards outlined in the City of Glenwood Springs Municipal Code.*

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to ensure that all non-residential and residential development on the site works creatively within the site's natural constraints, such as slope, geologic hazards, and significant vegetation.

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2. General

a) The siting of all buildings shall respond to existing site features to minimize the need for retaining walls, excavation, and other unnecessary site disturbances. Non-residential zones are purposefully located near primary roads on land with lesser degrees of slope.



D. BUILDING DESIGN

1. Intent

These standards are intended to encourage creative, quality commercial and residential building design that utilizes a variety of design techniques to break up larger building masses and emphasizes a pedestrian orientation at the street level.

2. Non-Residential

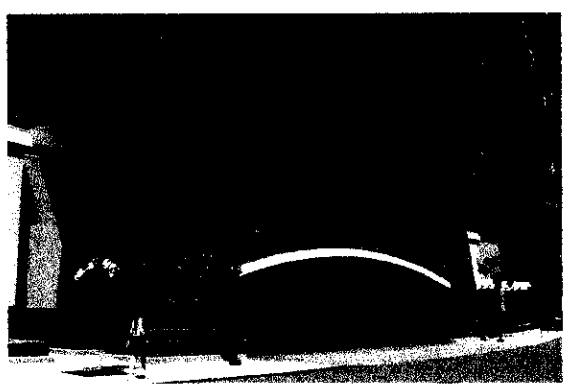
a) No single-user building footprint shall exceed a maximum of 130,000 square feet of enclosed floor area, nor shall the total useable area of any one user exceed 130,000 square feet.

b) Buildings shall have recessed, highly visible customer entrances that feature no less than 2 of the following:



(1) Canopies or porticos;
(2) Overhangs, recesses/projections;
(3) Arcades;
(4) Distinctive roof forms;
(5) Arches;
(6) Outdoor patios;
(7) Display windows;
(8) Planters or wing walls that incorporate landscaped areas and/or places for sitting.

c) For buildings less than 60,000 square feet, two or more of the following design elements shall be incorporated for each 30 horizontal feet of a building façade or wall. For buildings equal to and greater than 60,000 square feet, two or more of the following elements shall be incorporated for each 50 horizontal feet of a building façade or wall:



(1) Changes in color, texture, or materials;
(2) Projections, recesses, and reveals, expressing structural bays, entrances, or other aspects of the architecture with a minimum change of plane of 4-6 inches;
(3) Arcades or pergolas providing pedestrian interest;
(4) Trellises with vines, or
(5) An equivalent element that subdivides the wall into human scale proportions.

d) Building facades or walls that face public

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streets, adjacent developments, or connecting pedestrian frontage shall be subdivided and proportioned along 60% of their horizontal length using features such as:

(1) Windows;
(2) Entrances;
(3) Arcades;
(4) Awnings; or
(5) Other such features.

e) Parapet walls shall be incorporated when a flat roofline is required. The design or height of the parapet shall include a minimum of one change in setback or height along each 60 lineal feet of façade.

f) Sloping roofs shall have a minimum of one of following elements incorporated into their design for each 60 lineal feet of roof:

(1) Projecting gables;
(2) Hips;
(3) Horizontal/vertical breaks; or
(4) Other similar techniques.

g) Sloping roofs shall be integrated into the building architecture and shall be consistent with the characterized architectural style.

h) Sloping roofs shall be used at entries and other prominent features to add prominence. Other features intended to accent entries may be considered.

i) Intense, bright, or fluorescent colors shall not be used on any roof area visible from a public or private right-of-way or open space.

3. Residential



a) A building's special architectural features and treatments shall not be restricted to a single façade. All sides of a multi-family building open to view by the public, whether viewed from public or private property, shall display a similar level of quality and architectural interest.

b) All multi-family buildings shall be designed to provide complex massing configurations with a variety of different wall planes and roof planes. Plain, monolithic structures with long, monotonous, unbroken wall and roof plane surfaces are prohibited. At least every 50 linear feet, wall planes shall contain offsets or setbacks with a differential in horizontal plane of at least 5 feet.

c) The maximum length of a multi-family building shall be 125 feet.

d) All elevations on multi-family buildings shall contain windows.

An eave or overhang of at least 12-inches shall be provided on the perimeter of all residential buildings, except gable roof ends, where an 8-inch overhang shall be required.

For additional specificity, see Section X.

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E. BUILDING MATERIALS

1. Intent

The intent of these standards is to establish a palette of high-quality building materials to be used to add texture, color, and visual interest to the overall development.

2. Non-Residential

a) One or more of the following building materials shall be incorporated into a structure's design:

(1) Stucco;
(2) EIFS (Exterior Insulation and Finish Systems);
(3) Brick;
(4) Stone (cultured and natural);
(5) Tinted, textured and integral color masonry block.

b) Exterior building materials shall not include the following:

(1) Smooth-faced gray concrete block, painted concrete block, tilt-up concrete panels;
(2) Field-painted or pre-finished standard corrugated metal siding; or
(3) Standard single or double tee concrete systems.



c) Ribbed metal siding is prohibited as a primary exterior surface material. It may be used as trim material covering no more than 10% of the façade.

d) Exterior building material shall be continued down to within 9 inches of finished grade on any elevation.

e) High-intensity primary, metallic, or fluorescent colors are prohibited on any roof area visible from any public or private property.

f) All sloping roof areas with a pitch of 3:12 or greater, and visible from any public or private right-of-way, shall be surfaced with attractive and durable materials such as:

(1) Concrete, clay, or slate tiles; or
(2) Seamed architectural metals such as tin or copper; or
(3) Asphalt shingles.

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3. Residential

a) One or more of the following building materials shall be incorporated into a structure's design:

(1) Split shakes;

(2) Rough-sawn wood; or

(3) Board and batten wood.

b) Exterior building materials shall not include the following:

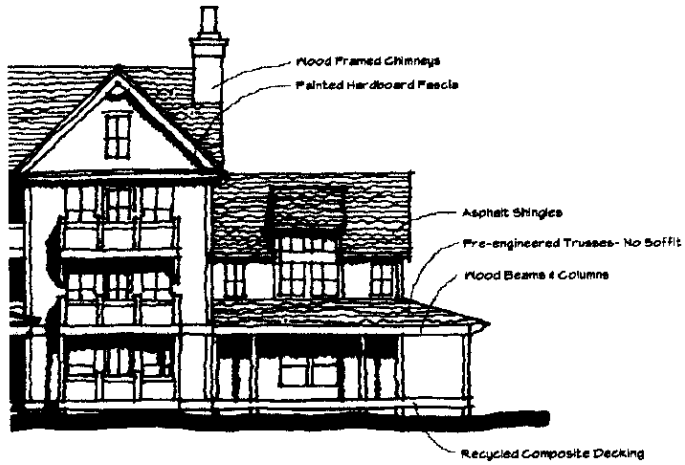
(1) Concrete block (including split face and ground face block), or

c) High-intensity primary, metallic, or fluorescent colors are prohibited on any roof area visible from any public or private property.

d) All sloped roofs visible from the ground or from a surrounding property shall be clad with one of the following:

(1) High profile composition shingles; or

(2) Seamed architectural metals.



F. VEHICULAR AND PEDESTRIAN CIRCULATION AND ACCESS

1. Intent

The intent of these standards is to create a hierarchy of streets within Glenwood Meadows that efficiently facilitate traffic flow, yet are designed to discourage speeds and volumes that impede pedestrian activity.



2. Vehicle Access and Circulation

a) Traffic calming devices, such as bulb-outs or curb extensions, traffic calming circles, and narrower street widths shall be used in residential neighborhoods to discourage through traffic and excessive speeds.

b) To the maximum extent feasible, common or shared service and delivery access shall be provided between adjacent parcels and/or buildings.

c) Internal vehicle circulation patterns shall provide a clear and direct path to the principal entrance of the primary building, to outlying pad sites where applicable, and to each parking area.

d) Internal vehicle circulation patterns shall provide the most direct vehicular route(s) between the development site's main entrance and the primary building's main customer entrance.

e) Main drive aisles shall be continuous and connect to the main entrance to the development site.

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f) Internal intersections shall have adequate sight lines, design geometrics, and/or traffic controls to minimize accident potential.

3. Pedestrian Access and Circulation



a) Continuous sidewalks or trails shall provide connections to and between:
   (1) The primary entrance or entrances to each building, including pad site buildings;
   (2) All parking lots or parking structures that serve such buildings;
   (3) Any sidewalks or walkways on adjacent properties that extend to the boundaries shared with the development;
   (4) Any public sidewalk system along the perimeter streets adjacent to the development;
   (5) Adjoining land uses;
   (6) Any greenway on or adjacent to the property; and
   (7) Other community amenities or gathering spaces.

b) Covered shelters shall be provided at transit shuttle sites in locations as determined by the landowner and the City.

G. PARKING

1. Intent

The intent of these standards is to minimize the visual impacts of large blocks of parking, both from within the development and from other areas of Glenwood Springs that, because of their higher elevation, view Glenwood Meadows from above, by breaking it into a series of smaller "rooms". These rooms may be defined by landscaped medians, pedestrian walkways, or tree plantings.

2. General

a) Parking quantities shall be no less than current city requirements, unless specifically noted otherwise.

b) Structured parking is strongly encouraged. Incentives shall be provided to the maximum extent feasible.



c) To the maximum extent feasible, parking shall be distributed between the front, sides, and rear of a building to further break up large parking areas.

d) In addition to the above standard, the visual appearance of parking blocks shall be further mitigated through the establishment of a shady canopy created by orchard plantings or regularly spaced tree diamonds within each parking block.

e) The use of terracing to further break up parking areas is strongly encouraged where grade changes allow. Where terracing is utilized, the standards for retaining walls and

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terracing outlined in Section V.H.6, shall be applied.

f) The above standards shall be applied in addition to the standards outlined in Section V.H. Landscaping and Screening.

H. LANDSCAPING AND SCREENING

1. Intent



The intent of these standards is to provide a high quality appearance for building sites, rights-of-way, parks, and open spaces within Glenwood Meadows. These standards exceed City of Glenwood requirements in some cases in order to enhance the appearance and pedestrian-oriented feeling of all development in Glenwood Meadows. For instance, additional landscape coverage is required for parking areas in order to ensure that the visual impacts of parking on this highly visible site are adequately mitigated by generally improving the appearance of these areas from both within the site and from surrounding neighborhoods with a birds-eye view of Glenwood Meadows. In addition, the spacing of required street tree plantings are significantly smaller that those required in the City Code. This again, is in intended to further enhance the appearance of the overall project and to create an inviting environment for pedestrians.

2. General

a) All landscape areas shall comply with City of Glenwood Springs Municipal Code in addition to these regulations.

b) Landscape architectural design elements shall relate to the physical site and built structures. A combination of evergreen plantings and other landscape elements, as defined in Table 1-Landscape Requirements, shall be used to screen and buffer service areas, mechanical features and break up large lengths of building walls.

c) Unless prohibited by a particular site's geologic mitigation requirements, building foundations shall be planted with ornamental plant material, such as ornamental trees, flowering shrubs and perennials, and ground covers and shall include a variety of plant materials to provide year round interest.

d) Development entryways shall be planted with ornamental plant material, such as ornamental trees, flowering shrubs and perennials, and ground covers.

e) Planting shall be massed and scaled as appropriate for the entryway size and space.

f) Landscaping shall break down in scale and increase in detail, color, and variety to mark entryways into developments.

g) All turf areas within individual sites shall be established by sodding. Un-manicured natural areas may be seeded when adjacent to open space as a transition to turf areas.

h) Due to the site's soil conditions and the arid nature of the Glenwood climate, xeric or low-water plant materials shall be required.

i) The use of the following xeriscape principles shall be required:

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(1) Grouping plants with similar water requirements together;
(2) Utilizing mulch and soil amendment to reduce irrigation requirements;
(3) Utilizing drip irrigation where possible to minimize run-off from sprinklers; and
(4) Restricting the amount of water comsumptive sod.

i) Irrigation systems shall be professionally designed to limit water consumption. The use of moisture sensors to reduce water consumption shall be encouraged.

k) Each owner or owner's association shall be responsible for the maintenance and repair of all site landscaping, including common open space areas.

l) Landscaping and maintenance shall comply with the Glenwood Meadows Geotechnical Mitigation Requirement.

3. Streetscape Improvements

a) Landscaping, decorative paving, and/or other site amenities shall be required to promote and enhance a comfortable pedestrian scale and orientation of the property.



b) The property between curb and the adjacent property line shall be landscaped according to Table 1-Landscape Requirements or paved with decorative paving in heavily used pedestrian areas, such as Market Street and Wulfsohn Road, or be treated with some combination of the two alternatives. Approval of all paving materials shall be subject to review by the Architectural Review Committee.

c) Streetscape shall be developed in a consistent manner and be reviewed as part of the overall development permit, if areas within the pod are developed separately, the design shall be consistent with that previously approved.

d) Trees selected from the plant list in this document shall be required within the back of curb landscaping strip. Such trees shall be planted every 40 feet maximum on center or depending on species at some other distance to ensure their proper spacing so as to develop a continuous canopy when mature.

e) Streetscape plantings shall be provided according to Table 1-Landscape Requirements. Variations in the tree species used from street to street are encouraged to avoid creating monocultures of trees. Landscape in the right-of-way and on individual sites is subject to review by the City of Glenwood Springs and any Design Review Committee of an owner's association.

4. Site Furnishings

a) Site furnishings, including, but not limited to: benches, seating, trash receptacles, bike racks, lighting fixtures and tree grates shall be incorporated with the theme of the building's architecture. All materials shall be considered and approved by any Design Review Committee of an owner's association and be in conformance with the City of Glenwood Springs Standards and these regulations.

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5. Parking Lot Landscaping

a) For lots with less than 20 spaces, a minimum of 10 percent of the total uncovered parking area, including access ways, shall be devoted exclusively to landscaping. For lots with twenty or greater spaces, a minimum of 20 percent of the total uncovered parking area, including access ways, shall be devoted exclusively to landscaping.

b) Required parking area interior landscaping shall be distributed in such a configuration so as to divide groups of parking spaces. No grouping of parking spaces shall exceed 8 in a row.

c) Parking lot edges shall be screened from public streets and sidewalks, public open space, and adjacent properties.

d) Landscaped islands shall be planted with ground cover or sod and a minimum of 2 deciduous trees (minimum caliper of 3 inches) per 200 square feet of landscaped island area.

e) Where a landscaped setback of at least 25 feet is not present, the perimeter of all parking lots shall be screened from adjacent streets, public sidewalks, and adjacent uses, with the exception of the area reserved as a site triangle at intersections, by either of the following methods:

(1) A berm 3 feet high with a maximum slope of 2:1 in combination with coniferous and deciduous trees and shrubs, as specified in table V.H.9.a, or

(2) A low continuous landscaped hedge at least 3 feet high consisting of a double row of shrubs planted 3 feet on center in a triangular pattern; or

(3) A low decorative masonry wall at least 3 feet high in combination with landscaping; or

(4) A combination of any of these methods.

f) Non-living ground cover, such as wood, bark, and rock mulches, decorative stone, brick or concrete paving, shall not exceed 20 percent of the required landscaped area.

6. Retaining Walls

a) Use of designed retaining walls shall be encouraged to reduce the slope and to provide planting pockets or terraces for revegetation and landscaping.

b) Retaining walls may be permitted to support slopes but shall not exceed 10 feet in height in commercial areas or 6 feet in height in residential areas from the finished grade without stepping back a minimum of 3 feet between walls to create a terraced effect.

c) No more than three tiers of retaining walls, as described above, shall be permitted to create terracing on a slope. Terraces created between retaining walls shall be permanently landscaped or revegetated and shall not exceed a 2:1 slope.



d) Retaining walls shall be constructed of or faced with stone or earth-colored materials, or a material compatible with the primary building materials. Railroad ties, timber, and gabion-type retaining walls are prohibited. Retaining walls shall not exceed 50 feet in length without providing an offset at least 12 inches.

e) All exposed retaining walls shall be textured or colored.

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7. Detention/Retention Ponds/Debris Channels

a) Detention/retention ponds and debris channels shall be visually integrated into the surrounding landscape.

b) Embankment slopes shall not exceed a 2:1 ratio.

8. Plant Materials

a) To meet the above standards, Plant Materials shall be chosen from the Plant List provided in the Appendix of this document. Xeric or low-water plant materials shall be utilized to the maximum extent feasible.

9. Landscape Requirements

a) For the purposes of meeting the requirements in the table below, appropriate screening shall mean plant material, a low wall, or combination to provide an opaque barrier between the street and the adjoining use to be screened.

Use	Residential Neighborhood	Mixed-Use	Commercial	Hospitality	Mixed-Use Campus
Required Open Space	40%	15%	15%	30%	30%
Open Space Planting	▪ 1 tree/1200 s.f. ▪ 4-shrubs/1200 s.f.	▪ 1 tree/500 s.f. ▪ 4-shrubs/500 s.f.	▪ 1 tree/1000 s.f. ▪ 4-shrubs/1000 s.f.	▪ 1 tree/1000 s.f. ▪ 4-shrubs/1000 s.f.	▪ 1 tree/1000 s.f. ▪ 4-shrubs/1000 s.f.
Setbacks Buffers Screens	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f	▪ 1 tree/25 l.f. ▪ 1/3 deciduous 2/3 evergreen ▪ 10 shrubs/25 l.f
Midland Avenue ROW	N/A	▪ 1tree/40 l.f. ▪ Irregular spacing	▪ 1tree/40 l.f. ▪ Irregular spacing	▪ 1tree/40 l.f. ▪ Irregular spacing	▪ 1tree/40 l.f. ▪ Irregular spacing
Wulfson Road ROW	▪ 1tree/35 l.f. ▪ Irregular spacing	▪ 1tree/35 l.f. ▪ Regular spacing	▪ 1tree/35 l.f. ▪ Irregular spacing	▪ 1tree/35 l.f. ▪ Irregular spacing	▪ 1tree/35 l.f. ▪ Irregular spacing
Internal Neighborhood Streets	1 deciduous tree/35 l.f. Evenly spaced	▪ 1 deciduous tree/40 l.f. Evenly spaced	▪ 1 deciduous tree/35 l.f.	▪ 1 deciduous tree/35 l.f.	▪ 1 deciduous tree/35 l.f.

Table 1—Landscape Requirements

I. SERVICE AREA AND MECHANICAL/UTILITY EQUIPMENT SCREENING

1. Intent

The intent of these standards is to minimize the visual and noise impacts created by service areas and mechanical equipment on surrounding uses and neighborhoods from public rights-of-way, surrounding high elevation neighborhoods, and adjacent uses within Glenwood Meadows.

2. Service Areas

a) No areas for outdoor storage, trash collection or compaction, loading, or other such uses shall be located within 20 feet of any public street, public sidewalk, or internal pedestrian

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walkway.

b) Loading docks, truck parking, outdoor storage, trash collection, trash compaction, and other service functions shall be incorporated into the overall design of the building and landscaping so that the visual and acoustic impacts of these functions are fully contained and out of view from adjacent properties and public streets.

c) Screening materials shall be the same as, or of equal quality to, the materials used for the primary building and landscaping.

3. Mechanical/Utility Equipment

a) Mechanical/utility screening shall be an integral part of the building structure and architecture and not give the appearance of being "tacked on" to the exterior surfaces.

b) All mechanical, electrical, and communications equipment, including but not limited to air-conditioning, heating and soft water tanks, television antennas, satellite dishes, security apparatus, transformers, electric and gas meters, shall be integrated into the building design, screened from public view, or when appropriate, enclosed in a suitable structure.

c) Roof-mounted equipment shall be contained within a completely enclosed structure. Such structure shall be an integral part of the building's architectural design and shall use materials compatible with those used on the façade of the building. However, if it can be demonstrated that the roof mounted equipment shall be screened or shall be placed such that the equipment can not be viewed or silhouetted in profile from public vantage points and neighboring properties, this may be considered as an alternative by the City.

d) Roof mounted equipment shall be clustered to the maximum extent feasible.

e) Roof mounted equipment shall utilize neutral colors and/ or materials that are compatible with adjacent natural or constructed colors.

f) A decorative wall constructed of materials compatible with the overall architectural design of the development and softened with landscaping shall screen ground-mounted equipment.

J. OPEN SPACE AND PARKS

1. Intent

The intent of these standards is to provide an interconnected network of open spaces and parks within non-residential and residential areas of Glenwood Meadows as well as to provide a high level of visual interest and a variety of recreational and leisure opportunities within a short walk of each residence in Glenwood Meadows.

2. General

a) Open spaces and parks within Glenwood Meadows shall include traditional, urban gathering spaces such as a village green, plaza, or town square in addition to a network of pathways and informal trails that help integrate the built environment of the neighborhood with adjacent open space and the natural environment. Appropriate locations for the above amenities shall be determined in part by the type of use they are integrated with.

b) Existing trees and vegetation shall be preserved whenever possible to act as buffers between adjoining developments and as site amenities within the neighborhood.

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3. Non-Residential

a) Outdoor Spaces

(1) Pedestrian-oriented outdoor spaces shall be placed near activity generating uses, such as street corners, shops, stores, offices, day care, and dwellings.

(2) To the maximum extent feasible, outdoor spaces shall be linked and visible from streets and sidewalks.

(3) Sculpture, fountains, kiosks, or shelters shall be prominently placed in outdoor spaces.

(4) In developments with multiple buildings, outdoor spaces and landscaped areas shall be integrated into an overall open space system in conjunction with streets and connections and not merely assembled from residual land remaining after buildings and parking lots have been sited.



b) Community Amenities

(1) A minimum of 1,000 s.f. of community amenities, open areas, and public gathering places per 50,000 s.f. of Commercial building area or a percentage thereof. This shall be considered a component of the landscape requirements as referenced in Section H.9.Community amenities may consist of any of the following:

(a) Patio or plaza with seating area;
(b) Mini-parks, squares, or village greens;
(c) Water feature,
(d) Clock tower;
(e) Public art;
(f) Any other, similar deliberately shaped area and/or focal feature that, in the City's judgment, adequately enhances such community and serves as a gathering place.

(2) All community amenities within a commercial development shall be an integral part of the overall design and within easy walking distance of major buildings, major tenants, and any transit stops.

4. Residential

a) Common Open Space

(1) Common open space shall be organized to create integrated systems of open space that connect with the following types of lands located within or adjacent to the development:

(a) Dedicated public park or greenway lands;
(b) Other dedicated open spaces;
(c) Common open space located within or adjacent to the development;
(d) Portions of the trail and open space system;
(e) Neighborhood retail and commercial centers; and
(f) Adjacent employment centers.

Common open space with pedestrian access shall be reasonably accessible to all of the residents of the Glenwood Meadows:

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(2) Where provided, access to common open space shall be a minimum of six feet wide and shall be located where such access is visible to dwelling units and shall not be isolated by walls, screening, landscaping, or any other kind of barrier that would prevent resident surveillance of the open space.

(3) If an applicant constructs recreational facilities in the common open space as a community amenity, such recreational facilities shall be constructed in accordance with applicable city standards regarding, but not limited to, size, siting, use, materials, and similar matters.

(4) Where common open space is bordered by private rear or side yards, opaque fences and walls shall not be erected in such yards bordering the open space. Open style fences, with a maximum 50% opacity (e.g., post and rail), shall be allowed on the perimeter of open space.

b) Parks

(1) One neighborhood park shall be provided within each residentially zoned parcel or "neighborhood". Each park shall be at least 1acre in size.

(2) Each neighborhood park shall be located where the network of local streets provides access and where direct pedestrian and bicycle access are provided from adjacent uses.

(3) Neighborhood parks shall be located in a visible, secure setting that is easily observed from streets. Rear facades of multi-family dwellings that do not contain building entrances shall not abut more than two sides of the park's perimeter.

(4) Each neighborhood park shall contain one or more of the following features:

(a) Multi-use areas;
(b) Community gardens;
(c) Walking paths;
(d) Plazas;
(e) Pavilions;
(f) Picnic tables;
(g) Benches; or
(h) Other similar features for various age groups to enjoy.

K. SIGNAGE

1. Intent

The intent of these standards is to provide consistent, high quality signage for Glenwood Meadows. All signage must be reviewed and approved by the Architectural Review Committee prior to permit application and must conform to all City of Glenwood Springs standards.

2. General

a) Each building group, user, or tenant shall be allowed at least one sign on the primary storefront elevation, providing such signage meets these standards and does not exceed the ordinance and requirements of the City of Glenwood Springs.

b) Signage placed at locations other than site locations and/or storefront elevation (such as rear and side wall locations) shall be considered provided that the total square footage allowance of all signage does not exceed the total aggregate area allowed by requirements of the City of Glenwood Springs Code.

c) All attachment devices, wiring, clips, transformers, lamps, tubes, and other mechanisms for signs shall be concealed.

d) Permanent signage may be illuminated providing it is designed so the source is not visible.

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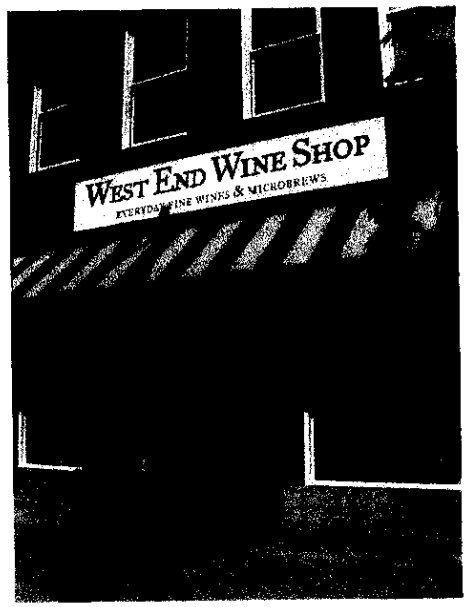
Individual internally lit channel letter signs or accent lighting, which is incorporated to enhance the signage, is acceptable. All signage lighting shall conform to lighting standards provided by the City of Glenwood Springs.

e) Each tenant shall provide signage at its expense and shall apply for and obtain their individual signage permits and approvals from the City of Glenwood Springs.

3. Freestanding Signs

a) No individual sign shall exceed 200 square feet in area nor shall the total sign area of any tenant exceed 600 square feet.

b) The placement of all signs shall be based on visibility and legibility. All freestanding identification signs shall be integrated into the surrounding landscape with good visibility to approaching vehicular traffic.



c) All freestanding signs shall be set back a minimum of 10 feet from the edge of curb and/or property line and six feet from all sidewalks.

d) Freestanding signs shall not be placed within the site triangle of an intersection as defined in the City of Glenwood Springs Code.

e) The information contained on freestanding identification signs shall be limited to company and corporate logos, and may include building names and addresses.

4. Regulatory Signs

a) The basic design and mounting heights of regulatory signs shall follow Federal Highway Administration standards.

5. Building Mounted Signage

a) Building mounted signage shall be allowed only for commercial developments for the specific purpose to provide identification to the tenant.

b) Signage style shall be as approved by the Architectural Review Committee.

6. Colors and Materials

a) The Architectural Review Committee shall consider all colors for approval.

7. Informational/Directional

a) Informational/directional signs shall be designed to conform to the proportions shown in these guidelines and shall not have a sign face which exceeds 20 square feet.

b) The number of informational/directional signs may vary by site, but shall be sufficient to accommodate both vehicular and pedestrian traffic.

c) Informational/directional signs for motorists shall be located between 100 and 200 feet from intersections.

d) Signs for pedestrians shall be placed at decision points in parking lots, in plazas, and where highly traveled walkways intersect.

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L. LIGHTING

1. Intent

The intent of these standards is to ensure that building, site, street, and signage lighting is sensitive to adjoining uses and is compatible with the overall development character in terms of scale and design.

2. General

a) All development shall by in compliance with the City of Glenwood Spring's Lighting Standards or comparable document as provided by the City.

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VI. Development Standards: Parcel "A", Mixed-Use Campus (C-1)



A. GENERAL INTENT

The intent of these standards, when combined with the General Development Standards, is to provide a framework for the development of a quality office and business park for Glenwood Springs. The Campus is envisioned to accommodate a variety of office, research and development activities in addition to complementary secondary uses such as restaurants, convenience shopping, childcare and housing. Additionally, the Campus is intended to function as an integral part of the overall Glenwood Meadows development, providing a range of employment opportunities for nearby residents.

B. APPLICABILITY

These standards shall apply to all development within Parcel "A", Mixed-Use Campus as defined on the accompanying Zoning Map. These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to encourage the creation of a park-like campus environment within the mixed-use campus zone and to ensure that non-residential uses within the mixed-use campus environment provide appropriate height and scale transitions to adjacent or adjoining residential uses.

2. General

a) All uses shall be carried out within completely enclosed buildings or structures, except for off-street parking and loading areas.

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3. Landscaping

a) All open space areas shall be landscaped according to Table 1-Landscape Requirements.

D. BUILDING DESIGN

1. Intent

The intent of these standards is to create a cohesive, office park environment through the use of common materials, architectural features, and colors.

2. General

a) See Section V. General Development Standards.

3. Orientation

a) Buildings shall be oriented towards the adjacent street or towards the center of a campus or park-like development block with an internal framework of outdoor spaces or connecting walkway.

4. Transition

a) Buildings abutting a residential area shall provide a gradual transition in height and scale to minimize conflicts between uses.

E. MIX OF USES

1. Intent

The intent of these standards is to provide general standards for appropriate percentages and locations of supporting uses within the mixed-use campus environment. Secondary uses are envisioned to include restaurants, convenience shopping, childcare, housing, or similar uses to complement primary office and research and development activities.

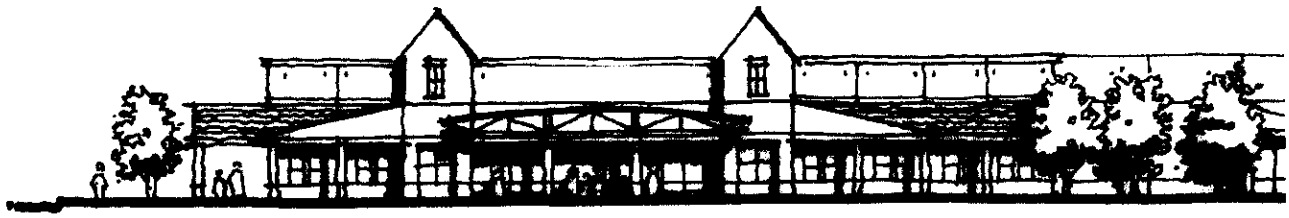
2. General

a) All supporting uses shall be visually and functionally integrated into an overall plan that emphasizes the primary uses of office and employment uses.

b) Retail uses shall not occupy more than 25 percent of the total gross area of the zone district.

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VII. Development Standards: Parcels "C", "D", and "H"-Commercial (C-2)



A. GENERAL INTENT

The intent of these standards is to achieve a high quality, pedestrian-friendly commercial core within Glenwood Meadows. This core will be anchored by large format retail anchors such as a grocery store and/or discount store and will be supplemented with a variety of smaller retail businesses. The purpose of this zone district is to serve both the needs of regional consumers for goods and services and the day-to-day needs of the surrounding residential neighborhoods in a functional and inviting environment that strays from the typical auto-oriented designs found in many commercial centers. The district is intended to function as an integrated center of activity within the overall Glenwood Meadows development through the establishment of clear pedestrian and vehicular circulation patterns and through transitions in the scale and character of development where they abut adjacent uses.

B. APPLICABILITY

These standards shall apply to all development within Parcels "C", "D", and "H", Commercial as defined on the accompanying Zoning Map. *These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.*

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to ensure that primary and secondary retail uses utilize careful building placement and orientation to create and enhance an active, attractive, pedestrian environment within the commercial core of Glenwood Meadows. Primary Commercial Buildings will serve as "anchors" for the commercial and mixed-use zones. These larger uses will be flanked by a variety of supporting, pedestrian-oriented retail storefronts and secondary commercial uses located on pad sites. The siting and design of smaller retail stores, or "pads," can create a more inviting appearance along Midland Ave and with in the neighborhood by visibly reducing the project's scale and by expanding the range of activities and businesses found within the neighborhood. The location, orientation of the entry, and architecture of pad site buildings also provide opportunities to frame the entry into the neighborhood and contribute to the development's visual interest by placing storefront spaces closer to the street and creating a street scene. Accordingly, pad site structures shall be compatible with the main buildings on a commercial site. The layout of pad site buildings shall relate coherently to the public streets and surroundings (outward) as well as to the main center (inward), and specific siting decisions shall further the general intent of creating a "sense of place," focal points,

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community amenities, and arrival into the commercial center.

2. General

a) See Section V. General Development Standards.

b) Pad Sites The primary façade of a building located on a pad site, typically the façade containing the primary customer entrance, may be oriented in a variety of ways, including:

(1) Toward the primary access street;
(2) Toward an internal "main street";
(3) Framing a primary entrance to the development or center;
(4) Toward the side (especially when that side faces another pad site building); or
(5) Toward the interior of the center.

c) Regardless of primary orientation, all sides of a pad site building that directly face and have access to a public street shall contain a customer entrance.

d) Pad sites shall be clustered together to define street edges and entry points or to enclose and create community amenities and visual interest between buildings.

e) Wherever practicable, spaces between adjacent pad site buildings shall be improved to provide small pockets (preferably heavily landscaped) of customer parking, pedestrian connections, small-scale project amenities, or focal points. Examples include, without limitation:

(1) A landscaped pedestrian way linking customer entrances between two or more pad site buildings;
(2) A public seating or outdoor eating area;
(3) An area landscaped with living materials emphasizing 4-season colors, textures, and varieties; or
(4) Sculptures or fountains.

D. BUILDING DESIGN

1. Intent

The intent of these standards is to ensure that the design of buildings located in parcels "C", "D", and "H", present a cohesive appearance through the use of common materials, architectural features, and colors.

2. General

a) See Section V. General Development Standards.

b) Pad site buildings and other accessory uses shall incorporate a similar façade and building design as those on the primary commercial building(s) in the zone district, including:



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(1) Exterior building materials;
(2) Roofline or roof materials;
(3) Façade colors;
(4) Pedestrian entry locations and entryway architecture/design;
(5) Amounts of glazing on facades visible from public streets; and
(6) Other distinctive architectural features.

c) Pad site buildings and other accessory uses shall select their exterior building materials from the material palette used on the primary commercial building(s).

3. Large Format Commercial

a) Large format commercial buildings of 60,000 square feet or greater shall have a minimum of one side of the building "wrapped" with independent retail storefronts. Uses adjoining Market Street shall "wrap" the edge closest to the street to help establish a pedestrian-oriented environment and create a transition to the mixed-use zone along Market Street, as discussed in Section VIII.

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VIII. Development Standards: Parcel "E", "F", "G"-Mixed-Use (C-2)

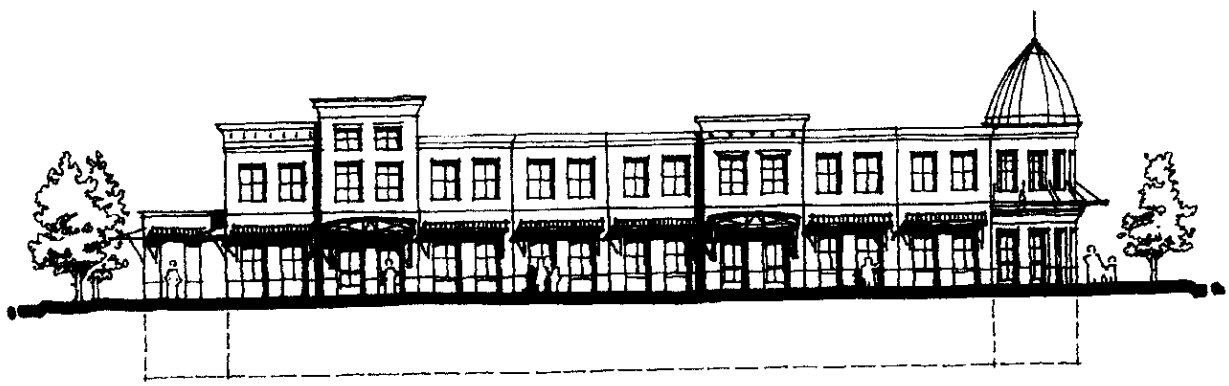
A. GENERAL INTENT

The intent of these standards is to create the framework for a pedestrian-oriented neighborhood retail street that will serve as the focal point for Glenwood Meadows. Oriented along a key connection between Midland Avenue and Wulfsohn Road, Market Street will be defined by a variety of smaller-scale retail shops and restaurants and will be designed with the pedestrian in mind. Storefronts will frame the broad sidewalk, while outdoor seating, landscaping, fountains, and other amenities will combine to create an inviting destination for nearby residents and retail customers alike. Diagonal parking will line either edge of the street, further enhancing the comfortable, pedestrian-oriented feeling by creating a buffer between outdoor activity and through traffic.



Market Street

Along the north side of Wulfsohn Road, bi-level structures will be used to help accommodate a transition in grade between larger commercial uses below and uses at grade with Wulfsohn Road. A variety of retail, offices and flex spaces, and upper-story residential will complement uses along Market Street and on the south side of Wulfsohn Road. Upper stories also help screen views from residential neighborhoods stepping up the hillside over large format uses below. Lower level uses will be oriented towards adjacent commercial and retail while primary uses located on the upper level along Wulfsohn Road will be oriented towards the street and the adjoining neighborhood. Buildings will be pulled up to the sidewalk to create a defined edge along the broad sidewalk. Off-street parking will be focused behind buildings to the extent feasible to enhance the pedestrian nature of the street and diagonal or parallel parking will be provided along Wulfsohn Road. Wulfsohn Road shall be designed to accommodate on-street bicycle circulation.



Wulfsohn Road

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On the south side of Wulfsohn Road, the zone takes on a more neighborhood-oriented character; with small-scale first floor retail uses lining the street and the opportunity for upper-story residences. The addition of residential uses within the zone would provide a transition between commercial uses to the north and residential neighborhoods to the south and provide attainable options within an already varied mix of housing products. This also provides opportunities for live/work units if desired and creates more of an active street environment. The pedestrian nature of the street along Wulfsohn Road provides opportunities for pedestrian-oriented uses such as sidewalk cafes.

B. APPLICABILITY

These standards shall apply to all development within Parcels "E", "F", and "G", Mixed-Use as defined on the accompanying Zoning Map. *These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.*

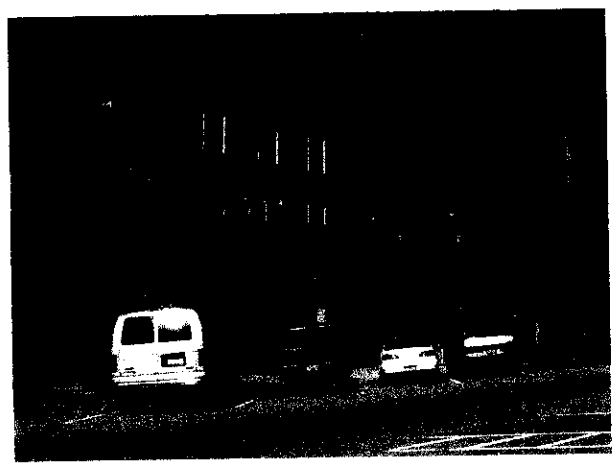
C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to ensure that building placement, setbacks, and orientation support the creation of a pedestrian scaled neighborhood retail street to serve as the retail core of the larger commercial development and Glenwood Meadows as a whole.

2. General

a) Compatible uses (i.e., office building and a movie theatre) shall explore opportunities for shared-use parking to minimize overall space requirements for parking.

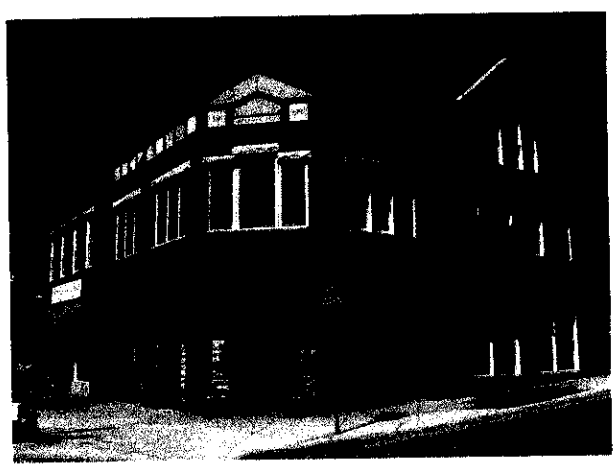


3. Mix of Uses

a) Each pod of development within the zone shall contain at least 2 of the following uses:

(1) Residential;
(2) Retail; or
(3) Office.

b) A minimum of 20 residential units shall be provided within the E, F and G mixed use parcels.

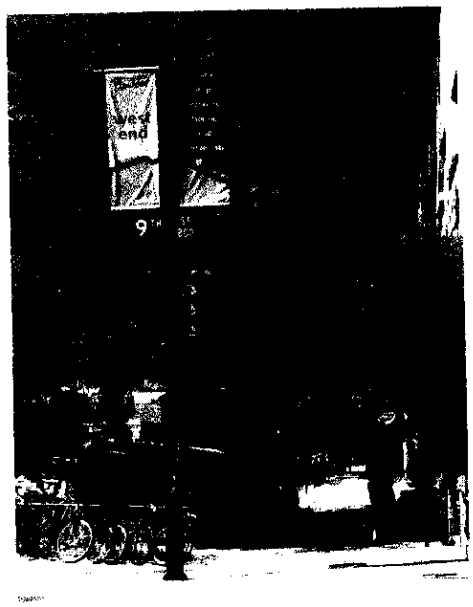


4. Location of Parking along Market Street and Wulfsohn Road

a) Parking shall be angled or parallel on-street parking.

b) Off-street parking shall not be permitted between buildings and either Market or Wulfsohn.

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5. Building Setback from Market Street and Wulfsohn Road

a) There shall be no minimum front, rear, and side yard setbacks required to promote a more urban, pedestrian-oriented environment along the street, provided local building code requirements are met.

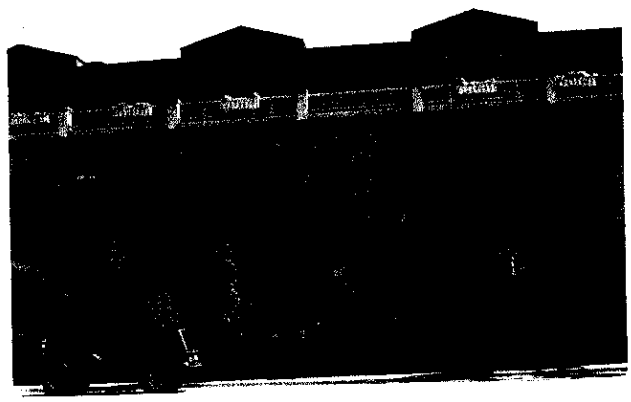
b) Should retail be constructed in phases, the front setback of later structures shall be built to equal the average setback of those structures already in place.

c) Buildings at the corners of Market Street and Wulfsohn Road shall be anchored, or brought up to meet the sidewalk edge and shall utilize a similar scale and massing as other buildings along the street edge.

6. Building Orientation

a) All buildings and building entries shall be oriented towards the primary street.

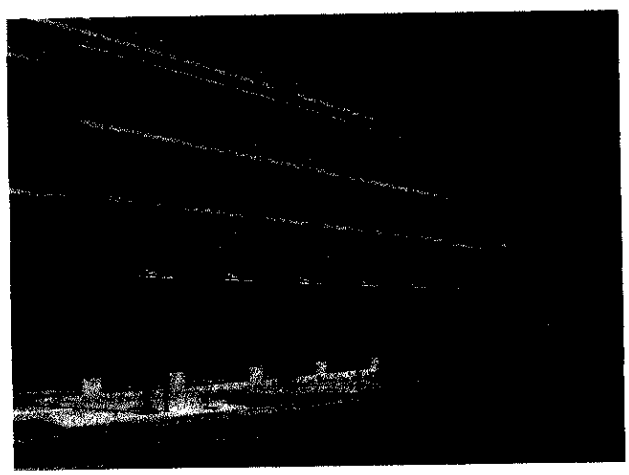
b) New buildings shall be aligned with existing buildings located across the intersecting streets to "complete" the space around the corner and create visual continuity.



7. Sidewalk Width

a) Sidewalk widths shall be a minimum of 10 feet along Market Street and Wulfsohn Road in order to provide ample space for outdoor seating and smooth pedestrian movement.

D. BUILDING DESIGN



1. Intent

The intent of these standards is to create a pedestrian-oriented feeling for the facades of retail establishments along Market Street and along Wulfsohn Road.

2. General

a) See Section V. General Development Standards.

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3. Building Height

a) Buildings shall be a minimum of 2 stories in height along the street edge. However, in order to create an active street environment along Market Street, especially at the intersection of Market St. and Midland Ave., portions of building or key buildings may be less than 2 stories if it can be demonstrated that the establishments add to the vitality of the street environment.

b) Along the north edge of Wulfsohn Road, buildings may need to be 3 stories in height to accommodate changes in grade and meet the above requirement.

4. Façade Articulation

a) One or more of the following design elements shall be incorporated for each 25 horizontal feet of a building façade or wall:

(1) Changes in color, texture, or materials;

(2) Projections, recesses, and reveals, expressing structural bays, entrances, or other aspects of the architecture with a minimum change of plane of 4-6 inches;

(3) Arcades or pergolas providing pedestrian interest.

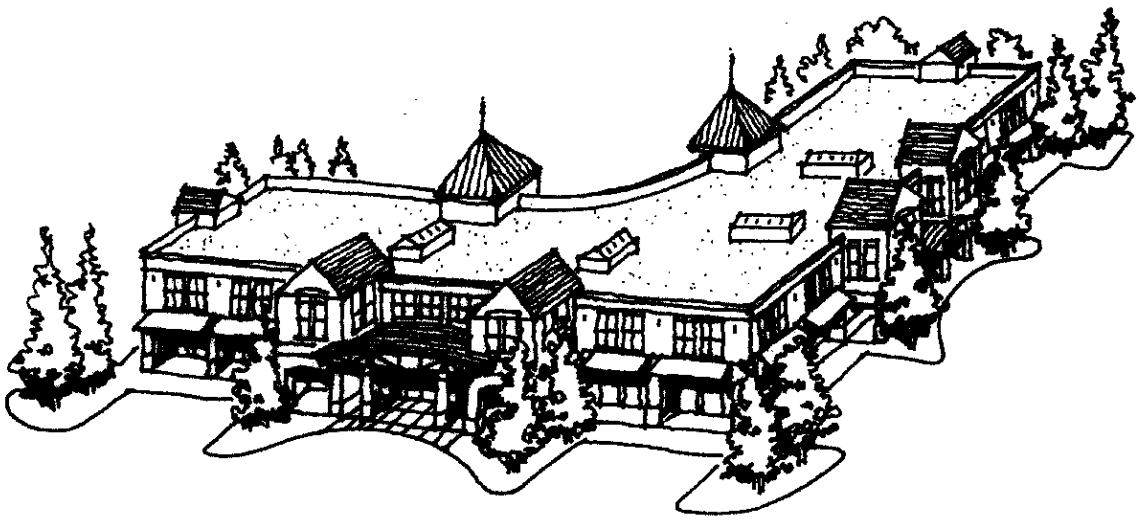
b) Retail storefronts shall consist of predominantly transparent display windows on the first floor sidewalk edge.

c) Darkly tinted glass or other opaque materials shall not be used in display windows.

d) Traditionally, windows in multi-story commercial buildings have a width to height ratio of one to two. Second story or upper story windows should generally be smaller than the storefront windows at ground level and shall be evenly spaced across all facades adjacent to the street.

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IX. Development Standards: Parcel "I", Hospitality (C-4)



A. GENERAL INTENT

The general intent of these standards is to create a full service hospitality site within Glenwood Meadows that accommodates a hotel with conference space or meeting rooms, a multi-screen movie theatre or other entertainment venue, such as a performing arts facility or outdoor amphitheater, visitor center, and/or a limited assortment of supporting retail uses such as restaurants or small stores, outdoor recreational opportunities, and the potential integration of a future park and ride and transit stop. The hospitality site is intended to function as more of a "campus" type environment, with more flexibility regarding the placement and relationship of uses as compared to the site's adjacent commercial areas based on the "campus" concept, meeting rooms or a separate dedicated facility on the site could serve as an extended learning facility or a business education and training facility. In addition to the adjacent commercial uses, all uses found on this site are also intended to complement the adjacent Community Center.

B. APPLICABILITY

These standards shall apply to all development within Parcel "I", Hospitality as defined on the accompanying Zoning Map. These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards are to ensure that the design of hospitality uses are compatible in terms of scale and mass with adjacent residential and commercial development and with the

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Community Center.

2. General

a) Compatible uses (i.e., office building and a movie theatre) shall explore opportunities for shared-use parking to minimize overall space requirements for parking.

3. Setbacks

a) Minimum front yard setbacks shall be as follows:

(1) From Midland Avenue and Wulfsohn Road: 25 ft.

(2) From uses in ajacent commercial parcel: 20 ft.

b) There shall be no minimum side or rear yard setback to promote a more urban, pedestrian-oriented environment within the Hospitality zone district.

c) At the time of the development permit application, a build to line shall be established to create a strong relationship to Wulfsohn Road, the Community Center, and adjacent mixed-use structures. The location of this line may vary depending on the site layout concept.

4. Landscaping

a) All open space areas shall be landscaped according to Table 1-Landscape Requirements.

5. Mix of Uses

a) Retail uses shall be limited to 25% of the total square footage permitted within the zone district. For the purposes of this standard, a theater shall not be defined as a retail use.

6. Relationship to Community Center

a) All uses with frontage along Wulfsohn Road shall provide an entrance along that frontage.

7. Parking

a) Large areas of parking shall be distributed between at least two sides of the primary structure, with not more than 35% of the parking for the entire Hospitality parcel remaining between the principal building and Wulfsohn Road.

D. BUILDING DESIGN

1. Intent

The intent of these standards are to ensure that the design of full service hospitality uses are compatible in terms of scale and mass with adjacent residential and commercial development and with the Community Center.

2. General

a) See Section V. General Development Standards.

b) When public or semi-public spaces such as the hotel/motel lobby, restaurants, meeting rooms, and banquet-facilities are sited at ground level adjacent to a connecting pedestrian walkway, these spaces shall be accented with the use of glass and transparent materials between the height of 3 feet and 8 feet above the walkway or street grade.

3. Building Height

a) The maximum height of buildings shall not exceed 45 feet.

b) A variety of heights within the zone are encouraged. In addition, the use of height to create a focal point or prominent structure within the zone is also encouraged.

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X. Development Standards: Parcels "B", "F", and "G", Residential Neighborhoods (R-3)

A. GENERAL INTENT

The intent of these standards is to establish general criteria for the development of a series of compact residential neighborhoods that provide a range of housing types within a short walk of community amenities, such as parks and open space, retail and commercial services, and employment.

B. APPLICABILITY

These standards shall apply to all development within Parcels "B", "F", and "G", Residential Neighborhoods as defined on the accompanying Zoning Map. *These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.*

C. SITE LAYOUT AND DEVELOPMENT PATTERN

1. Intent

The intent of these standards is to ensure that residential neighborhoods within Glenwood Meadows provide a variety of housing types in a cohesive, pedestrian-oriented environment and provide appropriate transitions to adjacent non-residential uses and open space, and work with the more pronounced topographical features of the site.

2. Mix of Housing Types

a) A range of housing types is strongly encouraged to promote a diverse community of mixed ages, family-types and incomes. Out of the 475 approved residential units, a maximum of 300 apartments shall be provided.

3. Block Layout

a) Residential neighborhoods shall be designed in a pattern of blocks and interconnecting streets and/ or alleys, defined by buildings, streetscape, sidewalks, and trails.

b) The maximum block length for a block shall be 500 feet. Where mid-block pedestrian walkways are provided, blocks may be up to 800 feet.



4. Lot Sizes

a) Lot sizes shall be a minimum of 3000 square feet where permitted by Glenwood Springs Municipal Code.

5. Setbacks

a) Homes shall be setback a minimum of 20 feet from the front property line.

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6. Site Grading

a) The use of extensive grading or unusual site improvements to force a preconceived design onto a particular piece of property is strongly discouraged. Modifying the design of a multifamily development to fit the site generally results in a reduced potential for environmental problems and an improved level of visual interest and variety.

b) To the maximum extent feasible, the layout of residential developments shall follow and respect the natural topography of the site.

c) Berms, channels, swales, and similar man-made changes to the landscape shall be designed and graded to be an integral part of the natural landscape and to provide a smooth transition in changes of slope.

7. Site Layout

a) Each of the three residential parcels within the Glenwood Meadows shall be considered an individual "neighborhood". A mix of housing types is encouraged within each neighborhood.



b) Multifamily buildings shall be separated by common open space, public open space (e.g., a greenway), natural features located on the site (e.g., a stream corridor), or community amenities such as swimming pools or other recreational facilities.



c) To the maximum extent practicable, multi-family buildings shall be oriented or arranged in a manner to enclose common open spaces required above (*Common Open Space*). Such common open spaces should include gardens, courtyards, recreation, or play areas and shall contain at least 3 of the following features:

(1) Seasonal planting areas;
(2) Large, flowering trees;
(3) Seating;
(4) Pedestrian-scaled lighting;
(5) Gazebos or other decorative shelters;
(6) Play structures for children; or
(7) Natural features or areas.

8. Development Transition

a) When any portion of a building or structure within a multifamily development is located adjacent to property used or zoned for lower-density residential, the following standards shall apply to ensure the privacy of nearby residents:

(1) The developer shall site multifamily structures with either fewer units or structures with two-story "end" units adjacent to property zoned or used for single-family residential.

b) Accessory structures, including garages and recreational facilities, shall be set back at least

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5 feet from the adjacent residential property line or zoning district boundary, and the developer shall provide a buffer between the structure and adjacent property. The buffer may be a fence, wall, heavy landscaping, or combination thereof. Fences and walls used for buffer purposes shall be a maximum of 6 feet in height, with finished side facing out.

c) Residential neighborhoods adjacent to open space shall incorporate one or more of the following techniques to create a visual transition between development and surrounding open space:

(1) Staggering building setbacks to create a softer development edge.
(2) Establishing a landscape buffer along the rear or visible edge(s) of the property to create a soft visual edge to the development.
(3) Locating structures near or behind existing stands of significant trees or vegetation so that the cluster of vegetation provides a buffer between the development and the adjoining open space. When siting structures in such a manner, care should be taken to not disturb existing vegetation either during or following construction.
(4) Utilizing a variety of native plant species and planting forms similar to those found on the adjoing open space, to create the appearance of a natural transition in the landscape.

9. Community Amenities

a) All residential projects with more than 10 dwelling units shall reserve and develop internal open space/outdoor leisure space, at a minimum ratio of 200 s.f. per unit. These open spaces/outdoor leisure areas shall be improved with a variety of community amenities, including, but not limited to the following:

(1) Community Garden;
(2) Grove of trees;
(3) Village green;
(4) Pocket park;
(5) Swimming pool;
(6) Resident clubhouse;
(7) Tot lots;
(8) Basketball, volleyball, or other sport court; or
(9) Picnic areas.

b) To the maximum extent feasible, internal open spaces/outdoor leisure spaces as required above shall be consolidated to create larger common spaces for residents.

10. Fencing

a) Perimeter fencing shall be of an open style, such as 2, 3, or 4 rail, split rail, wood post, or other similar style characteristic of the area's rural heritage.

b) Consistent styles of fencing shall be used throughout the neighborhood in order to achieve a cohesive appearance.

11. Storage of Personal Property

a) Dedicated storage for Recreational Vehicles (RV's), snowmobiles, trailers, and other personal property, not including personal automobiles, shall be provided off-street. Such property shall not be stored within the public right-of-way.

b) Storage areas, as outlined above, shall be screened to minimize visibility from adjacent streets and property lines as follows:

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(1) One continuous row of evergreen trees (minimum of 6 feet tall) shall be planted with a minimum spacing of 10 feet on center; or

(2) One continuous row of evergreen shrubs (minimum of 5gallon in size) planted at a minimum spacing of 3 feet on center, and deciduous trees planted at an average of one tree every 15 linear feet.

D. PARKING

1. Intent

The intent of these standards is to ensure that garages and parking areas within Glenwood Meadow's residential neighborhoods are appropriately scaled and sited to minimize their visual impact upon the street.

2. Location and Layout

a) To the maximum extent feasible within slope constraints, garage entries, carports, parking areas, and parking structures shall be internalized in building groupings or oriented away from street frontage.

b) Parking areas and freestanding parking structures (detached garages or carports) shall not occupy more than 50% of each perimeter street frontage.

c) To the maximum extent practicable, freestanding parking structures (detached garages or carports) that are visible from perimeter public streets shall be sited perpendicular to the perimeter street in order to reduce visual impacts on the streetscape.

d) Carports shall be limited to 72 feet in length, with a maximum of 8 parking spaces per carport structure.

e) If a carport backs to the street, a landscape buffer shall be provided according to the requirements contained in Table 1-Landscape Requirements., within Section V.

f) A detached garage structure shall contain parking for no more than 8 cars.

g) No more than 2 detached garage structures or 2 carport structures shall be located adjacent to each other end to end.

h) The minimum separation between adjacent detached parking structures (detached garages or carports) shall be 10 feet, and such separation area shall be landscaped with at least 1 deciduous tree and ground cover or sod. A pedestrian access way may be included within the separation area.

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E. BUILDING DESIGN



1. Intent

These standards are intended to encourage a variety of residential building character within Glenwood Meadow's neighborhoods by encouraging the use of identifiable design features and detailing to emphasize the façade at the street and create visual interest.

2. General

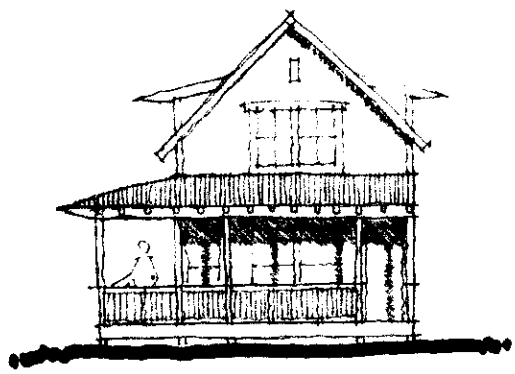
a) See Section V. General Development Standards.

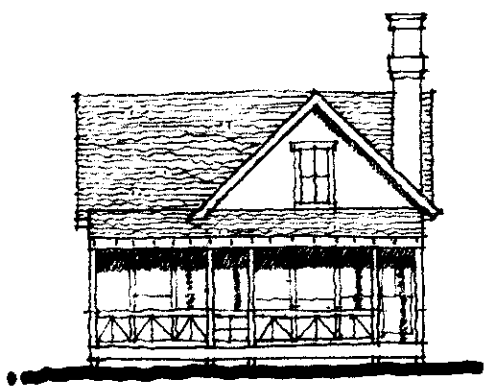
3. Architectural Detail

a) The incorporation of porches, balconies, and patios shall be strongly encouraged for all residential types.

b) Building entries shall be called out as a prominent streetscape feature for all residential types by extending the front of the main façade and emphasizing with materials and detailing.

c) Garages shall not be the prominent streetscape element. They shall be recessed and/or oriented towards the side or rear of the lot.





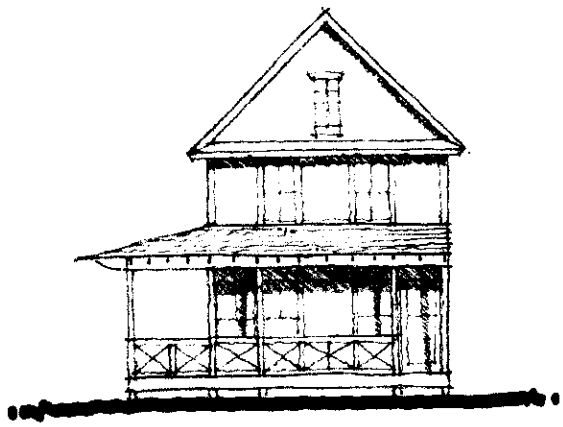
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d) The facades of single-family attached town homes shall be articulated to differentiate individual units.

e) All sides of a multi-family building shall display a similar level of quality and architectural interest. The majority of a building's architectural features and treatments shall not be restricted to a single façade.

f) Fronts of buildings shall be articulated through the use of bays, insets, balconies, porches, or stoops related to entrances and windows.

g) No more than 5 town home dwelling units shall be attached in any single row.



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XI. Parcel L: Open Space and Parks (HP)



A. GENERAL INTENT

The intent of these standards is to provide guidance for the range of appropriate uses that could occur within this portion of the Glenwood Meadow's site. The site is characterized by its dramatic views of Red Mountain, which frames the site on the south side, by its varied and sometimes dramatic topography, and by its lush stand of Gambel oaks. The site encompasses over 62% of the total area of Glenwood Meadows presents an opportunity to establish public open space for the neighborhood and for the larger Glenwood Spring's community that accommodates year-round active and passive recreational uses.

Many of the sites potential uses will vary from season to season, providing a range of activities for the community. For example, the north aspect of Red Mountain's slopes retain snow cover, creating a haven in its shadows for winter sports such as snow shoeing or cross-country skiing, while lower slopes with more solar exposure provide more opportunities for year-round activities such as hiking, biking, and possibly a golf course.

B. APPLICABILITY

These standards shall apply to all development within Parcels "L", Open Space and Parks as defined on the accompanying Zoning Map. *These standards shall be applied in addition to standards outlined in Section V., General Development Standards and in the City of Glenwood Springs Municipal Code.*

C. ACTIVE RECREATION

1. Intent

The intent of these standards is to suggest a range of appropriate active recreational uses for particular areas of the site, based on its varying landscape characteristics, such as slope,

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vegetative cover, and proximity to the residential neighborhoods of Glenwood Meadows. As a general rule, more land intensive, active uses, such as a golf course or a community park shall be located adjacent to or be partially integrated with nearby residential neighborhoods. By locating active uses near developed areas, where slopes are typically between 10 and 20 percent, pedestrian access to the sites would be more easily facilitated and a wider range of uses could be accommodated. Steeper slopes located towards the base of Red Mountain can be utilized to accommodate multi-use trails with little disturbance to existing landforms or views of the site. All development on the site, regardless of its intensity or location, shall work with existing site features to minimize overall disturbance and visual impacts.

2. General

a) Appropriate uses shall include, but not be limited to the following:

(1) Hiking trails;
(2) Golf courses;
(3) Mountain bike trails;
(4) Cross-country skiing trails;
(5) Equestrian trails;
(6) Snow shoeing trails; or
(7) Neighborhood parks.

b) Any of the above uses, as well as any additional non-prohibited uses as identified in the Appendix-Prohibited Uses for Parcel L, shall be required to undergo a special use review prior to approval. Soft surfaced trails and debris flow mitigation structures shall be allowed uses, the design and location of which shall be approved by City staff.

c) The use of motorized recreational vehicles such as snowmobiles, motorcycles, or similar vehicles shall not be permitted.

d) All uses shall use all practical means of preserving natural grade, drainage patterns, soil cover, and vegetation.

e) All uses shall be designed to minimize visual disturbances and scarring to the site, as viewed from within the site, from surrounding developments, and from Interstate-70.

f) All uses shall preserve and integrate outstanding natural physical features such as hill and ridge crests, natural rock outcroppings, major tree belts, watercourses, and other physical features.

g) Public access points shall be provided from residential neighborhoods to adjoining open space. To the maximum extent feasible, access points shall be provided a minimum of every 500 feet.

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XII. Appendix

A. PLANT LIST

1. Large Deciduous Trees

a) Narrow leaf Cottonwood-Populus angustifolia
b) Cottonwood 'Siouxland'-Populus deltoides 'Siouxland'
c) Lanceleaf Cottonwood-Populus x acuminata
d) Norway Maple-Acer plantanoides
e) Red Maple-Acer rubrum
f) Northern Catalpa-Catalpa speciosa
g) Common Hackberry-Celtis occidentalis (spring planting)
h) American Ash-Fraxinus americana 'Autumn Purple'
i) Green Ash-Fraxinus pennsylvanica
j) Thornless Honeylocust 'Shademaster'-Gleditsia triacanthos inermis
k) Bur Oak- Quercus macrocarpa
l) English Oak-Quercus robur
m) American Linden-Tilia americana
n) Littleleaf Linden-Tilia cordata 'Greenspire'
o) Redmond Linden-Tilia x euchlora 'Redmond'
p) American Elm-Ulmus Americana

2. Ornamental Trees

a) Amur Maple-Acer ginnala
b) Thinleaf Alder-Alnus tenuifolia
c) Shadblow Serviceberry-Amelanchier canadensis
d) Rocky Mountain or water birch-Betula occidentalis
e) Cockspur Hawthorn-Crataegus crus-galli
f) Washington Hawthorn-Crataegus phaenophyrum
g) Quaking Aspen-populus tremuloidies
h) Newport Plum-Prunus cerasifera 'Newport'
i) Canadian Red Cherry-Prunus virginiana 'Shubert'
j) Callery Pear-Pyrus calleryana
k) Gambel Oak-Quercus gambelii

3. Evergreen Trees

a) Subalpine or Rocky Mountain Fir-Abies lasiocarpa

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b) Douglas Fir-Pseudotsuga menziesii glauca
c) Rocky Mountain Juniper-Juniperus scopulorum
d) Bristlecone Pine-Pinus aristata
e) Lodgepole Pine-Pinus contorta latifolia
f) Pinyon Pine-pinus edulis
g) Limber Pine-Pinus flexilis
h) Southwestern White Pine-Pinus flexilis reflexa
i) Austrian Pine-Pinus nigra
j) Ponderosa Pine-Pinus ponderosa
k) Scotch Pine-Pinus sylvestris
l) Engelmann Spruce-Picea engelmannii
m) Black Hills Spruce-Picea glauca densta
n) Colorado Spruce-Picea pungens
o) Colorado Blue Spruce-Picea pungens glauca

4. Semi-Evergreen and Broadleaf Evergreen Shrubs

a) Kinnikinnick-Arctostaphylos uva-ursi
b) Euonymus-Euonymus fortunei
c) Manhattan Euonymus-Euonymus kiautschovicus 'Manhattan'
d) Oregon Grape Holly-Mahonia aquifolium
e) Compact Oregon Grape Holly-Mahonia aquifolium 'Compacta'
f) Creeping Oregon Grape Holly-Mahonia repens
g) Soapweed Yucca-Yucca glauca

5. Evergreen Shrubs

a) Armstrong Juniper-Juniper chinensis 'Armstrong'
b) Blue Rug Juniper-Juniperous horizontalis 'Wiltonii'
c) Sea Green Juniper-Juniperous media 'Sea Green'
d) Green Mound Juniper-Juniperous procumbens 'Green Mound'
e) Tammy Juniper-Juniperus sabina 'Tamariscifolia'
f) Table Top Juniper-Juniperus scopulorum 'Table Top'
g) Blue Star Juniper-Junperus squamata 'Blue Star'
h) Wichita Blue Juniper-Juniperus scopulorum 'Wichita Blue'
i) Hillspire Juniper-Juniperus virginiana 'Cupress'
j) Mugo Pine-Pinus mugo

6. Deciduous Shrubs

a) Serviceberry-Amelanchier spp.
b) Barberry-Berberis thunbergii atropurpurea

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c) Butterfly Bush-Buddleia davidii
d) Siberean Peashrub-Caragana arborescens
e) Flowering Quince-Chaenomeles speciosa
f) Blue Mist Spirea-Caryopteris spp.
g) Dogwood-Cornus sericea
h) Smoketree-Cotinus coggygria
i) Peking Cotoneaster-Cotoneaster acutifolia
j) Cranberry Cotoneaster-Cotoneaster apiculatus
k) Burning Bush-Euonymus alatus
l) Forsythia-Ligustrum vugare
m) Honeysuckle- Lonicera spp.
n) Russian Sage-Periovskia atriplicifolia
o) Common Ninebark-Physocarpus opulifolius
p) Potentilla (Shrubby Cinquefoil)-Potentilla fruiticosa
q) Plum-Prunus spp.

7. Perennials

a) Yarrow-Achilles filipendula
b) Columbine-Aquilegia (hybrids)
c) Hollyhock-Althaea rosea
d) Pearly Everlasting-Anaphalis spp.
e) Clustered Bellflower-Campanula glomerata
f) Canterbury Bells-Campanula medium
g) Cup-n-Saucer-Campanula medium calycanterma
h) Shasta Daisy-Chrysanthemum maximum
i) Delphinium-Delphinium elatum
j) Cottage Pink-Dianthus pulmarius
k) Bleeding Heart-Dicentra spectabillis
l) Foxglove-Digitalis purpurea
m) Blanket Flower-Gaillardia aristata
n) Bearded Iris-Iris germanica
o) Perennial Sweet Pea-Lathyrus latifolius
p) Blue Flax-Linum perenne
q) Lupine-Lupinus polyphyllus
r) Daffodil-Narcissus spp.
s) Perennial Phlox-Phlox paniculata
t) Buttercup-Ranunculus asiaticus
u) Johnny Jump-up-Viola kitaibeliana

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B. USE TABLE

In the event a use is permitted in the Glenwood Meadows standards but is not permitted in the underlying zone districts, the stricter obligations of the Code shall prevail.

Prohibited Use

Special Use

Use	A-Mixed-Use Campus (C-1)	C, D, and H-Commercial (C-1)	E, F, and G-Mixed-Use (C-2)	I-Hospitality (C-4)	B, J, and K-Residential Neighborhood (R-3)	L- Parks and Open Space (HP)
Accessory Uses						
Apartments						
Auto Rental						
Auto Repair						
Auto Parking						
Auto Sales						
Auto Service						
Auto Washing and/or Polishing Facility						
Banks with Drive Thru/ Accessory ATM Facilities						
Bed & Breakfast						
Child Care Home						
Commercial Indoor Cinema						
Daycare Facilities						
Sanitariums, Rest Homes, Homes for the Aged, Nursing or Convalescent Homes						
Emergency Services Facilities						
Golf Course						
Gas Sales						
Governmental Facilities and Non-Governmental Health and Human Services Facilities						
Government or Public Utility Service						
Commercial Health and Fitness Centers						
Home Improvement and Garden Supply						
Hospitals and their Related Facilities						
Hotels						

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Use	A-Mixed-Use Campus (C-1)	C, D, and H-Commercial (C-1)	E, F, and G-Mixed-Use (C-2)	I-Hospitality (C-4)	B, J, and K-Residential Neighborhood (R-2)	L- Parks and Open Space (NP)
Indoor Commercial Recreational Facilities						
Light Assembly						
Major Home Occupation						
Membership Warehouse						
Minor Home Occupation						
Mobile Home Manufacturing						
Mobile Home Park						
Mobile Home Sales						
Mortuary						
Multi-family Dwellings						
Museum						
Non-Bank Drive-Through Facilities						
Office Uses						
Office-Showroom						
Outdoor Display						
Outdoor Recreational Facilities						
Outdoor Storage						
Clinical and their Related Facilities						
Pedestrian-oriented Accessory Uses and Outdoor Seating for Restaurants						
Public Park						
Radio Transmission Facilities						
Recreation Vehicle Parking						
Religious Institutions						
Restaurants						
Retail						
Road, Driveway, Bikeway, Parking						
Schools						
Schools: Colleges or Universities						
Self-Storage Facilities						
Service and Repair of Appliances & Building Components						
Personal Service such as Photo Shop, Tailor, Dry Cleaning, Barber						
Single Family Detached Dwellings						
Single-Family Attached Housing e.g. Townhouses and						

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Use	A-Mixed-Use Campus (C-1)	C, D, and H-Commercial (C-1)	E, F, and G-Mixed-Use (C-2)	I-Hospitality (C-4)	B, J, and K-Residential Neighborhood (R-3)	L- Parks and Open Space (NP)
Roughhouses						
Skating Rinks, Public Recreational and Sports Facilities						
Small Animal Hospitals and Clinics						
Transient Housing/Boarding Houses						
Transit Park and Ride/ Bus Station						
Utility Substations						

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XIII. Definitions

Accessory Use—A use incidental and subordinate to the principal use of the lot.
Apartment- A type of multi-family dwelling unit, typically renter-rather than owner-occupied. See definition for multi-family dwellings below.
Auto Parking—Shall mean an off-street parking area or vehicular use area, an off-street parking area within a building or parking structure, or on street parallel or diagonal parking.
Day Care—A child care facility or day nursery, which is maintained for the whole or part of a day for the care of 7 or more children unrelated to the owner on a full time basis and/or requiring a day care nursery or a center license in accordance with the regulations of the State of Colorado Department of Social Services, whether such facility is operated with or without compensation for such care and with or without stated educational purposes.
Indoor Recreation—A commercial recreational land use conducted entirely within a building, including: an arcade, arena, art gallery and studio, art center, assembly hall, athletic and health clubs, auditorium, bowling alley, club or lounge, community center, conference center, exhibit hall, gymnasium, library, movie theater, museum, performance theater, pool or billiard hall, skating rink, swimming pool, or tennis court.
Multi-family dwellings—A building containing 3 or more dwelling units, not including hotels, motels, and similar group accommodations.
Non-banking Drive Thru—An establishment which by design, physical facilities, services, or packaging procedures encourages or permits customers to receive services, obtain goods, or be entertained while remaining in their motor vehicles.
Open Space—That portion of a building lot which is open to the sky, except as provided in the definition of lot coverage.
Outdoor Recreation—A commercial recreational land use conducted outside of a building, characterized by a minimal impact on traffic, the natural environment, or the surrounding neighborhood, including: an arboretum, botanical garden, bridle or hiking trails, country club, golf course, or historic site.
Pedestrian-oriented Development—Development that is designed with a primary emphasis on the street sidewalk and/or connecting walkway access to the site and building rather than on auto access and parking lots. This type of development typically warrants buildings being placed relatively close to the street with the main entrance oriented towards the street sidewalk or a walkway. Parking areas are provided but are not emphasized in the design of the site.
Transit-oriented Development—A development pattern characterized by mixed-use development at transit corridors, a high level of activities and extensive facilities for transit users, pedestrians, and bicyclists to provide easy movement between living and working environments.

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MEMORANDUM OF UNDERSTANDING
REGARDING RESIDENTIAL DEVELOPMENT WITHIN RH DISTRICT OF GLENWOOD MEADOWS

The following Memorandum of Understanding ("MOU" or "Agreement") sets forth the terms and conditions upon which the City of Glenwood Springs, Colorado, a Colorado municipal corporation (the "City") and Glenwood Meadows, LLC, a Colorado limited liability company ("GM") agree to resolve certain infrastructure issues related to future development in Glenwood Meadows as related to future development on lots retained by GM.

RECITALS

WHEREAS, GM originally annexed approximately three hundred and forty-five (345) acres of real property within the City of Glenwood Springs, which Property is commonly known as "Glenwood Meadows" pursuant to that certain Ordinance No. 17, Series of 2002, and Ordinance No. 18, Series of 2002; and

WHEREAS, on September 18, 2002, the City and Owner entered into an Annexation and Development Agreement to set forth their agreements in writing concerning the terms and conditions of annexation of the Property to the City, the zoning of the Property under the City's Municipal Code and the adopted and incorporated Zoning and Development Plan, as well as the other conditions of the development of the Property, which Annexation and Development Agreement was recorded in the records of the Garfield County Clerk and Recorder on December 6, 2002 as Reception No. 616083 (the "Original ADA"); and

WHEREAS, the City and Owner have since entered into: (i) the First Amendment to the Original ADA, which First Amendment was recorded May 6, 2004, as Reception No. 651648, and (ii) the Second Amendment to the Original ADA, which Second Amendment was recorded July 26, 2004 as Reception No. 656670, and (iii) the Third Amendment to the Original ADA, which Third Amendment was recorded December 2, 2010 as Reception No. 795138, and (iv) the Amended and Restated Third Amendment to the Original ADA, which Amended and Restated Third Amendment was recorded August 16, 2011 as Reception No. 806719; (v) the Fourth Amendment to the Original ADA, recorded April 10, 2015 as Reception No. 861345; (the Original ADA, together with all subsequent, recorded amendments thereto is hereafter referenced to as the "ADA"); and

WHEREAS, the City and Owner entered into a Memorandum of Understanding dated July 16, 2013; and

WHEREAS, Glenwood Meadows, LLC is the present owner of certain vacant, undeveloped lots within Glenwood Meadows: (i) Lots 12 and 13 of GM #2 Plat; (ii) Lot 10C of GM #3 Plat; (iii) Lot 11C-B of GM #6 Plat; and (vi) Lot 11C-C of GM #6 Plat (collectively, "GM Retained Lots"); and

WHEREAS, BLD Group, LLC is under contract to purchase portions of Lot 11C-B and 11C-C of GM #6 Plat and has submitted a Major Architectural Review and Minor Subdivision Application with the City of Glenwood Springs on December 29, 2020 and January 26, 2021 respectively (the "Applications"); and

WHEREAS; on March 1, 2021 the City's Assistant City Manager issued a letter to BLD and GM ("Interpretation Letter") that the City is unable to process the Applications because it would exceed the residential unit limits established for the Glenwood Meadows Development based on the City's interpretation of the ADA, as amended; and

WHEREAS, BLD and GM dispute such interpretation, but have agreed to enter into this MOU to resolve the difference of opinion and to expedite the processing of the Applications.

AGREEMENT

1. **Contribution Towards Lift Station Upgrades.** In the event BLD's Applications are approved for at least 300 multi-family units and BLD or its successor is issued a building permit pursuant to such approvals, GM will, in addition to City standard system improvement fees including Sewer System Improvement fees, make a payment of $475,000 to the City at the time of issuance of a building permit which funds shall be used directly for the necessary upgrade of the Midland Sewer lift station to an estimated capacity sufficient to serve all future development within all of Glenwood Meadows. The parties agree that this contribution represents 50% of the estimated costs to upgrade the lift station to such capacity and that the City will fund the balance of the actual costs required and commits to completion of the necessary lift station upgrades and any other necessary sewer system work prior to BLD's request for a certificate of occupancy. In the event the costs required to upgrade the lift station are less than $950,000, the City shall promptly reimburse GM's pro rata for its excess contribution. In the event such costs exceed $950,000, GM shall not be required to contribute any additional funds.

2. **Cost Reimbursement**. GM shall be entitled to cost recovery from any future impact or other fees paid by any future development within Glenwood Meadows, including on the GM Retained Lots, at a rate of $814 per EQR which amount shall increase annually with CPI. The City shall make payment to GM at the time a building permit is issued for such development. This obligation shall expire 20 years after the GM payment.

3. **Traffic Impact Fee.** In the event BLD's application and/or other residential development is approved on GM's Lot 12 of GM #2, Plat Lot 11C-B and/or Lot 11C-C of GM #6 Plat and a building permit is issued for the same, GM will fund an equitable share attributable to 415 additional residential units pursuant to the City's 2021 Glenwood Meadows area traffic study of improving Glenwood Meadows' Midland Avenue intersections, not to exceed $500.00 per fully permitted residential unit. Such funding will occur at the later of issuance of a building permit or at time the City contracts for design of such intersection improvements.

4. **Interpretation of ADA**. The City agrees that, upon the execution of this Agreement, its interpretation of the ADA is that the ADA remains in full force and effect, including but not limited to Section I. A. of the Fourth Amendment to the Original ADA, recorded April 10, 2015 as Reception No. 861345 and therefore 415 additional residential units,

of which 300 may be commercial apartments, are permitted within the RH zoned Lot 12 of GM #2 and Lot 11C-B and Lot 11C-C of GM #6 Plat and these 415 residential units, of which 300 may be commercial apartments, are independent of residential development completed or permitted on other lots and zone districts within Glenwood Meadows, the capacity of which is defined by the zoning of such lots. City agrees that this interpretation shall be binding upon the City for future applications within the GM Retained Lots.

5. **Withdrawal of Interpretation**. Concurrent with execution of this MOU, the City formally withdraws the Interpretation Letter and shall continue to or begin formally processing the Applications, and any other heretofore submitted Glenwood Meadows development applications, pursuant to the City's standard development review process. GM and BLD shall request a continuance of their appeal of the Interpretation Letter and the Planning and Zoning Commission Appeal hearing scheduled for May 10, 2021. Upon ratification of this Agreement by City Council, GM and BLD shall formally withdraw their appeal and cancel the agenda item. The parties understand that the City cannot guarantee approval of the Applications or other pending development applications, but rather such applications shall be subject to the approval of City Council according to the criteria set forth in the Glenwood Springs Land Use Code.

6. **Contingency**. The Paragraph 1 Contribution and Paragraph 2 Cost Reimbursement of this Agreement is contingent upon approval of the Applications for at least 300 multi-family units. In the event the Applications are withdrawn, denied, or approved but the Final Plat is never recorded, or approved but such approvals expire, and no building permit and corresponding payment is made, then Paragraph 1 Contribution and Paragraph 2 Cost Reimbursement provision of this Agreement shall be null and void and terminate automatically. In the event any building permits for any other residential units are issued for all or portions of RH zoned Lot 12 of GM #2 and Lot 11C-B and Lot 11C-C of GM #6 Plat, such residential units shall, in addition to City standard Sewer System Improvement fees, fund Lift Station improvements at a rate $814 per EQR, which amount shall increase annually with CPI.

7. **No Further Exactions.** Consistent with Paragraph 3(a) of the ADA, The City shall not charge any future impact fee, surcharge, special permit fees, special taxes or assessments, development fees or tap fees, or any other item against the GM Retained Lots unless the same is exacted uniformly and non-discriminatorily throughout the City, except as otherwise set forth in this MOU.

8. **Recordation of Final Agreement.** The terms of this Agreement shall be memorialized in a written agreement between GM, or its successor owners, recorded against all of the GM Retained Lots within the RH zone - Lot 12 of GM #2, Lot 11C-B and Lot 11C-C of GM #6 Plat. Such recordation shall occur at the time a Subdivision Improvements or Development Agreement is recorded.

9. **Ratification.** This MOU shall be presented for ratification by the City Council on the next meeting following execution. In the event this MOU is not ratified by the City Council by May 21, 2021, this Agreement shall be null and void.

Executed this 6th day of May 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

By: _____
Debra Figueroa, City Manager

ATTEST:

_____
Ryan Muse, City Clerk

GLENWOOD MEADOWS, LLC,
a Colorado limited liability company
By: Dunrene Management, Inc., Manager

By: _____
Michael Maple, Chief Operating Officer

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Consideration of Going Fare Free on Ride Glenwood

Action Requested: Consideration of going fare free on the City's Ride Glenwood Springs bus service

Department: Engineering

Presented By: Terri Partch, City Engineer
Linda DuPriest

Background Info: Since 2014 the City has had a dollar per ride fare for the Ride Glenwood Springs Transit Service. Before 2014, Ridge Glenwood Springs operated fare free.

Ride Glenwood Springs serves Glenwood Meadows to SH 6 to the Roaring Fork Market Place. Please see the purple line below.

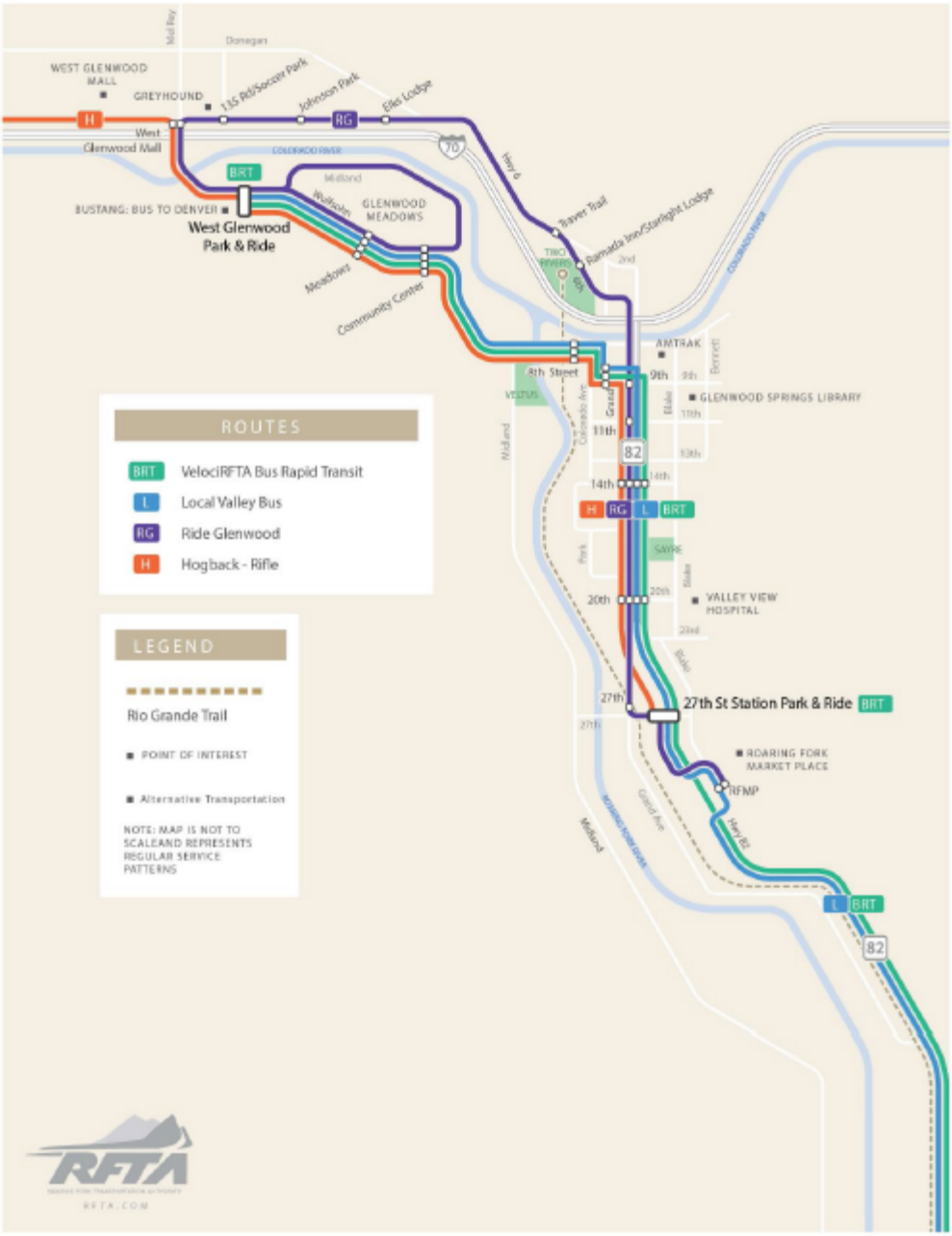


Figure 1 – Existing Transit Routes Serving Glenwood Springs

The other bus lines on the map are operated by RFTA; the Hogback service in orange, the Valley Local service in blue and the BRT service in green.

In RFTA's October meeting, RFTA decided to operate the Hogback, Valley Local and BRT fare free through it's Glenwood Zone (which goes from west Glenwood to CR 154)

City staff would like to consider operating Ride Glenwood Springs fare free to avoid loss in ridership on the line as well as to better serve economically disadvantaged areas of the City in west Glenwood.

The City's bus system is supported by a 0.2% sales tax that generates roughly $1,000,000 per year. In addition, the City usually receives about $750,000 in regular grants from the Federal Transit Authority.

RFTA's contract with the City to run Ridge Glenwood Springs , including the paratransit service is approximately $1,300,000.

The City's fare revenue generates between $75,000 to $100,000 per year in fares.

The bus tax fund overall ending fund balance for 2022 is projected to be approximately $1.3 million.

At the time that Ridge Glenwood Springs switched from being fare free to $1 per ride, there was a concern that homeless rode the bus to keep warm in the winter. Staff has spoken to RFTA about this concern and have come up with a few strategies to address the problem if it still exists. These strategies are:

- Better driver training
- Policy that enforces limiting the number of rides per day and or making people get off at the end of the line.

Issues: Some impact to the revenue stream for the fund.

Staff Recommendation: Approve fare free operation of Ride Glenwood Springs.

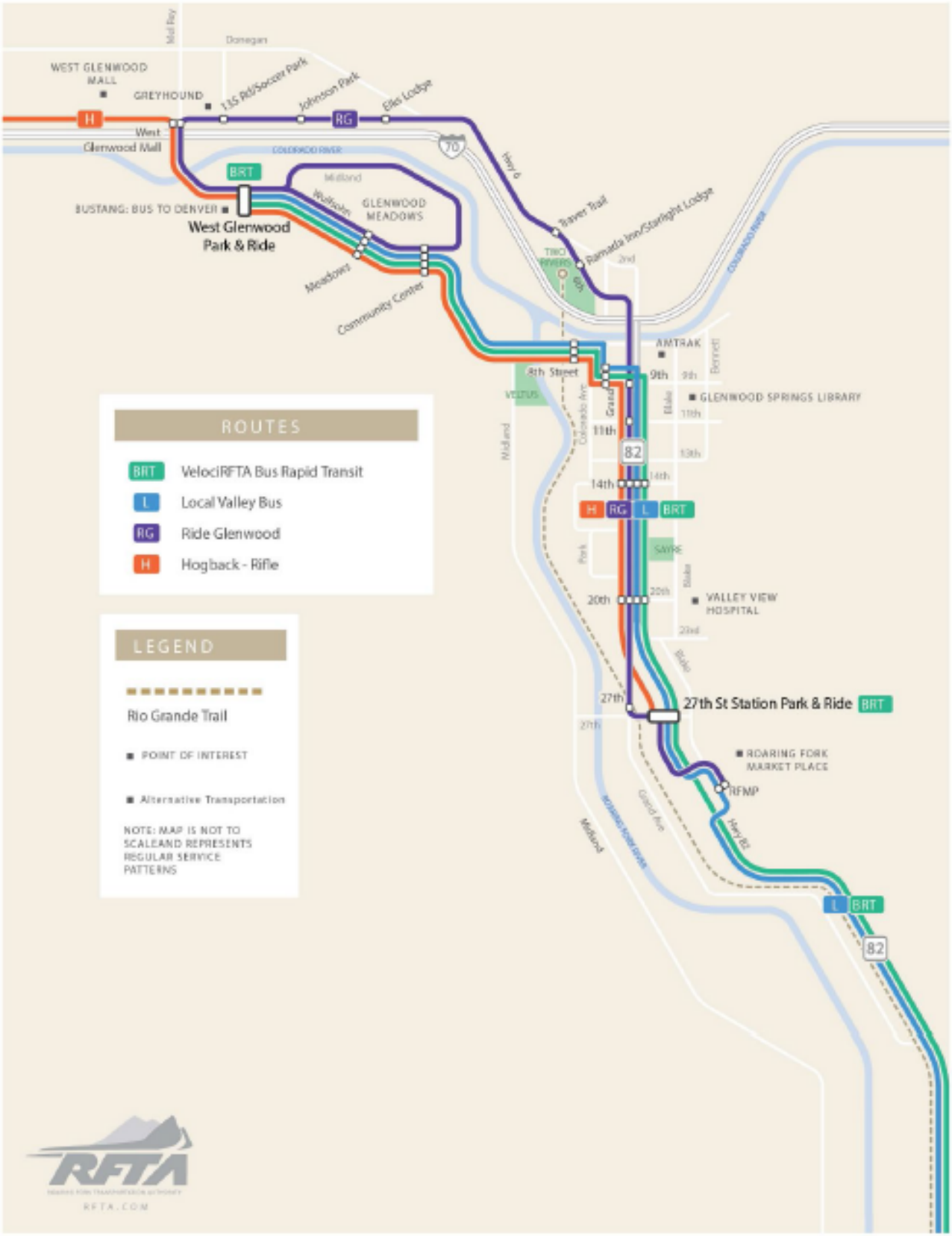


Figure 1 – Existing Transit Routes Serving Glenwood Springs

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Fuel Tank Upgrades

Action Requested: Provide staff direction on short-term airport decisions.

Department: City Administration

Presented By: Debra Figueroa, City Manager

Background Info: The 2022 Budget includes $300,000 in Capital Funds as a loan to the Airport Enterprise Fund to relocate and upgrade the Jet A Fuel System. City Council requested that staff bring back this budget item at the November 4 meeting to determine if it should remain in the budget.

On November 6, 2021, staff received notification (included as Attachment A) that both the Jet A and AVGAS dispenser were out of compliance with the existing fire code. The wooden sheds above them must be removed and the hoses on the system must be either replaced or crimped to an allowable length. The owner of the Jet A fuel tank has been notified of this issue and will remove the wooden shed. Staff will order the necessary equipment for the issues with the hoses.

The current Jet A fuel system has been pieced together over the past few years on City and private property located in unincorporated Garfield County. The current fuel tank was purchased and placed upon the private property of an airport user, but the fuel is sold on City property and the profit goes to the Airport Enterprise fund. This system is problematic both from a safety and capacity concern. The Fire Marshal is willing to allow up to 6 months for a new system to be in place, but that requires City Council allowing staff to move forward ASAP to start the replacement process. If approved, this would be placed solely on City owned property.

Quotes to replace both the Jet-A and 100 Low Lead fueling systems are attached. The Jet A fuel quote is for a 12 thousand tank and is for $212,840.82. The second quote is for a 12 thousand AV GAS fueling system and is $146,143.79. These quotes are good through November 7 and these prices are expected to rise.

Staff will still need to pour the foundation, the footing and add electrical hook ups which could be accomplished in house. There will also be an additional cost of renting
a crane to offload the tank and a forklift to offload the fuel skid.

Issues: The far majority of Jet A Fuel is used by Classic Air Medical. Staff reached out to Classic Air Medical and confirmed that they could continue their operation without Jet A Fuel being sold by the City. However, it is much more convenient for them if we do and other potential medical services rely upon Jet A fuel being available. The Airport Enterprise Fund would reap the benefit of a larger, code compliant Jet A Fuel system. Staff cannot estimate what the profit would be at this time.

In addition, it makes sense to move the AV Gas system at the same time, though it is not necessary for code compliance.

Staff recommends that the funding for this be placed in the 2022 Budget and permission to move forward this year so the equipment can be ordered. Staff is requesting to include this in an amendment to the 2021 Budget as necessary. The best place to pull this funding would be from the

Capital fund as a loan to the Airport Enterprise to be paid back over 5 years. There is a potential grant available for $60,000 from the state of Colorado that could be used to help with this expense. If it is accepted, then the City would commit to keeping the fuel system in place for the airport for 10 years. If not, the funding would have to be repaid.

Staff Recommendation: If City Council wants to continue selling Jet A Fuel, staff recommends allowing the Airport Enterprise to borrow up to $500,000 from the Capital fund to move forward. Staff does not support continuing to sell Jet A Fuel unless there is a plan to upgrade the system.

The legal risk to the city on the fueling system is not insignificant and currently the fuel brings in less than $50,000 a year in profits.

GLENWOOD SPRINGS EST. 1885 FIRE DEPARTMENT

To: **Ms. Debra Figueroa, City Manager**

101 West 8th Street

Glenwood Springs, CO 81601

FIRE INSPECTION REPORT October 26, 2021

Location: Glenwood Springs Airport Aircraft Fueling Facility

VIOLATIONS:

2015 IFC 2303.1 **Location of dispensing devices**, paragraph 2. *Dispensing devices shall be located ten feet or more from buildings having combustible exterior wall surfaces or buildings having noncombustible exterior surfaces that are not part of a 1-hour fire-resistance-rated assembly or buildings having combustible overhangs.*

- Both the AVGAS dispenser and the JET A fuel dispensers are situated within combustible wooden sheds. Sheds to be removed

2015 IFC 2303.1 **Location of dispensing devices**, paragraph 4. *Dispensing devices shall be located such that the nozzle, when the hose is fully extended, will not reach within 5 feet of building openings.*

- Hoses from both the AVGAS dispenser and the Jet A fuel dispenser reach openings of adjacent buildings. Hoses are to be made to meet the above requirement

Hoses may be "crimped" or blocked to permit extension only to the length allowed as described below:

AVGAS
Current Length of hose: 50 feet
Distance to nearest building opening: 45 feet
Length allowed: 40 feet

JET A
Current Length of hose: 75 feet
Distance to nearest building opening: 58 feet
Length allowed: 53 feet

PLEASE COMPLY WITH THIS REPORT OR RESPOND BY NOVEMBER 26, 2021.

Thank You,

Greg Bak
Fire Marshal
Glenwood Springs Fire Department
(970) 384-6433

cc: Wayne Rudd

QUOTE

Mascott EQUIPMENT

Portland, OR (503) 282-2587 | Seattle, WA (206) 763-7867 | Pasco, WA (509) 543-2018 | Spokane, WA (509) 255-7809 | Anchorage, AK (907) 561-1119

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Date	10/28/2021
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Ship-to: **SAME**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K JET A BULK WITH RETAIL DUCK
PULSER ON BULK FOR SALE
GLENWOOD SPRINGS, CO 81601

Bill-to: **NEW**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K JET A BULK WITH RETAIL DUCK
PULSER ON BULK FOR SALE
GLENWOOD SPRINGS, CO 81601

Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K JET A BULK W RETAIL	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	********** ********COURSE AND SCOPE****** ********** THIS FUEL SYSTEM IS BASED ON APPLICABLE AVIATION TANK FARM STANDARDS. ********** ***THIS SYSTEM IS SET UP TO OFFLOAD TRANSPORT AT APPROX 200 GPM FOR BULK OFFLOAD, AND IS ALSO SET UP FOR OWN DISPENSE OF JET A ,DUCKBILL 30 GPM WILL OFFLOAD INBOUND FUEL SUPPLIER TRANSPORTS AT APPROX 200 GPM, AND WILL RECIRCULATE FUEL THROUGH FILTRATION AND PLACE IT BACK IN TANK AT APPROX 200 GPM. WILL LOAD CLIENTS OWN TRUCK TO HAUL FUEL TO FIELD. THIS SYSTEM DOES INCORPORATE THE OFFLOAD PUMP,					

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

QUOTE

TERMS AND CONDITIONS SET FORTH OR NOTED ON ATTACHMENT SHALL EXCLUSIVELY GOVERN THIS SALE

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Item	Description	Ordered	UM	Price	UM	Extension
	AND WILL ALLOW END USER TO RECIRCULATE THE FUEL THROUGH THE FILTER BACK INTO THE TANK, AND WILL FILTER FUEL LOADED INTO TANK FROM TRANSPORT, AND INTO WING THROUGH DUCK BILL. INTO BULK TRUCK FROM FARM. **********					
	MASCOTT EQUIPMENT WILL FABRICATE AND WELD ALL PIPING FOR SKID AND TANK WITH THREE PASS WELD PROCEDURE USING 316L STAINLESS FILLER MATERIAL AND UTILIZING A 3/32 INCH WELD GAP. MASCOTT WILL ASSEMBLE AND INSTALL ALL PIPE/COMPONENTS ON JET A TANK, AND TEST AT 1.5 X OPERATING PRESSURE. INSTALL WATER DRAW WITH THIEF PUMP, INSTALL ALL PROPER VENTING, CLOCK GUAGES , AND OTHER COMPONENTS IN ACCORDANCE WITH STANDARD AVIATION SPEC. ALL PIPING WILL BE WELDED WITH A THREE PASS WELD PROCEDURE. HOSES USED WILL BE APPROVED API 1529 AVIATION HOSES					

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	OVERFILL PREVENTION VALVE WILL STOP FLOW OF FUEL TO TANK AT 95 % TANK CAPACITY. * ALL PIPING IS STAINLESS STEEL, WELDED, AND FLANGED, BOLTED, WITH FLEXATALLIC GASKETS. ********** *******MATERIALS AND LABOR**** ********** **********STORAGE TANK******					
12K UL 2085	12K UL 2085 AST TANK IS SLOPED ON SADDLES TO PER ATA 103. INTERIOR IS EPOXY COATED WHITE FOR USE WITH JET FUEL. HAS END LADDER WITH STICK PLATFORM ONE 24" MANWAY, ONE ADDL. MANWAY WITH INTERNAL LADDER. BOTTOM OF TANK SEAM GROUND 24" OFF CENTER LINE EITHER SIDE, SMOOTH. TANK HAS WATER DRAW LOW POINT SUMP BELL. ** UNIT QUOTED FOB MASCOTT.	**1**	**EA**			

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Quoted By: **CDM** *Quoted To*: **MEREDITH FOX** *Effective*: **10/28/2021** *Expires:* **11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	ESTIMATED FREIGHT TO GLENWOOD SPRINGS CO, ADD 5,300 TO BOTTOM TOTAL CLIENT TO PAY CARRIER DIRECTLY, TAX NOT IN BOTTOM TOTAL.					
	**********TANK VENT**********					
MR354-0300AV	VENT, 3" UPDRAFT SLIP ON	**1**	**EA**			
MR244OF-0100AV	VENT, EMERGENCY 8" 8oz. FLANGE	**2**	**EA**			
MR244F-0107AN	KIT, NUT/BOLTS 6" & 8" E-VENTS	**2**	**EA**			
MR244F-01102G	GASKET, 8" FLANGE E-VENT	**2**	**EA**			
	*********TANK GAUGES**********					
MR918F-0400AG	CLOCK GAUGE, 2"F.NPT W/ALARM	**1**	**EA**			
MR419-02121T-EVR	DROP TUBE, 2"X12' EVR	**1**	**EA**			
MR724-1200AI	LEAK INDICATOR W/GAURD 2"	**1**	**EA**			
	******STICK PORT ASSEMBLY*****					
MR178-1600AC	FILL CAP, 4" BRASS BODY & CAP	**1**	**EA**			
MR419-04001T	DROP TUBE, ALUMINUM 4"X 12'	**1**	**EA**			
FZ-GP16	GAUGE STICK, 168" SCALE	**1**	**EA**			
	******TANK FILL ASSEMBLY******					
MR9095A-03AVOEM	OVERFILL VALVE, 3"FNPT NO TOP	**1**	**EA**			

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
MR9095ATM-0100AM	TEST MECHANISM, MECHANICAL	**1**	**EA**			
MR419-02001T	DROP TUBE, ALUMINUM 3"X 10'	**1**	**EA**			
MR539AS-0300AD	DIFFUSER, 3" "AST" FILL	**1**	**EA**			
JO600-110	BALL VALVE, 3" FLG SS 150#	**1**	**EA**			
DX400AWBPSTSS	ADAPTER, 4" BUTT WELD S.STEEL	**1**	**EA**			
PTC40V-1001140	CAP, DUST 4" ALUMINUM	**1**	**EA**			
MR286FDI-4000AS	STRAINER, 3" FLANGED 100 MESH	**1**	**EA**			
MR246DRF-0100AV	VALVE, SWING CHECK 3" FLANGED	**1**	**EA**			
	********FLOATING SUCTION******					
OES764VE-G359	FLOATING SUCTION, 3"	**1**	**EA**			
MR246DRF-0100AV	VALVE, SWING CHECK 3" FLANGED	**1**	**EA**			
MR818I-0000AG	INDICATOR, CLOCK GAUGE 2"	**1**	**EA**			
	********FILTER ASSEMBLY*******					
FA-HCS-333-1436	FILTER VESSEL, COALESCER 3"FLG	**1**	**EA**			
FA11AV	AIR ELIMINATOR, 3/4" S.STEEL	**1**	**EA**			
FA82E3251311-100	VALVE, PRESSURE RELIEF 100PSI	**1**	**EA**			
FASC-9650	CHECK VALVE, 1/2" S.STEEL	**1**	**EA**			
FASC-5150-30-E	DP GAUGE WITH 3 WAY VALVE	**1**	**EA**			
FAWP-120-7	PROBE, WATER SENSING 120VAC	**1**	**EA**			
FASC-2007-1	PROBE, SAMPLE LEFT FLOW	**1**	**EA**			
FASC-2007-2	PROBE, SAMPLE RIGHT FLOW	**1**	**EA**			
PTC3/4A-1000107	ADAPTER, 3/4"FNPT ALUMINUM	**3**	**EA**			
PTC3/4V-1001107	CAP, DUST 3/4" ALUMINUM	**3**	**EA**			
MR691BSS-04001V	VALVE, BALL 3/4"LOCKING SSTEEL	**1**	**EA**			
JFWBV002E-3/4DEAD	BALL VALVE, 3/4" S.S. SPRING	**1**	**EA**			

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

QUOTE

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12K JET A BULK W RETAIL	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By: **CDM** *Quoted To*: **MEREDITH FOX** *Effective*: **10/28/2021** *Expires:* **11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
JO600-03DS_L_V	LUG VALVE, 3" W/HANDLE, VITON	**2**	**EA**			
	* TO ADD SUMP HEATER, PLEASE ADD 4,900 TO BOTTOM NUMBER					
	**********PUMP ASSEMBLY*******					
GM03F3-B	10HP, 3PH, EXP 200GPM, 3"	**1**	**EA**			
HMSF21-300-22-22-12	FLEX CONNECTOR, 3"X12" OAL	**2**	**EA**			
FA82G3851311-40-40-0	2" FLNG, PRS RELIEF. 50PSI, DI	**1**	**EA**			
	********STATIC RELAXATION*****					
	*(REQUIRED TO MEET NFPA 407)					
FA-HRC-C-100	STATIC TANK, HORIZONTAL, 100	**1**	**EA**			
FA82E3251311-100	VALVE, PRESSURE RELIEF 100PSI	**1**	**EA**			
FA11AV	AIR ELIMINATOR, 3/4" S.STEEL	**1**	**EA**			
FASC-9650	CHECK VALVE, 1/2" S.STEEL	**1**	**EA**			
JFWBV002E-3/4DEAD	BALL VALVE, 3/4" S.S. SPRING	**2**	**EA**			
PTC3/4F-1000607	ADAPTER, 3/4" ALUMINUM MNPT	**2**	**EA**			
PTC3/4V-1001107	CAP, DUST 3/4" ALUMINUM	**2**	**EA**			
	* STATIC REQUIRED TO MEET NFPA 407.					
	********TANK SUMP PUMP********					
GPI138000-02	HAND PUMP, DP20-UL DIAPHRAGM	**1**	**EA**			

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

QUOTE

TERMS AND CONDITIONS SET FORTH OR NOTED ON ATTACHMENT SHALL EXCLUSIVELY GOVERN THIS SALE

Continued on next page ...

QUOTE

Mascott EQUIPMENT

Portland, OR (503) 282-2587 | Seattle, WA (206) 763-7867 | Pasco, WA (509) 543-2018 | Spokane, WA (509) 255-7809 | Anchorage, AK (907) 561-1119

Since 1960

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Ship-to: **SAME**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K JET A BULK WITH RETAIL DUCK
PULSER ON BULK FOR SALE
GLENWOOD SPRINGS, CO 81601

Bill-to: **NEW**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K JET A BULK WITH RETAIL DUCK
PULSER ON BULK FOR SALE
GLENWOOD SPRINGS, CO 81601

Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K JET A BULK W RETAIL	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
PTC3/4A-1000107	ADAPTER, 3/4"FNPT ALUMINUM	**1**	**EA**			
PTC3/4V-1001107	CAP, DUST 3/4" ALUMINUM	**1**	**EA**			
JFWBV002E-3/4DEAD	BALL VALVE, 3/4" S.S. SPRING	**1**	**EA**			
MR912-070500AV	VALVE, 3/4" ANTI-SYPHON 0'-5'	**1**	**EA**			
	*********ELECTRICAL**********					
ELECTRICAL	ELECTRICAL	**1**	**EA**			
FUR-14EUE82HFA4FA	STARTER-ENCL NEMA 7&9 W/EXTRA PRE WIRED TO COMMON POINT FOR FINISH BY FIELD ELECTRICIAN. EXCLUDES TANK TOP, SOLENOID	**1**	**EA**			
	MISCELLANEOUS EQUIPMENT*					
FITTINGS/F	PIPE, FITTINGS & ACCESSORIES	**1**	**EA**			
FREIGHT*	FREIGHT IN AND OUT	**1**	**EA**			
USDECKITJETATANK	DECAL KIT, JET A TANK	**1**	**EA**			
CONSUMABLES	WELDING RODS,GAS,GR DISK, MISC	**1**	**EA**			
PAINTING	PAINTING OF SKID	**1**	**EA**			
AST6'X10'SKID	SKID, 6'X10' W/2" CONTAIN. LIP	**1**	**EA**			
INSTALLATION	LABOR TO FABRICATE/ASSEMBLE	**1**	**EA**			
	*****DISPENSING EQUIPMENT***** *********DUCK BILL OVERWING***					
LCM7C2	METER, 2" W/MECH REGISTER	**1**	**EA**			
LC42695	PULSER, 100:1 FACTORY MOUNTED	**1**	**EA**			

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Continued on next page ...

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GLENWOOD SPRINGS, CO 81601

Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K JET A BULK W RETAIL	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
LCA2247	FLANGE ASSY, M5 & M7, SST, TEF	**2**	**EA**			
OPW295SAJ-0200	NOZZLE, 1-1/2" JET FUEL	**1**	**EA**			
HAHN-VEPJ-22-30-31	REEL, 1-1/2"X100' 115V EXP PRO	**1**	**EA**			
HAHGR100-100	STATIC REEL, 100' SST ORANGE	**1**	**EA**			
HAHN-HS45	HOSE STOP, 1-1/2" & 2" HOSE	**1**	**EA**			
MR346FDI-0300AV	VALVE, EXT. EMERGENCY 3" FLNGD	**1**	**EA**			
JO600-104	BALL VALVE, 3/4" FLG SS 150#	**1**	**EA**			
JO500-305	BALL VALVE, SS, 1" THD 3 PIECE	**1**	**EA**			
JO600-110	BALL VALVE, 3" FLG SS 150#	**2**	**EA**			
FA-EF8210G035VH	VALVE, 3/4" ASCO SOLENOID N.O.	**1**	**EA**			
HHCP200900HABA	HOSE ASSY, 1-1/4" X 75' MXM	**1**	**EA**			
HMFSMS12X1.5	FLEX CONNECT, 1.5" X12" MXMS	**1**	**EA**			
JO601-627	BALL VALVE, 1.5" SOCKET WLD SS	**1**	**EA**			
OCV115G002-0201282P	VALVE, SOL 2"FLG SS TRIM VITON	**1**	**EA**			
	BULK TO TRUCK*******					
LCM15C2	METER, 3" W/MECH REGISTER	**1**	**EA**			
LC42695	PULSER, 100:1 FACTORY MOUNTED	**1**	**EA**			
FARH50-120-7	DEADMAN RHINO SYSTEM 120V	**1**	**EA**			
HHCP320180HABA	HOSE ASSY, 2"X15' AVIATION MXM	**1**	**EA**			
HMFSMS18X2	FLEX CONNECT, 2" X 18" MXMS	**1**	**EA**			
JO600-108	BALL VALVE, 2" FLG SS 150#	**1**	**EA**			
OES3630-0201	SWIVEL, 2" ALUM./90^ STYLE 30	**1**	**EA**			
WHIF116VX7D	NOZ, UDW, W/F582DE 2"NPT SWVL	**1**	**EA**			
WHIF595A	HOSE END CONTROL, WHITTAKER	**1**	**EA**			
	********CARDLOCK SYSTEM*******					

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CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	* CLIENT ALREADY OWNS					
	*********TRUCK MONITORING*****					
SG07903	MONITOR, TRUCK COMPARTMENT	**1**	**EA**			
SG08674	PLUG, BLUE OPTIC WITH J BOX	**1**	**EA**			
SG08749	GROUND MONITOR, W/DEADMAN	**1**	**EA**			
	******************************					
	***********NOTES*************					
	******************************					
	* TAX NOT INCLUDED IN BOTTOM TOTAL.					
	* MASCOTT CAN ASSIST WITH ANY QUESTIONS SITE ELECTRIC MAY HAVE.					
	* CAD DRAWINGS WILL BE ISSUED TO CLIENT FOR USE WITH PERMITS					
	* CLIENT RESPONSIBLE FOR CRANE TO OFFLOAD TANK, FORKLIFT TO OFFLOAD FUEL SKID AND EQUIP.					
	* BALLARDS CONCRETE AND SITE WORK BY OTHERS					

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Quoted By:	CDM	Quoted To:	MEREDITH FOX	Effective:	10/28/2021	Expires:	11/07/2021

Item	Description	Ordered	UM	Price	UM	Extension
	* PERMITS,FIRE,CITY,AND PORT ARE BY OTHERS * SITE ELECTRICAL IS BY OTHERS * CLIENT TO PROVIDE GENERAL CONTRACTOR FOR SITE WORK AND IMPROVEMENTS * MASCOTT WILL BE PRESENT FOR START UP AND TRAINING. * CONCRETE/SLAB,TANK FOOTINGS BY OTHERS * THIS SYSTEM IS SET UP FOR BULK /OFFLOAD,AND OWN USE. DISPENSE. * ALL SITE WIRING BY OTHERS. * ANY AND ALL REQUIRED OR DESIRED ENGINEERING IS BY OTHERS. * ANCHORING, ENGINEERING FOR ANCHORING, IS BY OTHERS. * NO FIRE EXTINGUISHERS,					

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Item	Description	Ordered	UM	Price	UM	Extension
	SPILL KITS, PLAQUARDS, INCL. * AREA LIGHTING IS BY OTHERS. * SOAK TEST IF REQ. BY OTHERS. * QUOTE AMOUNT AND START UP BASED ON ALL SITE WORK BEING DONE AT TIME MASCOTT IS DISPATCHED TO PERFORM START UP AND TRAINING, STAND BY TIME CAUSED BY ANY CONDITION THAT RENDERS SITE INOPERABLE FOR START UP AND TRAINING WILL BE CHARGED ON A TIME AND MATERIALS BASIS. * CLIENT TO PAY FREIGHT CARRIER DIRECTLY. * UNIT QUOTED FOB MASCOTT ********** ONE HALF DEPOSIT DUE AT TIME ORDER IS PLACED, FINAL PAYMENT DUE PRIOR TO SHIPMENT OF PRODUCT AS HAS BEEN OUTLINED HEREIN. **********					

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12K JET A BULK W RETAIL	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	**CDM**	*Quoted To*:	**MEREDITH FOX**	*Effective*:	**10/28/2021**	*Expires:*	**11/07/2021**

ITEM	DESCRIPTION	**ORDERED**	**UM**	**PRICE**	**UM**	*Extension*

1.) EXCLUSIONS: (Unless Noted) Site Improvements & Inspection Plans, Permits, Installation, Misc. Pipe Fitting/Accessories Electrical, Sales Tax and any item(s) not specifically listed above.

2.) PCI(Payment Card Industry) & EMV(Euro. Mastercard,Visa) COMPLIANCE DISCLAIMER: it is solely the Customer's responsibility to verify PCI compliance and Network Processing compliance with their Merchant Provider. Mascott will not be liable for direct, special or consequential damages, business interruption or loss of profits, sustained by Customer or any party claiming by, through or under the Customer.

3.) PERFORMANCE: Mascott or employees are not licensed engineers. Performance of equipment is based on accuracy of information provided by Owner or their Representatives Guaranteed performance require certification by a licensed engineer.

4.) EQUIPMENT ONLY: Subject to Owner's or Engineer's approval. Quotation limited to equipment/quantities listed. Owner or Installing contractor are responsible to determine actual quantities of pipe, fittings & accessories.

5.) STARTUP & WARRANTY: Where req'd warranty certification by Authorized Service Rep. (ASR) of equipment startup. Basic training is offered on a time & materials basis @ $125- hour/$1.17 a mile unless otherwise listed. Mascott's responsibility is limited to factory's published warranty. Owner is responsible for excessive travel charges less manufacturer (If Any) credits.

6.) ON-SITE MAINTENANCE OFFER: (MASCOTT FABRICATED PRODUCT ONLY) Add additional 4% to your quotation total or a minimum of $3,000 charge plus applicable State sales tax. An optional equipment service agreement may be offered for a period of 13 months from date of delivery of a Mascott fabricated Fueling Platform. Mascott reserves the right to offer, reject, or adjust pricing on Maintenance Agreements based on jobsite location or specialty equipment that may be installed. Maintenance Agreements are offered solely to customers purchasing Mascott fabricated refueling platforms in conjunction with & not intended to supercede the OEM printed warranties & specified maintenance guidelines. Deviation from manufacturer's equipment maintenance guidelines will void OEM warranties. Mascott will provide labor & basic miscellaneous materials needed at customer's jobsite location of original shipment to repair or replace at our discretion defective parts, workmanship or OEM equipment installed on quoted fuel platform. Maintenance agreement offered is exclusively limited to the quoted fueling platform above, fabricated by Mascott and OEM equipment installed. Travel expenses & accommodations (if any) are considered additional charges and billed to the customer at the rate incurred by Mascott.

7.) FREIGHT SHIPMENTS: Freight shipments are fob point of origin unless otherwise listed Owner or Owner's contractors are responsible for offloading unless otherwise listed. Excessive standby time by carrier due to offloading may result in additional charges. All freight shipments are to be instpected on receipt for visible damage and noted on Bill of Lading. Crated & boxed freight must be opened & contents inspected with 24 hours of receipt for hidden damage. Owner is responsible to report damage directly to carrier immediately. Failure to contact carrier within specified timelines may result in rejection of claim.

8.) LEAD TIME: Mascott can not guarantee factory quoted lead time. Special order equipment requires approval of submittal drawings prior to production. Lead times quoted commence upon receipt of drawings & required deposits.

9.) DEPOSITS: 50% Deposit required at time of submittal. Order will not be executed prior to receipt of deposit.

10.) FUEL SURCHARGES: Many manufacturers now add fuel surcharges to cover the high cost of fuel in shipping. Customer responsible for surcharges.

11.) FACTORY PRICE INCREASES: Unscheduled factory price increases will apply at time of order. Please confirm ALL pricing with your sales person prior to acceptance.

12.) *SPECIAL ORDER EQUIPMENT & SERVICE CANNOT BE RETURNED FOR CREDIT OR CANCELLED ONCE ENTERED INTO MANUFACTURER'S PRODUCTION SCHEDULE.

13.) Oregon CAT tax may apply. rev3/26/2021

QUOTE

Thank you for your business.

Merchandise	*Misc*	*Tax*	*Freight*	*Total*
212840.82	**.00**	**.00**	**.00**	**212840.82**

FOB FACTORY UNLESS SPECIFIED

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

TERMS AND CONDITIONS SET FORTH OR NOTED ON ATTACHMENT SHALL EXCLUSIVELY GOVERN THIS SALE

Continued on next page ...

TERMS AND CONDITIONS

1. ACCEPTANCE OF CONTRACT: Buyer acknowledges that all quotations, orders and agreements made between Buyer and Mascott Equipment Co., Inc.'s (herein Mascott) agent shall be considered an offer by Buyer, which said offer Shall be subject to acceptance and approval by an officer of Mascott at Mascott's Portland office, subject to credit approval. The parties agree that the terms and conditions of this document shall control and shall constitute the parties' agreement, and any terms and conditions on Buyers purchase order, invoice or other document will have no effect.

2. PRICE: Buyer agrees that the purchase price shall be the fair market value of the equipment and/or machinery (hereinafter equipment or goods) on the date of delivery. Therefore, Buyer agrees that Mascott has the right to adjust the balance due at delivery to reflect any fluctuation in market prices for materials and/or labor occurring between the date of this agreement and the delivery date. Mascott may require a payment equal to fifty percent (50%) of the purchase price to be paid at the time this order is placed. Buyer will be charged a restocking fee equal to twenty-five percent (25%) of the purchase price for returned goods. Any additional restocking fees assessed by the manufacturer for returned goods will also be paid by Buyer. When excavating for the installation of underground tanks or equipment, any unusual underground condition which prevents normal excavation and adds significantly to the cost, will be considered as extra, and will be charged for on a time and material basis. This may include excess water, rock greater than 12 inches in diameter, unstable soil, trash, old piping, etc.

3. PAYMENT TERMS: Buyer agrees to pay all invoices when due, which is the essence of all orders or contracts. If Buyer fails to make timely payment, Mascott may, at its sole option: (a) defer further shipments until Buyer makes such payments; or (b) elect to cancel all unfilled orders and contract. Buyer agrees that Mascott may withhold or delay deliveries if Buyer fails to maintain a satisfactory credit history with Mascott or fails to provide satisfactory security to Mascott for payment. IF, UPON MASCOTT'S NOTIFICATION TO BUYER THAT GOODS AND EQUIPMENT ARE READY TO SHIP, AND BUYER DELAYS SHIPMENT FOR MORE THAN THIRTY (30) DAYS FROM THE DATE OF SUCH NOTIFICATION, A CHARGE OF ONE PERCENT (1%) PER MONTH SHALL BE APPLIED TO THE TOTAL BALANCE DUE ON THIS ORDER.

4. TAXES: In addition to the Price set forth above, Buyer will pay, or reimburse Mascott upon demand if Mascott pays, all sales, use, excise, occupation, duty or other tax or taxes levied, assessed or imposed by any taxing authority, whether the United States, a State, or a political subdivision of either.

5. PERMITS: Buyer shall, at its expense, obtain all necessary public, inspection, license, building, and other permits and shall be responsible for compliance with all applicable laws, ordinances and government regulations regarding the installation and operation of the equipment on Buyer's premises.

6. CHARACTER OF EQUIPMENT: The parties intend that the equipment shall, at all times, be considered personal property and not as fixture(s), notwithstanding of the manner in which the equipment may be installed or connected to Buyer's real estate.

7. SECURITY AGREEMENT: Buyer hereby grants Mascott a security interest in all of Buyer's right, title and interest, now owned or hereafter acquired, in and to the equipment described above and any portion of such equipment, including any other after acquired, substituted or replacement parts, materials, and equipment, to secure the timely performance and payments of the underlying obligation herein and all indebtedness and obligations of Buyer to Mascott presently existing or hereinafter arising, direct or indirect, and interest thereon. Buyer will not, without the written consent of Mascott, sell, contract to sell, lease, encumber, assign, transfer from its place of installation or otherwise dispose of equipment or any interest therein until this security agreement and all debts secured thereby have been fully satisfied. At the request of Mascott, Buyer will join in executing, or will execute, as appropriate, all necessary financing statements and all other instruments deemed necessary by Mascott and by the cost of filing such documents. Buyer shall not delegate performance nor assign any rights or obligation hereunder.

8. RISK OF LOSS: This agreement is a shipment contract FOB Mascott's place of business or FOB manufacturer's facility. The risk of loss, injury, or destruction of the equipment or any pert thereof passes to the Buyer upon due delivery of the equipment to the carrier. The Buyer shall pay the freight and insurance costs. Any such loss, injury, or destruction shall not release Buyer from any obligations under this agreement, including the payment of the full purchase price and shall, at Mascott's option, accelerate the maturity of the unpaid balance of the purchase price to the date of such event.

9. DELIVERY: Buyer acknowledges that Mascott may change delivery dates without notice. Mascott shall not be liable for any loss, damage, or delay due to transportation or caused by fire, strike, civil or military authority, insurrection, a riot or any causes beyond Mascott's reasonable control.

10. INSPECTION AND ACCEPTANCE: BUYER SHALL INSPECT THE EQUIPMENT WITHIN TEN (10) DAYS AFTER THE DATE OF DELIVERY. A rejection of the goods by Buyer shall not be effective unless it is made and written notice thereof is given within fifteen (15) days after the date of delivery specifying any claim, defect, or any other proper objection to the equipment. Buyer shall thereafter be deemed conclusively to have accepted the equipment as satisfactory. Buyer must send the defective part(s) to Mascott at Portland, Oregon, within ninety (90) days from the date of purchase and tag all defective part(s) showing date and all information necessary to support a claim. A revocation of acceptance shall not be effective unless written notice of the revocation is given within ten (10) days after Buyer has discovered the defect in the goods, or twenty (20) days after acceptance of Buyer, whichever occurs first.

11. MERGER: This agreement signed by both parties constitutes a final written expression of all the terms of this agreement and is a complete and exclusive statement of those terms and shall not be modified, controlled, or effected in any way by any usage of trade or subject to any course of dealings or performance between the parties. All agreements entered into prior to or contemporaneously with the execution of this agreement are excluded, whether oral or written. Any and all representations, promises, express or implied warranties or statements by Mascott's agent that differs in any way from the terms of this written agreement shall be given no force or effect.

12. WAIVER: Mascott shall not, by any act, delay, omission, or otherwise be deemed to have waived any of its rights or remedies under this agreement. No waiver whatever stall be valid unless in writing signed by Mascott, and then only to the extent under the terms set forth therein.

13. SEVERABILITY: This agreement is divisible. If any provision of this agreement is declared invalid by any tribunal, the remaining provision of this agreement shall not be affected thereby.

14. JURISDICTION: This agreement shall be construed and governed in at matters by the law of the State of Oregon. The parties consent to the exclusive jurisdiction of and venue in Multnomah County, Oregon with respect to any and all claims or controversies arising out of or related to this order, and consent to service of process outside the State of Oregon in any action hereunder by registered mail or personal service. The prevailing party in any action commenced hereunder shall be entitled to a reasonable sum as attorney fees, together with all costs. An action brought for a breech of this agreement shall be commenced within one (1) year after the cause of action has accrued.

15. DEFAULT: All times specified in this agreement for the performance of the obligations of the parties shall be deemed of the essence. If the Buyer fails to pay, when due, any amount payable on this agreement or on any other indebtedness of Buyer secured hereby, or shall fail to perform any of the provisions of agreement, Buyer shall be in default.

16. MASCOTT'S REMEDIES: On any default, and at any time thereafter, Mascott may, at Mascott's option, pursue any rights and remedies provided by this agreement and the Oregon Uniform Commercial Code, including but not limited to: repossess the machines and equipment from Buyer's premises; dispose of the equipment pursuant to a public or private sale; or forfeit the Buyer's rights and retain all sums paid heretofore by Buyer to Mascott in lieu of resale and in satisfaction of Buyer's obligations. Mascott shall be entitled to compensation for all incidental damages, including but not limited to all commercially reasonable charges, expenses, or commissions incurred in stopping delivery under the Code, in the transportation, care and custody of goods after a breach by Buyer and in connection with the return or resale of goods, or any other damages resulting from a breach by Buyer. Mascott's remedies and rights are cumulative and the exercise of one right or remedy does not exclude any other rights or remedies conferred on Mascott by law.

17. LIQUIDATED DAMAGES: The parties agree that Mascott shall be entitled to retain all deposits made by Buyer, as liquidated damages, if Buyer shall breach or fail to consummate this sale. The parties agree that liquidated damages are needed because of the difficulty in determining Mascott's damages upon Buyer's breech, Mascott's capital investment in making the equipment and the numerous jurisdictions in which Mascott sells equipment. At its sole option, Mascott may elect the remedies provided in Paragraph 16 instead of liquidated damages.

18. LIMITATION ON MASCOTT'S LIABILITY: MASCOTT SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE INCLUDING, BUT NOT LIMITED TO, LOSS OF BUSINESS OR TIME, INTERRUPTION OR LOSS OF EQUIPMENT, OR LABOR IN REPAIRING, SUSTAINED BY BUYER BY REASON OF ANY DEFECT IN THE GOODS, OR ANY PART THEREOF, DELAY IN THE DELIVERY OF THE GOODS, OR BREACH OF WARRANTY, EXCEPT TO THE EXTENT OF REPAIR OR REPLACEMENT AS PROVIDED IN PARAGRAPHS 19 AND 20.

19. EXCLUSIVE REMEDY OF THE BUYER: THE PARTIES AGREE THAT BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE GOODS IS TO REQUIRE MASCOTT TO DELIVER TO A CARRIER, PROPERLY CONSIGNED TO BUYER, A SUITABLE PART TO REMEDY THE DEFECT. THE REPLACEMENT OF THE DEFECTIVE PART IS THE LIMIT OF THE LIABILITY OF MASCOTT. THE SOLE PURPOSE OF THIS STIPULATED AND EXCLUSIVE REMEDY IS FOR MASCOTT TO REPAIR, AND OR REPLACE, DEFECTIVE PARTS IN THE MANNER HEREIN PROVIDED. THIS EXCLUSIVE REMEDY SHALL NOT BE DEEMED TO HAVE FAILED ON ITS ESSENTIAL PURPOSE SO LONG AS MASCOTT IS WILLING AND ABLE TO REPAIR OR REPLACE DEFECTIVE PARTS IN THE PRESCRIBED MANNER.

20. MANUFACTURERS' WARRANTIES: SOME OF THE GOODS AND EQUIPMENT SOLD BY MASCOTT MAY BE COVERED BY MANUFACTURERS' WARRANTIES. IN SUCH CASES, ALL MANUFACTURERS' WARRANTIES SHALL BE PASSED TO BUYER FOR BUYER'S BENEFIT.

21. WAIVER OF EXPRESS WARRANTIES: EXCEPT AS PROVIDED IN PARAGRAPH 20, MASCOTT GIVES NO EXPRESS WARRANTIES AS TO THE DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, PRODUCTIVENESS, OR ANY OTHER MATTER, OF ANY GOODS SUPPLIED BY MASCOTT. MASCOTT IS IN NO WAY RESPONSIBLE FOR THE PROPER USE AND OR SERVICE OF SUCH GOODS. EXCEPT AS PROVIDED HEREIN WITH REGARD TO INSPECTION AND ACCEPTANCE, BUYER HEREBY WAIVES ALL RIGHTS OF REFUSAL AND RETURN OF SUCH GOODS.

22. WAIVER OF IMPLIED WARRANTIES: THIS SALE IS MADE ON THE EXPRESS UNDERSTANDING THAT THERE IS NO IMPLIED WARRANTY THAT THE GOODS SHALL BE MERCHANTABLE OR AN IMPLIED WARRANTY THAT THE GOODS SHALL BE FIT FOR ANY PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT BUYER IS NOT RELYING ON MASCOTT'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS SUITABLE FOR ANY PARTICULAR PURPOSE, BUYER HAS NOT RELIED ON ANY ORAL OR WRITTEN REPRESENTATIONS, AFFIRMATION OF FACT, DESCRIPTION OF GOODS, OR PRODUCT SAMPLES, EXCEPT THOSE EXPRESSLY STATED WITHIN THIS WRITTEN DOCUMENT, AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACT HEREOF.

23. EXCLUSION OF WARRANTIES: MASCOTT MAKES NO WARRANTY AS TO TITLE OF GOODS, CLAIMS OF THIRD PARTY ARISING FROM PATENT OR TRADEMARK INFRINGEMENT, OR AS TO THE EXISTENCE OF ANY SECURITY INTEREST, LIEN OR OTHER ENCUMBRANCE ON THE GOODS SOLD TO BUYER AT THE TIME OF THE EXECUTION OF THIS AGREEMENT, AT THE TIME OF DELIVERY OF THE GOODS, OR AT ANY OTHER TIME.

24. BUYER'S REPRESENATION: Buyer recognizes that: (a) the equipment sold to Buyer pursuant to this agreement may be protected by any number of patents and/or trademarks; and (b) part of the consideration for the sale of the equipment is Buyer's representations, therefore, Buyer represents and warrants that Buyer shall not, at any time, alter any equipment furnished by Mascott under this agreement or do anything that will infringe, impeach or lessen the validity of the patents or trademarks under which Mascott's equipment is made or sold.

25. FACSIMILE S: Facsimile transmission of any signed original document shall be the same as delivery of an original. At the request of Mascott, Buyer will confirm facsimile transmitted signatures by signing an original document.

Initial: _____ Date: _____

... Last Page

QUOTE

Mascott EQUIPMENT

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Since 1960

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Number	068816
Date	10/28/2021
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Ship-to: **SAME**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K UL 2085 AV GAS RETAIL ONLY NO BULK
GLENWOOD SPRINGS, CO 81601

Bill-to: **NEW**
GLENWOOD SPRINGS AIRPORT
1172 CO RD 116
12K UL 2085 AV GAS RETAIL ONLY NO BULK
GLENWOOD SPRINGS, CO 81601

Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K UL 2085 AV GAS RETAIL ONLY	F/J	CASH SALE	01		WILL CALL

Quoted By:	CDM	Quoted To:	MEREDITH FOX	Effective:	10/28/2021	Expires:	11/07/2021

Item	Description	Ordered	UM	Price	UM	Extension
	********** *****COURSE AND SCOPE********* ********** MASCOTT EQUIPMENT COMPANY WILL SUPPLY ONE 12K UL 2085 STORAGE TANK FOR THE STORAGE AND DISPENSE OF AV GAS 100LL MASCOTT WILL ASSEMBLE AND INSTALL ALL COMPONENTS TO MAKE THIS UNIT FUNCTIONAL AS PER CLIENTS REQUESTS AND SPECIFICATIONS. ALL PIPING IS WELDED STAINLESS STEEL BOTH BEFORE AND AFTER FILTER TANK WILL BE TOP FILL. TANK WILL BE OUTFIT WITH OVERFILL PREVENTION DEVICE TO STOP FLOW OF FUEL AT 95% TANK CAPACITY. STAINLESS STEEL PIPING WILL BE WELDED WITH THREE PASS WELD PROCEDURE, UTILIZING 316L FILLER MATERIAL TANK WILL ARRIVE FULLY ASSEMBLED, TURN KEY, MINUS VENTS DUE TO HEIGHT. TANK TOP					

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

QUOTE

TERMS AND CONDITIONS SET FORTH OR NOTED ON ATTACHMENT SHALL EXCLUSIVELY GOVERN THIS SALE

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Mascott EQUIPMENT

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Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K UL 2085 AV GAS RETAIL ONLY	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	ELECTRICAL IS BY OTHERS. UNIT WILL DISPENSE AV GAS AT APPROX 22 GPM INTO AIRCRAFT VIA STANDARD OVERWING NOZZLE. THIS SYSTEM IS SET UP TO RECEIVE BULK FUEL FROM INBOUND TRANSPORT, AND TO DISPENSE FUEL DIRECTLY TO AIRCRAFT. NOT SET UP FOR BULK FUELING OF CLIENTS OWN TRANSPORT FOR DELIVERY ONTO FIELD. SYSTEM UTILIZES INBOUND TRANSPORTS PUMP FOR TANK FILL. **********MATERIALS AND LABOR* *******FUEL STORAGE TANK******					
12K UL 2085 AST	12K UL 2085 AST UL 2085 , CYLINDER, ABOVE GROUND TANK, EXTERIOR WHITE, INTERIOR COATED W EPOXY ONE MANWAY, FLANGED TANK HAS END LADDER AND STICK TANK FITTED WITH TWO MANWAYS, ONE WITH INTERNAL ENTRY LADDER TANK IS DOUBLE BUTT CONSTRUCT WELDS INTERNAL GROUND SMOOTH FROM BOTTOM CENTER LINE UP	**1**	**EA**			

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K UL 2085 AV GAS RETAIL ONLY	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By:	Quoted To:	Effective:	Expires:
CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
	BOTH SIDES 24" FROM BOTTOM. TANK EQUIPPED WITH LOW POINT SUMP BELL FOR WATER DRAW REMOVAL. * IMPORTANT NOTE, TANK QUOTED FOB MASCOTT, ESTIMATED FREIGHT GLENWOOD SPRINGS ADD TO BOTTOM TOTAL CLIENT TO PAY CARRIER DIRECTLY. TAX NOT IN FINAL TOTAL. **********TANK VENTING********					
OPW623V-3203	VENT, 3" EVR, 3"WCP, 8"WCV	**1**	**EA**			
MR244OF-0100AV	VENT, EMERGENCY 8" 8oz. FLANGE	**2**	**EA**			
MR244F-0107AN	KIT, NUT/BOLTS 6" & 8" E-VENTS	**2**	**EA**			
MR244F-01102G	GASKET, 8" FLANGE E-VENT	**2**	**EA**			
	*********STAGE ONE VAPOR******					
MR323-0300AAEVR	ADAPTRER, 4X3 STAGE 1 EVR	**1**	**EA**			
MR323C-0100ACEVR	CAP, VAPOR RECOVERY, CARB EVR	**1**	**EA**			
	*********SUMP PUMP**********					
GPI138000-02	HAND PUMP, DP20-UL DIAPHRAGM	**1**	**EA**			
JFWBV002E-3/4DEAD	BALL VALVE, 3/4" S.S. SPRING	**1**	**EA**			

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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12K UL 2085 AV GAS RETAIL ONLY	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By: **CDM** *Quoted To*: **MEREDITH FOX** *Effective*: **10/28/2021** *Expires:* **11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
PTC3/4A-1000107	ADAPTER, 3/4"FNPT ALUMINUM	**1**	**EA**			
PTC3/4V-1001107	CAP, DUST 3/4" ALUMINUM	**1**	**EA**			
MR912-070500AV	VALVE, 3/4" ANTI-SYPHON 0'-5'	**1**	**EA**			
	**********TANK GUAGING*****					
MR918-0100AG	ALARM, CLOCK GAUGE, 2" W/FLOAT	**1**	**EA**			
MR419-02121T-EVR	DROP TUBE, 2"X12' EVR	**1**	**EA**			
MR724-1200AI	LEAK INDICATOR W/GAURD 2"	**1**	**EA**			
	********STICK PORT ASSEMBLY***					
MR178GSP-0100AC	GAUGE PORT, 2"FNPT BRASS ADAPT	**1**	**EA**			
MR419-02121T-EVR	DROP TUBE, 2"X12' EVR	**1**	**EA**			
FZ-GP16	GAUGE STICK, 168" SCALE	**1**	**EA**			
	**********OUTBOUND FILTER****					
FA-VF22SB-PGWP	FILTER VESSEL, VF22 W/WATER	**1**	**EA**			
FA-FGO-612-7	ELEMENT, 1 MICRON MONITOR	**2**	**EA**			
	**********TANK FILL ASSEMBLY*					
MR9095AA-9300AVEVR	VALVE, OVERFILL 3"FNPT EVR	**1**	**EA**			
MR9095ATM-0100AM	TEST MECHANISM, MECHANICAL	**1**	**EA**			
PTC30V-1001130	CAP, DUST 3" ALUMINUM	**1**	**EA**			
PTCPF30A-60523000	ADAPTER, 3" 150# FLANGED ALUM	**1**	**EA**			
JO600-110	BALL VALVE, 3" FLG SS 150#	**1**	**EA**			
MR286FDI-4000AS	STRAINER, 3" FLANGED 100 MESH	**1**	**EA**			

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Reference #	Slsp	Terms	Whse	Freight	Ship Via
12K UL 2085 AV GAS RETAIL ONLY	**F/J**	**CASH SALE**	**01**		**WILL CALL**

Quoted By: **CDM** *Quoted To*: **MEREDITH FOX** *Effective*: **10/28/2021** *Expires:* **11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
MR246DRF-0100AV	VALVE, SWING CHECK 3" FLANGED	**1**	**EA**			
MR419-03101T-EVR	DROP TUBE, 3"X10' EVR	**1**	**EA**			
MR539AS-0300AD	DIFFUSER, 3" "AST" FILL	**1**	**EA**			
	*******DISPENSING EQUIPMENT***					
WYG6201D/27BGJK/W1.	DISPENSER, REMOTE 1PD/1 HOSE	**1**	**EA**			
WY-FREIGHT-LP	FREIGHT, WAYNE LOW-PROFILE DIS	**1**	**EA**			
WY/ANP	NOZZLE PLATE, AVIATION NOZZLE	**1**	**EA**			
OPW10BHMP-5830	VALVE, EMERGENCY 1-1/2"MNPT	**1**	**EA**			
MR910-2100AV	VALVE, 2" ANTI-SIPHON 5-10 FT	**1**	**EA**			
HAHGR100-100	STATIC REEL, 100' SST ORANGE	**1**	**EA**			
AST6'X10'SKID	SKID, 6'X10' W/2" CONTAIN. LIP	**1**	**EA**			
HAHN-VEPJ-22-30-31	REEL, 1-1/2"X100' 115V EXP PRO	**1**	**EA**			
HHCP161200HABA	HOSE ASSY, 1" X 100' MXM	**1**	**EA**			
OPW295SA-0135	NOZZLE, 1" X 1" AIRCRAFT	**1**	**EA**			
HMFSMS12X1.5	FLEX CONNECT, 1.5" X12" MXMS	**1**	**EA**			
HAHN-HS45	HOSE STOP, 1-1/2" & 2" HOSE	**1**	**EA**			
FESTPF-150VL2-7	TURBINE, 1.5HP VARIABLE LENGTH	**1**	**EA**			
FESTP-CBS	CONTROL BOX, FIXED SPEED PUMP	**1**	**EA**			
	**********FLOATING SUCTION***					
OES764-0063	FLOATING SUCTION ASSY, 2"X10'	**1**	**EA**			
MR818I-0000AG	INDICATOR, CLOCK GAUGE 2"	**1**	**EA**			
	********MISCELLANEOUS*********					
USDECKIT100LLTANK	DECAL KIT, AVGAS 100LL	**1**	**EA**			

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CDM	**MEREDITH FOX**	**10/28/2021**	**11/07/2021**

Item	Description	Ordered	UM	Price	UM	Extension
CONSUMABLES	WELDING RODS,GAS,GR DISK, MISC	**1**	**EA**			
FITTINGS/AST	FITTINGS, PIPE, MISC SUPPLIES	**1**	**EA**			
FREIGHT, INBOUND, OU	FREIGHT, INBOUND,	**1**	**EA**			
INSTALLATION	LABOR TO FABRICATE/ASSEMBLE	**1**	**EA**			
***PAINT**	PAINT OF SKID	**1**	**EA**			
	**********ELECTRICAL**********					
ELECTRICAL	PRE WIRED, EXCLUDES TANK TOP	**1**	**EA**			
	**********					
	**********NOTES**********					
	**********					
	* PERMITS BY OTHERS.					
	* SPCC PLAN IS BY OTHERS.					
	* MASCOTT WILL BE PRESENT FOR START UP AND TRAINING.					
	* ANY REQUIRED OR DESIRED ENGINEERING IS BY OTHERS.					
	* ALL SITE WORK IS BY OTHERS.					
	* TAX NOT INCLUDED IN BOTTOM					

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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Item	Description	Ordered	UM	Price	UM	Extension
	TOTAL. * QUOTE AMOUNT AND START UP BASED ON ALL SITE WORK BEING DONE AT TIME MASCOTT IS DISPATCHED TO PERFORM START UP AND TRAINING, STAND BY TIME CAUSED BY ANY CONDITION THAT RENDERS SITE INOPERABLE FOR START UP AND TRAINING WILL BE CHARGED ON A TIME AND MATERIALS BASIS. ********** ***ONE HALF DEPOSIT DUE AT TIME ORDER IS PLACED, FINAL PAYMENT DUE PRIOR TO SHIPPING********** **********					

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ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

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ITEM	DESCRIPTION	ORDERED	UM	PRICE	UM	Extension

1.) EXCLUSIONS: (Unless Noted) Site Improvements & Inspection Plans, Permits, Installation, Misc. Pipe Fitting/Accessories Electrical, Sales Tax and any item(s) not specifically listed above.

2.) PCI(Payment Card Industry) & EMV(Euro. Mastercard,Visa) COMPLIANCE DISCLAIMER: it is solely the Customer's responsibility to verify PCI compliance and Network Processing compliance with their Merchant Provider. Mascott will not be liable for direct, special or consequential damages, business interruption or loss of profits, sustained by Customer or any party claiming by, through or under the Customer.

3.) PERFORMANCE: Mascott or employees are not licensed engineers. Performance of equipment is based on accuracy of information provided by Owner or their Representatives Guaranteed performance require certification by a licensed engineer.

4.) EQUIPMENT ONLY: Subject to Owner's or Engineer's approval. Quotation limited to equipment/quantities listed. Owner or Installing contractor are responsible to determine actual quantities of pipe, fittings & accessories.

5.) STARTUP & WARRANTY: Where req'd warranty certification by Authorized Service Rep. (ASR) of equipment startup. Basic training is offered on a time & materials basis @ $125- hour/$1.17 a mile unless otherwise listed. Mascott's responsibility is limited to factory's published warranty. Owner is responsible for excessive travel charges less manufacturer (If Any) credits.

6.) ON-SITE MAINTENANCE OFFER: (MASCOTT FABRICATED PRODUCT ONLY) Add additional 4% to your quotation total or a minimum of $3,000 charge plus applicable State sales tax. An optional equipment service agreement may be offered for a period of 13 months from date of delivery of a Mascott fabricated Fueling Platform. Mascott reserves the right to offer, reject, or adjust pricing on Maintenance Agreements based on jobsite location or specialty equipment that may be installed. Maintenance Agreements are offered solely to customers purchasing Mascott fabricated refueling platforms in conjunction with & not intended to supercede the OEM printed warranties & specified maintenance guidelines. Deviation from manufacturer's equipment maintenance guidelines will void OEM warranties. Mascott will provide labor & basic miscellaneous materials needed at customer's jobsite location of original shipment to repair or replace at our discretion defective parts, workmanship or OEM equipment installed on quoted fuel platform. Maintenance agreement offered is exclusively limited to the quoted fueling platform above, fabricated by Mascott and OEM equipment installed. Travel expenses & accommodations (if any) are considered additional charges and billed to the customer at the rate incurred by Mascott.

7.) FREIGHT SHIPMENTS: Freight shipments are fob point of origin unless otherwise listed Owner or Owner's contractors are responsible for offloading unless otherwise listed. Excessive standby time by carrier due to offloading may result in additional charges. All freight shipments are to be instpected on receipt for visible damage and noted on Bill of Lading. Crated & boxed freight must be opened & contents inspected with 24 hours of receipt for hidden damage. Owner is responsible to report damage directly to carrier immediately. Failure to contact carrier within specified timelines may result in rejection of claim.

8.) LEAD TIME: Mascott can not guarantee factory quoted lead time. Special order equipment requires approval of submittal drawings prior to production. Lead times quoted commence upon receipt of drawings & required deposits.

9.) DEPOSITS: 50% Deposit required at time of submittal. Order will not be executed prior to receipt of deposit.

10.) FUEL SURCHARGES: Many manufacturers now add fuel surcharges to cover the high cost of fuel in shipping. Customer responsible for surcharges.

11.) FACTORY PRICE INCREASES: Unscheduled factory price increases will apply at time of order. Please confirm ALL pricing with your sales person prior to acceptance.

12.) *SPECIAL ORDER EQUIPMENT & SERVICE CANNOT BE RETURNED FOR CREDIT OR CANCELLED ONCE ENTERED INTO MANUFACTURER'S PRODUCTION SCHEDULE.

13.) Oregon CAT tax may apply. rev3/26/2021

QUOTE

Thank you for your business.

Merchandise	*Misc*	*Tax*	*Freight*	*Total*
146134.79	**.00**	**.00**	**.00**	**146134.79**

FOB FACTORY UNLESS SPECIFIED

Credit card payments are subject to 3% service fee.

ACCEPTED FOR PURCHASE **Signature:** _____ **Date:** _____

TERMS AND CONDITIONS SET FORTH OR NOTED ON ATTACHMENT SHALL EXCLUSIVELY GOVERN THIS SALE

Continued on next page ...

TERMS AND CONDITIONS

1. ACCEPTANCE OF CONTRACT: Buyer acknowledges that all quotations, orders and agreements made between Buyer and Mascott Equipment Co., Inc.'s (herein Mascott) agent shall be considered an offer by Buyer, which said offer Shall be subject to acceptance and approval by an officer of Mascott at Mascott's Portland office, subject to credit approval. The parties agree that the terms and conditions of this document shall control and shall constitute the parties' agreement, and any terms and conditions on Buyers purchase order, invoice or other document will have no effect.

2. PRICE: Buyer agrees that the purchase price shall be the fair market value of the equipment and/or machinery (hereinafter equipment or goods) on the date of delivery. Therefore, Buyer agrees that Mascott has the right to adjust the balance due at delivery to reflect any fluctuation in market prices for materials and/or labor occurring between the date of this agreement and the delivery date. Mascott may require a payment equal to fifty percent (50%) of the purchase price to be paid at the time this order is placed. Buyer will be charged a restocking fee equal to twenty-five percent (25%) of the purchase price for returned goods. Any additional restocking fees assessed by the manufacturer for returned goods will also be paid by Buyer. When excavating for the installation of underground tanks or equipment, any unusual underground condition which prevents normal excavation and adds significantly to the cost, will be considered as extra, and will be charged for on a time and material basis. This may include excess water, rock greater than 12 inches in diameter, unstable soil, trash, old piping, etc.

3. PAYMENT TERMS: Buyer agrees to pay all invoices when due, which is the essence of all orders or contracts. If Buyer fails to make timely payment, Mascott may, at its sole option: (a) defer further shipments until Buyer makes such payments; or (b) elect to cancel all unfilled orders and contract. Buyer agrees that Mascott may withhold or delay deliveries if Buyer fails to maintain a satisfactory credit history with Mascott or fails to provide satisfactory security to Mascott for payment. IF, UPON MASCOTT'S NOTIFICATION TO BUYER THAT GOODS AND EQUIPMENT ARE READY TO SHIP, AND BUYER DELAYS SHIPMENT FOR MORE THAN THIRTY (30) DAYS FROM THE DATE OF SUCH NOTIFICATION, A CHARGE OF ONE PERCENT (1%) PER MONTH SHALL BE APPLIED TO THE TOTAL BALANCE DUE ON THIS ORDER.

4. TAXES: In addition to the Price set forth above, Buyer will pay, or reimburse Mascott upon demand if Mascott pays, all sales, use, excise, occupation, duty or other tax or taxes levied, assessed or imposed by any taxing authority, whether the United States, a State, or a political subdivision of either.

5. PERMITS: Buyer shall, at its expense, obtain all necessary public, inspection, license, building, and other permits and shall be responsible for compliance with all applicable laws, ordinances and government regulations regarding the installation and operation of the equipment on Buyer's premises.

6. CHARACTER OF EQUIPMENT: The parties intend that the equipment shall, at all times, be considered personal property and not as fixture(s), notwithstanding of the manner in which the equipment may be installed or connected to Buyer's real estate.

7. SECURITY AGREEMENT: Buyer hereby grants Mascott a security interest in all of Buyer's right, title and interest, now owned or hereafter acquired, in and to the equipment described above and any portion of such equipment, including any other after acquired, substituted or replacement parts, materials, and equipment, to secure the timely performance and payments of the underlying obligation herein and all indebtedness and obligations of Buyer to Mascott presently existing or hereinafter arising, direct or indirect, and interest thereon. Buyer will not, without the written consent of Mascott, sell, contract to sell, lease, encumber, assign, transfer from its place of installation or otherwise dispose of equipment or any interest therein until this security agreement and all debts secured thereby have been fully satisfied. At the request of Mascott, Buyer will join in executing, or will execute, as appropriate, all necessary financing statements and all other instruments deemed necessary by Mascott and by the cost of filing such documents. Buyer shall not delegate performance nor assign any rights or obligation hereunder.

8. RISK OF LOSS: This agreement is a shipment contract FOB Mascott's place of business or FOB manufacturer's facility. The risk of loss, injury, or destruction of the equipment or any pert thereof passes to the Buyer upon due delivery of the equipment to the carrier. The Buyer shall pay the freight and insurance costs. Any such loss, injury, or destruction shall not release Buyer from any obligations under this agreement, including the payment of the full purchase price and shall, at Mascott's option, accelerate the maturity of the unpaid balance of the purchase price to the date of such event.

9. DELIVERY: Buyer acknowledges that Mascott may change delivery dates without notice. Mascott shall not be liable for any loss, damage, or delay due to transportation or caused by fire, strike, civil or military authority, insurrection, a riot or any causes beyond Mascott's reasonable control.

10. INSPECTION AND ACCEPTANCE: BUYER SHALL INSPECT THE EQUIPMENT WITHIN TEN (10) DAYS AFTER THE DATE OF DELIVERY. A rejection of the goods by Buyer shall not be effective unless it is made and written notice thereof is given within fifteen (15) days after the date of delivery specifying any claim, defect, or any other proper objection to the equipment. Buyer shall thereafter be deemed conclusively to have accepted the equipment as satisfactory. Buyer must send the defective part(s) to Mascott at Portland, Oregon, within ninety (90) days from the date of purchase and tag all defective part(s) showing date and all information necessary to support a claim. A revocation of acceptance shall not be effective unless written notice of the revocation is given within ten (10) days after Buyer has discovered the defect in the goods, or twenty (20) days after acceptance of Buyer, whichever occurs first.

11. MERGER: This agreement signed by both parties constitutes a final written expression of all the terms of this agreement and is a complete and exclusive statement of those terms and shall not be modified, controlled, or effected in any way by any usage of trade or subject to any course of dealings or performance between the parties. All agreements entered into prior to or contemporaneously with the execution of this agreement are excluded, whether oral or written. Any and all representations, promises, express or implied warranties or statements by Mascott's agent that differs in any way from the terms of this written agreement shall be given no force or effect.

12. WAIVER: Mascott shall not, by any act, delay, omission, or otherwise be deemed to have waived any of its rights or remedies under this agreement. No waiver whatever stall be valid unless in writing signed by Mascott, and then only to the extent under the terms set forth therein.

13. SEVERABILITY: This agreement is divisible. If any provision of this agreement is declared invalid by any tribunal, the remaining provision of this agreement shall not be affected thereby.

14. JURISDICTION: This agreement shall be construed and governed in at matters by the law of the State of Oregon. The parties consent to the exclusive jurisdiction of and venue in Multnomah County, Oregon with respect to any and all claims or controversies arising out of or related to this order, and consent to service of process outside the State of Oregon in any action hereunder by registered mail or personal service. The prevailing party in any action commenced hereunder shall be entitled to a reasonable sum as attorney fees, together with all costs. An action brought for a breech of this agreement shall be commenced within one (1) year after the cause of action has accrued.

15. DEFAULT: All times specified in this agreement for the performance of the obligations of the parties shall be deemed of the essence. If the Buyer fails to pay, when due, any amount payable on this agreement or on any other indebtedness of Buyer secured hereby, or shall fail to perform any of the provisions of agreement, Buyer shall be in default.

16. MASCOTT'S REMEDIES: On any default, and at any time thereafter, Mascott may, at Mascott's option, pursue any rights and remedies provided by this agreement and the Oregon Uniform Commercial Code, including but not limited to: repossess the machines and equipment from Buyer's premises; dispose of the equipment pursuant to a public or private sale; or forfeit the Buyer's rights and retain all sums paid heretofore by Buyer to Mascott in lieu of resale and in satisfaction of Buyer's obligations. Mascott shall be entitled to compensation for all incidental damages, including but not limited to all commercially reasonable charges, expenses, or commissions incurred in stopping delivery under the Code, in the transportation, care and custody of goods after a breach by Buyer and in connection with the return or resale of goods, or any other damages resulting from a breach by Buyer. Mascott's remedies and rights are cumulative and the exercise of one right or remedy does not exclude any other rights or remedies conferred on Mascott by law.

17. LIQUIDATED DAMAGES: The parties agree that Mascott shall be entitled to retain all deposits made by Buyer, as liquidated damages, if Buyer shall breach or fail to consummate this sale. The parties agree that liquidated damages are needed because of the difficulty in determining Mascott's damages upon Buyer's breech, Mascott's capital investment in making the equipment and the numerous jurisdictions in which Mascott sells equipment. At its sole option, Mascott may elect the remedies provided in Paragraph 16 instead of liquidated damages.

18. LIMITATION ON MASCOTT'S LIABILITY: MASCOTT SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE INCLUDING, BUT NOT LIMITED TO, LOSS OF BUSINESS OR TIME, INTERRUPTION OR LOSS OF EQUIPMENT, OR LABOR IN REPAIRING, SUSTAINED BY BUYER BY REASON OF ANY DEFECT IN THE GOODS, OR ANY PART THEREOF, DELAY IN THE DELIVERY OF THE GOODS, OR BREACH OF WARRANTY, EXCEPT TO THE EXTENT OF REPAIR OR REPLACEMENT AS PROVIDED IN PARAGRAPHS 19 AND 20.

19. EXCLUSIVE REMEDY OF THE BUYER: THE PARTIES AGREE THAT BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE GOODS IS TO REQUIRE MASCOTT TO DELIVER TO A CARRIER, PROPERLY CONSIGNED TO BUYER, A SUITABLE PART TO REMEDY THE DEFECT. THE REPLACEMENT OF THE DEFECTIVE PART IS THE LIMIT OF THE LIABILITY OF MASCOTT. THE SOLE PURPOSE OF THIS STIPULATED AND EXCLUSIVE REMEDY IS FOR MASCOTT TO REPAIR, AND OR REPLACE, DEFECTIVE PARTS IN THE MANNER HEREIN PROVIDED. THIS EXCLUSIVE REMEDY SHALL NOT BE DEEMED TO HAVE FAILED ON ITS ESSENTIAL PURPOSE SO LONG AS MASCOTT IS WILLING AND ABLE TO REPAIR OR REPLACE DEFECTIVE PARTS IN THE PRESCRIBED MANNER.

20. MANUFACTURERS' WARRANTIES: SOME OF THE GOODS AND EQUIPMENT SOLD BY MASCOTT MAY BE COVERED BY MANUFACTURERS' WARRANTIES. IN SUCH CASES, ALL MANUFACTURERS' WARRANTIES SHALL BE PASSED TO BUYER FOR BUYER'S BENEFIT.

21. WAIVER OF EXPRESS WARRANTIES: EXCEPT AS PROVIDED IN PARAGRAPH 20, MASCOTT GIVES NO EXPRESS WARRANTIES AS TO THE DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, PRODUCTIVENESS, OR ANY OTHER MATTER, OF ANY GOODS SUPPLIED BY MASCOTT. MASCOTT IS IN NO WAY RESPONSIBLE FOR THE PROPER USE AND OR SERVICE OF SUCH GOODS. EXCEPT AS PROVIDED HEREIN WITH REGARD TO INSPECTION AND ACCEPTANCE, BUYER HEREBY WAIVES ALL RIGHTS OF REFUSAL AND RETURN OF SUCH GOODS.

22. WAIVER OF IMPLIED WARRANTIES: THIS SALE IS MADE ON THE EXPRESS UNDERSTANDING THAT THERE IS NO IMPLIED WARRANTY THAT THE GOODS SHALL BE MERCHANTABLE OR AN IMPLIED WARRANTY THAT THE GOODS SHALL BE FIT FOR ANY PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT BUYER IS NOT RELYING ON MASCOTT'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS SUITABLE FOR ANY PARTICULAR PURPOSE, BUYER HAS NOT RELIED ON ANY ORAL OR WRITTEN REPRESENTATIONS, AFFIRMATION OF FACT, DESCRIPTION OF GOODS, OR PRODUCT SAMPLES, EXCEPT THOSE EXPRESSLY STATED WITHIN THIS WRITTEN DOCUMENT, AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACT HEREOF.

23. EXCLUSION OF WARRANTIES: MASCOTT MAKES NO WARRANTY AS TO TITLE OF GOODS, CLAIMS OF THIRD PARTY ARISING FROM PATENT OR TRADEMARK INFRINGEMENT, OR AS TO THE EXISTENCE OF ANY SECURITY INTEREST, LIEN OR OTHER ENCUMBRANCE ON THE GOODS SOLD TO BUYER AT THE TIME OF THE EXECUTION OF THIS AGREEMENT, AT THE TIME OF DELIVERY OF THE GOODS, OR AT ANY OTHER TIME.

24. BUYER'S REPRESENATION: Buyer recognizes that: (a) the equipment sold to Buyer pursuant to this agreement may be protected by any number of patents and/or trademarks; and (b) part of the consideration for the sale of the equipment is Buyer's representations, therefore, Buyer represents and warrants that Buyer shall not, at any time, alter any equipment furnished by Mascott under this agreement or do anything that will infringe, impeach or lessen the validity of the patents or trademarks under which Mascott's equipment is made or sold.

25. FACSIMILE S: Facsimile transmission of any signed original document shall be the same as delivery of an original. At the request of Mascott, Buyer will confirm facsimile transmitted signatures by signing an original document.

Initial: _____ Date: _____

... Last Page

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item:	2022 Budget Approval
Action Requested:	Approve 2022 Budget
Department:	Finance
Presented By:	Debra Figueroa, City Manager Steve Boyd, COO Yvette Gustad, Finance Director
Background Info:	This is the final budget submitted for approval. The budget book will be available prior to January 31, 2022.
Issues:	NA
Staff Recommendation:	Staff supports approval of this budget



2022 BUDGET

Submitted November 4, 2021

2022 Budget
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General Fund

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$750,002	$21,394,869	$19,503,101	$22,154,101	$23,019,468
Expenditures		($18,132,356)	($19,527,679)	($22,189,531)	($22,942,583)
Change in Fund Balance		$3,262,513	($24,578)	($35,430)	$76,885
Beginning Fund Balance		$6,475,416	$9,737,929	$9,737,929	$9,702,499
Ending Fund Balance		$9,737,929	$9,713,351	$9,702,499	$9,779,384
Fund Balance Reserves:					
*Airport Road (Restricted)			($86,000)	($86,000)	($86,000)
*Affordable Housing (Restricted)			($26,984)	($26,984)	($26,984)
*In Lieu Housing Fee (Restricted)			($71,382)	($71,382)	($71,382)
*In Lieu Sidewalk Fee (Restricted)			$0	$0	($3,520)
Mine Expansion Opposition			($1,000,000)	($1,000,000)	($1,000,000)
Employee Retention Reserve			$0	($450,000)	$0
Leverage Reserve from stimulus			$0	($1,050,000)	($2,100,000)
			($1,184,366)	($2,684,366)	($3,287,886)
Available Fund Balance			$8,528,985	$7,018,133	$8,991,498
			43.7%	31.6%	39.2%
Cash Balance as of 6/30/21	$10,624,032				

*Restricted Fund Balance means it is imposed externally - Council cannot reallocate

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 00						
0100020-41110	PROPERTY TAXES	$1,932,535	$2,158,786	$2,170,498	$2,272,234	8.603 mills plus abatements from consolidation of fire equipment replacement fund tax and fire operating tax.
0100020-41120	DELINQUENT PROPERTY TAXES	$1,578	$857	$2,000	$1,500	
0100020-41130	FIRE BOND TAXES	($831)	($93)	($0)	($0)	
0100020-41140	FIRE CAP. IMPR. TAXES	($612)	($69)	($0)	($0)	
0100020-41150	SPECIFIC OWNERSHIP	$144,818	$144,014	$100,000	$145,000	
0100020-41160	SPECIAL ASSESSMENTS	$36,691	$36,108	$30,000	$36,500	
0100020-41210	GENERAL SALES TAX	$7,629,412	$8,662,187	$7,505,542	$8,750,855	Assumes 0% growth over the 2021 amended budget.
0100020-41310	USE TAX	$473,981	$305,342	$300,000	$466,216	Assumes $1,150,000 in total use tax.
0100020-41710	FRANCHISE FEES	$178,566	$165,025	$214,000	$180,000	
		$10,396,138	$11,472,157	$10,322,040	$11,852,305	
01 GENERAL FUND - 00						
0100060-41220	AUDIT REVENUE	$51,651	$95,583	$40,000	$100,000	
0100060-43510	INTEREST	$152,643	$153,345	$85,000	$165,000	
0100060-43520	POLICE CONFISCATED ASSETS	$743	$300	($0)	$1,000	
0100060-43630	MINERAL LEASE	$317,533	$72,388	$200,000	$75,000	
0100060-43650	MISCELLANEOUS LEASE	$58,959	$46,106	$40,000	$60,000	
0100060-43710	CONTRIBUTIONS/DONATIONS	$7,663	($0)	($0)	($0)	
0100060-43810	INTERFUND COST SERVICE	$2,501,801	$2,574,827	$2,628,389	$2,680,957	2% increase from 2021 Budget
0100060-43910	OTHER ENTITIES	$27,116	$56,328	$40,000	$50,000	
0100060-43920	INSURANCE REIMBURSEMENT	$148,987	$17,364	($0)	$10,000	
0100060-44110	SALE OF ASSETS	$8,693	$3,525	$10,000	$10,000	
0100060-44120	CASH OVER/SHORT	($109)	$18	($0)	($0)	
0100060-44130	MISCELLANEOUS	$35,925	$20,270	$30,000	$25,000	
		$3,311,604	$3,040,055	$3,073,389	$3,176,957	
01 GENERAL FUND - 00						
0100040-42210	STATE & COUNTY SALES TAX	$332,227	$370,161	$330,000	$365,000	
0100040-42220	CIGARETTE TAXES	$58,274	$72,235	($0)	($0)	
0100040-42230	HIGHWAY USE TAX	$359,020	$265,031	$266,330	$350,000	
0100040-42240	SEVERENCE TAX	$162,497	$79,312	$60,000	$20,000	
0100040-42310	GRANTS				$1,350,000	Includes $1,050,000 from Stimulus Pmt #2
		$342,656	$995,779	$1,345,806	$61,600	Micro Loan Program - assumes remaining $78,000 is distributed this year.
	TOTAL GRANTS	$342,656	$995,779	$1,345,806	$1,411,600	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
		$1,254,675	$1,782,518	$2,002,136	$2,146,600	
01 GENERAL FUND - 00						
0100070-43840	ALLOCATED ORGANIZATIONAL COST	$478,842	$493,208	$493,210	$503,074	
0100070-43850	ALLOCATED ORGANIZATIONAL WA/W	$189,020	$194,690	$194,690	$241,809	3% of Sales
0100070-43860	INTERFUND FRANCHISE - ELECTRIC	$478,842	$493,208	$493,210	$503,074	
0100070-43870	INTERFUND FRANCHISE - WA/WW	$189,020	$194,690	$194,690	$241,809	
0100070-44315	TRANSFER FROM A & I	$1,170,940	$1,540,000	$1,420,000	$1,000,000	Community Center Subsidy
					$120,000	EHOP
					$100,000	Community Events
					$200,000	Parks Maintenance
	TOTAL TRANSFER FROM A & I	$1,170,940	$1,540,000	$1,420,000	$1,420,000	
0100070-44320	TRANSFER FROM DDA	($0)	($0)	($0)	$100,000	Downtown Maintenance and Security
0100070-44350	TRANSFER FROM TOURISM FUND	$50,000	($0)	($0)	$50,000	Part of 7.5% revenue that goes to FAB grants for special events. Funds were not transferred in 2020 because COVID prevented the events from taking place. City invoiced the Tourism Fund directly for the $50,000 in 2021.
0100070-44355	TRANSFER FROM MARIJUANA TAX FU	$175,000	$276,272	$185,000	$100,000	Public Safety
					$100,000	Youth mental health services. May include passes to the Community Center and/or outsourced contracting for counseling related services.
	TOTAL TRANSFER FROM MARIJUANA TAX FU	$175,000	$276,272	$185,000	$200,000	
0100070-44395	TRANSFER FROM TOBACCO TAX FUND	($0)	$750,000	$750,000	$400,000	Reduced from $750,000 in 2021. Funds contribute to increase in public safety and youth education.
		$2,731,664	$3,942,067	$3,730,800	$3,659,766	
01 GENERAL FUND - 10 GENERAL GOVERNMENT						
0110030-42140	SALES TAX/BUSINESS LICENSES	$96,900	$43,800	$50,000	$40,000	
0110030-42150	LIQUOR LICENSES	$44,490	$69,585	$50,000	$50,000	
		$141,390	$113,385	$100,000	$90,000	
01 GENERAL FUND - 10 GENERAL GOVERNMENT						
0110050-42420	CREDIT CARD CONVENIENCE FEES	$894	$653	($0)	($0)	
		$894	$653	($0)	($0)	
01 GENERAL FUND - 20 PUBLIC SAFETY						
0120030-42160	DOG LICENSES	$105	$45	$150	$50	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
		$105	$45	$150	$50	
01 GENERAL FUND - 20 PUBLIC SAFETY						
0120050-42414	POLICE FINES	$113,371	$51,197	$125,000	$75,000	Increased from 2020 but less than 2019.
0120050-42415	VEHICLE INSPECTION FEES	$800	$795	$800	$800	
0120050-42416	COURT FEES	$41,079	$19,749	$40,000	$30,000	Increase from 2020, less than previous years.
0120050-42417	PARKING FEES & FINES	$31,493	$20,468	$40,000	$30,000	
0120050-42418	IMPOUND FEES	$2,250	$1,410	$4,000	$2,500	
		$188,993	$93,619	$209,800	$138,300	
01 GENERAL FUND - 25 COMMUNITY/ECONOMIC DEVELOPMENT						
0125030-42110	BUILDING PERMITS	$248,232	$193,133	$135,000	$250,000	
0125030-42120	VENDOR PERMITS	$1,540	$1,200	$1,000	$1,500	
0125030-42170	CONTRACTOR'S LICENSES	$28,815	$20,862	$20,000	$20,000	
		$278,587	$215,194	$156,000	$271,500	
01 GENERAL FUND - 25 COMMUNITY/ECONOMIC DEVELOPMENT						
0125050-42411	LEGAL FEES	($0)	($0)	$10,000	($0)	
0125050-42412	PLAN CHECK AND RECORD FEE	$94,944	$105,048	$75,000	$100,000	
0125050-42430	PLANNING FEES	$27,731	$21,388	$25,000	$40,000	
0125050-42960	FEE IN LIEU - SIDEWALK	($0)	$3,520	($0)	($0)	
		$122,675	$129,956	$110,000	$140,000	
01 GENERAL FUND - 30 PUBLIC WORKS						
0130050-42410	ENGINEERING FEES	$11,778	($0)	$10,000	($0)	
0130050-42431	DOWNTOWN TRASH FEE	$7,300	$27,963	$55,000	$25,000	
		$19,078	$27,963	$65,000	$25,000	
01 GENERAL FUND - 35 CULTURE AND RECREATION						
0135050-42413	CEMETERY FEES	$13,843	$8,119	$10,000	$8,000	
0135050-42419	PARK RENTALS/BOAT RAMP FEES	$38,770	$97,742	$50,000	$50,000	
0135050-42433	DOWNTOWN SNOW REMOVAL	($0)	($0)	($0)	$25,000	
0135050-43210	RECREATION FEES	($0)	($0)	$254,000	$213,500	
0135050-43260	ART CENTER FEES	$23,978	$7,393	$28,700	$77,200	
0135050-43310	COMMUNITY CENTER FEES	$1,346,646	$467,522	$995,000	$1,145,290	
		$1,423,237	$580,776	$1,337,700	$1,518,990	
		$19,869,039	$21,398,387	$21,107,015	$23,019,468	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 100 CITY COUNCIL						
01100-51110	REGULAR EMPLOYEES	$0	$74,585	$96,720	$86,400	Mayor (1) $1,200 per month Councilors (6) $1,000 per month each
01100-51250	FICA CONTRIBUTIONS	$0	$5,733	$7,597	$6,808	
01100-51270	UNEMPLOYMENT COMPENSATION	$0	$225	$299	$267	
01100-51280	WORKERS' COMPENSATION	$0	$81	$72	$90	
01100-51610	SUPPLIES	$0	$461	$6,000	$0	
01100-51710	PROFESSIONAL SERVICES	$0	$5,100	$0	$5,000	Facilitators and miscellaneous press events
01100-52210	PROFESSIONAL DEVELOPMENT	$0	$2,135	$7,000	$21,000	$2,500 + $500 per Councilor
					$10,000	Professional development for Planning and Zoning Commissioners.
	TOTAL PROFESSIONAL DEVELOPMENT	$0	$2,135	$7,000	$31,000	
01100-52310	MISC. TRAVEL	$0	$744	$4,000	$0	
01100-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$0	$0	$2,500	Colorado Municipal League (CML), Colorado Association of Ski Towns (CAST)
01100-52810	OTHER OPERATING EXPENSE	$0	$1,218	$22,000	$30,000	Council meetings; food, materials, broadcasting fees, translation.
	TOTAL 100 - CITY COUNCIL	$0	$90,282	$143,688	$162,065	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 112 ADMINISTRATION						
01112-51110	REGULAR EMPLOYEES	$525,081	$436,038	$519,214	$513,468	City Manager Assistant City Manager (75%) Chief Operating Officer Public Information Officer (25%) Executive Assistant - City Manager (50%)
01112-51210	HEALTH INSURANCE PREMIUMS	$65,481	$79,155	$75,098	$73,484	
01112-51220	LONG TERM DISABILITY	$24	$1,078	$1,161	$1,191	
01112-51230	BASIC LIFE INSURANCE	$56	$1,145	$1,174	$1,243	
01112-51250	FICA CONTRIBUTIONS	$36,294	$30,455	$39,720	$39,281	
01112-51260	RETIREMENT CONTRIBUTIONS	$28,553	$21,461	$36,345	$35,942	
01112-51270	UNEMPLOYMENT COMPENSATION	$1,526	$1,252	$1,558	$1,541	
01112-51280	WORKERS' COMPENSATION	$650	$764	$679	$526	
01112-51360	EMPLOYEE ONBOARDING	$0	$34	$0	$0	
01112-51410	UTILITIES	$215	$0	$0	$0	
01112-51610	SUPPLIES	$3,506	$1,821	$2,500	$2,000	
01112-51710	PROFESSIONAL SERVICES	$68,124	$15,413	$55,000	$25,000	Facilitation, surveys, orientations, etc.
01112-51810	MAINTENANCE & REPAIR	$1,199	$0	$0	$0	
01112-51920	RENT/LEASE - EQUIPMENT	$353	$0	$3,800	$3,800	
01112-52110	PUBLIC NOTICES	$0	$0	$2,000	$0	
01112-52130	SPECIAL EVENT POSTING	$0	$0	$0	$2,500	
01112-52210	PROFESSIONAL DEVELOPMENT	$12,836	$1,070	$10,000	$6,000	Meetings, events, training and related travel.
01112-52310	MISC. TRAVEL	$2,518	$497	$2,500	$0	
01112-52410	PROFESSIONAL DUES AND MEMBERSH	$395	$2,381	$0	$0	
01112-52420	ORGANIZATIONAL DUES AND MEMBER	$38,736	$42,335	$25,000	$0	
01112-52440	PROFESSIONAL SUBSCRIPTION	$0	$75	$0	$0	
01112-52810	OTHER OPERATING EXPENSE	$54,322	$17,485	$6,000	$12,500	Ad hoc meetings, materials, costs associated with hosting miscellaneous events.
01112-59520	CAPITAL OUTLAY	$1,589	$0	$0	$0	
	TOTAL 112 - ADMINISTRATION	$841,459	$652,459	$781,749	$718,476	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 113 COMMUNITY CENTER						
01113-51110	REGULAR EMPLOYEES	$706,118	$719,201	$807,171	$615,340	Parks & Recreation Director Community Center Manager Parks & Rec Administrator Maintenance Tech Guest Services Supervisor Custodian I Fitness Coordinator Aquatics Supervisor Lifeguard (2)
01113-51120	PART-TIME EMPLOYEES	$631,237	$245,775	$638,000	$631,237	
01113-51130	SEASONAL EMPLYOEES	$24	$62	$0	$24	
01113-51140	OVERTIME	$3,173	$180	$5,000	$3,173	
01113-51210	HEALTH INSURANCE PREMIUMS	$203,409	$240,360	$257,472	$232,116	
01113-51220	LONG TERM DISABILITY	$58	$2,247	$2,394	$1,997	
01113-51230	BASIC LIFE INSURANCE	$105	$1,901	$1,950	$1,624	
01113-51250	FICA CONTRIBUTIONS	$100,431	$69,705	$112,888	$47,076	
01113-51260	RETIREMENT CONTRIBUTIONS	$42,251	$29,957	$56,459	$43,074	
01113-51270	UNEMPLOYMENT COMPENSATION	$3,938	$2,735	$2,421	$1,845	
01113-51280	WORKERS' COMPENSATION	$34,903	$39,309	$31,103	$21,884	
01113-51310	TUTITION REIMBURSEMENTS	$1,500	$0	$0	$0	
01113-51360	EMPLOYEE ONBOARDING	$2,366	$2,219	$6,500	$6,000	
01113-51410	UTILITIES	$229,974	$191,638	$264,600	$65,000	Natural Gas
					$25,000	Water
					$150,000	Electric
					$10,000	Trash
					$500	Landfill
					$5,000	Telephone
					$3,000	Mobile - 6 Phones @$40/Month Each
					$2,750	Satellite
	TOTAL UTILITIES	$229,974	$191,638	$264,600	$261,250	
01113-51610	SUPPLIES	$63,839	$31,393	$52,000	$46,500	Paper Goods, Equipment And Cleaning Supplies
					$1,500	Office supplies
					$2,000	Printing
					$500	Small tools
					$2,500	Lifeguard Shirts, New Staff Shirts
					$5,000	Monthly Newsletter/Brochure
					$1,000	PPE
					$1,000	Copying
	TOTAL SUPPLIES	$63,839	$31,393	$52,000	$60,000	
01113-51710	PROFESSIONAL SERVICES	$62,072	$14,999	$14,950	$500	Community Center instruction

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01113-51810	MAINTENANCE & REPAIR	$109,842	$70,660	$96,000	$90,000	Building Maintenance
					$5,000	Landscaping
					$3,000	Fuel
					$5,000	Vehicle maintenance
	TOTAL MAINTENANCE & REPAIR	$109,842	$70,660	$96,000	$103,000	
01113-51920	RENT/LEASE - EQUIPMENT	$4,451	$4,900	$4,000	$4,000	Copier lease
01113-52120	EMPLOYMENT POSTING	$1,334	$662	$1,000	$1,000	
01113-52130	SPECIAL EVENT POSTING	$281	$0	$0	$0	
01113-52140	PROCUREMENT ADVERTISING	$36	$26	$500	$0	
01113-52210	PROFESSIONAL DEVELOPMENT	$11,178	$2,176	$3,000	$6,000	Afo Instructor For John, Troy Ice $2500 (Training And Travel)
					$2,000	Travel
	TOTAL PROFESSIONAL DEVELOPMENT	$11,178	$2,176	$3,000	$8,000	
01113-52310	MISC. TRAVEL	$0	$223	$0	$0	
01113-52410	PROFESSIONAL DUES AND MEMBERSH	$3,988	$4,772	$1,000	$2,000	NPRA ($112.50/Person), CPRA ($87/Person), USA Hockey (Troy's Membership)
01113-52420	ORGANIZATIONAL DUES AND MEMBER	$130	$175	$0	$0	
01113-52440	PROFESSIONAL SUBSCRIPTION	$365	$0	$0	$0	
01113-52510	GRANTS	$0	$48,510	$0	$0	
01113-52610	TECHNOLOGY	$13,471	$12,783	$17,000	$7,500	Rectrac, When I Work
					$1,500	Software licenses
	TOTAL TECHNOLOGY	$13,471	$12,783	$17,000	$9,000	
01113-52710	CREDIT CARD FEES	$45,783	$0	$8,000	$0	
01113-52810	OTHER OPERATING EXPENSE	$818	$1,821	$0	$0	
01113-53310	COMMUNITY CENTER EXPENSE	$120,875	$39,347	$96,105	$150	Aquatics auxiliary programming
					$20,000	Acid-rite, accu-tab, muriatic acid
					$2,400	Hip packs, breathing barriers, backboards
					$2,500	Public classes - WSI, LG, FA
					$300	Annual ARC fee
					$16,000	Includes Contingency For Unforeseen Maintenance ($3K)
					$3,500	Belay Certs, Harness, Ropes, Misc. Maint.
					$3,000	Ribbon, Lanyards, Membership Cards
					$7,500	Branded Items For Sale, Suits, Towels, Locks
					$2,000	Fund With Corporate Challenge Type Fundraiser
					$1,500	Prizes For Challenges, Senior Activities
					$3,000	Equipment
					$3,000	Health Fair
					$4,000	Cardio Balcony Equip Maint, Small Replacements
					$500	General programming

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01113-53310	COMMUNITY CENTER EXPENSE				$10,000	Ice rink maintenance
					$7,000	Add Back In
					$1,500	"Above And Beyond Just Care" Programs
					$1,500	Arts & Crafts, Teaching Supplies
					$1,500	Books, Mats, Sensory, Replacement Toys
					$3,000	Tables Replacements, Table Clothes
					$2,000	Coffee & Soda Carts
					$800	Climbing wall general programming
					$500	Climbing wall auxiliary programming
					$10,000	Ddd, Halloween, Preschool Events, Dive In Movies
	TOTAL COMMUNITY CENTER EXPENSE	$120,875	$39,347	$96,105	$107,150	
	TOTAL 113 - COMMUNITY CENTER	$2,397,948	$1,777,736	$2,479,514	$2,161,290	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 114 CITY CLERK						
01114-51110	REGULAR EMPLOYEES	$143,344	$110,116	$124,879	$99,897	City Clerk Assistant To City Clerk/Muni Court (50%)
01114-51120	PART-TIME EMPLOYEES	$0	$1,040	$0	$0	
01114-51140	OVERTIME	$747	$0	$1,000	$1,000	
01114-51210	HEALTH INSURANCE PREMIUMS	$10,928	$4,309	$14,561	$20,856	
01114-51220	LONG TERM DISABILITY	$12	$319	$398	$339	
01114-51230	BASIC LIFE INSURANCE	$21	$257	$305	$254	
01114-51250	FICA CONTRIBUTIONS	$11,058	$8,527	$9,546	$7,642	
01114-51260	RETIREMENT CONTRIBUTIONS	$8,667	$5,569	$8,713	$6,993	
01114-51270	UNEMPLOYMENT COMPENSATION	$434	$334	$375	$300	
01114-51280	WORKERS' COMPENSATION	$186	$755	$318	$125	
01114-51360	EMPLOYEE ONBOARDING	$21	$10	$0	$0	
01114-51410	UTILITIES	$480	$480	$600	$480	Cell Phone
01114-51610	SUPPLIES	$1,044	$577	$1,500	$1,000	
01114-51710	PROFESSIONAL SERVICES	$26,296	$14,468	$20,000	$30,000	
01114-51810	MAINTENANCE & REPAIR	$1,046	$1,436	$4,000	$1,100	
01114-52110	PUBLIC NOTICES	$11,154	$13,503	$10,000	$15,000	
01114-52120	EMPLOYMENT POSTING	$0	$70	$0	$100	
01114-52140	PROCUREMENT ADVERTISING	$360	$171	$0	$0	
01114-52210	PROFESSIONAL DEVELOPMENT	$2,373	$551	$2,500	$2,500	
01114-52310	MISC. TRAVEL	$398	$0	$0	$0	
01114-52410	PROFESSIONAL DUES AND MEMBERSH	$295	$355	$450	$400	
01114-52810	OTHER OPERATING EXPENSE	$3,923	$3,914	$5,000	$4,000	
01114-53510	PROPERTY INSURANCE	$55,215	$84,156	$101,660	$90,000	
01114-53520	LIABILITY AND CASUALITY INSURA	$129,348	$135,094	$150,000	$150,000	
01114-53540	DEDUCTIBLES PAID	$10,303	$2,384	$8,000	$5,000	
01114-53550	OTHER INSURANCE	$7,463	$9,003	$12,000	$10,000	
01114-53610	ELECTIONS	$15,279	$18,665	$10,000	$15,000	
	TOTAL 114 - CITY CLERK	$440,394	$416,064	$485,806	$461,986	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 115 HUMAN RESOURCES						
01115-51110	REGULAR EMPLOYEES	$170,795	$194,620	$216,150	$193,368	Human Resources Manager Human Resources Generalist Admin Assistant II
01115-51140	OVERTIME	$42	$236	$0	$0	
01115-51210	HEALTH INSURANCE PREMIUMS	$48,992	$56,191	$55,692	$52,104	
01115-51220	LONG TERM DISABILITY	$17	$630	$586	$712	
01115-51230	BASIC LIFE INSURANCE	$30	$521	$464	$561	
01115-51250	FICA CONTRIBUTIONS	$12,047	$13,703	$15,252	$16,323	
01115-51260	RETIREMENT CONTRIBUTIONS	$7,286	$9,537	$13,934	$14,936	
01115-51270	UNEMPLOYMENT COMPENSATION	$472	$537	$598	$641	
01115-51280	WORKERS' COMPENSATION	$831	$314	$280	$234	Workers' Comp
01115-51290	OTHER EMPLOYEE BENEFITS	$4,585	$0	$0	$0	
01115-51320	AWARDS	$1,611	$388	$0	$400	
01115-51340	WELLNESS PROGRAM	$94	$69	$500	$100	
01115-51360	EMPLOYEE ONBOARDING	$112	$0	$0	$0	
01115-51410	UTILITIES	$228	$0	$0	$0	
01115-51610	SUPPLIES	$1,718	$126	$500	$200	
01115-51710	PROFESSIONAL SERVICES	$32,870	$37,719	$51,520	$38,000	Retirement Plan Admin Fees Flexible Spending Admin Fees
					$30,000	Outsourced HR consulting, training, education, development.
	TOTAL PROFESSIONAL SERVICES	$32,870	$37,719	$51,520	$68,000	
01115-51810	MAINTENANCE & REPAIR	$0	$1,436	$0	$0	
01115-51920	RENT/LEASE - EQUIPMENT	$1,046	$0	$1,000	$1,100	Printer/copier shared with Clerk's office.
01115-52120	EMPLOYMENT POSTING	$1,013	($582)	$250	$1,500	
01115-52210	PROFESSIONAL DEVELOPMENT	$1,756	$2,602	$2,500	$10,000	City-wide training and access to events, webinars and related materials.
01115-52410	PROFESSIONAL DUES AND MEMBERSH	$284	$438	$1,500	$400	
01115-52420	ORGANIZATIONAL DUES AND MEMBER	$6,009	$0	$0	$0	
01115-52810	OTHER OPERATING EXPENSE	$2,542	$2,695	$2,000	$2,500	
	TOTAL 115 - HUMAN RESOURCES	$294,379	$321,181	$362,726	$363,079	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 116 FINANCE						
01116-51110	REGULAR EMPLOYEES	$540,254	$514,915	$597,235	$524,150	Finance Director Controller Accounting Manager Accounting Specialist - Utilities and Tax Sr Accounting Technician -Utilities Utilities/Payroll Manager Accounting Specialist - A/P and Sales Tax Implementation Support Specialist
01116-51140	OVERTIME	$91	$0	$1,000	$0	
01116-51210	HEALTH INSURANCE PREMIUMS	$135,107	$141,745	$179,464	$161,172	
01116-51220	LONG TERM DISABILITY	$41	$1,491	$1,722	$1,677	
01116-51230	BASIC LIFE INSURANCE	$74	$1,275	$1,401	$1,372	
01116-51250	FICA CONTRIBUTIONS	$39,407	$37,072	$45,016	$40,099	
01116-51260	RETIREMENT CONTRIBUTIONS	$32,813	$23,619	$41,221	$36,690	
01116-51270	UNEMPLOYMENT COMPENSATION	$1,545	$1,454	$1,767	$1,572	
01116-51280	WORKERS' COMPENSATION	$650	$864	$768	$623	
01116-51360	EMPLOYEE ONBOARDING	$80	$630	$0	$500	
01116-51610	SUPPLIES	$72,849	$77,883	$70,000	$87,500	Includes paper and postage for City Hall.
01116-51710	PROFESSIONAL SERVICES	$57,742	$95,784	$80,000	$20,000	MuniRevs Support/Admin Fees
					$63,000	Annual Financial Audit
					$15,000	Compliance with Sales and Use Tax System (SUTS) from State Dept of Revenue.
	TOTAL PROFESSIONAL SERVICES	$57,742	$95,784	$80,000	$98,000	
01116-51810	MAINTENANCE & REPAIR	$0	$2,970	$4,500	$3,000	
01116-51920	RENT/LEASE - EQUIPMENT	$11,492	$12,657	$12,000	$13,000	
01116-52120	EMPLOYMENT POSTING	$100	$0	$0	$200	
01116-52210	PROFESSIONAL DEVELOPMENT	$104	$0	$4,000	$5,000	GFOA, CGFOA
01116-52410	PROFESSIONAL DUES AND MEMBERSH	$492	$85	$1,000	$500	
01116-52440	PROFESSIONAL SUBSCRIPTION	$31	$33	$0	$0	
01116-52710	CREDIT CARD FEES	$2,495	$2,886	$0	$3,000	
01116-52750	TREASURER'S FEES	$38,797	$43,730	$40,000	$45,000	
01116-52810	OTHER OPERATING EXPENSE	$14,612	$14,283	$0	$1,000	
01116-53910	PRINCIPAL - BONDS	$240,000	$250,000	$0	$0	
01116-53930	INTEREST - BONDS	$10,731	$5,475	$0	$0	
01116-59520	CAPITAL OUTLAY	$485	$0	$2,500	$15,000	Modifications to finance suite.
	TOTAL 116 - FINANCE	$1,199,992	$1,228,850	$1,083,593	$1,039,055	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 117 INFORMATION TECHNOLOGY						
01117-51110	REGULAR EMPLOYEES	$322,131	$374,786	$431,494	$422,131	IT Director Asst IT Director IT Support Specialist GIS Administrator (50%) Asset Mgmt/GIS Support Specialist (57%) System Administrator
01117-51140	OVERTIME	$1,054	$207	$0	$0	
01117-51150	STANDBY AND CALLBACK PAY	$342	$0	$0	$0	
01117-51210	HEALTH INSURANCE PREMIUMS	$57,617	$74,294	$82,388	$117,816	
01117-51220	LONG TERM DISABILITY	$29	$1,202	$1,226	$1,400	
01117-51230	BASIC LIFE INSURANCE	$51	$999	$991	$1,228	
01117-51250	FICA CONTRIBUTIONS	$24,222	$27,291	$32,963	$39,838	
01117-51260	RETIREMENT CONTRIBUTIONS	$21,359	$18,064	$30,164	$34,557	
01117-51270	UNEMPLOYMENT COMPENSATION	$950	$1,070	$1,292	$1,253	
01117-51280	WORKERS' COMPENSATION	$464	$570	$507	$462	
01117-51410	UTILITIES	$122,491	$114,220	$70,000	$140,000	Includes Communications: Microsoft, Teams, email and related licensing.
					$6,000	Electronic recycling
	TOTAL UTILITIES	$122,491	$114,220	$70,000	$146,000	
01117-51610	SUPPLIES	$22,853	$19,148	$16,000	$21,000	Office, technology, reproduction.
01117-51710	PROFESSIONAL SERVICES	$72,996	$10,500	$100,000	$0	
01117-51810	MAINTENANCE & REPAIR	$157	$0	$0	$0	
01117-52120	EMPLOYMENT POSTING	$0	$0	$0	$500	
01117-52210	PROFESSIONAL DEVELOPMENT	$10,957	$702	$10,000	$28,000	
01117-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$0	$0	$330	
01117-52420	ORGANIZATIONAL DUES AND MEMBER	$0	$330	$0	$0	
01117-52610	TECHNOLOGY	$136,577	$159,603	$170,000	$150,000	Annual recurring fees
					$40,500	GIS software, ArcGIS user licenses
					$17,000	Aerial photography
	TOTAL TECHNOLOGY	$136,577	$159,603	$170,000	$207,500	
01117-52810	OTHER OPERATING EXPENSE	$297	$1,129	$0	$0	
TOTAL 117 - INFORMATION TECHNOLOGY		$794,547	$804,115	$947,026	$1,022,015	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 118 MUNICIPAL COURT						
01118-51110	REGULAR EMPLOYEES	$65,978	$61,070	$64,986	$91,555	Court Administrator Assistant To City Clerk/Muni Court (50%)
01118-51120	PART-TIME EMPLOYEES	$0	$0	$0	$10,000	Assistant Clerk covering during vacations and peak dockets.
01118-51210	HEALTH INSURANCE PREMIUMS	$10,173	$11,270	$11,106	$20,856	
01118-51220	LONG TERM DISABILITY	$5	$197	$191	$311	
01118-51230	BASIC LIFE INSURANCE	$9	$167	$151	$245	
01118-51250	FICA CONTRIBUTIONS	$5,023	$4,397	$4,972	$7,004	
01118-51260	RETIREMENT CONTRIBUTIONS	$3,312	$2,218	$4,525	$6,409	
01118-51270	UNEMPLOYMENT COMPENSATION	$197	$172	$194	$275	
01118-51280	WORKERS' COMPENSATION	$93	$105	$94	$73	
01118-51360	EMPLOYEE ONBOARDING	$0	$10	$0	$0	
01118-51610	SUPPLIES	$2,844	$1,032	$4,000	$1,000	
01118-51710	PROFESSIONAL SERVICES	$66,657	$129,339	$115,000	$145,000	Judge, Prosecutor, Interpreter, Security
01118-51810	MAINTENANCE & REPAIR	$3,081	$0	$1,500	$1,000	
01118-51920	RENT/LEASE - EQUIPMENT	$441	$603	$0	$650	
01118-52210	PROFESSIONAL DEVELOPMENT	$350	$0	$0	$3,250	Full Court software, open court and trial procedures, administration.
01118-52310	MISC. TRAVEL	$401	$0	$0	$0	
01118-52410	PROFESSIONAL DUES AND MEMBERSH	$160	$87	$200	$0	
01118-52710	CREDIT CARD FEES	$894	$0	$0	$0	
01118-52810	OTHER OPERATING EXPENSE	$120	$6,470	$0	$8,650	Fees for escorting, covering and delivering county defendants.
01118-52840	COURT SERVICES (YOUTH)	$10,500	$0	$20,000	$15,000	Increased requirements to fund youth services, courtroom advocates, ongoing obligations.
TOTAL 118 - MUNICIPAL COURT		$170,240	$217,138	$226,919	$311,278	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 119 LEGAL						
01119-51710	PROFESSIONAL SERVICES	$520,149	$382,220	$400,000	$400,000	
	TOTAL 119 - LEGAL	$520,149	$382,220	$400,000	$400,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 120 NON-DEPARTMENTAL						
01120-51275	EMPLOYEE HOUSING GRANT	$110,000	$0	$120,000	$120,000	
01120-51410	UTILITIES	$104,951	$99,310	$110,000	$109,000	
01120-51710	PROFESSIONAL SERVICES	$91,307	$17,507	$50,000	$35,000	Written translation Interpretation Meeting facilitation Video captions and production Graphic design
					$4,000	Archive Social
	TOTAL PROFESSIONAL SERVICES	$91,307	$17,507	$50,000	$39,000	
01120-51810	MAINTENANCE & REPAIR	$798	$1,445	$1,000	$3,000	
01120-52510	GRANTS	$73,588	$100,000	$0	$100,000	Miscellaneous grants, contributions.
01120-52810	OTHER OPERATING EXPENSE	$76	$11,981	$0	$1,000	Equipment for public information officer
01120-52815	SALES TAX REFUNDS	$6,871	$0	$3,000	$5,000	
01120-52820	TIF TO DDA	$310,762	$332,781	$126,486	$289,865	
01120-52825	ECONOMIC INCENTIVE REBATE	$55,552	$109,439	$40,540	$81,081	
01120-52845	MINE OPPOSITION	$222,583	$309,517	$150,000	$150,000	
01120-52850	GCID	$3,130	$0	$0	$0	
01120-52885	CITY MGR DISCRETIONARY	$0	$0	$100,000	$200,000	
01120-53720	YOUTH EDUCATIONAL PROGRAMMING	$4,746	$75,000	$100,000	$100,000	
01120-54110	BAD DEBTS	$0	$2,506	$0	$0	
01120-59998	BIW PERSONNEL	$0	$0	$0	$20,000	Placeholder for implementation of bonuses paid to employees that speak spanish.
TOTAL 120 - NON-DEPARTMENTAL		$984,364	$1,059,487	$801,026	$1,217,946	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 121 FACILITIES						
01121-51110	REGULAR EMPLOYEES	$83,019	$81,499	$112,411	$337,829	Facilities Superintendent Custodial Supervisor Custodian II Custodian I Maintenance Tech (2)
01121-51140	OVERTIME	$136	$0	$0	$0	
01121-51210	HEALTH INSURANCE PREMIUMS	$39,132	$40,922	$43,019	$119,911	
01121-51220	LONG TERM DISABILITY	$4	$268	$267	$1,148	
01121-51230	BASIC LIFE INSURANCE	$7	$236	$212	$923	
01121-51250	FICA CONTRIBUTIONS	$6,171	$5,720	$8,599	$25,844	
01121-51260	RETIREMENT CONTRIBUTIONS	$5,821	$4,293	$5,157	$23,647	
01121-51270	UNEMPLOYMENT COMPENSATION	$242	$224	$338	$1,014	
01121-51280	WORKERS' COMPENSATION	$3,065	$3,810	$3,387	$3,052	
01121-51360	EMPLOYEE ONBOARDING	$73	$21	$0	$0	
01121-51410	UTILITIES	$0	$0	$0	$2,200	4 phones @$40/month each
01121-51610	SUPPLIES	$9,587	$7,424	$10,100	$15,000	Includes downtown ($5000), increased services
					$750	Facilities Specific Apparel
					$500	Puncture proof gloves
					$750	Deicer
	TOTAL SUPPLIES	$9,587	$7,424	$10,100	$17,000	
01121-51710	PROFESSIONAL SERVICES	$0	$0	$3,780	$0	
01121-51810	MAINTENANCE & REPAIR	$23,242	$50,697	$35,621	$2,500	Monitor and maintenance contract, preventative maintenance
					$30,000	LED Conversions/office remodel
					$3,200	Contract and monitoring
					$10,000	Cleaning ($750), LED ($2,500), crackseal ($5,000), concrete evaluation/repair ($1,350)
					$2,000	Tools, salt spreader, weed whacker
					$20,000	Monitor, and annual contract
	TOTAL MAINTENANCE & REPAIR	$23,242	$50,697	$35,621	$67,700	
01121-52210	PROFESSIONAL DEVELOPMENT	$0	$0	$0	$5,000	HVAC software training. City of Glenwood Springs BEST Cert
					$2,000	Regional Opportunities for building management collective
	TOTAL PROFESSIONAL DEVELOPMENT	$0	$0	$0	$7,000	
01121-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$0	$0	$500	Facilities Designation for potential accreditation
01121-52810	OTHER OPERATING EXPENSE	$67	$456	$0	$0	
	TOTAL 121 - FACILITIES	$170,566	$195,570	$222,891	$607,768	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 122 RECREATION						
01122-51110	REGULAR EMPLOYEES	$75,640	$110,364	$119,484	$181,712	Recreation Manager Athletics Supervisor Community Recreation Supervisor
01122-51120	PART-TIME EMPLOYEES	$46,689	$10,364	$27,500	$77,500	
01122-51140	OVERTIME	$1,240	$45	$0	$0	
01122-51210	HEALTH INSURANCE PREMIUMS	$20,618	$38,647	$41,211	$51,948	
01122-51220	LONG TERM DISABILITY	$9	$362	$364	$618	
01122-51230	BASIC LIFE INSURANCE	$15	$292	$287	$471	
01122-51250	FICA CONTRIBUTIONS	$9,404	$8,559	$9,141	$13,901	
01122-51260	RETIREMENT CONTRIBUTIONS	$2,529	$3,307	$8,340	$12,720	
01122-51270	UNEMPLOYMENT COMPENSATION	$369	$336	$359	$545	
01122-51280	WORKERS' COMPENSATION	$3,524	$4,998	$3,638	$4,099	
01122-51360	EMPLOYEE ONBOARDING	$62	$0	$0	$0	
01122-51410	UTILITIES	$7,929	$7,594	$4,960	$3,000	Natural gas
					$1,600	Water/Sewer
					$3,500	Electric
					$500	Trash
					$3,000	1 Landline + 4 Lines At $40/Phone/Month, Plus Replacement Costs
	TOTAL UTILITIES	$7,929	$7,594	$4,960	$11,600	
01122-51610	SUPPLIES	$6,916	$1,262	$0	$1,500	Add Second Floor And Additional Programming
					$200	Office supplies
					$2,000	Printing
					$100	Copying
					$500	Tool Box For Arts Center
					$500	Staff Shirts
					$2,000	Reach Media, Monthly Newsletters
	TOTAL SUPPLIES	$6,916	$1,262	$0	$6,800	
01122-51710	PROFESSIONAL SERVICES	$7,000	$11,115	$48,125	$78,700	Youth art camp ($50K), Fencing ($8K), Sewing ($1,200), Tennis ($15K), Golf ($1,500), Learn-To-Skate ($3K)
01122-51810	MAINTENANCE & REPAIR	$17,108	$329	$0	$5,000	Arts Center building maintenance
01122-52130	SPECIAL EVENT POSTING	$4,446	$105	$0	$0	
01122-52210	PROFESSIONAL DEVELOPMENT	$0	$141	$0	$2,000	Training, Certifications, Conferences
					$1,000	Travel, Per Diem
	TOTAL PROFESSIONAL DEVELOPMENT	$0	$141	$0	$3,000	
01122-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$88	$0	$400	CPRA $87/Person NPRA $112.50/Person
01122-52420	ORGANIZATIONAL DUES AND MEMBER	$200	$0	$0	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01122-52610	TECHNOLOGY	$0	$0	$0	$7,250	Rectrac, When I Work, Music Licensing
					$1,250	Office, Adobe
	TOTAL TECHNOLOGY	$0	$0	$0	$8,500	
01122-52810	OTHER OPERATING EXPENSE	$159	$19	$0	$0	
01122-52860	SPECIAL EVENTS	$137,524	$34,225	$110,180	$10,000	Marketing
					$25,000	Rentals
					$100,000	Services
					$15,000	Supplies
	TOTAL SPECIAL EVENTS	$137,524	$34,225	$110,180	$150,000	
01122-53310	RECREATION PROGRMMING				$4,000	Softballs, Footballs, Flags, Pucks
					$500	Pickleballs, Cornhole Bags, Shuffleboard Mats?
					$5,500	Uniforms/Hats, Soccer Balls, Bitty Batter Equip (Tees), Trophies/Prizes
					$425	Canning Classes, Hunter Safety, Concealed Carry
					$15,000	Licensing, Background Checks, Supplies, Trips
					$3,000	Congregate Meals, Movie Day, Game Day, Senior Prom
					$4,000	School Days Off, Break Camps, Field Trips
					$500	Supplies - Participation Certs, Cones, Push Carts
		$0	$0	$0	$1,500	Scholarships
	TOTAL RECREATION PROGRMMING	$0	$0	$0	$34,425	
01122-53360	ART CENTER PROGRAMS	$3,758	$532	$30,700	$1,000	Snow Shoes, Paddles, Pumps, Fishing Line, Lures, Flyers
					$1,500	Clay, Glazes, Art Supplies, Silks
					$2,500	Clay, Glazes, Art Supplies
					$4,800	Youth Clay, Dance Clothing, Art Supplies, Tech, Silks, Holiday Crafts
	TOTAL ART CENTER PROGRAMS	$3,758	$532	$30,700	$9,800	
01122-59520	CAPITAL OUTLAY	$10,297	$1,260	$0	$0	
	TOTAL 122 - RECREATION	$355,435	$233,945	$404,289	$651,739	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 131 POLICE						
01131-51110	REGULAR EMPLOYEES	$2,332,805	$2,022,853	$2,692,987	$2,694,839	Chief Of Police Police Lieutenant (2) Patrol Sergeant (4) Police Sergeant Code Enforcement Officer (2) Police Officer I (11) Police Officer II (5) Police Officer III (5) Police Admin Assistant II Sr Police Records Technician Police Records Clerk (2) Parking Enforcement
01131-51140	OVERTIME	$142,243	$33,511	$150,000	$120,000	
01131-51150	STANDBY AND CALLBACK PAY	$25,577	$28,068	$30,000	$25,000	
01131-51210	HEALTH INSURANCE PREMIUMS	$593,637	$527,541	$637,328	$692,567	
01131-51220	LONG TERM DISABILITY	$152	$6,205	$7,784	$8,929	
01131-51230	BASIC LIFE INSURANCE	$268	$5,187	$6,226	$7,022	
01131-51240	FPPA DEATH AND DISABILITY INS	$840	$37,051	$55,679	$58,801	
01131-51250	FICA CONTRIBUTIONS	$32,585	$28,566	$39,048	$39,075	
01131-51260	RETIREMENT CONTRIBUTIONS	$155,835	$95,301	$188,492	$188,640	
01131-51265	POLICE/FIRE RETIREMENT CONTRIB	$188,408	$156,537	$201,974	$202,113	
01131-51270	UNEMPLOYMENT COMPENSATION	$7,167	$6,025	$8,020	$8,085	
01131-51280	WORKERS' COMPENSATION	$73,560	$94,315	$78,179	$55,178	
01131-51310	TUTITION REIMBURSEMENTS	$1,828	$0	$0	$0	
01131-51360	EMPLOYEE ONBOARDING	$504	$8,806	$5,000	$0	
01131-51410	UTILITIES	$33,728	$28,439	$25,000	$30,000	
01131-51610	SUPPLIES	$46,958	$72,723	$46,000	$48,000	Officer, safety, building.
01131-51710	PROFESSIONAL SERVICES				$60,000	Security Downtown
					$32,000	Body and Car Cameras - Software, storage and technology - move to tech May offset with grants by $14k from Federal Funds
					$33,000	Victims Rights Advocate (VRA) - Previously a County expense - paid to GarCo
					$10,000	Speak Write - Officer dictation service
					$5,000	Language Line Svc
					$5,000	Towing services
		$35,767	$19,932	$155,000	$0	Department assessment of expected service delivery
	TOTAL PROFESSIONAL SERVICES	$35,767	$19,932	$155,000	$145,000	
01131-51810	MAINTENANCE & REPAIR	$103,214	$78,789	$98,800	$100,000	
01131-51920	RENT/LEASE - EQUIPMENT	$5,462	$5,229	$6,300	$0	
01131-52120	EMPLOYMENT POSTING	$1,377	$1,543	$4,000	$1,500	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01131-52210	PROFESSIONAL DEVELOPMENT	$23,887	$28,787	$51,000	$46,000	SWAT, Firearms, Use of Force, POST mandated training, travel to get there.
01131-52310	MISC. TRAVEL	$11,142	$1,344	$5,000	$0	
01131-52410	PROFESSIONAL DUES AND MEMBERSH	$1,568	$1,942	$3,000	$2,000	
01131-52420	ORGANIZATIONAL DUES AND MEMBER	$444	$2,918	$1,000	$1,000	Colorado Chiefs
01131-52440	PROFESSIONAL SUBSCRIPTION	$1,591	$3,526	$4,000	$1,500	FBINAA, IACP
01131-52510	GRANTS	$86,662	$70,437	$84,566	$90,000	HIDTA - Passthrough Grant (90K)
01131-52610	TECHNOLOGY	$0	$16,920	$15,600	$33,000	Garfield County Emergency Dispatch
01131-52810	OTHER OPERATING EXPENSE	$18,918	$36,049	$15,000	$17,000	Misc items w/o specific line items-coding
01131-52835	COMMUNITY OUTREACH	$6,195	$743	$8,500	$5,000	CPA, Explorers, Natl Night Out
01131-53240	LABORATORY	$4,612	$0	$3,500	$5,500	DUI, Narc blood draws
01131-53830	INVESTIGATIONS	$3,920	$3,178	$15,000	$4,000	
01131-53840	ANIMAL CONTROL	$11,060	$11,560	$16,000	$16,000	
01131-53850	CONFISCATED FUNDS EXPENDITURE	$0	$0	$5,000	$0	
01131-53860	FIREARMS	$18,971	$16,226	$50,000	$28,000	
	TOTAL 131 - POLICE	$3,970,884	$3,450,251	$4,712,981	$4,673,749	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 141 COMMUNITY DEVELOPMENT						
01141-51110	REGULAR EMPLOYEES	$358,745	$350,434	$429,925	$439,921	Assistant City Manager/CD Director (25%) Eco/Cd Assistant Director Long Range Senior Planner Econ Development Specialist Building Permit Technician (50%) Planner I Planner
01141-51120	PART-TIME EMPLOYEES	$0	$3,355	$0	$0	
01141-51140	OVERTIME	$61	$50	$0	$0	
01141-51210	HEALTH INSURANCE PREMIUMS	$84,352	$77,023	$91,320	$128,448	
01141-51220	LONG TERM DISABILITY	$36	$1,128	$1,252	$1,495	
01141-51230	BASIC LIFE INSURANCE	$64	$923	$1,032	$1,140	
01141-51250	FICA CONTRIBUTIONS	$26,108	$25,632	$32,889	$33,655	
01141-51260	RETIREMENT CONTRIBUTIONS	$22,443	$15,713	$30,080	$30,794	
01141-51270	UNEMPLOYMENT COMPENSATION	$1,024	$1,005	$1,290	$1,320	
01141-51280	WORKERS' COMPENSATION	$848	$574	$561	$856	
01141-51360	EMPLOYEE ONBOARDING	$80	$63	$0	$0	
01141-51410	UTILITIES	$0	$0	$0	$1,200	
01141-51610	SUPPLIES	$7,091	$9,000	$8,000	$5,000	Historic Preservation endeavors
					$5,000	Office supplies
	TOTAL SUPPLIES	$7,091	$9,000	$8,000	$10,000	
01141-51710	PROFESSIONAL SERVICES				$200,000	Comprehensive Plan
					$10,000	Surveying, graphic and other design for misc. projects
		$176,384	$31,364	$265,000	$50,000	Economic Development Strategy Implementation
					$20,000	System Improvement Fee Analysis
	TOTAL PROFESSIONAL SERVICES	$176,384	$31,364	$265,000	$280,000	
01141-51810	MAINTENANCE & REPAIR	$293	$453	$2,500	$5,000	Miscellaneous repairs in Comm Dev Suite.
01141-51920	RENT/LEASE - EQUIPMENT	$333	$48	$0	$3,000	
01141-52110	PUBLIC NOTICES	$913	$1,848	$2,000	$2,000	
01141-52120	EMPLOYMENT POSTING	$1,260	$0	$300	$1,000	
01141-52210	PROFESSIONAL DEVELOPMENT	$3,354	$2,801	$1,000	$12,500	
01141-52310	MISC. TRAVEL	$3,553	$981	$500	$0	
01141-52410	PROFESSIONAL DUES AND MEMBERSH	$1,312	$968	$3,500	$2,500	
01141-52510	GRANTS	$6,265	$2,542	$118,000	$78,000	USDA revolving loan fund
01141-52710	CREDIT CARD FEES	$1,302	$0	$0	$0	
01141-52810	OTHER OPERATING EXPENSE	$13,298	$2,759	$5,000	$20,000	Historic Preservation Printing and potential grant match for historic preservation grant
					$7,500	General operating expenses including dinners for Planning and Zoning Commission
	TOTAL OTHER OPERATING EXPENSE	$13,298	$2,759	$5,000	$27,500	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01141-52855	AFFORDABLE HOUSING	$0	$0	$0	$50,000	Affordable Housing managing units, technical assistance with RFQ, and potential commitment to regional MOU
01141-59998	BIW PERSONNEL				$70,000	Neighborhood Services and water enforcement
	TOTAL BIW PERSONNEL				$70,000	
TOTAL 141 - COMMUNITY DEVELOPMENT		$709,117	$528,664	$994,150	$1,180,329	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 144 ENGINEERING & ADMINISTRATION						
01144-51110	REGULAR EMPLOYEES	$435,535	$385,418	$429,369	$427,104	City Engineer Assistant City Engineer (2) Transit Planning And Development Lead
01144-51210	HEALTH INSURANCE PREMIUMS	$73,126	$84,346	$107,746	$86,203	
01144-51220	LONG TERM DISABILITY	$28	$1,202	$1,388	$1,357	
01144-51230	BASIC LIFE INSURANCE	$52	$1,006	$1,020	$1,104	
01144-51250	FICA CONTRIBUTIONS	$31,676	$27,731	$33,068	$32,674	
01144-51260	RETIREMENT CONTRIBUTIONS	$22,051	$14,214	$30,799	$29,897	
01144-51270	UNEMPLOYMENT COMPENSATION	$1,242	$1,082	$1,316	$1,280	
01144-51280	WORKERS' COMPENSATION	$1,301	$1,620	$1,421	$852	
01144-51360	EMPLOYEE ONBOARDING	$146	$2,373	$200	$2,000	Costs associated with new hire.
01144-51410	UTILITIES	$1,742	$3,292	$3,500	$4,200	
01144-51610	SUPPLIES	$5,412	$2,527	$10,000	$12,000	General supplies. Two digital levels- $760.00 and one GIS data collector $3,000
01144-51710	PROFESSIONAL SERVICES	$1,365	$8,263	$352,606	$0	Drainage survey project -100k
					$20,000	Arterial Traffic Counting Project
					$6,047	Completion of the LoVa Trail design contract.
					$40,583	Completion of the Mitchell Creek flood plain analysis project from 2021.
					$75,000	Pedestrian Bridge Survey and Maintenance Plan Development
	TOTAL PROFESSIONAL SERVICES	$1,365	$8,263	$352,606	$141,630	
01144-51810	MAINTENANCE & REPAIR	$1,752	$3,028	$2,500	$3,000	
01144-51920	RENT/LEASE - EQUIPMENT	$333	$48	$500	$500	
01144-52110	PUBLIC NOTICES	$0	$35	$1,000	$0	
01144-52120	EMPLOYMENT POSTING	$330	$0	$500	$200	
01144-52210	PROFESSIONAL DEVELOPMENT	$5,991	$286	$10,000	$6,000	
01144-52310	MISC. TRAVEL	$722	$0	$5,000	$3,000	
01144-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$120	$1,000	$500	
01144-52440	PROFESSIONAL SUBSCRIPTION	$0	$0	$500	$0	
01144-52510	GRANTS	$0	$0	$18,269	$0	
01144-52610	TECHNOLOGY	$16,569	$3,313	$31,000	$6,000	
01144-52810	OTHER OPERATING EXPENSE	$2,544	$2,350	$2,500	$2,500	
01144-59520	CAPITAL OUTLAY	$837	$0	$0	$0	
01144-59998	BIW PERSONNEL	$0	$0	$0	$145,000	
	TOTAL 144 - ENGINEERING & ADMINISTRATION	$602,755	$542,251	$1,045,202	$907,001	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 145 BUILDING INSPECTION						
01145-51110	REGULAR EMPLOYEES	$152,075	$180,199	$197,502	$198,081	Building Official Building Inspector II Building Permit Technician (50%)
01145-51140	OVERTIME	$4,613	$312	$0	$500	
01145-51210	HEALTH INSURANCE PREMIUMS	$41,961	$49,049	$49,525	$50,877	
01145-51220	LONG TERM DISABILITY	$16	$580	$586	$669	
01145-51230	BASIC LIFE INSURANCE	$28	$485	$464	$524	
01145-51250	FICA CONTRIBUTIONS	$11,331	$12,886	$15,109	$15,153	
01145-51260	RETIREMENT CONTRIBUTIONS	$7,587	$7,014	$13,788	$13,865	
01145-51270	UNEMPLOYMENT COMPENSATION	$444	$505	$593	$594	
01145-51280	WORKERS' COMPENSATION	$1,765	$2,057	$1,978	$3,231	
01145-51360	EMPLOYEE ONBOARDING	$52	$0	$0	$0	
01145-51410	UTILITIES	$201	$599	$0	$600	Building Official cell phone
01145-51610	SUPPLIES	$1,590	$349	$2,000	$5,000	Includes additional 2021 Building Code books
01145-51710	PROFESSIONAL SERVICES	$30,034	$83	$5,000	$25,000	Process improvements for building department.
01145-51810	MAINTENANCE & REPAIR	$2,451	$2,275	$5,500	$2,500	
01145-52120	EMPLOYMENT POSTING	$0	$0	$0	$500	
01145-52210	PROFESSIONAL DEVELOPMENT	$2,316	$1,017	$2,500	$3,000	
01145-52310	MISC. TRAVEL	$3,065	$0	$2,000	$0	
01145-52410	PROFESSIONAL DUES AND MEMBERSH	$190	$503	$1,000	$1,000	
01145-52810	OTHER OPERATING EXPENSE	$693	$11	$2,000	$2,000	
TOTAL 145 - BUILDING INSPECTION		$260,411	$257,925	$299,545	$323,094	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 153 STREETS & ALLEYS						
01153-51110	REGULAR EMPLOYEES	$415,689	$403,503	$477,682	$561,793	Streets Superintendent Assistant Street Superintendent Street Crew Leader (2) Sign Shop Technician II Street Maintenance Operator (4)
01153-51140	OVERTIME	$7,851	$4,021	$7,000	$2,000	
01153-51150	STANDBY AND CALLBACK PAY	$22,157	$14,368	$23,000	$20,000	
01153-51210	HEALTH INSURANCE PREMIUMS	$129,203	$135,483	$135,902	$141,667	
01153-51220	LONG TERM DISABILITY	$36	$1,300	$1,298	$1,909	
01153-51230	BASIC LIFE INSURANCE	$63	$1,103	$1,028	$1,485	
01153-51250	FICA CONTRIBUTIONS	$33,054	$30,918	$36,543	$42,977	
01153-51260	RETIREMENT CONTRIBUTIONS	$26,365	$20,811	$33,423	$39,325	
01153-51270	UNEMPLOYMENT COMPENSATION	$1,296	$1,187	$1,434	$1,686	
01153-51280	WORKERS' COMPENSATION	$21,336	$25,500	$23,390	$17,938	
01153-51360	EMPLOYEE ONBOARDING	$106	$0	$0	$0	
01153-51380	UNIFORM ALLOWANCE	$438	$2,800	$1,350	$7,400	
01153-51410	UTILITIES				$130,000	Street Lights/Electric
		$204,102	$154,340	$201,200	$2,500	Landfill
					$10,000	Natural Gas/Propane
					$12,000	Telephones
					$12,000	Communications
					$5,500	Trash
					$30,000	Water/Sewer
	TOTAL UTILITIES	$204,102	$154,340	$201,200	$202,000	
01153-51610	SUPPLIES	$25,539	$25,386	$18,000	$10,000	Small Tools and Equipment
					$1,800	Office Supply
					$7,500	Update Safety Equipment and Training
					$2,500	Technology
	TOTAL SUPPLIES	$25,539	$25,386	$18,000	$21,800	
01153-51710	PROFESSIONAL SERVICES	$3,223	$4,886	$1,500	$5,000	Other professional services
01153-51810	MAINTENANCE & REPAIR	$153,291	$151,010	$153,291	$230,000	Increase for cost of parts
01153-51920	RENT/LEASE - EQUIPMENT	$787	$541	$500	$3,000	
01153-51930	RENT/LEASE - BUILDING	$0	$0	$0	$31,510	Payment on the Sign Shop Building - South Yard.
01153-52110	PUBLIC NOTICES	$539	$0	$350	$350	
01153-52120	EMPLOYMENT POSTING	$490	$0	$200	$1,000	
01153-52210	PROFESSIONAL DEVELOPMENT				$5,000	Increase for 3rd party training
		$4,727	$412	$800	$2,000	Travel
	TOTAL PROFESSIONAL DEVELOPMENT	$4,727	$412	$800	$7,000	
01153-52310	MISC TRAVEL	$351	$258	$500	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01153-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$392	$0	$500	
01153-52420	ORGANIZATIONAL DUES AND MEMBER	$202	$0	$202	$0	
01153-52610	TECHNOLOGY	$3,802	$625	$1,500	$3,500	Software licensing
					$5,000	Additions and upgrades in workstations, systems, deployments, software, radio system and technology.
	TOTAL TECHNOLOGY	$3,802	$625	$1,500	$8,500	
01153-52810	OTHER OPERATING EXPENSE	$20,031	$15,426	$15,000	$25,000	
01153-52870	FLOOD CONTROL/HAZARDOUS WASTE	$1,238	$1,445	$800	$1,500	Flood Control/Hazardous Waste
01153-55110	SAFETY PROGRAMS	$3,949	$2,586	$2,000	$0	
01153-59520	CAPITAL OUTLAY	$57,512	$0	$0	$100,000	South Yard Improvements and Contingency for Streets Projects
	TOTAL 153 - STREETS & ALLEYS	$1,137,378	$998,302	$1,137,892	$1,475,340	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 154 PARKS & CEMETERY						
01154-51110	REGULAR EMPLOYEES	$438,874	$532,507	$585,297	$673,911	Parks Superintendent Crew Leader/Parks Trails & Open Space/Spec Projects Forestry & Gardens Supervisor Parks Supervisor Maintenance Worker II - Parks (5) Maintenance Worker III - Parks Maintenance Worker (2) Maintenance Worker I - Parks
01154-51120	PART-TIME EMPLOYEES	$100,738	$28,809	$176,000	$100,738	
01154-51140	OVERTIME	$691	$537	$0	$691	
01154-51150	STANDBY AND CALLBACK PAY	$2,725	$1,458	$0	$3,100	
01154-51210	HEALTH INSURANCE PREMIUMS	$135,389	$165,985	$216,621	$300,264	
01154-51220	LONG TERM DISABILITY	$47	$1,574	$1,785	$2,290	
01154-51230	BASIC LIFE INSURANCE	$82	$1,327	$1,454	$1,771	
01154-51250	FICA CONTRIBUTIONS	$41,170	$41,063	$44,776	$51,554	
01154-51260	RETIREMENT CONTRIBUTIONS	$26,052	$21,685	$40,929	$47,175	
01154-51270	UNEMPLOYMENT COMPENSATION	$1,614	$1,610	$1,754	$2,021	
01154-51280	WORKERS' COMPENSATION	$15,885	$26,866	$17,622	$23,439	
01154-51360	EMPLOYEE ONBOARDING	$657	$780	$700	$700	
01154-51380	UNIFORM ALLOWANCE	$467	$3,908	$4,250	$0	
01154-51410	UTILITIES	$191,790	$222,983	$204,695	$51,900	About $4200/Month And $500X3 For Power Washing
					$110,500	Water/Sewer
					$4,000	Natural Gas
					$31,000	Electric
					$20,000	Trash
					$1,000	Landfill
					$10,375	Communications
	TOTAL UTILITIES	$191,790	$222,983	$204,695	$228,775	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01154-51610	SUPPLIES	$40,184	$26,240	$22,800	$800	Copy supplies
					$18,000	Number Of Restrooms And Length Of Operation Has Increased. Parks Is Committed To More Environmentally Sound Practices That Slightly Raise Costs.
					$750	Office supplies
					$4,000	8 Staff, $500 Each
					$1,500	3 Staff, $500 Each
					$1,000	2 Staff, $500 Each
					$1,690	For Shirts And Uniforms Split From Uniform Allowance
					$2,000	Division Is In Need Of Additional Ppe For Staff
					$4,250	Deicer
	TOTAL SUPPLIES	$40,184	$26,240	$22,800	$33,990	
01154-51710	PROFESSIONAL SERVICES				$22,650	Mosquito Abatement W/ Garco, Trees, I-Central
					$25,500	Tree Lighting
					$6,000	RFOV $5000, RFMBA $1000
		$61,721	$21,923	$55,250	$500	CDL/Random testing
	TOTAL PROFESSIONAL SERVICES	$61,721	$21,923	$55,250	$54,650	
01154-51810	MAINTENANCE & REPAIR	$117,802	$147,176	$217,040	$108,340	Vehicle Maintenance
					$30,000	Number Of Facilities And Level Of Service Has Risen On A Yearly Basis
					$25,000	Increase In Newly Landscaped Areas And Aging Landscaping Needs
					$25,000	Aging Infrastructure Repair Costs Are Rising
					$10,000	Level Of Service And Associated Costs. 6Th Street Renovation Will Require More Service
					$25,000	To Be Offset By Business' Costs
					$20,000	26 Pots, North landing, Sunflower Park Adding Smoke Ally Pots
					$2,000	Small Increase For 6Th St
					$12,000	Silver Sage, Midland, Devereux, 6Th St
					$1,000	Row
					$5,000	Parks building maintenance
	TOTAL MAINTENANCE & REPAIR	$117,802	$147,176	$217,040	$263,340	
01154-51910	RENT/LEASE - LAND	$780	$680	$860	$860	Boy Scout Trail And Union Pacific Area On 7Th
01154-51920	RENT/LEASE - EQUIPMENT	$17,581	$41,417	$28,860	$850	Equipment rental
					$14,410	Portalets - Gregory, Whitewater, Two Rivers? $12420, Rosebud $1392, Commcenter $510
					$4,200	Portalets - Axtel Park
					$8,400	Portalets - Archery range, Atkinson Trail
					$1,000	Copier lease
	TOTAL RENT/LEASE - EQUIPMENT	$17,581	$41,417	$28,860	$28,860	
01154-52120	EMPLOYMENT POSTING	$637	$258	$510	$600	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01154-52140	PROCUREMENT ADVERTISING	$487	$91	$0	$0	
01154-52210	PROFESSIONAL DEVELOPMENT	$3,664	$1,754	$1,500	$2,500	Travel
					$5,000	Backflow Cert, Playground Safety,
	TOTAL PROFESSIONAL DEVELOPMENT	$3,664	$1,754	$1,500	$7,500	
01154-52310	MISC. TRAVEL	$368	$0	$0	$0	
01154-52410	PROFESSIONAL DUES AND MEMBERSH	$190	$290	$425	$500	CPRA $87/person NPRA $112.50/person
01154-52610	TECHNOLOGY	$0	$512	$2,750	$5,600	$5000 Vueworks, $54/Yr Per Staff Timeclock/Scheduler
					$500	$392 Autocad
	TOTAL TECHNOLOGY	$0	$512	$2,750	$6,100	
01154-52810	OTHER OPERATING EXPENSE	$9,034	$19,885	$0	$0	
01154-52875	AGRICULTURAL/HORTICULTURAL	$9,147	$11,342	$0	$0	
01154-56210	REPURCHASE OF CEMETERY PLOTS	$0	$850	$5,000	$5,000	
TOTAL 154 - PARKS & CEMETERY		$1,217,776	$1,323,510	$1,630,877	$1,837,829	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
01 GENERAL FUND - 999 INTERFUND TRANSFERS						
01999-55920	TRANSFER TO A&I	$0	$100,000	$100,000	$0	
01999-55930	TRANSFER TO CAPITAL PROJECTS	$1,646,053	$0	$1,377,040	$0	
01999-55960	TRANSFER TO FIRE & EMS				$1,612,797	$2,272,374 *6.113 mills / 8.613 mills
		$2,871,209	$2,485,460	$2,805,904	$1,156,169	Fire Dept Contribution
	TOTAL TRANSFER TO FIRE & EMS	$2,871,209	$2,485,460	$2,805,904	$2,768,966	
01999-55970	TRANSFER TO EMERG SVCS	$543,580	$370,635	$623,706	$659,577	Equipment Replacement Fund transfer $2,272,374 *2.5 mills / 8.613 mills
TOTAL 999 - INTERFUND TRANSFERS		$5,060,842	$2,956,095	$4,906,650	$3,428,543	
		$21,128,635	$17,436,046	$23,066,524	$22,942,583	

TOURISM FUND

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$846,812	$952,926	$1,304,725	$1,355,337
Expenditures	($1,127,323)	($1,034,753)	($1,034,753)	($1,366,112)
Change in Fund Balance	($280,511)	($81,827)	$269,972	($10,775)
Beginning Fund Balance	$495,905	$215,394	$215,394	$485,366
Ending Fund Balance	$215,394	$133,567	$485,366	$474,591
Reserves:				
7.5% of Revenue for Tourism Impact				($101,699)
15% of Revenue	($126,156)	($208,751)	($208,751)	($203,398)
Available Fund Balance	$89,238	($75,184)	$276,615	$169,494

**Reserves as a % of revenue are calculated from cash receipts from 9/1/2020 through 8/31/2021; $1,354,337*

Cash Balance as of 6/30/2 $125,660

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
05 TOURISM PROMOTION - 00						
0500020-41410	ACCOMODATIONS TAX	$1,211,106	$846,111	$951,926	$1,354,337	
		$1,211,106	$846,111	$951,926	$1,354,337	
05 TOURISM PROMOTION - 00						
0500060-43510	INTEREST	$3,808	$485	$1,000	$1,000	
		$3,808	$485	$1,000	$1,000	
		$1,214,915	$846,596	$952,926	$1,355,337	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
05 TOURISM PROMOTION - 111 TOURISM PROMOTION FUND						
05111-56410	MKTG DIRECTOR SALARY	$83,733	$87,780	$87,780	$93,000	
05111-56411	MARKETING ASSTISTANT	$57,000	$59,850	$55,000	$57,200	
05111-56412	PAYROLL TAXES-BENEFITS	$28,100	$29,526	$28,566	$30,040	
05111-56413	VISITOR SERVICES	$115,000	$115,000	$75,000	$100,000	
05111-56414	PUBLIC RELATIONS	$24,430	$18,611	$1,000	$10,500	
05111-56415	BROCHURE PRINTING & DIST	$36,734	$36,456	$29,600	$36,400	
05111-56416	PRINT & OTHER ADVERTISING	$812,635	$629,758	$595,956	$716,088	
05111-56417	HOSTING	$33,764	$23,050	$24,284	$23,564	
05111-56418	CONNECTIVITY SERVICES LISTINGS	$15,286	$20,154	$25,000	$20,000	
05111-56419	DIRECT MAIL/FULLFILLMENT	$7,979	$6,025	$6,000	$9,000	
05111-56420	TRADE SHOWS	$9,324	$5,634	$2,500	$2,500	
05111-56421	ASSOCIATION MEMBERSHIPS	$5,865	$4,240	$3,275	$5,300	
05111-56422	MISC. ADS AND PROMO	$2,236	$3,535	$675	$1,380	
05111-56423	TRAVEL	$19,642	$9,065	$4,900	$15,490	
05111-56424	SPECIAL EVENTS & MARKETING	$24,860	$5,495	$2,000	$16,800	
05111-56425	BOOKKEEPING SERVICES	$10,400	$10,400	$10,400	$10,500	
05111-56426	TRANSFER TO OTHER FUNDS	$110,000	$0	$0	$0	To General Fund for Downtown Maintenance
					$50,000	This $50,000 is part of the FAB grant funds and is transferred to the General Fund to assist with the costs of major events including the 4th of July and New Year's.
	TOTAL TRANSFER TO OTHER FUNDS	$110,000	$0	$0	$50,000	
05111-56427	INTERFUND COST OF SERVICE	$10,660	$11,199	$11,423	$11,651	
05111-56428	OTHER EXPENSE	$2,544	$1,544	$0	$100,000	Continency funds for emergencies ; fires, pandemics, I-70 disasters, etc.
05111-56429	CONSULTANTS	$450	$0	$0	$5,000	Miscellaneous
05111-56430	COMMUNITY PROMOTION	$35,654	$50,000	$71,394	$51,699	Tourism Fund revenue is split to allocate 85% to the Tourism Management Fund and 15% to the General Fund. The 15% is split evenly between the grant process managed by the Financial Advisory Board, and a reserve set aside for addressing the impacts of Tourism on the City. This line item represents the FAB grant amount less $50,000 transferred to the General Fund for events.
TOTAL 111 - TOURISM PROMOTION FUND		$1,446,295	$1,127,323	$1,034,753	$1,366,112	
		$1,446,295	$1,127,323	$1,034,753	$1,366,112	

Street Tax Fund

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$2,799,508	$2,409,145	$2,611,848	$3,122,357
Expenditures		($3,463,192)	($2,424,528)	($3,066,014)	($3,256,959)
Change in Fund Balance		($663,684)	($15,383)	($454,166)	($134,602)
Beginning Fund Balance		$1,777,000	$1,113,316	$1,113,316	$659,150
Ending Fund Balance		$1,113,316	$1,097,933	$659,150	$524,548
Reserves:					
Developer Contributions		($25,000)	($25,000)	($25,000)	
Springridge Traffic Fees		($249,941)	($249,941)	($249,941)	
Available Fund Balance		$838,375	$822,992	$384,209	$524,548
Cash Balance as of 6/30/21	$2,540,153				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
13 STREET TAX FUND - 00						
1300020-41210	GENERAL SALES TAX	$2,543,106	$2,420,711	$2,582,929	$2,916,952	
1300020-41310	USE TAX	$157,992	$91,018	$100,000	$155,405	
		$2,701,097	$2,511,729	$2,682,929	$3,072,357	
13 STREET TAX FUND - 15 PUBLIC TRANSPORTATION						
1315060-41220	AUDIT REVENUE	$17,217	$31,861	$10,000	$25,000	
1315060-42310	GRANTS	($0)	$200,000	($0)	($0)	
1315060-42420	CREDIT CARD CONVENIENCE FEES	$298	$197	($0)	($0)	
1315060-42930	TRAFFIC IMPACT - SPRINGRIDGE	$15,871	$16,218	($0)	($0)	
1315060-43510	INTEREST	$75,480	$25,760	($0)	$25,000	
		$108,866	$274,036	$10,000	$50,000	
		$2,809,963	$2,785,765	$2,692,929	$3,122,357	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
13 STREET TAX FUND - 000						
1330-54710	ROUTINE MAINTENANCE	$513,643	$0	$0	$0	
1330-60000	PROJECT	$76,000	$2,176,166	$1,535,000	$100,000	Devereux Bridge Repairs
					$160,000	Blake Avenue - 23rd to 26th
					$25,000	Centennial Street - Mill and overlay
					$55,000	Storm Water Soccer field
					$65,000	Vista and Sunny Acres Intersection
					$80,000	21st (Blake to Palmer) Repave
					$1,200,000	Red Mountain South Phase II
					$25,000	Lincolnwood Drainage and Pavement
	TOTAL PROJECT	$76,000	$2,176,166	$1,535,000	$1,710,000	
	TOTAL 000 -	$589,643	$2,176,166	$1,535,000	$1,710,000	
13 STREET TAX FUND - 253 STREET TAX FUND						
13253-51610	SUPPLIES	$82,605	$80,995	$97,500	$89,500	Purchase additional traffic control devices, new small VMS 2023, contracted flaggers for various projects
13253-51710	PROFESSIONAL SERVICES	$16,221	$25,133	$110,000	$86,500	Testing Requirements, rebuild planning around South Grand.
13253-51810	MAINTENANCE & REPAIR	$120,637	$155,891	$0	$615,000	Includes chip seal, crack seal, street striping, traffic signal maintenance, snow removal contract, misc. equipment rentals, traffic calming program, 8th St temporary sidewalk, roadside sign replacement, storm water system maintenance, guardrail replacement, alleyway maintenance, safe routes to school, sidewalk panel, and ADA ramp, ROW concrete
13253-51920	RENT/LEASE - EQUIPMENT	$32,186	$0	$0	$0	
13253-52510	GRANTS	$0	$0	$24,000	$0	
13253-52610	TECHNOLOGY	$0	$0	$7,500	$0	
13253-52710	CREDIT CARD FEES	$832	$883	$0	$0	
13253-52810	OTHER OPERATING EXPENSE	$4,572	$10,826	$0	$0	
13253-52820	TIF TO DDA	$103,586	$110,926	$42,162	$96,621	
13253-52825	ECONOMIC INCENTIVE REBATE	$18,517	$34,343	$13,513	$27,027	
13253-53910	PRINCIPAL - BONDS	$265,000	$275,000	$275,000	$255,000	
13253-53930	INTEREST - BONDS	$52,554	$46,512	$46,512	$64,296	
13253-53950	ISSUANCE COSTS	$300	$300	$0	$300	
13253-54310	INTERFUND COST OF SERVICE	$291,818	$300,573	$306,584	$312,715	
13253-54710	ROUTINE MAINTENANCE	$388,606	$245,644	$580,000	$0	
13253-55920	TRANSFER TO A&I	$74,000	$0	$0	$0	
	TOTAL 253 - STREET TAX FUND	$1,451,433	$1,287,026	$1,502,771	$1,546,959	
		$2,041,076	$3,463,192	$3,037,771	$3,256,959	

MARIJUANA TAX FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$458,236	$295,000	$360,000	$450,000
Expenditures		($326,998)	($285,000)	($488,150)	($286,000)
Change in Fund Balance		$131,238	$10,000	($128,150)	$164,000
Beginning Fund Balance		$177,388	$308,626	$308,626	$180,476
Ending Fund Balance		$308,626	$318,626	$180,476	$344,476
Reserves:					
Detox Center					($50,000)
Available Fund Balance		$308,626	$318,626	$180,476	$294,476
Cash Balance as of 6/30/21	$313,920				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
15 MARIJUANA TAX FUND - 00						
1500020-41510	MARIJUANA SALES TAX	$286,724	$390,044	$250,000	$375,000	
1500020-41520	MARIJUANA EXCISE TAX	$50,714	$68,193	$45,000	$75,000	
		$337,438	$458,237	$295,000	$450,000	
15 MARIJUANA TAX FUND - 00						
1500060-43510	INTEREST	$577	($0)	($0)	($0)	
		$577	($0)	($0)	($0)	
		$338,015	$458,237	$295,000	$450,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
15 MARIJUANA TAX FUND - 510 MARIJUANA TAX FUND						
15510-51710	PROFESSIONAL SERVICES	$502	$726	$0	$1,000	
15510-53710	CONTRIBUTIONS/DONATIONS	$0	$50,000	$0	$0	
15510-55950	TRANSFER TO GENERAL FUND				$100,000	Police and security
		$166,833	$276,272	$185,000	$100,000	Youth mental health
	TOTAL TRANSFER TO GENERAL FUND	$166,833	$276,272	$185,000	$200,000	
15510-55960	TRANSFER TO FIRE & EMS	$83,167	$0	$100,000	$85,000	Public safety
	TOTAL 510 - MARIJUANA TAX FUND	$250,502	$326,998	$285,000	$286,000	
		$250,502	$326,998	$285,000	$286,000	

TOBACCO TAX FUND

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$949,717	$901,000	$901,000	$805,000
Expenditures	($751,617)	($751,500)	($931,500)	($402,000)
Change in Fund Balance	$198,100	$149,500	($30,500)	$403,000
Beginning Fund Balance	$0	$198,100	$198,100	$167,600
Ending Fund Balance	$198,100	$347,600	$167,600	$570,600
Reserves:				
Youth Mental Health Reserve				($200,000)
Social Services				($200,000)
Available Fund Balance	$198,100	$347,600	$167,600	$170,600

Cash Balance as of 6/30/21 $109,347

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
16 TOBACCO TAX - 00						
1600020-41530	TOBACCO SALES TAX	($0)	$939,141	$900,000	$800,000	
		($0)	$939,141	$900,000	$800,000	
16 TOBACCO TAX - 00						
1600030-42140	SALES TAX/BUSINESS LICENSES	($0)	$17,500	($0)	$5,000	
		($0)	$17,500	($0)	$5,000	
16 TOBACCO TAX - 00						
1600060-43510	INTEREST	($0)	($0)	$1,000	($0)	
		($0)	($0)	$1,000	($0)	
		($0)	$956,641	$901,000	$805,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
16 TOBACCO TAX - 520 TOBACCO TAX						
16520-51710	PROFESSIONAL SERVICES	$0	$1,617	$1,500	$2,000	
16520-52510	GRANTS	$0	$0	$353,150	$0	
16520-52810	OTHER OPERATING EXPENSE	$0	$0	$30,000	$0	
	TOTAL 520 - TOBACCO TAX	$0	$1,617	$384,650	$2,000	
16 TOBACCO TAX - 999 INTERFUND TRANSFERS						
16999-55950	TRANSFER TO GENERAL FUND	$0	$750,000	$750,000	$400,000	Down from $750k in 2021
	TOTAL 999 - INTERFUND TRANSFERS	$0	$750,000	$750,000	$400,000	
		$0	$751,617	$1,134,650	$402,000	

BUS TAX FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$2,182,204	$1,808,314	$1,889,395	$2,374,043
Expenditures		($1,937,744)	($2,126,849)	($2,212,077)	($1,757,973)
Change in Fund Balance		$244,460	($318,535)	($322,682)	$616,070
Beginning Fund Balance		$813,783	$1,058,243	$1,058,243	$735,561
Ending Fund Balance		$1,058,243	$739,708	$735,561	$1,351,631
Reserves:					
Bike Path Reserve					($50,000)
Available Fund Balance		$1,058,243	$739,708	$735,561	$1,301,631
Cash Balance as of 6/30/21	$1,313,816				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
18 BUS TAX FUND - 00						
1800020-41210	GENERAL SALES TAX	$1,017,167	$968,213	$919,789	$1,166,781	
1800020-41310	USE TAX	$63,192	$36,405	$40,000	$62,162	
		$1,080,359	$1,004,617	$959,789	$1,228,943	
18 BUS TAX FUND - 00						
1800040-42310	GRANTS	$728,117	$1,131,492	$764,405	$300,000	This is a grant from the State to offset operating costs of the RGS system during 2021 and 2022. The grant will only reimburse operating costs.
					$750,000	Standard FTA 5311 grant for system operations. This has not been guaranteed yet, but is likely. This grant is a 50% reimbursement on operating costs up to $316,716 (Total cost, revenue plus expenditure $633,432.)
	TOTAL GRANTS	$728,117	$1,131,492	$764,405	$1,050,000	
		$728,117	$1,131,492	$764,405	$1,050,000	
18 BUS TAX FUND - 15 PUBLIC TRANSPORTATION						
1815060-41220	AUDIT REVENUE	$6,886	$12,743	$2,000	$10,000	
1815060-42420	CREDIT CARD CONVENIENCE FEES	$119	$79	$120	$100	
1815060-43510	INTEREST	$5,533	$378	$1,000	$5,000	
1815060-43920	INSURANCE REIMBURSEMENT	($0)	$43,445	($0)	($0)	
1815060-44130	MISCELLANEOUS	$1,450	$28,694	$1,000	($0)	
		$13,988	$85,339	$4,120	$15,100	
18 BUS TAX FUND - 15 PUBLIC TRANSPORTATION						
1815050-42421	ADVERTISING FEES	$10,850	$1,001	$5,000	$5,000	
1815050-42422	BUS FARES	$98,959	$42,037	$75,000	$75,000	
		$109,809	$43,037	$80,000	$80,000	
		$1,932,274	$2,264,485	$1,808,314	$2,374,043	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
18 BUS TAX FUND - 170 BUS TAX FUND						
18170-51410	UTILITIES	$12,260	$11,700	$13,000	$12,500	
18170-51710	PROFESSIONAL SERVICES				$100,000	Ride Glenwood Expansion and On-demand Transit Study
					$65,000	First and Last Mile Connection Design; Midland to 27th Street Underpasses
		$8,380	$7,790	$128,363	$75,000	Identification of BRT extension preferred route through Glenwood Springs.
	TOTAL PROFESSIONAL SERVICES	$8,380	$7,790	$128,363	$240,000	
18170-52210	PROFESSIONAL DEVELOPMENT	$2,072	$0	$2,000	$3,000	
18170-52510	GRANTS	$543,184	$555,109	$629,432	$0	
18170-52710	CREDIT CARD FEES	$333	$353	$300	$5,000	
18170-52810	OTHER OPERATING EXPENSE	$10,816	$125,063	$20,000	$20,000	
18170-52815	SALES TAX REFUNDS	$0	$0	$1,050	$0	
18170-52820	TIF TO DDA	$41,431	$44,367	$16,865	$38,649	
18170-52825	ECONOMIC INCENTIVE REBATE	$7,494	$13,737	$6,000	$10,811	
18170-53510	PROPERTY INSURANCE	$6,900	$7,900	$7,000	$7,100	
18170-54310	INTERFUND COST OF SERVICE	$127,773	$131,606	$134,238	$136,922	
18170-56510	FIXED LABOR COSTS	$381,409	$341,045	$406,140	$429,073	
18170-56515	DIRECT LABOR COSTS	$390,631	$341,309	$425,464	$427,452	
18170-56520	EMPLOYEE BUS PASSES	$1,067	$292	$1,000	$500	
18170-56525	TDM PROGRAM EXPENSE	$3,963	$0	$5,000	$5,000	
18170-56530	DIRECT MILEAGE COSTS	$200,858	$190,043	$242,760	$241,620	
18170-56535	ALLOCATED TRAINING & OTHER COS	$68,785	$57,866	$80,640	$94,470	
18170-56540	VAN MAINTENANCE	$4,315	$872	$3,500	$0	
18170-56545	PARA-TRANSTI SERVICE	$30,000	$30,000	$30,000	$30,000	
18170-56550	TRANSIT OPERATIONS PLAN	$20,737	$0	$0	$0	
18170-56555	ALLOCATED CAPITAL COSTS	$52,383	$47,677	$59,325	$55,876	
18170-56560	BUS WRAPS	$15,652	$14,155	$0	$0	
18170-56565	RIDE HAILING PILOT	$0	$16,861	$0	$0	
18170-60000	PROJECTS	$0	$46,637	$0	$0	
	TOTAL 170 - BUS TAX FUND	$1,930,442	$1,984,381	$2,212,077	$1,757,973	
		$1,930,442	$1,984,381	$2,212,077	$1,757,973	

WATER AND WASTEWATER FUND

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$7,003,480	$6,473,500	$7,273,500	$11,846,039
Expenditures	($11,402,151)	($11,793,007)	($15,611,610)	($12,792,769)
Change in Fund Balance	($4,398,671)	($5,319,507)	($8,338,110)	($946,730)
Beginning Fund Balance	$31,535,248	$27,136,577	$27,136,577	$18,798,467
Ending Fund Balance	$27,136,577	$21,817,070	$18,798,467	$17,851,737
Reserves:				
Restricted Water Fees			($2,753,726)	($2,753,726)
Restricted Sewer Fees			($1,625,448)	($1,625,448)
Available Fund Balance	$27,136,577	$21,817,070	$14,419,293	$13,472,563

Cash Balance as of 6/30/21	$674,766

**Does not include debt raised in 2021*

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21 WATER, SEWER AND SANITATION - 45 WATER						
2145060-42310	GRANTS	($0)	$198,278	$800,000	($0)	
2145060-43510	INTEREST	$139,353	$50,358	$60,000	$100,000	
2145060-43910	COST REIMBURSEMENTS	($0)	$10,837	($0)	($0)	
2145060-44130	MISCELLANEOUS	$1,191	$3,983	($0)	$3,502,000	Includes $3.5 million in loans and grants
		$140,543	$263,456	$860,000	$3,602,000	
21 WATER, SEWER AND SANITATION - 45 WATER						
2146050-42520	SEWER USER FEES	$3,354,836	$3,271,097	$3,450,000	$4,051,496	
2146050-42580	SEWER IMPROVEMENT FEES	$316,908	$267,726	$50,000	$100,000	
		$3,671,744	$3,538,823	$3,500,000	$4,151,496	
21 WATER, SEWER AND SANITATION - 46 WASTEWATER						
2145050-42510	WATER USER FEES	$2,795,662	$2,926,465	$2,850,000	$3,991,793	
2145050-42530	WATER TAP FEES	($0)	$2,122	($0)	$2,000	
2145050-42550	METER SALES	$14,211	$15,861	$10,000	$15,000	
2145050-42560	SERVICE CONNECT FEES	$3,747	$3,750	$3,500	$3,750	
2145050-42570	WATER IMPROVEMENT FEES	$191,102	$253,497	$50,000	$80,000	
		$3,004,722	$3,201,695	$2,913,500	$4,092,543	
		$6,817,009	$7,003,974	$7,273,500	$11,846,039	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21 WATER, SEWER AND SANITATION - 000						
2146-60000	PROJECTS	$974,843	$16,098	$1,507,300	$100,000	Sewer Program - Pipe Lining and Manhole Rehabilitation
					$80,000	Starbucks/Safeway Sewer Main Replacement
					$10,000	Generator Trailer and System Wiring
					$75,000	System Improvements/Repairs Yearly
					$500,000	Wastewater Plant 10 Year Maintenance Program
					$60,000	WWTP Bio-Growth Removal and Control Program
					$45,000	Digester Air Balance Rrepair
					$75,000	Lift Station 11,000 Design and Permitting
					$30,000	Vehicle Replacement
	TOTAL PROJECTS	$974,843	$16,098	$1,507,300	$975,000	
	TOTAL 000 -	$974,843	$16,098	$1,507,300	$975,000	
21 WATER, SEWER AND SANITATION - 000						
2145-60000	PROJECTS	$597,406	$81,861	$5,912,642	$100,000	North Glenwood Water System Design - Water Tank and Pump Station Upgrades
					$60,000	Flouride System Upgrade
					$75,000	System Improvements/Yearly Upgrades
					$150,000	21st Street Waterline Replacement
					$50,000	Yearly Field Telemetry and SCADA Upgrades
					$812,500	Red Mountain South - Phase 2
					$40,000	Replace and Repair WTP Filter Building Exterior Insulation
					$75,000	Blake Avenue Waterline Replacement Phase 2 - Walmart to Blake Gate
					$20,000	2022 Comprehensive Tank Inspection
					$10,000	Generator Trailer and System Wiring
					$3,500,000	Roaring Fork pump station line and mixing vault
					$50,000	Raw Water System Expansion Planning and Designs
					$65,000	Equipment Replacement
	TOTAL PROJECTS	$597,406	$81,861	$5,912,642	$5,007,500	
	TOTAL 000 -	$597,406	$81,861	$5,912,642	$5,007,500	
21 WATER, SEWER AND SANITATION - 211 WATER & SEWER ADMINISTRATION						
21211-51110	REGULAR EMPLOYEES	$250,260	$362,520	$429,527	$328,306	Public Works Director (50%) WA/WW Plant Ops Superintendent WA/WW Field Ops Superintendent GIS Administrator Asset Mgmt/GIS Support Specialist (29%) Public Information Officer (25%)
21211-51210	HEALTH INSURANCE PREMIUMS	$40,196	$49,925	$56,864	$91,116	
21211-51220	LONG TERM DISABILITY	$29	$1,042	$1,144	$1,105	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21211-51230	BASIC LIFE INSURANCE	$51	$857	$909	$863	
21211-51250	FICA CONTRIBUTIONS	$22,489	$27,600	$31,023	$25,114	
21211-51260	RETIREMENT CONTRIBUTIONS	$20,539	$19,323	$28,387	$22,982	
21211-51270	UNEMPLOYMENT COMPENSATION	$889	$956	$1,217	$985	
21211-51280	WORKERS' COMPENSATION	$7,663	$13,163	$7,256	$8,656	
21211-51310	TUTITION REIMBURSEMENTS	$390	$0	$0	$0	
21211-51380	UNIFORM ALLOWANCE	$0	$1,050	$700	$0	
21211-51410	UTILITIES	$672	$1,383	$1,320	$1,500	Mobile phones (2)
21211-51610	SUPPLIES	$1,467	$989	$1,000	$1,000	Plan Printing for Construction Jobs and Reviews
					$100	
					$500	Office Supply
					$1,000	Misc. material
					$1,000	Uniforms
	TOTAL SUPPLIES	$1,467	$989	$1,000	$3,600	
21211-51710	PROFESSIONAL SERVICES	$47,838	$43,045	$45,000	$500	
					$30,000	Consultants
					$5,000	
					$5,000	
					$20,000	Water Model Yearly Updates
	TOTAL PROFESSIONAL SERVICES	$47,838	$43,045	$45,000	$60,500	
21211-51810	MAINTENANCE & REPAIR				$2,000	General Supplies
		$8,449	$11,124	$13,500	$100	Fire extinguishers for cars and buildings
					$1,000	Equipment for Trucks
					$5,000	Fuel for Mike and Warren's Vehicles
					$1,000	Upkeep on the Vehicles through Fleet - Mike and Warren Trucks
	TOTAL MAINTENANCE & REPAIR	$8,449	$11,124	$13,500	$9,100	
21211-52110	PUBLIC NOTICES	$902	$0	$0	$0	
21211-52120	EMPLOYMENT POSTING	$0	$1,247	$1,000	$250	
21211-52140	PROCUREMENT ADVERTISING	$46	$140	$200	$0	
21211-52210	PROFESSIONAL DEVELOPMENT				$2,500	Registration - Training Opportunities and Conference Attendance
		$115	$300	$4,000	$1,500	Air - Training Opportunities and Conference Attendance
					$1,000	Hotel - Training Opportunities and Conference Attendance
					$250	Mileage - Training Opportunities and Conference Attendance
					$500	Per Diem - Training Opportunities and Conference Attendance
					$250	Other - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$115	$300	$4,000	$6,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21211-52410	PROFESSIONAL DUES AND MEMBERSH	$324	$1,218	$0	$3,500	
21211-52420	ORGANIZATIONAL DUES AND MEMBER	$550	$50	$2,400	$0	
21211-52440	PROFESSIONAL SUBSCRIPTION	$0	$0	$350	$500	RMWEA Membership
21211-52510	GRANTS	$0	$9,606	$830,000	$15,000	Sustainable Strategies
21211-52610	TECHNOLOGY	$0	$0	$0	$10,500	Software licensing
21211-52710	CREDIT CARD FEES	$5,888	$0	$0	$0	
21211-52810	OTHER OPERATING EXPENSE	$1,117	$7,108	$24,500	$0	
21211-53510	PROPERTY INSURANCE	$75,133	$89,387	$80,000	$90,000	
21211-53520	LIABILITY AND CASUALITY INSURA	$8,741	$10,014	$16,626	$10,000	
21211-54310	INTERFUND COST OF SERVICE	$386,258	$397,846	$405,803	$413,919	
21211-54610	ENERGY CONSERVATION	$2,209	$0	$0	$0	
21211-54810	WATER ASSESMENTS	$29,530	$13,865	$33,000	$15,000	
21211-55110	SAFETY PROGRAMS	$0	$102	$200	$0	
	TOTAL 211 - WATER & SEWER ADMINISTRATION	$911,745	$1,063,859	$2,015,926	$1,118,496	
21 WATER, SEWER AND SANITATION - 240 CUSTOMER ACCOUNTS WATER						
21240-51710	PROFESSIONAL SERVICES	$995	$0	$0	$0	
21240-54110	BAD DEBTS	$0	$2,925	$0	$0	
21240-54310	INTERFUND COST OF SERVICE	$173,776	$178,989	$182,569	$186,220	
	TOTAL 240 - CUSTOMER ACCOUNTS WATER	$174,771	$181,915	$182,569	$186,220	
21 WATER, SEWER AND SANITATION - 260 WATER INTERFUND						
21260-55710	ALLOCATED ORGANIZATION COST	$85,516	$88,081	$95,000	$120,264	3% of Sales
21260-55810	INTERFUND FRANCHISE FEE	$85,516	$88,081	$95,000	$120,264	3% of Sales
	TOTAL 260 - WATER INTERFUND	$171,032	$176,163	$190,000	$240,528	
21 WATER, SEWER AND SANITATION - 261 WASTEWATER INTERFUND						
21261-55710	ALLOCATED ORGANIZATION COST	$103,504	$106,609	$95,000	$120,264	
21261-55810	INTERFUND FRANCHISE FEE	$103,504	$106,609	$95,000	$120,264	
	TOTAL 261 - WASTEWATER INTERFUND	$207,008	$213,218	$190,000	$240,528	
21 WATER, SEWER AND SANITATION - 270 INTEREST						
21270-53930	INTEREST - BONDS	$658,236	$609,178	$580,069	$0	
	TOTAL 270 - INTEREST	$658,236	$609,178	$580,069	$0	
21 WATER, SEWER AND SANITATION - 275 DEPRECIATION/AMORTIZATION						

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21275-55610	DEPRECIATION	$616,164	$655,106	$658,533	$645,000	
21275-59599	CAPITALIZED ASSETS	($746,999)	$0	$0	$0	
	TOTAL 275 - DEPRECIATION/AMORTIZATION	($130,835)	$655,106	$658,533	$645,000	
21 WATER, SEWER AND SANITATION - 276 DEPRECIATION/AMORTIZATION - WA						
21276-55610	DEPRECIATION	$1,106,414	$1,106,427	$1,131,735	$1,100,000	
	TOTAL 276 - DEPRECIATION/AMORTIZATION - WA	$1,106,414	$1,106,427	$1,131,735	$1,100,000	
21 WATER, SEWER AND SANITATION - 410 WATER TREATMENT						
21410-51110	REGULAR EMPLOYEES	$252,139	$194,066	$283,394	$265,563	Chief Operator Water Treatment Water Treatment Operator II B (2) WA/WW Treatment Operator I D Plus Water Treatment Operation I D
21410-51140	OVERTIME	$6,512	$3,359	$8,000	$4,400	
21410-51150	STANDBY AND CALLBACK PAY	$18,490	$18,881	$20,000	$20,000	
21410-51210	HEALTH INSURANCE PREMIUMS	$48,833	$41,852	$42,304	$60,432	
21410-51220	LONG TERM DISABILITY	$23	$683	$698	$903	
21410-51230	BASIC LIFE INSURANCE	$40	$537	$554	$702	
21410-51250	FICA CONTRIBUTIONS	$20,055	$17,679	$18,236	$20,316	
21410-51260	RETIREMENT CONTRIBUTIONS	$17,782	$11,133	$16,688	$18,589	
21410-51270	UNEMPLOYMENT COMPENSATION	$786	$693	$715	$796	
21410-51280	WORKERS' COMPENSATION	$7,896	$4,217	$9,000	$8,461	
21410-51290	OTHER EMPLOYEE BENEFITS	$0	$125	$0	$6,000	
21410-51360	EMPLOYEE ONBOARDING	$0	$20	$0	$0	
21410-51380	UNIFORM ALLOWANCE	$29	$1,677	$1,400	$0	
21410-51410	UTILITIES	$122,108	$124,425	$138,000	$60,000	Electric
					$22,500	Natural gas
					$18,100	Tele/Mobile/Radio Tower
					$950	Trash
					$11,000	Bumped up to accommodate for W/WW rate increase
	TOTAL UTILITIES	$122,108	$124,425	$138,000	$112,550	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21410-51610	SUPPLIES				$2,000	Copy and Printing Services Billed Here
		$5,801	$5,454	$6,680	$3,500	Combined Profserv Cleaning
					$800	Postage
					$500	Office consumables
					$500	Misc. material
					$2,000	Tools for the Plants
					$2,000	Uniforms/Shirts/Hats/ETC for the Team
	TOTAL SUPPLIES	$5,801	$5,454	$6,680	$11,300	
21410-51710	PROFESSIONAL SERVICES	$20,978	$61,011	$46,200	$2,500	Consultants
					$3,000	
					$400	CDL Testing
					$35,000	Others/ SCADA / Control Work
	TOTAL PROFESSIONAL SERVICES	$20,978	$61,011	$46,200	$40,900	
21410-51810	MAINTENANCE & REPAIR				$30,000	
		$57,432	$42,432	$79,000	$250	Fire extinguishers for cars and buildings
					$45,000	Equipment maintenance and repair
					$3,000	Fuel for Treatment Plant Vehicles and Equipment
					$10,000	Upkeep on the Vehicles through Fleet
	TOTAL MAINTENANCE & REPAIR	$57,432	$42,432	$79,000	$88,250	
21410-51920	RENT/LEASE - EQUIPMENT	$0	$221	$1,000	$1,000	
21410-52210	PROFESSIONAL DEVELOPMENT	$815	$2,246	$6,000	$500	Ed Supplies - Training Opportunities and Conference Attendance
					$1,500	Registration - Training Opportunities and Conference Attendance
					$1,000	Hotel - Training Opportunities and Conference Attendance
					$350	Mileage - Training Opportunities and Conference Attendance
					$250	Per Diem - Training Opportunities and Conference Attendance
					$1,500	Other - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$815	$2,246	$6,000	$5,100	
21410-52410	PROFESSIONAL DUES AND MEMBERSH	$0	$503	$0	$0	
21410-52420	ORGANIZATIONAL DUES AND MEMBER	$0	$400	$0	$0	
21410-52610	TECHNOLOGY	$0	$0	$0	$3,500	Software licensing
21410-52810	OTHER OPERATING EXPENSE	$2,608	$4,696	$5,000	$5,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21410-53230	OTHER CHEMICALS	$145,713	$156,521	$157,000	$210,000	Polymer (Coagulant/Filter Aid) Caustic Soda (pH adjustment) Chlorine (disinfection) Fluoride Salt for OSHG System 12% Sodium hypochlorite (Emergency feed system) WTP primary coagulant (poly aluminum chloride)
21410-53240	LABORATORY	$6,870	$3,370	$7,000	$7,000	TOC monitoring, inorganics, VOCs, bacteriological samples, miscellaneous analytical samples
21410-54820	LAB SUPPLIES	$2,322	$9,333	$8,000	$10,000	
21410-55110	SAFETY PROGRAMS	$519	$631	$5,000	$3,000	Added budget for additional PPE
21410-59520	CAPITAL OUTLAY	$0	$2,392	$8,500	$15,000	OSHG spare motors/Titrator
	TOTAL 410 - WATER TREATMENT	$737,750	$708,558	$868,369	$918,762	
21 WATER, SEWER AND SANITATION - 420 WATER TRANSMISSION & DISTRIBUT						
21420-51110	REGULAR EMPLOYEES	$255,956	$235,356	$260,522	$286,996	Water Utility Worker IV Water Util Maint Coord II Water/WW Equipment Operator III (50%) Water Utility Worker I (2)
21420-51120	PART-TIME EMPLOYEES	$0	($23)	$0	$0	
21420-51140	OVERTIME	$6,648	$5,274	$9,000	$6,000	
21420-51150	STANDBY AND CALLBACK PAY	$8,711	$11,249	$13,000	$12,000	
21420-51210	HEALTH INSURANCE PREMIUMS	$55,950	$59,225	$67,767	$99,312	
21420-51220	LONG TERM DISABILITY	$14	$682	$696	$975	
21420-51230	BASIC LIFE INSURANCE	$24	$546	$551	$756	
21420-51250	FICA CONTRIBUTIONS	$20,118	$17,239	$19,929	$21,955	
21420-51260	RETIREMENT CONTRIBUTIONS	$14,511	$8,603	$18,237	$20,089	
21420-51270	UNEMPLOYMENT COMPENSATION	$789	$676	$782	$861	
21420-51280	WORKERS' COMPENSATION	$9,176	$5,630	$9,963	$7,558	
21420-51290	OTHER EMPLOYEE BENEFITS	$0	$0	$0	$6,000	
21420-51360	EMPLOYEE ONBOARDING	$141	$26	$0	$0	
21420-51380	UNIFORM ALLOWANCE	$335	$1,378	$1,750	$0	
21420-51410	UTILITIES	$6,322	$8,054	$11,000	$20,000	Tanks/Stations/Heat Tape/Maint Shop
					$1,000	Maintenance Building
					$4,500	Mobile and telephone
					$500	Dump/Trash Services
	TOTAL UTILITIES	$6,322	$8,054	$11,000	$26,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21420-51610	SUPPLIES	$5,011	$4,427	$7,775	$1,000	Copy and Printing Services Billed Here
					$2,500	Combined Profserv Cleaning
					$500	Misc Office Supplies
					$2,000	Misc. Materials
					$1,000	Tools for the trucks/stations
					$250	Equipment, not tools
					$2,000	Uniforms/Shirts/Hats/ETC for the Team
	TOTAL SUPPLIES	$5,011	$4,427	$7,775	$9,250	
21420-51710	PROFESSIONAL SERVICES	$12,044	$14,208	$28,200	$8,000	Yearly As-Builts
					$1,750	
					$500	CDL Testing
					$5,000	Other Professional Services
	TOTAL PROFESSIONAL SERVICES	$12,044	$14,208	$28,200	$15,250	
21420-51810	MAINTENANCE & REPAIR				$2,500	Water/WW Maintenance Shop
		$80,111	$101,883	$93,300	$250	Fire extinguishers for cars and buildings
					$4,400	Fuel for Treatment Plant Vehicles and Equipment
					$20,000	Fire Hydrant Upkeep Program
					$12,000	Upkeep on the Vehicles through Fleet
					$60,000	Supplies
	TOTAL MAINTENANCE & REPAIR	$80,111	$101,883	$93,300	$99,150	
21420-51920	RENT/LEASE - EQUIPMENT	$0	$1,213	$4,000	$2,000	Miscellaneous equipment rental for non-routine work (e.g., vacuum trailer, track hoe rental)
21420-52210	PROFESSIONAL DEVELOPMENT	$2,387	$150	$7,500	$500	Ed Supplies - Training Opportunities and Conference Attendance
					$3,500	Registration - Training Opportunities and Conference Attendance
					$750	Hotel - Training Opportunities and Conference Attendance
					$750	Hotel - Training Opportunities and Conference Attendance
					$500	Mileage - Training Opportunities and Conference Attendance
					$500	Per Diem - Training Opportunities and Conference Attendance
					$1,000	Other - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$2,387	$150	$7,500	$7,500	
21420-52420	ORGANIZATIONAL DUES AND MEMBER	$53	$0	$0	$0	
21420-52610	TECHNOLOGY	$0	$0	$0	$3,500	VUE Works/GIS/XC2/Innovyze
21420-52810	OTHER OPERATING EXPENSE	$83	$1,143	$1,200	$1,200	
21420-53240	LABORATORY	$0	$4,263	$6,600	$5,500	Contract Lab Services
21420-53530	DAMAGE CLAIMS	$0	$0	$3,000	$3,000	
21420-54330	FORCE CONSTRUCTION	$23,292	$23,758	$23,292	$50,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21420-55110	SAFETY PROGRAMS	$3,223	$2,500	$5,000	$4,000	PPE (fall protection equipment, hard hats, safety vests, harnesses) Annual safety equipment inspections/certification Traffic Safety (traffic cones, signage, etc.) First Aid Kits Shoring Box Repair (split w/ collections) Respirators ($250/respirator x 4 respirators) Respiratory Physicals & Fit Testing ($100/test x 4 staff) Calibration Gas for confined space gas meters Safety Videos
21420-55210	FIRE HYDRANT REPLACEMENT	$42	$0	$28,000	$0	
21420-55220	METERS	$24,401	$11,165	$50,000	$25,000	Existing AMR/repair parts AMR system-wide replacement program ($70K equipment remaining)
21420-55230	LEAK DETECTION	$6,463	$4,862	$8,500	$7,500	Routine leak detection (1/3 of system/year) Emergency leak detection
21420-59520	CAPITAL OUTLAY	$11,924	$6,919	$15,000	$20,000	Shoring (Split with Collections) Job site work lighting (Split with Collections) Steel plates (Split with Collections) Chipping hammers PSI Testing Pump and Equipment GPS Collector Inspection camera (split with sewer)(from 2020)
TOTAL 420 - WATER TRANSMISSION & DISTRIBUT		$547,730	$530,405	$694,564	$741,352	
21 WATER, SEWER AND SANITATION - 430 WASTEWATER TREATMENT						
21430-51110	REGULAR EMPLOYEES	$193,272	$188,245	$278,144	$258,947	Chief Operator WW Treatment WW Treatment Operator II B (2) WA/WW Treatment Operator I D Plus (50%) WW Treatment Operator I D
21430-51140	OVERTIME	$5,682	$2,598	$10,000	$4,000	
21430-51150	STANDBY AND CALLBACK PAY	$13,674	$18,611	$19,398	$20,000	
21430-51210	HEALTH INSURANCE PREMIUMS	$48,669	$38,194	$50,530	$85,452	
21430-51220	LONG TERM DISABILITY	$17	$560	$682	$881	
21430-51230	BASIC LIFE INSURANCE	$30	$453	$541	$671	
21430-51250	FICA CONTRIBUTIONS	$15,771	$15,382	$17,835	$19,810	
21430-51260	RETIREMENT CONTRIBUTIONS	$12,679	$10,417	$16,320	$18,127	
21430-51270	UNEMPLOYMENT COMPENSATION	$618	$603	$699	$777	
21430-51280	WORKERS' COMPENSATION	$10,759	$10,327	$6,381	$6,062	
21430-51290	OTHER EMPLOYEE BENEFITS	$0	$0	$0	$4,000	
21430-51310	TUTITION REIMBURSEMENTS	$434	$0	$0	$0	
21430-51360	EMPLOYEE ONBOARDING	$89	$20	$0	$100	
21430-51380	UNIFORM ALLOWANCE	$0	$1,444	$1,400	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21430-51410	UTILITIES	$263,452	$243,354	$300,000	$160,000	
					$42,000	Natural gas
					$6,000	Mobile and telephone
					$4,000	Trash
					$21,000	Bumped up to accommodate for W/WW rate increase
	TOTAL UTILITIES	$263,452	$243,354	$300,000	$233,000	
21430-51610	SUPPLIES	$9,772	$9,954	$10,000	$2,000	Copy and Printing Services Billed Here
					$7,000	Combined Profserv Cleaning
					$1,750	Postage
					$750	Office supply
					$2,500	Tools for the Plants
					$250	Equipment, not Tools
					$2,000	Uniforms/Shirts/Hats/ETC for the Team
	TOTAL SUPPLIES	$9,772	$9,954	$10,000	$16,250	
21430-51710	PROFESSIONAL SERVICES	$20,757	$44,834	$56,000	$2,500	
					$250	Consultants
					$500	CDL Testing
					$40,000	Others/ SCADA / Control Work
	TOTAL PROFESSIONAL SERVICES	$20,757	$44,834	$56,000	$43,250	
21430-51810	MAINTENANCE & REPAIR	$146,577	$118,171	$110,000	$40,000	Waste Water Plant
					$10,000	
					$5,000	LS13000
					$20,000	LS13000
					$250	Fire extinguishers for cars and buildings
					$50,000	Equipment maintenance and repair
					$6,600	Fuel for Treatment Plant Vehicles and Equipment
					$500	Parts
					$10,000	Upkeep on the Vehicles through Fleet
					$2,000	Supplies
	TOTAL MAINTENANCE & REPAIR	$146,577	$118,171	$110,000	$144,350	
21430-51920	RENT/LEASE - EQUIPMENT	$0	$0	$1,500	$1,500	Rental of equipment for non-routine tasks or emergencies

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21430-52210	PROFESSIONAL DEVELOPMENT				$250	Ed Supplies - Training Opportunities and Conference Attendance
		$1,551	$1,079	$7,000	$2,500	Registration - Training Opportunities and Conference Attendance
					$1,500	Air - Training Opportunities and Conference Attendance
					$1,000	Hotel - Training Opportunities and Conference Attendance
					$500	Mileage - Training Opportunities and Conference Attendance
					$750	Per Diem - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$1,551	$1,079	$7,000	$6,500	
21430-52310	MISC. TRAVEL	$78	$39	$0	$0	
21430-52420	ORGANIZATIONAL DUES AND MEMBER	$35	$0	$0	$0	
21430-52610	TECHNOLOGY	$0	$0	$0	$3,500	Software licensing
21430-52810	OTHER OPERATING EXPENSE	$16,325	$9,413	$10,000	$1,500	
21430-53230	OTHER CHEMICALS	$21,434	$19,744	$35,000	$30,000	Polymer (Clarification Aid) Misc Chemicals - Chlorine, Ferric, Caustic, Algae Control
21430-53240	LABORATORY	$11,591	$9,053	$13,000	$11,500	Contract Labs for Biosolids Testing: *CSU Labs - Sludge Screening Analysis *Colorado Analytical - FecalColi ACZ Testing for Reg 85 and Discharge Permit: *Nutrients (Up & Downstream & Eff) *Annual Industrial Pollutant Monitoring *Arsenic Toxiticy Testing Lab retest contingency
21430-54820	LAB SUPPLIES	$13,972	$14,546	$17,500	$15,000	BOD Reagent Dextrose and Gultamic Reagents IDEX Reagents QC Reagents QA 38 ERA Reagents Spectrophotometer Reagents: *TNT Ammonia *TNT Nitrates *TNT P04 *TNT COD *TNT Volatile Acids *TNT Hydrogen Sulfide Fisher Scientific (Glass Filter, membrane kit, membranes) Calibrate Analytical Balance "still" maintenance Staining Supplies Microscope Service Turbidity Standards Misc Supplies and Re-Tests BOD bottle and cruicible/evap dish replacement Latex/Nitrile Gloves ORP Calibration Solution
21430-55110	SAFETY PROGRAMS	$294	$1,448	$4,000	$4,000	Safety Supplies (gloves, hearing protection, safety vests, etc.) Gas Detector Sensors First Aid Kit Calibration gases Fall Protection

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21430-59520	CAPITAL OUTLAY	$0	$0	$8,000	$14,000	Noise controllers for digester probes
TOTAL 430 - WASTEWATER TREATMENT		$807,532	$758,486	$973,930	$943,177	
21 WATER, SEWER AND SANITATION - 440 WASTWATER COLLECTION & TRANSMI						
21440-51110	REGULAR EMPLOYEES	$157,138	$170,529	$216,531	$251,657	Wastewater Utility Worker II WW Utility Maint Coord I Water/WW Equipment Operator III (50%) WW Utility Worker (2)
21440-51120	PART-TIME EMPLOYEES	$0	($23)	$0	$0	
21440-51140	OVERTIME	$7,942	$3,830	$4,000	$4,000	
21440-51150	STANDBY AND CALLBACK PAY	$8,437	$6,491	$9,699	$7,500	
21440-51210	HEALTH INSURANCE PREMIUMS	$51,891	$49,246	$63,333	$94,956	
21440-51220	LONG TERM DISABILITY	$12	$516	$615	$856	
21440-51230	BASIC LIFE INSURANCE	$22	$439	$487	$656	
21440-51250	FICA CONTRIBUTIONS	$13,262	$13,240	$16,565	$19,252	
21440-51260	RETIREMENT CONTRIBUTIONS	$7,646	$5,516	$15,118	$17,616	
21440-51270	UNEMPLOYMENT COMPENSATION	$520	$519	$650	$753	
21440-51280	WORKERS' COMPENSATION	$5,574	$12,688	$6,175	$4,309	
21440-51290	OTHER EMPLOYEE BENEFITS	$0	$0	$0	$4,000	
21440-51360	EMPLOYEE ONBOARDING	$47	$2,040	$0	$2,000	
21440-51380	UNIFORM ALLOWANCE	$1,473	$1,626	$1,400	$0	
21440-51410	UTILITIES	$3,310	$9,742	$16,000	$12,500	Lift Stations/Maint Shop
					$1,000	Maint Shop
					$2,500	Mobile and telephone
					$7,000	Bumped up to accommodate for W/WW rate increase
	TOTAL UTILITIES	$3,310	$9,742	$16,000	$23,000	
21440-51610	SUPPLIES				$500	Vests, Cones, etc. for the Field Personnel
		$5,467	$2,521	$6,000	$2,500	Profserv Cleaning
					$500	Pens/Notebooks, Etc.
					$1,200	Vests, Cones, etc. for the Field Personnel
					$1,250	Tools for the Plants
					$250	Equipment, not Tools
					$2,000	Uniforms/Shirts/Hats/ETC for the Team
	TOTAL SUPPLIES	$5,467	$2,521	$6,000	$8,200	
21440-51710	PROFESSIONAL SERVICES				$250	Parts and Supplies
		$9,378	$9,621	$17,000	$250	Parts and Supplies
					$250	Parts and Supplies
					$250	Parts and Supplies
					$250	Parts and Supplies

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21440-51710	PROFESSIONAL SERVICES				$250	Parts and Supplies
					$250	Parts and Supplies
					$1,000	Emergency Engineer Service
					$2,500	Support services
					$500	CDL Testing
					$10,000	Others Services
	TOTAL PROFESSIONAL SERVICES	$9,378	$9,621	$17,000	$15,750	
21440-51810	MAINTENANCE & REPAIR				$2,000	W/WW Maintenance Shop
		$68,679	$80,831	$85,500	$500	Parts and Supplies
					$500	Parts and Supplies
					$500	Parts and Supplies
					$500	Parts and Supplies
					$500	Parts and Supplies
					$500	Parts and Supplies
					$500	Parts and Supplies
					$250	Fire extinguishers for cars and buildings
					$7,500	Parts for Hydrovac trucks/Camera Van
					$4,400	Fuel for Treatment Plant Vehicles and Equipment
					$15,000	Upkeep on the Vehicles through Fleet
					$40,000	Supplies
	TOTAL MAINTENANCE & REPAIR	$68,679	$80,831	$85,500	$72,650	
21440-51920	RENT/LEASE - EQUIPMENT	$0	$1,213	$1,500	$1,500	Miscellaneous equipment for non-routine work (e.g., track hoe rental)
21440-52210	PROFESSIONAL DEVELOPMENT	$592	$350	$4,000	$2,500	Registration - Training Opportunities and Conference Attendance
					$750	Hotel - Training Opportunities and Conference Attendance
					$500	Mileage - Training Opportunities and Conference Attendance
					$500	Per Diem - Training Opportunities and Conference Attendance
					$1,000	Other - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$592	$350	$4,000	$5,250	
21440-52420	ORGANIZATIONAL DUES AND MEMBER	$53	$0	$0	$0	
21440-52610	TECHNOLOGY	$0	$0	$0	$3,500	Software licensing
21440-52810	OTHER OPERATING EXPENSE	$70	$1,143	$1,200	$1,000	
21440-53530	DAMAGE CLAIMS	$0	$2,000	$1,000	$1,000	
21440-54330	FORCE CONSTRUCTION	$300	$300	$300	$300	Interfund force construction
21440-54510	LOSS ON ASSET DISPOSITION	$0	$0	$2,000	$0	
21440-54910	ROOT CONTROL	$6,458	$10,551	$10,000	$10,000	Preventive root maintenance
21440-54920	BACKFLOW DEVICE	$0	$0	$2,500	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
21440-55110	SAFETY PROGRAMS	$3,832	$3,329	$3,400	$4,000	PPE (fall protection equipment, hard hats, safety vests, harnesses) Respiratory Physicals & Fit Testing Annual safety equipment inspections/certification Shoring Box Repairs (split w/ Dist) First aid kits Respirators Traffic Safety (traffic cones, signage, etc.) Calibration Gas for confined space gas meters Safety Videos
21440-59520	CAPITAL OUTLAY	$12,601	$4,885	$15,000	$22,500	Shoring (Split with Collections) Job site work lighting (Split with Collections) Steel plates (Split with Collections) Chipping hammers PSI Testing Pump and Equipment GPS Collector Inspection camera (split with sewer)(from 2020)
TOTAL 440 - WASTWATER COLLECTION & TRANSMI		$364,703	$393,142	$499,973	$576,205	
21 WATER, SEWER AND SANITATION - 999 INTERFUND TRANSFERS						
21999-55910	TRANSFER TO FLEET SERVICE	$0	$0	$0	$100,000	
21999-55980	TRANSFER TO OTHER FUNDS	$1,013,000	$100,000	$206,000	$0	
TOTAL 999 - INTERFUND TRANSFERS		$1,013,000	$100,000	$206,000	$100,000	
		$8,141,334	$6,594,416	$15,611,610	$12,792,769	

Broadband

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$0	$10,173,682	$10,173,682	$1,851,226
Expenditures	$0	($5,598,758)	($5,715,320)	($2,725,921)
Change in Fund Balance	$0	$4,574,924	$4,458,362	($874,695)
Beginning Fund Balance	$0	$0	$0	$4,458,362
Ending Fund Balance	$0	$4,574,924	$4,458,362	$3,583,667
Available Fund Balance	$0	$4,574,924	$4,458,362	$3,583,667

Cash Balance as of 6/30/2022 $8,708,290

**Cash balance includes $9 million in debt financing from an interfund loan with Electric*

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
22 BROADBAND - 51 BROADBAND						
2251050-43410	BANDWIDTH - ENTERPRISE	($0)	($0)	$1,173,682	$1,851,226	
		($0)	($0)	$1,173,682	$1,851,226	
		($0)	($0)	$1,173,682	$1,851,226	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
22 BROADBAND - 227 BROADBAND						
22227-51110	REGULAR EMPLOYEES	$0	$0	$720,725	$481,075	Customer Service Representative/Team Lead Broadband Fiber Plant Technician Broadband Superintendent Broadband Service Technician Broadband Commercial Acct Rep/Marketing Utility Line Locator Broadband Systems Technician
22227-51120	PART-TIME EMPLOYEES	$0	$0	$85,000	$30,000	
22227-51140	OVERTIME	$0	$0	$0	$1,500	
22227-51150	STANDBY AND CALLBACK PAY	$0	$0	$0	$15,000	
22227-51210	HEALTH INSURANCE PREMIUMS	$0	$0	$142,653	$115,800	
22227-51220	LONG TERM DISABILITY	$0	$0	$3,175	$1,565	
22227-51230	BASIC LIFE INSURANCE	$0	$0	$2,476	$1,237	
22227-51250	FICA CONTRIBUTIONS	$0	$0	$77,732	$36,801	
22227-51260	RETIREMENT CONTRIBUTIONS	$0	$0	$68,198	$33,674	
22227-51270	UNEMPLOYMENT COMPENSATION	$0	$0	$2,824	$1,445	
22227-51280	WORKERS' COMPENSATION	$0	$0	$733	$1,500	
22227-51410	UTILITIES	$0	$0	$18,100	$170,000	
22227-51610	SUPPLIES	$0	$0	$15,000	$30,100	
22227-51710	PROFESSIONAL SERVICES	$0	$0	$330,217	$290,000	Includes $50,000 in consultants for build-out
22227-51810	MAINTENANCE & REPAIR	$0	$0	$30,450	$40,000	
22227-51930	RENT/LEASE - BUILDING	$0	$0	$0	$50,000	
22227-52210	PROFESSIONAL DEVELOPMENT	$0	$0	$10,000	$2,500	
22227-52510	GRANTS	$0	$0	$15,000	$15,000	
22227-52610	TECHNOLOGY	$0	$0	$55,000	$94,000	
22227-52810	OTHER OPERATING EXPENSE	$0	$0	$0	$8,500	Includes $6,500 in insurance premiums
22227-53520	LIABILITY AND CASUALITY INSURA	$0	$0	$0	$35,554	
22227-53940	INTEREST - OTHER DEBT	$0	$0	$181,528	$269,100	
22227-54110	BAD DEBTS	$0	$0	$35,210	$35,200	
22227-54310	INTERFUND COST OF SERVICE	$0	$0	$16,049	$16,370	
22227-55910	TRANSFER TO FLEET SERVICE	$0	$0	$0	$100,000	Overhead allocation
					$200,000	Bucket Truck
	TOTAL TRANSFER TO FLEET SERVICE	$0	$0	$0	$300,000	
22227-60000	PROJECTS	$0	$0	$3,884,544	$75,000	Core and Miscellaneous Capital projects
					$75,000	Network equipment, In and Outside Plants
					$500,000	Lightworks Construction Contract
	TOTAL PROJECTS	$0	$0	$3,884,544	$650,000	
	TOTAL 227 - BROADBAND	$0	$0	$5,694,614	$2,725,921	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
		$0	$0	$5,694,614	$2,725,921	

ELECTRIC FUND

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$14,796,322	$15,530,596	$15,530,596	$19,819,400
Expenditures	($18,220,598)	($19,030,363)	($19,146,925)	($21,396,811)
Change in Fund Balance	($3,424,276)	($3,499,767)	($3,616,329)	($1,577,411)
Beginning Fund Balance	$31,535,247	$28,110,971	$28,110,971	$24,494,642
Ending Fund Balance	$28,110,971	$24,611,204	$24,494,642	$22,917,231
Available Fund Balance	$28,110,971	$24,611,204	$24,494,642	$22,917,231

Cash Balance as of 6/30/21 $3,418,663

**2022 Budget revenue includes $4.5 million in debt financing for the Electric Operations Building*

***Cash Balance does not include $8,981,224 for Broadband that was raised here but will be serviced by Broadband*

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24 ELECTRIC UTILITY - 50 ELECTRIC						
2450060-42310	GRANTS	($0)	$27,000	($0)	($0)	
2450060-42560	SERVICE CONNECT FEES	$17,345	$14,255	$13,954	$14,000	
2450060-42650	VENDORS FEE	$8,078	$7,526	$8,160	$8,000	
2450060-42660	JOINT POLE USE	$2,832	($0)	$2,889	$2,900	
2450060-43510	INTEREST	$72,109	$42,608	$25,000	$50,000	
2450060-43710	DEVELOPER CONTRIBUTIONS	$206,551	$99,045	($0)	$100,000	
2450060-44110	SALE OF ASSETS	$7,855	$5,194	($0)	$5,000	
2450060-44130	MISCELLANEOUS	$426,606	$158,381	$20,000	($0)	
2450060-44140	BAD DEBT RECOVERY	$1,565	$2,631	($0)	$2,000	
		$742,942	$356,641	$70,003	$181,900	
24 ELECTRIC UTILITY - 50 ELECTRIC						
2450050-42610	COMMERCIAL	$9,640,020	$9,102,541	$10,908,260	$10,000,000	
2450050-42620	RESIDENTIAL	$4,511,382	$4,795,965	$4,396,598	$5,000,000	
2450050-42630	MUNICIPAL	$134,830	$117,695	$141,500	$125,000	
2450050-42640	SECURITY LIGHTING	$12,596	$12,508	$14,235	$12,500	
2450050-43410	BANDWIDTH - ENTERPRISE	$664,357	$637,464	($0)	($0)	
		$14,963,185	$14,666,173	$15,460,593	$15,137,500	
		$15,706,127	$15,022,814	$15,530,596	$15,319,400	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24 ELECTRIC UTILITY - 000						
2451-60000	PROJECTS	$0	$1,020,759	$0	$0	
	TOTAL 000 -	$0	$1,020,759	$0	$0	
24 ELECTRIC UTILITY - 000						
2450-60000	PROJECTS	$266,573	$1,690,266	$4,026,741	$50,000	General Capital System Upgrades
					$180,000	Mitchell Creek Re-closures
					$150,000	South Midland - 2021 Carry Over
					$20,000	Red Mountain South Phase 2
					$4,500,000	New Electric Department Facilities
					$135,000	Cable and Conduit for Cardnell Substation Connection to Wulfsohn
					$1,200,000	Cardnell Substation - 2021 Carry Over
					$50,000	Midland Center Loop
	TOTAL PROJECTS	$266,573	$1,690,266	$4,026,741	$6,285,000	
	TOTAL 000 -	$266,573	$1,690,266	$4,026,741	$6,285,000	
24 ELECTRIC UTILITY - 220 ELECTRIC ADMINISTRATION						
24220-51110	REGULAR EMPLOYEES	$131,278	$151,695	$177,714	$163,986	Public Works Director Asset Mgmt/GIS Support Specialist (14%) Electric Administrative Assistant GIS Administrator Public Information Officer (25%)
24220-51150	STANDBY AND CALLBACK PAY	$0	$0	$25,000	$0	
24220-51210	HEALTH INSURANCE PREMIUMS	$15,780	$20,702	$22,746	$58,548	
24220-51220	LONG TERM DISABILITY	$21	$463	$533	$557	
24220-51230	BASIC LIFE INSURANCE	$39	$386	$425	$426	
24220-51250	FICA CONTRIBUTIONS	$14,352	$11,131	$13,595	$9,919	
24220-51260	RETIREMENT CONTRIBUTIONS	$10,728	$7,495	$12,440	$11,479	
24220-51270	UNEMPLOYMENT COMPENSATION	$570	$437	$534	$493	
24220-51280	WORKERS' COMPENSATION	$279	$397	$353	$2,566	
24220-51410	UTILITIES	$20,063	$17,925	$50,000	$10,000	Electirc
					$3,000	Natural gas
					$4,500	This is Mobile and Telephone Combined
					$2,500	Trash
					$250	Accommodate for W/WW rate increase
	TOTAL UTILITIES	$20,063	$17,925	$50,000	$20,250	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24220-51610	SUPPLIES	$5,398	$1,803	$6,000	$500	Copy and Printing Services
					$100	Postage
					$1,500	Office Supplies
					$250	Misc
	TOTAL SUPPLIES	$5,398	$1,803	$6,000	$2,350	
24220-51710	PROFESSIONAL SERVICES	$27,769	$18,425	$70,000	$5,000	ESC and misc.
					$1,000	GIS Services and Others
	TOTAL PROFESSIONAL SERVICES	$27,769	$18,425	$70,000	$6,000	
24220-51810	MAINTENANCE & REPAIR	$9,290	$250	$0	$250	Fire extinguishers for cars and buildings
24220-51920	RENT/LEASE - EQUIPMENT	$749	$27,529	$28,000	$28,000	Temporary Electric Building
24220-52110	PUBLIC NOTICES	$364	$0	$2,000	$0	
24220-52120	EMPLOYMENT POSTING	$0	$0	$500	$0	
24220-52140	PROCUREMENT ADVERTISING	$107	$0	$480	$0	
24220-52210	PROFESSIONAL DEVELOPMENT				$400	Training Opportunities and Conference Attendance
		$2,038	$0	$11,200	$2,000	Air - Training Opportunities and Conference Attendance
					$2,000	Hotel - Training Opportunities and Conference Attendance
					$100	Mileage - Training Opportunities and Conference Attendance
					$600	Per Diem - Training Opportunities and Conference Attendance
	TOTAL PROFESSIONAL DEVELOPMENT	$2,038	$0	$11,200	$5,100	
24220-52310	MISC. TRAVEL	$3,857	$383	$5,000	$0	
24220-52410	PROFESSIONAL DUES AND MEMBERSH	$13,654	$8,971	$30,000	$15,000	Subscriptions Fees and Organization Fees
24220-52420	ORGANIZATIONAL DUES AND MEMBER	$0	$3,960	$2,500	$0	
24220-52510	GRANTS	$0	$0	$15,000	$10,000	Sustainable Strategies
24220-52610	TECHNOLOGY	$0	$0	$0	$3,500	Software licensing
24220-52710	CREDIT CARD FEES	$11,048	$0	$0	$0	
24220-52810	OTHER OPERATING EXPENSE	$978	$670	$0	$0	
24220-53510	PROPERTY INSURANCE	$59,052	$72,237	$55,000	$67,000	
24220-53520	LIABILITY AND CASUALITY INSURA	$8,580	$9,638	$16,000	$9,000	
24220-53950	ISSUANCE COSTS	$0	$121,110	$0	$0	
24220-54310	INTERFUND COST OF SERVICE	$320,000	$329,600	$336,192	$342,915	
24220-54330	FORCE CONSTRUCTION	$3,500	$0	$0	$0	
24220-54410	REGULATORY EXPENSE	$8,323	$4,193	$10,000	$10,000	
24220-54510	LOSS ON ASSET DISPOSITION	$49,275	$1,412,796	$0	$0	
24220-54610	ENERGY CONSERVATION	$168,538	$68,981	$210,000	$125,000	
24220-54750	PURCHASED POWER	$9,869,566	$9,813,427	$9,900,000	$10,000,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
TOTAL 220 - ELECTRIC ADMINISTRATION		$10,755,196	$12,104,604	$11,001,212	$10,892,339	
24 ELECTRIC UTILITY - 227 BROADBAND						
24227-51110	REGULAR EMPLOYEES	$173,915	$229,977	$0	$0	
24227-51140	OVERTIME	$71	$306	$0	$0	
24227-51150	STANDBY AND CALLBACK PAY	$31,656	$38,306	$0	$0	
24227-51210	HEALTH INSURANCE PREMIUMS	$27,368	$31,164	$0	$0	
24227-51220	LONG TERM DISABILITY	$14	$720	$0	$0	
24227-51230	BASIC LIFE INSURANCE	$24	$573	$0	$0	
24227-51250	FICA CONTRIBUTIONS	$15,287	$19,692	$0	$0	
24227-51260	RETIREMENT CONTRIBUTIONS	$11,970	$8,588	$0	$0	
24227-51270	UNEMPLOYMENT COMPENSATION	$599	$772	$0	$0	
24227-51280	WORKERS' COMPENSATION	$389	$1,490	$0	$302	
24227-51310	TUTITION REIMBURSEMENTS	$1,500	$0	$0	$0	
24227-51360	EMPLOYEE ONBOARDING	$0	$285	$0	$0	
24227-51410	UTILITIES	$135,064	$161,372	$0	$0	
24227-51610	SUPPLIES	$42,921	$58,591	$0	$0	
24227-51710	PROFESSIONAL SERVICES	$174,305	$269,102	$0	$0	
24227-51810	MAINTENANCE & REPAIR	$4,152	$6,744	$0	$0	
24227-51920	RENT/LEASE - EQUIPMENT	$0	$20,800	$0	$0	
24227-52120	EMPLOYMENT POSTING	$0	$395	$0	$0	
24227-52140	PROCUREMENT ADVERTISING	$0	$216	$0	$0	
24227-52210	PROFESSIONAL DEVELOPMENT	$795	$595	$0	$0	
24227-52310	MISC. TRAVEL	$221	$0	$0	$0	
24227-52610	TECHNOLOGY	$23,306	$90,317	$0	$0	
24227-52810	OTHER OPERATING EXPENSE	$649	$10,815	$0	$0	
24227-54310	INTERFUND COST OF SERVICE	$15,276	$15,734	$0	$0	
24227-54710	ROUTINE MAINTENANCE	$37	$180	$0	$0	
24227-59520	CAPITAL OUTLAY	$70,422	$0	$0	$0	
	TOTAL 227 - BROADBAND	$729,943	$966,735	$0	$302	
24 ELECTRIC UTILITY - 245 CUSTOMER ACCOUNTS ELECTRIC						
24245-51110	REGULAR EMPLOYEES	$104,131	$120,045	$145,721	$140,907	Electric Meter Technician - Journeyman Electric Meter Technician
24245-51140	OVERTIME	$190	$0	$650	$0	
24245-51210	HEALTH INSURANCE PREMIUMS	$47,620	$43,221	$42,426	$42,996	
24245-51220	LONG TERM DISABILITY	$0	$375	$371	$479	
24245-51230	BASIC LIFE INSURANCE	$0	$336	$294	$380	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24245-51250	FICA CONTRIBUTIONS	$7,740	$7,972	$10,574	$10,780	
24245-51260	RETIREMENT CONTRIBUTIONS	$6,328	$5,314	$9,676	$9,863	
24245-51270	UNEMPLOYMENT COMPENSATION	$303	$313	$415	$423	
24245-51280	WORKERS' COMPENSATION	$1,609	$1,650	$1,563	$1,221	
24245-51380	UNIFORM ALLOWANCE	$0	$300	$1,400	$0	
24245-51610	SUPPLIES	$300	$0	$0	$2,000	PPE/FR
					$300	Uniforms/Shirts/Hats/ETC for the Team
	TOTAL SUPPLIES	$300	$0	$0	$2,300	
24245-51710	PROFESSIONAL SERVICES	$128	$0	$0	$0	
24245-52210	PROFESSIONAL DEVELOPMENT	$0	$0	$0	$650	Training
24245-52610	TECHNOLOGY	$25,740	$27,622	$0	$52,600	SCADA Maintenance Agreement
24245-54110	BAD DEBTS	$3,872	$3,067	$0	$0	
24245-54320	INTERFUND BILLING	$325,334	$335,094	$341,796	$348,632	
24245-54340	NONRECIPROCAL INTERFUND ACTIVI	$478,842	$493,207	$503,071	$513,132	
24245-54760	CUSTOMER DEPOSIT INTEREST	$936	$1,206	$0	$1,500	
24245-55810	INTERFUND FRANCHISE FEE	$478,842	$493,207	$503,071	$513,132	
24245-59520	CAPITAL OUTLAY	$0	$0	$50,000	$0	
	TOTAL 245 - CUSTOMER ACCOUNTS ELECTRIC	$1,481,916	$1,532,927	$1,611,028	$1,638,995	
24 ELECTRIC UTILITY - 270 INTEREST						
24270-53930	INTEREST - BONDS	$0	$81,183	$0	$0	
	TOTAL 270 - INTEREST	$0	$81,183	$0	$0	
24 ELECTRIC UTILITY - 275 DEPRECIATION/AMORTIZATION						
24275-55610	DEPRECIATION	$1,023,831	$1,027,479	$997,000	$1,027,794	
24275-59599	CAPITALIZED ASSETS	($516,519)	($2,720,955)	$0	$0	
	TOTAL 275 - DEPRECIATION/AMORTIZATION	$507,312	($1,693,476)	$997,000	$1,027,794	
24 ELECTRIC UTILITY - 380 MAINTENANCE & DISTRIBUTION						
24380-51110	REGULAR EMPLOYEES	$494,844	$505,977	$750,653	$736,898	Electric Line Superintendent Electric Crew Leader (3) Electric Apprentice Lineman (4)
24380-51140	OVERTIME	$8,674	$1,727	$6,000	$2,500	
24380-51150	STANDBY AND CALLBACK PAY	$56,546	$60,372	$57,500	$60,000	
24380-51160	PROJECT ALLOCATION WAGES	($46,455)	($61,903)	$0	$0	
24380-51210	HEALTH INSURANCE PREMIUMS	$103,367	$108,905	$110,690	$121,320	
24380-51220	LONG TERM DISABILITY	$55	$2,081	$2,090	$2,326	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24380-51230	BASIC LIFE INSURANCE	$103	$1,816	$1,771	$1,922	
24380-51250	FICA CONTRIBUTIONS	$53,744	$57,440	$55,130	$56,372	
24380-51260	RETIREMENT CONTRIBUTIONS	$42,663	$38,263	$50,446	$51,584	
24380-51270	UNEMPLOYMENT COMPENSATION	$2,108	$2,253	$2,161	$2,210	
24380-51280	WORKERS' COMPENSATION	$18,938	$12,010	$11,299	$10,200	
24380-51350	OTHER EMPLOYEE BENEFITS	$0	$0	$0	$12,500	
24380-51360	EMPLOYEE ONBOARDING	$100	$0	$0	$0	
24380-51380	UNIFORM ALLOWANCE	$4,315	$1,200	$1,400	$0	
24380-51410	UTILITIES	$6,529	$1,542	$750	$1,000	Mobile and telephone
					$750	Landfill
	TOTAL UTILITIES	$6,529	$1,542	$750	$1,750	
24380-51610	SUPPLIES				$1,000	Copy and Printing Services Billed Here
		$66,263	$17,476	$25,000	$1,000	Combined Profserv Cleaning into this line item
					$1,000	Office supply
					$5,000	Misc. material
					$7,500	Vests, Cones, etc. for the Field Personnel
					$12,000	Tools for the Plants
					$1,200	Uniforms/Shirts/Hats/FR
	TOTAL SUPPLIES	$66,263	$17,476	$25,000	$28,700	
24380-51710	PROFESSIONAL SERVICES	$121,903	$12,234	$30,000	$100,000	System Design-5 Year Capital Planning
					$5,000	Miscellaneous
					$500	CDL Testing
					$30,000	GIS Services/misc.
	TOTAL PROFESSIONAL SERVICES	$121,903	$12,234	$30,000	$135,500	
24380-51810	MAINTENANCE & REPAIR	$39,729	$32,726	$90,000	$500	Fire extinguishers for cars and buildings
					$250	
					$10,000	New Equipment/Equipment Repair and Testing
					$50,000	Upkeep on the Vehicles through Fleet
					$500	Supplies
					$5,000	Meters
					$75,000	Tree Trimming
					$10,000	SCADA
					$5,000	City Wide
					$5,000	Substation Specific
					$25,000	Street Lights
					$25,000	Underground Line Maintenance
	TOTAL MAINTENANCE & REPAIR	$39,729	$32,726	$90,000	$211,250	
24380-52140	PROCUREMENT ADVERTISING	$72	$80	$240	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
24380-52210	PROFESSIONAL DEVELOPMENT	$7,431	$3,966	$5,800	$1,000	Registration - Training Opportunities and Conference Attendance
					$1,000	Air - Training Opportunities and Conference Attendance
					$1,500	Hotel - Training Opportunities and Conference Attendance
					$350	Mileage - Training Opportunities and Conference Attendance
					$500	Per Diem
					$6,000	Development/Training
	TOTAL PROFESSIONAL DEVELOPMENT	$7,431	$3,966	$5,800	$10,350	
24380-52310	MISC. TRAVEL	$263	$198	$500	$0	
24380-52610	TECHNOLOGY	$0	$0	$0	$3,500	SAAS Fees
24380-52810	OTHER OPERATING EXPENSE	$5,195	$1,249	$5,000	$2,500	Other Operating Expense
24380-53530	DAMAGE CLAIMS	$0	$0	$1,000	$1,000	
24380-54710	ROUTINE MAINTENANCE	$75,116	$93,558	$150,000	$0	
24380-59520	CAPITAL OUTLAY	$113,174	$5,953	$0	$0	
	TOTAL 380 - MAINTENANCE & DISTRIBUTION	$1,174,679	$899,121	$1,357,430	$1,452,382	
24 ELECTRIC UTILITY - 999 INTERFUND TRANSFERS						
24999-55910	TRANSFER TO FLEET SERVICES	$133,000	$155,372	$115,000	$100,000	Overhead Allocation
24999-55920	TRANSFER TO A&I	$130,000	$0	$0	$0	
24999-55930	TRANSFER TO CAPITAL PROJECTS	$25,000	$25,000	$50,000	$0	
	TOTAL 999 - INTERFUND TRANSFERS	$288,000	$180,372	$165,000	$100,000	
		$15,203,619	$16,782,491	$19,158,411	$21,396,811	

AIRPORT FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$314,437	$191,900	$191,900	$449,424
Expenditures		($174,994)	($227,432)	($243,932)	($621,116)
Change in Fund Balance		$139,443	($35,532)	($52,032)	($171,692)
Beginning Fund Balance		$504,822	$644,265	$644,265	$592,233
Ending Fund Balance		$644,265	$608,733	$592,233	$420,541
Reserves					
Loan to Capital Projects Fund					($200,000)
Available Fund Balance		$644,265	$608,733	$592,233	$220,541
Cash Balance as of 6/30/21	$280,655				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
27 AIRPORT ENTERPRISE FUND - 55 AIRPORT						
2755040-42250	STATE AVIATION FUEL TAX REFUND	$459	$3,416	$500	$500	
		$459	$3,416	$500	$500	
27 AIRPORT ENTERPRISE FUND - 55 AIRPORT						
2755060-42423	LATE FEE	$80	($0)	($0)	($0)	
2755060-43510	INTEREST	$789	($0)	$200	$200	
2755060-44110	SALE OF ASSETS	($0)	$15,000	($0)	($0)	
2755060-44130	MISCELLANEOUS	$2,242	$626	($0)	$200,000	Loan from Capital Projects Fund to provide sufficient liquidity to fund needed improvements to the Jet A fuel system
		$3,110	$15,626	$200	$200,200	
27 AIRPORT ENTERPRISE FUND - 55 AIRPORT						
2755050-42710	RUNWAY USER FEES	$1,500	($0)	$3,000	$3,000	
2755050-42720	LONG TERM TIE DOWNS	$11,865	$9,980	$12,000	$15,000	
2755050-42730	TRANSIENT TIE DOWN FEES	$2,400	$1,730	$2,000	$3,000	
2755050-42740	FUEL SALES	$151,812	$157,035	$150,000	$164,000	
		$167,577	$168,745	$167,000	$185,000	
27 AIRPORT ENTERPRISE FUND - 55 AIRPORT						
2755055-43610	BUILDING LEASE	$9,200	$29,150	$9,200	$15,000	
2755055-43620	LAND LEASES	$18,295	$97,500	$15,000	$48,724	
		$27,495	$126,650	$24,200	$63,724	
		$198,642	$314,437	$191,900	$449,424	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
27 AIRPORT ENTERPRISE FUND - 450 AIRPORT ADMINISTRATION						
27450-51110	REGULAR EMPLOYEES	$17,796	$0	$17,510	$0	
27450-51120	PART-TIME EMPLOYEES	$179	$20,821	$5,000	$43,000	
27450-51250	FICA CONTRIBUTIONS	$1,375	$1,593	$1,339	$3,320	
27450-51270	UNEMPLOYMENT COMPENSATION	$54	$62	$52	$129	
27450-51280	WORKERS' COMPENSATION	$0	$0	$10	$25	
27450-51360	EMPLOYEE ONBOARDING	$193	$0	$0	$0	
27450-51410	UTILITIES	$4,708	$4,647	$5,000	$2,500	Communications
					$2,000	Electric
					$600	Trash
	TOTAL UTILITIES	$4,708	$4,647	$5,000	$5,100	
27450-51610	SUPPLIES	$104	$210	$400	$650	
27450-51710	PROFESSIONAL SERVICES	$2,498	$2,798	$0	$0	
27450-51810	MAINTENANCE & REPAIR	$8,981	$11,367	$5,000	$5,000	Inspections, fire extinguishers, equipment repair
					$1,000	Landscaping
					$5,000	Crack seal, striping
					$1,000	Vehicle maintenance
	TOTAL MAINTENANCE & REPAIR	$8,981	$11,367	$5,000	$12,000	
27450-51930	RENT/LEASE - BUILDING	$4,440	$6,790	$6,600	$6,600	
27450-52110	PUBLIC NOTICES	$0	$51	$0	$0	
27450-52130	SPECIAL EVENT POSTING	$51	$0	$800	$0	
27450-52150	ADVERTISING	$392	$0	$0	$0	
27450-52210	PROFESSIONAL DEVELOPMENT	$293	$1,348	$1,600	$1,000	Training and dues
27450-52310	MISC. TRAVEL	$0	$98	$0	$0	
27450-52440	PROFESSIONAL SUBSCRIPTION	$200	$99	$0	$300	
27450-52610	TECHNOLOGY	$0	$0	$0	$950	Maintenance agreement
					$500	Software license
	TOTAL TECHNOLOGY	$0	$0	$0	$1,450	
27450-52710	CREDIT CARD FEES	$2,814	$2,990	$3,000	$3,000	
27450-52810	OTHER OPERATING EXPENSE	$3,037	$4,857	$3,000	$5,500	Special events, miscellaneous
27450-53520	LIABILITY AND CASUALITY INSURA	$6,541	$4,984	$6,500	$7,370	
27450-54310	INTERFUND COST OF SERVICE	$2,400	$2,472	$2,521	$2,572	
27450-55610	DEPRECIATION	$9,099	$9,099	$9,100	$9,100	
27450-56110	AVIATION FUEL	$110,871	$100,708	$135,000	$120,000	
27450-59520	CAPITAL OUTLAY				$100,000	Communication system (may be accelerated to 2021)
		$0	$0	$41,500	$300,000	Jet A Fuel System
	TOTAL CAPITAL OUTLAY	$0	$0	$41,500	$400,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
TOTAL 450 - AIRPORT ADMINISTRATION		$176,026	$174,994	$243,932	$621,116	
		$176,026	$174,994	$243,932	$621,116	

LANDFILL FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$2,876,395	$2,812,500	$2,812,500	$2,991,000
Expenditures		($3,553,522)	($3,022,024)	($3,047,072)	($3,042,725)
Change in Fund Balance		($677,127)	($209,524)	($234,572)	($51,725)
Beginning Fund Balance		$2,989,453	$2,312,326	$2,312,326	$2,077,754
Ending Fund Balance		$2,312,326	$2,102,802	$2,077,754	$2,026,029
Available Fund Balance		$2,312,326	$2,102,802	$2,077,754	$2,026,029
Cash Balance as of 6/30/21	$1,611,887				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
29 LANDFILL ENTERPRISE FUND - 60 LANDFILL						
2960060-42310	GRANTS	($0)	$141,370	($0)	$50,000	
2960060-42650	VENDORS FEE	$1,694	$2,010	($0)	$2,000	
2960060-43510	INTEREST	$89,211	$54,767	$50,000	$55,000	
2960060-43920	INSURANCE REIMBURSEMENT	($0)	$6,190	($0)	($0)	
2960060-44130	MISCELLANEOUS	$24,633	$34,310	$10,000	$40,000	Includes wood chips
2960060-44150	FINANCE CHARGES	$4,189	$1,088	($0)	$1,500	
		$119,727	$239,735	$60,000	$148,500	
29 LANDFILL ENTERPRISE FUND - 60 LANDFILL						
2960050-42810	CONCRETE	$220,230	$70,856	$150,000	$200,000	
2960050-42811	OTHER RECYCLABLE METALS	$3,653	$3,555	$2,200	$3,000	
2960050-42812	ANIMALS	$1,354	$1,026	$1,200	$1,000	
2960050-42813	NON-FRIABLE ASBESTOS	$898	$432	$600	$500	
2960050-42814	APPLIANCES	$9,555	$11,595	$9,000	$13,500	
2960050-42815	BRUSH & WOOD	$48,406	$180,656	$55,000	$140,000	
2960050-42816	CITY OF GLENWOOD	$21,952	$19,701	$48,000	$20,000	
2960050-42817	CONSTRUCTION WASTE MIXED	$742,930	$668,827	$650,000	$750,000	
2960050-42818	CONTAMINATED SOIL	$69,559	$24,611	$10,000	($0)	
2960050-42819	MUNICIPAL WASTE	$1,024,077	$1,045,981	$1,100,000	$1,100,000	
2960050-42820	RESIDENTIAL/MIXED	$74,534	$91,314	$45,000	$85,000	
2960050-42821	SLUDGE	$27,133	$18,451	$20,000	$17,500	
2960050-42822	CAR WASH SLUDGE	$107,576	$70,470	$80,000	$100,000	
2960050-42823	SEPTIC SLUDGE	$305,616	$283,509	$450,000	$232,500	
2960050-42824	TIRES - PASSENGER/LT TRUCK	$18,834	$21,855	$17,000	$18,500	
2960050-42825	TIRES - LARGE TRUCK	$2,905	$2,330	$2,000	$4,000	
2960050-42826	TIRES - EQUIPMENT	$105	$630	$200	$500	
2960050-42827	COMPOST FEE	$76,942	$58,389	$60,000	$105,000	
2960050-42828	SCRAP METAL/RECYLE FEES	($0)	$6,025	$3,000	$6,500	
2960050-42829	CLEAN OUT FEE	$2,250	$1,650	$1,300	$2,000	
2960050-42830	ELECTRONICS	$43,398	$52,459	$48,000	$43,000	
		$2,801,906	$2,634,322	$2,752,500	$2,842,500	
		$2,921,633	$2,874,058	$2,812,500	$2,991,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
29 LANDFILL ENTERPRISE FUND - 000						
2960-60000	PROJECTS	$0	$685,966	$600,000	$120,000	Complete scale replacement
					$75,000	Grader (1/2)
					$160,000	Compactor replacement savings fund
					$300,000	TR626 Trommel screen
	TOTAL PROJECTS	$0	$685,966	$600,000	$655,000	
	TOTAL 000 -	$0	$685,966	$600,000	$655,000	
29 LANDFILL ENTERPRISE FUND - 610 LANDFILL ADMINISTRATION						
29610-51110	REGULAR EMPLOYEES	$416,457	$591,729	$670,442	$584,626	Landfill Manager Crew Leader - Landfill Accounting Technician/Cashier Landfill Recycling Technician Equipment Operator III - Landfill (3) Equipment Operator II - Landfill Equipment Operator I - Landfill Public Information Officer (25%)
29610-51120	PART-TIME EMPLOYEES	$20,861	$18,232	$75,000	$0	
29610-51140	OVERTIME	$58,537	$35,656	$30,600	$0	
29610-51210	HEALTH INSURANCE PREMIUMS	$104,683	$145,672	$176,494	$151,020	
29610-51220	LONG TERM DISABILITY	$41	$1,605	$1,805	$1,973	
29610-51230	BASIC LIFE INSURANCE	$73	$1,348	$1,433	$1,533	
29610-51250	FICA CONTRIBUTIONS	$36,493	$46,451	$48,228	$44,724	
29610-51260	RETIREMENT CONTRIBUTIONS	$16,674	$25,379	$44,084	$40,923	
29610-51270	UNEMPLOYMENT COMPENSATION	$1,431	$1,821	$1,892	$1,755	
29610-51280	WORKERS' COMPENSATION	$7,803	$17,626	$8,609	$23,401	
29610-51360	EMPLOYEE ONBOARDING	$536	$70	$0	$400	
29610-51380	UNIFORM ALLOWANCE	$3,116	$3,617	$3,600	$3,960	
29610-51410	UTILITIES	$8,510	$9,422	$10,000	$7,300	Electric
					$200	Natural gas
					$5,000	Communications
					$1,700	Includes portapotty at landfill
	TOTAL UTILITIES	$8,510	$9,422	$10,000	$14,200	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
29610-51610	SUPPLIES	$16,732	$11,851	$5,000	$2,500	Janitorial
					$4,000	Misc. materials
					$2,500	Office supply
					$3,200	Ship samples, UPS geotech equipment
					$2,500	PPE
					$3,000	Small tools
					$500	Printing
					$4,000	Uniforms
	TOTAL SUPPLIES	$16,732	$11,851	$5,000	$22,200	
29610-51710	PROFESSIONAL SERVICES				$3,000	CDL/Randon
					$110,000	All engineering services including groundwater
					$11,000	APEN fees, WQD permit fees
					$30,000	Compost, septic, pond, stormwater testing, geotech
		$150,355	$271,646	$125,000	$43,000	Bluestar E-waste removal & recycling
	TOTAL PROFESSIONAL SERVICES	$150,355	$271,646	$125,000	$197,000	
29610-51810	MAINTENANCE & REPAIR	$325,462	$191,422	$250,000	$5,300	Storms crew trailer rental
					$45,000	Small equip, possible glass pulverizer purchase
					$120,000	Fuel for all equipment and def
					$2,000	Hardware
					$2,500	Supplies
					$10,000	Routine and maintenance
					$180,000	Heavy equipment and repairs, lube, parts, etc.
					$2,500	Litter pickers
					$20,000	Parts
	TOTAL MAINTENANCE & REPAIR	$325,462	$191,422	$250,000	$387,300	
29610-51920	RENT/LEASE - EQUIPMENT	$275,370	$384,022	$425,000	$84,000	Grinder
					$42,900	25 ton truck
					$52,800	938 Loader
					$42,000	950 Loader
					$85,200	D6 Dozer
	TOTAL RENT/LEASE - EQUIPMENT	$275,370	$384,022	$425,000	$306,900	
29610-52110	PUBLIC NOTICES	$720	$0	$1,500	$1,000	
29610-52120	EMPLOYMENT POSTING	$409	$45	$1,000	$150	
29610-52130	SPECIAL EVENT POSTING	$0	$0	$2,000	$0	
29610-52140	PROCUREMENT ADVERTISING	$0	$31	$2,000	$0	
29610-52210	PROFESSIONAL DEVELOPMENT	$25,758	$634	$7,500	$1,400	Ground
					$2,000	Hotel
	TOTAL PROFESSIONAL DEVELOPMENT	$25,758	$634	$7,500	$3,400	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
29610-52310	MISC. TRAVEL	$398	$1,245	$1,000	$3,400	
29610-52410	PROFESSIONAL DUES AND MEMBERSH	$838	$861	$800	$2,000	
29610-52420	ORGANIZATIONAL DUES AND MEMBER	$0	$250	$1,500	$2,000	
29610-52610	TECHNOLOGY	$200	$800	$1,000	$2,000	
29610-52810	OTHER OPERATING EXPENSE	$16,839	$26,604	$25,000	$0	
29610-53510	PROPERTY INSURANCE	$418	$3,061	$300	$0	
29610-53520	LIABILITY AND CASUALITY INSURA	$45,162	$45,864	$50,000	$16,500	
29610-54110	BAD DEBTS	$0	$2,925	$5,000	$2,500	
29610-54310	INTERFUND COST OF SERVICE	$135,900	$139,977	$142,777	$145,632	
29610-54320	INTERFUND BILLING	$4,500	$4,635	$4,728	$4,728	
29610-55110	SAFETY PROGRAMS	$0	$0	$15,000	$0	
29610-55310	MANAGEMENT FEES	$496,251	$0	$0	$0	
29610-55320	SEPTIC AND CAR WASH	$47,518	$0	$3,000	$3,500	
29610-55340	TIRE DISPOSAL	$17,191	$0	$25,000	$22,000	
29610-55350	CONCRETE CRUSHING AND RECYCLIN	$0	$0	$45,000	$0	
29610-55360	LANDFILL CLOSURE COSTS	$210,228	$240,157	$39,000	$40,000	
29610-55370	LANDFILL POSTCLOSURE COSTS	$34,370	$215,788	$30,000	$32,000	
29610-55380	WEED CONTROL	$3,950	$5,250	$6,000	$5,000	
29610-55390	RECYCLING PROGRAM	$77,645	$78,285	$90,000	$90,000	
29610-55510	HOUSEHOLD HAZARDOUS WASTE	$20,322	$8,171	$30,000	$21,000	
29610-55610	DEPRECIATION	$96,596	$108,926	$45,000	$109,000	
29610-55910	TRANSFER TO FLEET SERVICE	$0	$25,000	$25,000	$100,000	
29610-59520	CAPITAL OUTLAY	$457,876	$52,653	$0	$0	
29610-59599	CAPITALIZED ASSETS	($450,311)	($738,619)	$18,000	$0	
TOTAL 610 - LANDFILL ADMINISTRATION		$2,685,913	$1,980,111	$2,494,292	$2,387,725	
29 LANDFILL ENTERPRISE FUND - 999 INTERFUND TRANSFERS						
29999-55930	TRANSFER TO CAPITAL PROJECTS	$25,000	$25,000	$25,000	$0	
TOTAL 999 - INTERFUND TRANSFERS		$25,000	$25,000	$25,000	$0	
		$2,710,913	$2,691,077	$3,119,292	$3,042,725	

CAPITAL PROJECTS FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$1,291,957	$2,759,145	$4,823,888	$3,237,357
Expenditures		($3,149,845)	($3,164,684)	($4,460,048)	($3,486,017)
Change in Fund Balance		($1,857,888)	($405,539)	$363,840	($248,660)
Beginning Fund Balance		$4,962,401	$3,104,513	$3,104,513	$3,468,353
Ending Fund Balance		$3,104,513	$2,698,974	$3,468,353	$3,219,693
Available Fund Balance		$3,104,513	$2,698,974	$3,468,353	$3,219,693
Reserves					
Parkland Fees			($632,324)	($1,078,547)	($842,547)
Water Storage Fees			($2,290)	($2,290)	($2,290)
Springridge			($322,324)	($271,263)	$0
Glenwood Park Fees			($3,375)	($3,375)	($3,375)
Employee Retention Reserve			$0	($45,000)	$0
Loan Due from Airport Fund					$200,000
Contingency			($2,000,000)	($2,000,000)	($2,000,000)
Available Reserves			($261,340)	$67,878	$571,481
Cash Balance as of 6/30/21	$3,357,765				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
31 CAPITAL PROJECTS - 00						
3100020-41210	GENERAL SALES TAX	$2,543,106	$1,020,746	$2,501,848	$2,916,952	
3100020-41310	USE TAX	$157,992	$58,734	$100,000	$155,405	
		$2,701,097	$1,079,480	$2,601,848	$3,072,357	
31 CAPITAL PROJECTS - 00						
3100060-41220	AUDIT REVENUE	$17,217	$31,861	$10,000	$15,000	
3100060-42420	CREDIT CARD CONVENIENCE FEES	$298	$133	($0)	($0)	
3100060-43510	INTEREST	$87,886	$47,871	$50,000	$50,000	
3100060-43710	CONTRIBUTIONS/DONATIONS	($0)	$5,065	($0)	($0)	
3100060-43920	INSURANCE REIMBURSEMENT	$2,516	($0)	($0)	($0)	
3100060-44130	MISCELLANEOUS	$150	($0)	($0)	($0)	
3100060-44325	TRANSFER FROM LANDFILL	$25,000	$25,000	$25,000	$25,000	
3100060-44385	TRANSFER FROM WA/SW	$50,000	$50,000	$50,000	$50,000	
3100060-44390	TRANSFER FROM ELECTRIC	$25,000	$25,000	$25,000	$25,000	
		$208,066	$184,930	$160,000	$165,000	
31 CAPITAL PROJECTS - 00						
3100040-42310	GRANTS	$30,000	($0)	($0)	($0)	
		$30,000	($0)	($0)	($0)	
31 CAPITAL PROJECTS - 00						
3100070-44315	TRANSFER FROM A & I	$1,974,283	($0)	($0)	($0)	
3100070-44370	TRANSFER FROM GENERAL FUND	$1,646,053	($0)	$1,587,040	($0)	
		$3,620,336	($0)	$1,587,040	($0)	
31 CAPITAL PROJECTS - 30 PUBLIC WORKS						
3130030-42424	PARKLAND FEES - SPRINGRIDGE	$17,324	$17,324	($0)	($0)	
3130030-42425	PARK LAND FEES	$17,324	$7,453	$200,000	($0)	
		$34,649	$24,777	$200,000	($0)	
		$6,594,149	$1,289,187	$4,548,888	$3,237,357	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
31 CAPITAL PROJECTS - 000						
3110-60000	PROJECTS	$510,608	$591,164	$812,195	$315,000	ERP Project
					$100,000	Computer replacement cycle
					$200,000	Wireless Controller/Backup Device/Service, Backhaul
					$25,000	Security upgrades
					$7,500	Switch and AC upgrades - Community Center
	TOTAL PROJECTS	$510,608	$591,164	$812,195	$647,500	
3110-61000	DEPARTMENTAL	$140,572	$234,277	$0	$0	
	TOTAL 000 -	$651,180	$825,440	$812,195	$647,500	
31 CAPITAL PROJECTS - 000						
3120-60000	PROJECTS	$0	$0	$0	$17,000	Police K-9
3120-61000	DEPARTMENTAL	$0	$49,875	$21,805	$0	
	TOTAL 000 -	$0	$49,875	$21,805	$17,000	
31 CAPITAL PROJECTS - 000						
3135-60000	PROJECTS	($9,102)	$76,786	$1,876,716	$150,000	3 Mile Park completion of Phase 1
					$8,000	Arts Center Restrooms ADA compliance
					$60,500	Arts Center offices and FFE
					$408,562	9th and Cooper parking garage repairs
					$353,158	Community Center generator
					$63,000	Lone Pine project
					$80,000	Axtel Park Improvements - County to cover 1/2 ($40,000)
					$10,000	Two Rivers Park Staircase at Crows Nest
	TOTAL PROJECTS	($9,102)	$76,786	$1,876,716	$1,133,220	
3135-61000	DEPARTMENTAL	$655,248	$50,002	$0	$0	
	TOTAL 000 -	$646,146	$126,787	$1,876,716	$1,133,220	
31 CAPITAL PROJECTS - 000						
3130-60000	PROJECTS	$3,746,701	$418,574	$340,000	$48,000	EMS I-70 Access Line Breaks
					$8,810	11th Street Trees, Irrigation and Sod - Construction
					$200,000	Project and SWAT contingency
	TOTAL PROJECTS	$3,746,701	$418,574	$340,000	$256,810	
3130-61000	DEPARTMENTAL	$81,471	$43,486	$0	$0	
	TOTAL 000 -	$3,828,172	$462,060	$340,000	$256,810	
31 CAPITAL PROJECTS - 000						
3125-61000	COMM DEV DEPARTMENTAL	$0	($1,292)	($62,636)	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
	TOTAL 000 -	$0	($1,292)	($62,636)	$0	
31 CAPITAL PROJECTS - 390 SPECIAL WORKS ACTIVITIES TEAM						
31390-51110	REGULAR EMPLOYEES	$169,386	$221,435	$240,036	$192,928	Swat Crew Lead Swat Maintenance Specialist (2)
31390-51140	OVERTIME	$1,508	$2,995	$2,000	$2,000	
31390-51150	STANDBY AND CALLBACK PAY	$2,493	$9,342	$2,000	$2,000	
31390-51210	HEALTH INSURANCE PREMIUMS	$39,269	$46,209	$46,103	$43,932	
31390-51220	LONG TERM DISABILITY	$18	$710	$703	$656	
31390-51230	BASIC LIFE INSURANCE	$32	$578	$556	$499	
31390-51250	FICA CONTRIBUTIONS	$13,123	$17,487	$18,363	$14,759	
31390-51260	RETIREMENT CONTRIBUTIONS	$7,995	$9,877	$16,762	$13,505	
31390-51270	UNEMPLOYMENT COMPENSATION	$515	$686	$720	$579	
31390-51280	WORKERS' COMPENSATION	$6,608	$7,913	$7,000	$2,523	
31390-51360	EMPLOYEE ONBOARDING	$21	$0	$0	$0	
31390-51380	UNIFORM ALLOWANCE	$1,283	$1,400	$450	$7,000	
31390-51410	UTILITIES				$3,200	Electric
		$9,308	$6,224	$9,500	$8,000	Landfill
					$2,000	Natural gas
					$20,000	Communications
					$2,500	Water/Sewer
	TOTAL UTILITIES	$9,308	$6,224	$9,500	$35,700	
31390-51610	SUPPLIES	$53,778	$60,246	$50,000	$30,000	Welding
					$8,500	Small Tools
					$15,000	Misc Materials - Asphalt, Steel, Landscaping, Block, etc.
					$4,500	Concrete materials
					$2,500	FR
	TOTAL SUPPLIES	$53,778	$60,246	$50,000	$60,500	
31390-51710	PROFESSIONAL SERVICES	$37,564	$31,057	$130,012	$750	CDL/RANDOM
31390-51810	MAINTENANCE & REPAIR	$16,390	$23,498	$15,500	$28,000	Equipment
					$5,000	Buildings
	TOTAL MAINTENANCE & REPAIR	$16,390	$23,498	$15,500	$33,000	
31390-51920	RENT/LEASE - EQUIPMENT	$1,137	$541	$1,500	$3,000	Equipment Rentals
31390-51930	RENT/LEASE - BUILDING	$0	$76,226	$45,000	$44,716	Public Works - Building and improvements at boneyard
31390-52210	PROFESSIONAL DEVELOPMENT	$584	$0	$500	$2,000	Training
					$1,500	Safety Program
					$1,500	Misc. Travel
	TOTAL PROFESSIONAL DEVELOPMENT	$584	$0	$500	$5,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
31390-52310	MISC TRAVEL	$0	$0	$300	$0	
31390-52510	GRANTS	$0	$9,606	$210,000	$0	
31390-52610	TECHNOLOGY	$0	$0	$0	$5,000	Radio Upgrades and Computers
31390-52710	CREDIT CARD FEES	$832	$645	$0	$0	
31390-52810	OTHER OPERATING EXPENSE	$2,184	$7,319	$5,000	$10,000	
31390-52820	TIF TO DDA	$103,586	$110,926	$42,162	$96,622	
31390-52825	ECONOMIC INCENTIVE REBATE	$18,517	$27,934	$13,513	$27,027	
31390-53520	LIABILITY AND CASUALITY INSURA	$1,662	$1,386	$2,500	$0	
31390-54310	INTERFUND COST OF SERVICE	$82,147	$86,304	$88,031	$89,791	
31390-55910	TRANSFER TO FLEET SERVICE	$447,000	$841,500	$617,000	$515,000	Fleet catch up
31390-59520	CAPITAL OUTLAY	$4,389	$7,875	$150,000	$25,000	Improvements to Facilities at South Yard
TOTAL 390 - SPECIAL WORKS ACTIVITIES TEAM		$1,021,330	$1,609,916	$1,715,211	$1,231,487	
31 CAPITAL PROJECTS - 999 INTERFUND TRANSFERS						
31999-55980	TRANSFER TO OTHER FUNDS	$400,000	$68,000	$0	$200,000	This is an interfund transfer from Capital Projects to the Airport to enable the enterprise fund to acquire a compliant fuel system for Jet-A fuel. Terms of repayment are not yet established.
TOTAL 999 - INTERFUND TRANSFERS		$400,000	$68,000	$0	$200,000	
		$6,546,828	$3,140,786	$4,703,291	$3,486,017	

A&I FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$9,229,465	$13,732,394	$13,932,394	$9,934,485
Expenditures		($11,654,145)	($18,487,415)	($18,403,159)	($13,251,187)
Change in Fund Balance		($2,424,680)	($4,755,021)	($4,470,765)	($3,316,702)
Beginning Fund Balance		$17,253,650	$14,828,970	$14,828,970	$10,358,205
Ending Fund Balance		$14,828,970	$10,073,949	$10,358,205	$7,041,503
Reserves:					
Bond Reserve		($1,980,388)	($1,980,388)	($1,980,388)	($1,980,388)
South Bridge		($250,000)	($500,000)	($750,000)	($1,000,000)
27th Street Underpass				($750,000)	$0
6th Street Reserve		$0	($1,750,000)	($1,750,000)	$0
Theatre Reserve		($704,112)	($704,112)	($704,112)	($704,112)
FAB Grant Reserve		$0	($10,307)	($86,037)	($86,037)
A&I Contingency		($3,000,000)	($3,000,000)	($3,000,000)	($3,000,000)
Available Fund Balance		$8,894,470	$2,129,142	$1,337,668	$270,966
Cash Balance as of 6/30/21	$11,590,929				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
33 ACQUISITION & IMPROVEMENTS - 00						
3300020-41210	GENERAL SALES TAX	$5,086,212	$4,841,422	$5,004,349	$5,833,903	
3300020-41310	USE TAX	$315,983	$182,036	$200,000	$310,812	
		$5,402,195	$5,023,458	$5,204,349	$6,144,715	
33 ACQUISITION & IMPROVEMENTS - 00						
3300060-41220	AUDIT REVENUE	$34,434	$63,721	$20,000	$30,000	
3300060-42310	GRANTS	$3,787,147	$2,400,384	$8,763,450	$2,169,770	Remaining BUILD Grant Reimbursement
					$1,040,000	LoVa Extension Grants
					$150,000	CDOT Main Street Grant
	TOTAL GRANTS	$3,787,147	$2,400,384	$8,763,450	$3,359,770	
3300060-42420	CREDIT CARD CONVENIENCE FEES	$596	$393	($0)	($0)	
3300060-43510	INTEREST	$505,990	$200,578	$150,000	$100,000	
3300060-43650	MISCELLANEOUS LEASE	$500	($0)	($0)	($0)	
3300060-43710	CONTRIBUTIONS/DONATIONS	$3,410	$60,700	($0)	($0)	
3300060-43910	COST REIMBURSEMENTS	$850,000	$3,632	$200,000	$300,000	Contribution to project from Iron Mountain Hot Springs
3300060-44110	SALE OF ASSETS	($0)	$1,206,813	($0)	($0)	
3300060-44130	MISCELLANEOUS	$30	$35	($0)	($0)	
3300060-44210	BOND PROCEEDS	$12,200,000	($0)	($0)	($0)	
		$17,382,106	$3,936,256	$9,133,450	$3,789,770	
33 ACQUISITION & IMPROVEMENTS - 00						
3300070-44310	TRANSFER FROM CAPITAL PROJECTS	($0)	$68,000	($0)	($0)	
3300070-44330	TRANSFER FROM OTHER FUNDS	$134,000	$200,000	($0)	($0)	
3300070-44385	TRANSFER FROM WA/SW	$725,000	($0)	($0)	($0)	
3300070-44390	TRANSFER FROM ELECTRIC	$130,000	($0)	($0)	($0)	
		$989,000	$268,000	($0)	($0)	
		$23,773,301	$9,227,714	$14,337,799	$9,934,485	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
33 ACQUISITION & IMPROVEMENTS - 000						
3310-60000	PROJECTS	$40	$0	$0	$0	
	TOTAL 000 -	$40	$0	$0	$0	
33 ACQUISITION & IMPROVEMENTS - 000						
3330-60000	PROJECTS	$14,851,322	$4,556,344	$16,626,724	$3,485,233	South Midland Construction This includes remaining contract balances over three separate contracts: Gould Construction $3,126,312.70 SGM (construction management) $312,331.50 Public information contract $30,089.60 Total of $3,468,733.80 $16,500 is added for miscellaneous project closeout and requirements from CDOT and FHWA.
					$1,750,000	6th Street Improvements from Laurel to Pine - Construction
					$850,000	Devereux Trail Extension Current funding: $300,000 from Iron Mtn Hot Springs $150,000 CDOT Main streets Grant City contribution is $400,000
					$750,000	27th Street Underpass Contribution to Construction
					$6,047	Complete LoVa design in 2022
					$1,150,000	Build LoVa Extension -Grant funded project Total project cost $1,150,000 Town of New castle Match $650,000 RFTA Match funds $175,000 Garfield County Match funds $150,000 Town of New Castle Match Funds $15,000 City of Glenwood Match Funds $ 160,000
					$50,000	6th Street Bike Path Rebuild In house design for the reconstruction of the bike path from Linden to Donegan. 50k will allow for survey, geotechnical engineering and the subsurface utility mapping.
					$500,000	A&I Project Contingency
	TOTAL PROJECTS	$14,851,322	$4,556,344	$16,626,724	$8,541,280	
	TOTAL 000 -	$14,851,322	$4,556,344	$16,626,724	$8,541,280	
33 ACQUISITION & IMPROVEMENTS - 000						
3335-60000	PROJECTS	$1,164,576	$2,624,225	$270,000	$60,000	Raising per Tree City USA designations, $2 per capita minimum.
					$200,000	Retaining Wall Repairs on Rio Grande Trail at 8th Street. Reimbursed by RFTA.
	TOTAL PROJECTS	$1,164,576	$2,624,225	$270,000	$260,000	
3335-61000	DEPARTMENT PROJECTS	$0	$0	$34,460	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
	TOTAL 000 -	$1,164,576	$2,624,225	$304,460	$260,000	
33 ACQUISITION & IMPROVEMENTS - 300 A&I GENERAL GOVERNMENT						
33300-51410	UTILITIES	$27,842	$29,671	$0	$35,000	
33300-51710	PROFESSIONAL SERVICES	$88,024	$49,838	$0	$50,000	
33300-52510	GRANTS	$164,672	$143,121	$181,991	$180,000	
33300-52710	CREDIT CARD FEES	$1,663	$1,766	$0	$1,700	
33300-52820	TIF TO DDA	$207,172	$221,851	$84,324	$193,243	
33300-52825	ECONOMIC INCENTIVE REBATE	$37,034	$68,686	$27,028	$54,054	
33300-53710	CONTRIBUTIONS/DONATIONS	$12,500	$97,500	$97,500	$25,000	LoVa Operations
					$60,000	Historical Museum
					$13,050	Reudi Aquatics; includes a $550 increase to aquatics nuisance species
	TOTAL CONTRIBUTIONS/DONATIONS	$12,500	$97,500	$97,500	$98,050	
33300-54310	INTERFUND COST OF SERVICE	$305,392	$314,554	$320,845	$327,262	
33300-54710	ROUTINE MAINTENANCE	$22,990	$0	$0	$0	
	TOTAL 300 - A&I GENERAL GOVERNMENT	$867,290	$926,987	$711,688	$939,309	
33 ACQUISITION & IMPROVEMENTS - 301 A&I PUBLIC WORKS						
33301-54710	ROUTINE MAINTENANCE	$20,076	$16,845	$0	$0	
	TOTAL 301 - A&I PUBLIC WORKS	$20,076	$16,845	$0	$0	
33 ACQUISITION & IMPROVEMENTS - 302 A&I CULTURE & RECREATION						
33302-51810	MAINTENANCE & REPAIR	$0	$0	$0	$50,000	Trail maintenance
					$4,000	River clean-up, Riverfest
					$50,000	ROW tree maintenance - Tree City USA designation
					$10,000	Fire mitigation
	TOTAL MAINTENANCE & REPAIR	$0	$0	$0	$114,000	
33302-54710	ROUTINE MAINTENANCE	$90,846	$10,705	$0	$0	
	TOTAL 302 - A&I CULTURE & RECREATION	$90,846	$10,705	$0	$114,000	
33 ACQUISITION & IMPROVEMENTS - 303 A&I DEBT SERVICE						
33303-53910	PRINCIPAL - BONDS	$0	$1,295,000	$1,335,000	$620,000	Series of 2018
					$755,000	Series of 2019
	TOTAL PRINCIPAL - BONDS	$0	$1,295,000	$1,335,000	$1,375,000	
33303-53930	INTEREST - BONDS	$638,013	$682,440	$642,635	$276,948	Series of 2018
					$324,650	Series of 2019
	TOTAL INTEREST - BONDS	$638,013	$682,440	$642,635	$601,598	
33303-53950	ISSUANCE COSTS	$94,317	$0	$0	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
33303-53960	ADMIN SERVICE FEES	$1,200	$1,600	$0	$0	
	TOTAL 303 - A&I DEBT SERVICE	$733,530	$1,979,040	$1,977,635	$1,976,598	
33 ACQUISITION & IMPROVEMENTS - 999 INTERFUND TRANSFERS						
33999-55980	TRANSFER TO OTHER FUNDS	$3,145,223	$1,540,000	$1,420,000	$1,000,000	Community Center
					$200,000	Parks Maintenance Transfer
					$120,000	Employee Housing
					$100,000	Special Events
	TOTAL TRANSFER TO OTHER FUNDS	$3,145,223	$1,540,000	$1,420,000	$1,420,000	
	TOTAL 999 - INTERFUND TRANSFERS	$3,145,223	$1,540,000	$1,420,000	$1,420,000	
		$20,872,902	$11,654,145	$21,040,508	$13,251,187	

General Improvement District

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$44,949	$42,900	$42,900	$42,669
Expenditures		($63,053)	($13,314)	($49,989)	($14,580)
Change in Fund Balance		($18,104)	$29,586	($7,089)	$28,089
Beginning Fund Balance			$113,867	$113,867	$106,778
Ending Fund Balance		$113,867	$143,453	$106,778	$134,867
Reserves					
Parking Garage					($100,000)
Available Fund Balance		$113,867	$143,453	$106,778	$34,867
Cash Balance as of 6/30/21	$141,366				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
37 GENERAL IMPROVEMENT DISTRICT - 00						
3700020-41110	PROPERTY TAXES	$40,143	$60,456	$40,000	$42,669	
3700020-41120	DELINQUENT PROPERTY TAXES	$15	$2	($0)	($0)	
3700020-41150	SPECIFIC OWNERSHIP	$2,955	$2,822	$2,900	($0)	
		$43,113	$63,280	$42,900	$42,669	
37 GENERAL IMPROVEMENT DISTRICT - 00						
3700060-43510	INTEREST	$602	$154	($0)	($0)	
		$602	$154	($0)	($0)	
		$43,715	$63,433	$42,900	$42,669	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
37 GENERAL IMPROVEMENT DISTRICT - 282 GENERAL IMPROVEMENT DISTRICT #						
37282-51710	PROFESSIONAL SERVICES	$0	$0	$36,675	$0	
37282-52750	TREASURER'S FEES	$806	$843	$0	$1,000	
37282-54310	INTERFUND COST OF SERVICE	$12,763	$13,053	$13,314	$13,580	
37282-60000	PROJECTS	$0	$13,325	$0	$0	
TOTAL 282 - GENERAL IMPROVEMENT DISTRICT #		$13,569	$27,221	$49,989	$14,580	
		$13,569	$27,221	$49,989	$14,580	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
43 FIRE & EMS FUND - 00						
4300070-44355	TRANSFER FROM MARIJUANA TAX FU	$75,000	($0)	$100,000	$85,000	Public safety
4300070-44370	TRANSFERS FROM GENERAL FUND	$2,871,209	$2,485,460	$2,805,904	$2,768,966	
4300070-44380	TRANSFER FROM RURAL FIRE DISTR	$756,876	$810,463	$857,939	$983,456	
		$3,703,085	$3,295,923	$3,763,843	$3,837,422	
43 FIRE & EMS FUND - 20 PUBLIC SAFETY						
4320030-42130	FIRE PERMITS	$16,065	$9,450	$15,000	$20,000	
		$16,065	$9,450	$15,000	$20,000	
43 FIRE & EMS FUND - 20 PUBLIC SAFETY						
4320040-42310	GRANTS	$57,627	$202,782	($0)	$50,000	
		$57,627	$202,782	($0)	$50,000	
43 FIRE & EMS FUND - 20 PUBLIC SAFETY						
4320050-42428	AMBULANCE FEES	$701,175	$875,306	$550,000	$850,000	
4320050-42429	MEDICARE/MEDICAID ADJUSTMENT	($245,175)	($302,837)	($0)	($300,000)	
		$456,001	$572,469	$550,000	$550,000	
43 FIRE & EMS FUND - 20 PUBLIC SAFETY						
4320060-43510	INTEREST	($760)	($0)	$300	$1,100	
4320060-43710	CONTRIBUTIONS/DONATONS	$200	$200	($0)	$200	
4320060-43910	COST REIMBURSEMENTS	($0)	$2,250	($0)	($0)	
4320060-44130	MISCELLANEOUS	$9,669	$178	$5,000	$5,000	
4320060-44140	BAD DEBT RECOVERY	$19,299	$24,194	$20,000	$25,000	
		$28,408	$26,822	$25,300	$31,300	
		$4,261,186	$4,107,446	$4,354,143	$4,488,722	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
43 FIRE & EMS FUND - 133 FIRE & EMS						
43133-51110	REGULAR EMPLOYEES	$2,004,138	$2,095,238	$2,340,673	$2,261,170	Fire Chief Deputy Fire Chief Fire Marshall Emergency Services Coordinator Battalion Chief (3) Fire Lieutenant (3) Firefighter II/EMT Paramedic (5) Firefighter II/Engineer (6) Firefighter II/EMT Basic (3) Firefighter I/EMT Paramedic (2) Firefighter I/EMT Basic (2)
43133-51120	PART-TIME EMPLOYEES	$196,160	$198,334	$208,813	$200,000	
43133-51140	OVERTIME	$139,955	$36,015	$138,000	$125,000	
43133-51210	HEALTH INSURANCE PREMIUMS	$510,057	$490,889	$529,844	$531,756	
43133-51220	LONG TERM DISABILITY	$162	$6,018	$6,172	$7,483	
43133-51230	BASIC LIFE INSURANCE	$289	$5,074	$5,006	$5,918	
43133-51240	FPPA DEATH AND DISABILITY INS	$1,319	$48,386	$8,831	$63,482	
43133-51250	FICA CONTRIBUTIONS	$44,972	$44,703	$52,708	$32,786	
43133-51260	RETIREMENT CONTRIBUTIONS	$138,035	$105,496	$157,643	$158,280	
43133-51265	POLICE/FIRE RETIREMENT CONTRIB	$160,807	$159,928	$164,468	$169,589	
43133-51270	UNEMPLOYMENT COMPENSATION	$6,825	$6,692	$6,769	$6,783	
43133-51280	WORKERS' COMPENSATION	$84,082	$102,185	$84,461	$80,235	
43133-51360	EMPLOYEE ONBOARDING	$2,788	$0	$3,500	$0	
43133-51410	UTILITIES	$46,239	$42,439	$46,500	$48,000	
43133-51610	SUPPLIES	$50,700	$28,819	$71,000	$40,000	
43133-51710	PROFESSIONAL SERVICES	$53,268	$22,800	$33,100	$22,500	Sustainable Strategies
					$10,000	Medical Advisor
					$3,100	Hope Center
	TOTAL PROFESSIONAL SERVICES	$53,268	$22,800	$33,100	$35,600	
43133-51810	MAINTENANCE & REPAIR	$125,377	$111,701	$150,000	$120,000	
43133-51920	RENT/LEASE - EQUIPMENT	$790	$1,915	$1,900	$1,200	
43133-52110	PUBLIC NOTICES	$0	$0	$250	$0	
43133-52120	EMPLOYMENT POSTING	$229	$0	$250	$0	
43133-52130	SPECIAL EVENT POSTING	$0	$0	$250	$0	
43133-52140	PROCUREMENT ADVERTISING	$0	$0	$250	$0	
43133-52210	PROFESSIONAL DEVELOPMENT	$40,437	$16,675	$40,000	$30,000	Paramedic School Officer Development Training Conferences
43133-52310	MISC. TRAVEL	$3,303	$2,591	$2,500	$0	
43133-52410	PROFESSIONAL DUES AND MEMBERSH	$2,347	$830	$3,000	$1,500	
43133-52420	ORGANIZATIONAL DUES AND MEMBER	$636	$0	$1,200	$0	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
43133-52510	GRANTS	$27,194	$30,906	$15,000	$20,000	
43133-52610	TECHNOLOGY	$0	$0	$4,000	$0	
43133-52810	OTHER OPERATING EXPENSE	$7,862	$4,422	$15,000	$7,500	
43133-53230	OTHER CHEMICALS	$0	$2,840	$1,500	$0	
43133-53510	PROPERTY INSURANCE	$8,252	$11,615	$8,500	$12,400	
43133-53520	LIABILITY AND CASUALITY INSURA	$16,088	$17,044	$22,000	$18,000	
43133-53710	CONTRIBUTIONS/DONATIONS	$30,000	$34,643	$0	$30,000	
43133-53820	MEDICAL SUPPLIES	$30,885	$37,600	$38,000	$32,000	
43133-54110	BAD DEBTS	$294,892	$200,704	$250,000	$200,000	
43133-54210	COLLECTION EXPENSE	$20,296	$21,760	$25,000	$22,000	
43133-54310	INTERFUND COST OF SERVICE	$212,801	$219,185	$223,569	$228,040	
	TOTAL 133 - FIRE & EMS	$4,261,186	$4,107,446	$4,659,658	$4,488,722	
		$4,261,186	$4,107,446	$4,659,658	$4,488,722	

VALE

	2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue	$12,851	$20,000	$20,000	$26,000
Expenditures	($16,573)	($19,000)	($19,000)	($25,000)
Change in Fund Balance	($3,722)	$1,000	$1,000	$1,000
Beginning Fund Balance	$36,383	$32,661	$32,661	$33,661
Ending Fund Balance	$32,661	$33,661	$33,661	$34,661
Available Fund Balance	$32,661	$33,661	$33,661	$34,661

Cash Balance as of 6/30/21 $17,264

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
45 V.A.L.E. FUND - 10 GENERAL GOVERNMENT						
4510050-42426	V.A.L.E. ASSESSMENT	$24,983	$11,972	$25,000	$25,000	
		$24,983	$11,972	$25,000	$25,000	
45 V.A.L.E. FUND - 10 GENERAL GOVERNMENT						
4510060-43510	INTEREST	$646	$873	$1,000	$1,000	
4510060-44130	MISCELLANEOUS	($0)	$6	($0)	($0)	
		$646	$879	$1,000	$1,000	
		$25,629	$12,851	$26,000	$26,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
45 V.A.L.E. FUND - 132 V.A.L.E. FUND						
45132-56310	VICTIM/WITNESS ASSISTANCE	$23,060	$16,574	$20,000	$25,000	
45132-59520	CAPITAL OUTLAY	$0	$0	$5,000	$0	
	TOTAL 132 - V.A.L.E. FUND	$23,060	$16,574	$25,000	$25,000	
		$23,060	$16,574	$25,000	$25,000	

CONSERVATION TRUST

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$105,205	$113,200	$113,200	$112,250
Expenditures		$0	($218,500)	$0	($425,000)
Change in Fund Balance		$105,205	($105,300)	$113,200	($312,750)
Beginning Fund Balance		$235,274	$340,479	$340,479	$453,679
Ending Fund Balance		$340,479	$235,179	$453,679	$140,929
Reserves:					
Water Park			($100,000)	$0	$0
LoVa Trail Match			($100,000)	$0	$0
Available Fund Balance		$340,479	$35,179	$453,679	$140,929
Cash Balance as of 6/30/21	$406,675				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
48 CONSERVATION TRUST - 35 CULTURE AND RECREATION						
4835040-42260	LOTTERY FUNDS	$114,298	$103,519	$112,200	$110,000	
		$114,298	$103,519	$112,200	$110,000	
48 CONSERVATION TRUST - 35 CULTURE AND RECREATION						
4835060-43510	INTEREST	$1,581	$2,214	$1,000	$2,250	
		$1,581	$2,214	$1,000	$2,250	
		$115,878	$105,733	$113,200	$112,250	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
48 CONSERVATION TRUST - 000						
4835-60000	PROJECTS	$1,123	$0	$368,500	$425,000	Tennis Court Resurface. This releases reserves for whitewater wave park and LoVa Trail.
	TOTAL 000 -	$1,123	$0	$368,500	$425,000	
		$1,123	$0	$368,500	$425,000	

CEMETERY FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$750	$1,050	$1,050	$0
Expenditures		$0	$0	$0	$0
Change in Fund Balance		$750	$1,050	$1,050	$0
Beginning Fund Balance		$52,088	$52,838	$52,838	$53,888
Ending Fund Balance		$52,838	$53,888	$53,888	$53,888
Available Fund Balance		$52,838	$53,888	$53,888	$53,888
Cash Balance as of 6/30/21	$52,838				

FLEET FUND

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$1,607,236	$2,060,450	$2,060,450	$2,277,840
Expenditures		($1,784,721)	($2,107,397)	($2,111,603)	($2,395,137)
Change in Fund Balance		($177,485)	($46,947)	($51,153)	($117,297)
Beginning Fund Balance		$4,728,182	$4,550,697	$4,550,697	$4,499,544
Ending Fund Balance		$4,550,697	$4,503,750	$4,499,544	$4,382,247
Available Fund Balance		$4,550,697	$4,503,750	$4,499,544	$4,382,247
Cash Balance as of 6/30/21	$64,211				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
64 FLEET SERVICE FUND - 00						
6400060-43510	INTEREST	$23,490	$4,555	$10,000	$15,000	
6400060-43920	INSURANCE REIMBURSEMENT	$18,092	$21,967	$40,000	$30,000	
6400060-44110	SALE OF ASSETS	($0)	$9,000	$75,000	$165,000	
6400060-44130	MISCELLANEOUS	$16	($0)	$1,000	($0)	
		$41,598	$35,522	$126,000	$210,000	
64 FLEET SERVICE FUND - 10 GENERAL GOVERNMENT						
6410050-43110	SERVICE GENERAL GOVERNMENT	$1,997	$589	$2,750	$5,000	
		$1,997	$589	$2,750	$5,000	
64 FLEET SERVICE FUND - 10 GENERAL GOVERNMENT						
6410070-44410	FUNDING GENERAL GOVERNMENT	$100,000	$636,500	($0)	$12,500	Facilities purchases
		$100,000	$636,500	($0)	$12,500	
64 FLEET SERVICE FUND - 15 PUBLIC TRANSPORTATION						
6415050-43115	SERVICE PUBLIC TRANSPORTATION	$4,315	$872	$6,500	$5,000	
		$4,315	$872	$6,500	$5,000	
64 FLEET SERVICE FUND - 20 PUBLIC SAFETY						
6420050-43120	SERVICE PUBLIC SAFETY	$165,965	$154,234	$250,000	$225,000	
		$165,965	$154,234	$250,000	$225,000	
64 FLEET SERVICE FUND - 20 PUBLIC SAFETY						
6420070-44310	TRANSFER FROM CAPITAL PROJECTS	($0)	($0)	$617,000	($0)	
6420070-44420	FUNDING PUBLIC SAFETY	$258,000	($0)	($0)	($0)	
		$258,000	($0)	$617,000	($0)	
64 FLEET SERVICE FUND - 25 COMMUNITY/ECONOMIC DEVELOPMENT						
6425050-43125	SERVICE COM DEVELOPMENT	$2,451	$2,275	$8,000	$2,500	
		$2,451	$2,275	$8,000	$2,500	
64 FLEET SERVICE FUND - 30 PUBLIC WORKS						
6430050-43130	SERVICE PUBLIC WORKS	$146,646	$127,876	$125,000	$175,000	
		$146,646	$127,876	$125,000	$175,000	
64 FLEET SERVICE FUND - 30 PUBLIC WORKS						

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
6430070-44310	TRANSFER FROM CAPITAL PROJECTS	$150,000	$205,000	($0)	$200,000	Police vehicles (3)
					$315,000	Fleet overhead
TOTAL TRANSFER FROM CAPITAL PROJECTS		$150,000	$205,000	($0)	$515,000	
6430070-44430	FUNDING PUBLIC WORKS	$189,000	($0)	($0)	($0)	
		$339,000	$205,000	($0)	$515,000	
64 FLEET SERVICE FUND - 35 CULTURE AND RECREATION						
6435050-43135	SERVICE CULTURE & RECREATION	$76,150	$61,001	$76,000	$98,340	Parks work orders
		$76,150	$61,001	$76,000	$98,340	
64 FLEET SERVICE FUND - 35 CULTURE AND RECREATION						
6435070-44435	FUNDING CULTURE & RECREATION	$150,000	($0)	($0)	$106,500	Parks purchases
		$150,000	($0)	($0)	$106,500	
64 FLEET SERVICE FUND - 45 WATER						
6445050-43140	SERVICE WATER & SEWER	$99,608	$83,615	$295,800	$95,000	Work orders
		$99,608	$83,615	$295,800	$95,000	
64 FLEET SERVICE FUND - 45 WATER						
6445070-44385	TRANSFER FROM WA/SW	($0)	($0)	$226,000	($0)	
6445070-44440	FUNDING WATER & SEWER	$238,000	$50,000	($0)	$95,000	Water truck and skidster
					$100,000	Overhead
TOTAL FUNDING WATER & SEWER		$238,000	$50,000	($0)	$195,000	
		$238,000	$50,000	$226,000	$195,000	
64 FLEET SERVICE FUND - 50 ELECTRIC						
6450050-43145	SERVICE ELECTRIC	$43,067	$36,031	$100,000	$50,000	Work orders
		$43,067	$36,031	$100,000	$50,000	
64 FLEET SERVICE FUND - 50 ELECTRIC						
6450070-44390	TRANSFER FROM ELECTRIC	($0)	($0)	$160,900	($0)	
6450070-44445	FUNDING ELECTRIC	$133,000	$155,372	($0)	$100,000	Overhead
		$133,000	$155,372	$160,900	$100,000	
64 FLEET SERVICE FUND - 51 BROADBAND						
6451050-43160	SERVICE BROADBAND	($0)	($0)	($0)	$40,000	Work orders
		($0)	($0)	($0)	$40,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
64 FLEET SERVICE FUND - 51 BROADBAND						
6451070-44460	FUNDING BROADBAND	($0)	($0)	($0)	$200,000	Bucket truck
					$100,000	Overhead
	TOTAL FUNDING BROADBAND	($0)	($0)	($0)	$300,000	
		($0)	($0)	($0)	$300,000	
64 FLEET SERVICE FUND - 55 AIRPORT						
6455050-43150	SERVICE AIRPORT	$1,363	$2,813	$1,500	$3,000	
		$1,363	$2,813	$1,500	$3,000	
64 FLEET SERVICE FUND - 60 LANDFILL						
6460050-43155	SERVICE LANDFILL	$29,871	$26,914	$40,000	$40,000	
		$29,871	$26,914	$40,000	$40,000	
64 FLEET SERVICE FUND - 60 LANDFILL						
6460070-44455	FUNDING LANDFILL	($0)	$25,000	$25,000	$100,000	Overhead
		($0)	$25,000	$25,000	$100,000	
		$1,831,031	$1,603,614	$2,060,450	$2,277,840	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
64 FLEET SERVICE FUND - 110 FLEET MAINTENANCE						
64110-51110	REGULAR EMPLOYEES	$264,673	$276,674	$306,816	$303,134	Technician/Welder III -Fleet Technician/Welder II - Fleet Technician/Welder III -Fleet Fleet Maintenance Superintendent
64110-51140	OVERTIME	$91	$0	$0	$0	
64110-51210	HEALTH INSURANCE PREMIUMS	$60,070	$60,427	$61,764	$62,376	
64110-51220	LONG TERM DISABILITY	$22	$842	$876	$1,031	
64110-51230	BASIC LIFE INSURANCE	$39	$690	$692	$789	
64110-51250	FICA CONTRIBUTIONS	$19,654	$19,963	$23,472	$23,189	
64110-51260	RETIREMENT CONTRIBUTIONS	$13,726	$12,753	$21,448	$21,218	
64110-51270	UNEMPLOYMENT COMPENSATION	$771	$783	$921	$909	
64110-51280	WORKERS' COMPENSATION	$9,923	$7,579	$5,600	$6,353	
64110-51380	UNIFORM ALLOWANCE	$0	$1,400	$1,400	$0	
64110-51410	UTILITIES				$6,000	Electric
		$13,827	$21,285	$11,000	$7,000	Natural gas
					$2,000	Communications
					$3,500	Trash
					$3,500	Water/sewer
	TOTAL UTILITIES	$13,827	$21,285	$11,000	$22,000	
64110-51610	SUPPLIES				$100	Computer supplies
		$14,362	$11,742	$45,000	$2,500	Janitorial
					$350	Misc. materials
					$250	Office Supply
					$150	Postage
					$2,000	Gloves/Glasses/Earplugs/HI-VIS
					$5,000	Small tools
					$3,000	Uniform/Hats/Sweatshirts
	TOTAL SUPPLIES	$14,362	$11,742	$45,000	$13,350	
64110-51710	PROFESSIONAL SERVICES				$600	CDL/Randon
		$12,206	$11,340	$10,500	$10,000	Consulting
					$1,000	Other
	TOTAL PROFESSIONAL SERVICES	$12,206	$11,340	$10,500	$11,600	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
64110-51810	MAINTENANCE & REPAIR				$30,000	Fix roof, fix waterproofing issues, boiler for snow melt system
		$262,632	$204,113	$70,000	$400	Fire extinguishers for trucks
					$3,500	Supplies
					$2,500	Equipment
					$4,500	Fuel for Fleet Equipment/Vehicles
					$200,000	All Fleet Shop Supplies
	TOTAL MAINTENANCE & REPAIR	$262,632	$204,113	$70,000	$240,900	
64110-52110	PUBLIC NOTICES	$39	$0	$0	$0	
64110-52210	PROFESSIONAL DEVELOPMENT				$2,000	Air
		$9,036	$315	$15,000	$1,500	Hotel
					$1,500	Other
	TOTAL PROFESSIONAL DEVELOPMENT	$9,036	$315	$15,000	$5,000	
64110-52310	MISC. TRAVEL	$1,571	($533)	$2,500	$0	
64110-52410	PROFESSIONAL DUES AND MEMBERSH	$180	$26	$500	$500	
64110-52440	PROFESSIONAL SUBSCRIPTION	$1,094	$2,614	$3,600	$2,750	Amazon Account, ProLink Software, Motologic
64110-52810	OTHER OPERATING EXPENSE	$1,417	$1,000	$2,000	$1,000	
64110-52880	FREIGHT	$3,111	$3,389	$2,000	$3,250	
64110-53510	PROPERTY INSURANCE	$8,471	$11,053	$6,500	$14,000	
64110-53520	LIABILITY AND CASUALITY INSURA	$3,931	$2,108	$4,000	$2,600	
64110-53540	DEDUCTIBLES PAID	$6,616	$6,000	$0	$5,000	
64110-54310	INTERFUND COST OF SERVICE	$46,834	$48,239	$49,204	$50,188	
64110-54710	ROUTINE MAINTENANCE	$169,438	$156,562	$358,000	$0	
64110-55610	DEPRECIATION	$837,040	$924,356	$525,000	$925,000	
64110-59520	CAPITAL OUTLAY	$868,010	$0	$0	$30,000	Water Treatment Truck
					$65,000	Skidster for Water Plant Deliveries
					$200,000	Broadband New bucket truck
					$200,000	Police vehicles (3)
					$56,000	Parks Trucks (2) - Chevy Colorados
					$32,500	Parks van - replacement - Ford Connect
					$18,000	Parks irrigation compressor
					$7,500	Facilities skid steer
					$5,000	Facilities Implement
					$65,000	Tire Alignment Machine
	TOTAL CAPITAL OUTLAY	$868,010	$0	$0	$679,000	
64110-59599	CAPITALIZED ASSETS	($916,631)	$0	$0	$0	
	TOTAL 110 - FLEET MAINTENANCE	$1,712,153	$1,784,721	$1,527,793	$2,395,137	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
		$1,712,153	$1,784,721	$1,527,793	$2,395,137	

FIRE EQUIPMENT REPLACEMENT

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$1,552,824	$936,340	$936,340	$995,120
Expenditures		($1,287,703)	($326,000)	($326,000)	($1,035,000)
Change in Fund Balance		$265,121	$610,340	$610,340	($39,880)
Beginning Fund Balance		$1,898,764	$2,163,885	$2,163,885	$2,774,225
Ending Fund Balance		$2,163,885	$2,774,225	$2,774,225	$2,734,345
Reserves:					
Station Replacement					($2,000,000)
Available Fund Balance		$2,163,885	$2,774,225	$2,774,225	$734,345
Cash Balance as of 6/30/21	$2,612,213				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
70 EMERGENCY SERVICES & EQUIPMENT - 00						
7020040-42310	GRANTS	($0)	$918,214	($0)	($0)	
		($0)	$918,214	($0)	($0)	
70 EMERGENCY SERVICES & EQUIPMENT - 00						
7000070-44370	TRANSFER FROM GENERAL FUND	$543,580	$370,635	$623,706	$659,577	
7000070-44380	TRANSFER FROM RURAL FIRE DISTR	$272,181	$202,070	$212,634	$240,543	$1,187,222 * 2.5 mills / 12.339 mills
		$815,761	$572,705	$836,340	$900,120	
70 EMERGENCY SERVICES & EQUIPMENT - 20 PUBLIC SAFETY						
7020030-42950	FIRE IMPACT FEES	$103,185	$57,632	$100,000	$85,000	
		$103,185	$57,632	$100,000	$85,000	
70 EMERGENCY SERVICES & EQUIPMENT - 20 PUBLIC SAFETY						
7020060-43510	INTEREST	$27,000	$2,090	($0)	$10,000	
		$27,000	$2,090	($0)	$10,000	
		$945,946	$1,550,641	$936,340	$995,120	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
70 EMERGENCY SERVICES & EQUIPMENT - 134 FIRE EQUIP REPLACEMENT						
70134-52510	GRANTS	$0	$918,214	$0	$0	
70134-59520	CAPITAL OUTLAY	$61,880	$362,190	$326,000	$200,000	Station Improvements/acquisition
					$15,000	Mobile Data Technology
					$20,000	Rescue Air Bags
					$800,000	Replacement fire engine
	TOTAL CAPITAL OUTLAY	$61,880	$362,190	$326,000	$1,035,000	
70134-59525	LAND ACQUISITION	$0	$7,300	$0	$0	
TOTAL 134 - FIRE EQUIP REPLACEMENT		$61,880	$1,287,703	$326,000	$1,035,000	
		$61,880	$1,287,703	$326,000	$1,035,000	

DDA FUND BUDGET

		2020 Actual	2021 Budget	2021 Revised Forecast	2022 Budget
Revenue		$930,796	$228,000	$437,000	$790,000
Expenditures		($463,693)	($315,143)	($565,143)	($807,286)
Change in Fund Balance		$467,103	($87,143)	($128,143)	($17,286)
Beginning Fund Balance		$563,414	$1,030,517	$1,030,517	$902,374
Ending Fund Balance		$1,030,517	$943,374	$902,374	$885,088
Reserves:					
Project Reserves					($550,000)
Available Fund Balance			$943,374	$902,374	$335,088
Cash Balance as of 6/30/21	$1,348,898				

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
86 DOWNTOWN DEVELOPMENT AUTHORITY - 00						
8600020-41610	TIF PROPERTY TAXES	$116,126	$98,261	$115,000	$75,000	
8600020-41620	TIF SALES TAX	$766,538	$820,851	$312,000	$715,000	
		$882,664	$919,112	$427,000	$790,000	
86 DOWNTOWN DEVELOPMENT AUTHORITY - 10 GENERAL GOVERNMENT						
8600060-43510	INTEREST	$26,138	$8,634	$10,000	($0)	
8600060-43650	MISCELLANEOUS LEASE	$4,000	$3,050	($0)	($0)	
		$30,138	$11,684	$10,000	($0)	
		$912,802	$930,796	$437,000	$790,000	

2022 DRAFT BUDGET

Account	Account Description	2019 Actual	2020 Actual	2021 Revised Budget	2022 Request	Description
86 DOWNTOWN DEVELOPMENT AUTHORITY - 000						
8610-60000	PROJECTS	$138,060	$44,010	$155,000	$0	
	TOTAL 000 -	$138,060	$44,010	$155,000	$0	
86 DOWNTOWN DEVELOPMENT AUTHORITY - 000						
8630-60000	PROJECTS	$306,165	$4,925	$0	$0	
	TOTAL 000 -	$306,165	$4,925	$0	$0	
86 DOWNTOWN DEVELOPMENT AUTHORITY - 180 DOWNTOWN DEVELOPMENT AUTHORITY						
86180-51610	SUPPLIES	$20	$0	$0	$4,650	Office and miscellaneous supplies
86180-51710	PROFESSIONAL SERVICES	$90,272	$124,690	$370,000	$135,000	Exec Director and Mgmt, Legal, Meeting Minutes
86180-52310	MISC. TRAVEL	$0	$0	$2,400	$5,000	
86180-52510	GRANTS	$720	$156,000	$0	$150,000	
86180-52750	TREASURER'S FEES	$2,323	$929	$1,400	$1,200	
86180-52810	OTHER OPERATING EXPENSE	$653	$2,000	$0	$50,000	Economic Development
					$50,000	DDA Contingency
	TOTAL OTHER OPERATING EXPENSE	$653	$2,000	$0	$100,000	
86180-53520	LIABILITY AND CASUALITY INSURA	$0	$813	$1,450	$1,350	
86180-53940	INTEREST - OTHER DEBT	$10,584	$8,617	$12,750	$87,500	
86180-54310	INTERFUND COST OF SERVICE	$21,077	$21,709	$22,143	$22,586	
86180-55920	TRANSFER TO A&I				$175,000	DDA Contribution to 6th Street Construction
		$0	$100,000	$0	$100,000	Downtown Maintenance
	TOTAL TRANSFER TO A&I	$0	$100,000	$0	$275,000	
	TOTAL 180 - DOWNTOWN DEVELOPMENT AUTHORITY	$125,649	$414,759	$410,143	$782,286	
		$569,874	$463,694	$565,143	$782,286	

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Ordinance 13 - Series of 2021; An Ordinance of the City of Glenwood Springs, Colorado, Acting by and Through its Utility Enterprise, Approving a Loan, Evidenced by a Note, to Finance System Capital Improvements; Approving the Note Form and Loan Repayment From the Operation of the City's Water and Facilities; and Providing Other Details and Approving Documents Relating to the Loan.

Action Requested: Approve Ordinance 13 - Series of 2021 allowing our Water/Wastewater Enterprise fund to take debt to finance projects and upgrades.

Department: Public Works

Presented By: Matthew Langhorst, Public Works Director
Steve Boyd, COO

Background Info: The Water/Wastewater system is in need of approximately $12,000,000 in upgrades, much of which is attributable to recent fire activity. The City closed on a line-of-credit with the Colorado Water Conservation Board (CWCB) in June that staff expects to draw up to $4,000,000 against. These funds can only be used for specific capital improvements that meet the qualification of the loan documents.

The additional $8,100,000 that we are closing in December will fund some or all of the following projects and bring available fund reserves to adequate levels:

- Water Treatment Plant upgrades: $3,500,000 – Scheduled for completion in 2021
- Wastewater Plant 10 Year Maintenance: $500,000 – To be completed in 2022
- Lift Station 16,000 Replacement: $530,000 – Scheduled for completion in 2021
- Lift Station 11,000 Replacement: $500,000 – To be designed in 2022, constructed in 2023
- Cardiff 500k Gallon Water Tank: $830,000 – Will be completed in 2021
- Red Mountain South Phase 2: $690,000 – To be completed in 2022
- Pump Station #1 Design and Construction: $450,000 - To be designed in 2022, constructed in 2023.
- Sunny Acres Area 500,000 Gallon Water Tank: $1,000,000 - To be designed in 2022, constructed in 2023.

Bank of Colorado is offering the most favorable terms. The loan is fixed for the first 10 years at 2.54% interest, then will reset to the then-current 10-year US Treasury rate plus 1.25%. There is no prepayment penalty and staff is budgeting to have the funds available to pay the loan off in 10 years. This debt is secured by a lien against the revenues of the water fund on parity with the two existing obligations in the fund, no sales or property tax dollars are obligated and the full faith and credit of the City is not pledged for payment. The only relevant covenant is that the Water Fund must have cash flow equal to at least 1.1 times the maximum annual debt service. The debt service is included in the pro forma developed with the help of Gov Rates during the recent rate study.

Tom Peltz from Kutak Rock is acting as bond counsel on the issue, and Nick Taylor from Northslope Advisors is our Municipal Advisor.

Issues: None.

Staff Recommendation: Approve Ordinance 13 - Series of 2021.

ORDINANCE NO. 2021 - 13

AN ORDINANCE OF THE CITY OF GLENWOOD SPRINGS, COLORADO, ACTING BY AND THROUGH ITS UTILITY ENTERPRISE, APPROVING A LOAN, EVIDENCED BY A NOTE, TO FINANCE SYSTEM CAPITAL IMPROVEMENTS; APPROVING THE NOTE FORM AND LOAN REPAYMENT FROM THE OPERATION OF THE CITY'S WATER FACILITIES AND WASTEWATER FACILITIES; AND PROVIDING OTHER DETAILS AND APPROVING DOCUMENTS RELATING TO THE LOAN.

WHEREAS, the City of Glenwood Springs, Colorado, is a municipal corporation duly organized and operating as a home-rule city under Article XX of the Constitution of the State of Colorado and the Charter of the City (unless otherwise indicated, capitalized terms used in this preamble shall have the meanings set forth in Section 1 of this Ordinance); and

WHEREAS, as codified in Article 080.070 of the Municipal Code, the City has established its Utility Enterprise which constitutes an enterprise within the meaning of Article X, Section 20 of the Colorado Constitution and undertakes utility activities including the diversion, storage, carriage, delivery, distribution, collection, treatment, use, reuse, augmentation, exchange or discharge of electricity, water, wastewater, fiber optics or storm drainage services, and the acquisition of electricity, water or water rights in accordance with applicable provisions of State law, the City Charter, and the Municipal Code; and

WHEREAS, as part of its Utility Enterprise, the City has heretofore determined and undertaken to operate and maintain "Water Facilities" and "Wastewater Facilities" as defined in Section 080.070.020 of the Municipal Code as a joint system (the Water Facilities and Wastewater Facilities are collectively defined herein as the "System") and the financial activities of the System are annually accounted for by the City in the City's "Water and Sewer Fund"; and

WHEREAS, during the 2021 fiscal year the Utility Enterprise received under ten percent of its annual revenue in State and local grants and, during the current fiscal year, it is reasonably anticipated that the Utility Enterprise will receive under ten percent of its revenue in State and local grants as provided in Section (10)(a) of Article 080.070.030 of the Municipal Code as the City's standard to issue bonds or other multiple fiscal year obligations without voter approval; and

WHEREAS, the City Council is acting hereunder as the governing body of the Utility Enterprise as provided in Section 080.070.050 of the Municipal Code; and

WHEREAS, in order to finance System Capital Improvements the City issued a proposal request seeking funding in the amount of $8,000,000 net of estimated closing fees and costs and, with the assistance of North Slope Capital Advisors as financial advisor to the City, the City staff has made recommendations to the City Council based upon the qualified responses received; and

WHEREAS, the City Council has determined that proceeding with the Loan proposal from the Bank of Colorado is in the best interests of the City and the residents thereof, and that a promissory note be issued to evidence the repayment obligation for the Loan; and

WHEREAS, the Note shall be a revenue obligation of the City payable solely from the Net Revenues derived from System accounted for in the Water and Sewer Fund; and

WHEREAS, none of the members of the City Council have any potential conflicting interests in connection with the authorization, issuance and delivery of the Note, or the use of the proceeds thereof; and

WHEREAS, there have been presented to the City, and made available to the members of the City Council, the Term Sheet for the Loan and forms of other documents relating to the Note; and

WHEREAS, the City Council desires to authorize the Loan to be evidenced by the Note.

THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, ORDAINS:

Section 1. Definitions. The following terms shall have the following meanings as used in this Ordinance:

"*Authorized Denomination*" means the outstanding principal amount of the Note issued and delivered pursuant to this Ordinance.

"*Business Day*" means any day other than (a) a Saturday or Sunday or (b) a day on which banking institutions in the State are authorized or obligated by law or executive order to be closed for business.

"*Capital Improvements*" means the acquisition of land, easements, facilities, and equipment (other than ordinary repairs and replacements), and the construction or reconstruction of improvements, betterments, and extensions, for use by or in connection with the System which, under Generally Accepted Accounting Principles for governmental units as prescribed by the Governmental Accounting Standards Board, are properly chargeable as capital items.

"*Charter*" means the Glenwood Springs Home Rule Charter.

"*City*" means the City of Glenwood Springs, Colorado.

"*City Council*" means the City Council of the City.

"*Combined Maximum Annual Principal and Interest Requirements*" means, with regard to the Note and any Parity Obligations, the maximum annual payments of principal of and interest on all of said issues, excluding redemption premiums, to become due during any fiscal year while the Note is outstanding; provided that such computation shall assume the redemption and payment of principal subject to mandatory redemption for the Note and any Parity Obligations, but shall be made without regard to any right of optional redemption which has not been exercised. In the event that the calculation is made prior to January 1, 2032, the assumed Interest Rate for the Note as reset on and after January 1, 2032, shall be calculated as the greater of 2.54% or the published 10-year U.S. Treasury Rate plus 1.25% (one hundred twenty-five basis points) on the date on which such calculation is to be made.

"C.R.S." means the Colorado Revised Statutes, as amended and supplemented as of the date hereof.

"CWCB 2021 Loan" means the public loan from an agency of the State, identified by Intergovernmental Loan Contract Number CMS 164684 CT2021-3104, as the same may be amended from time to time, by and between the City and the State acting by and through the Department of Natural Resources, Colorado Water Conservation Board and evidenced by the Promissory Note issued in the aggregate principal amount of $8,080,000.

"CWRPDA 2010 Loan" means the Loan Agreement, dated as of May 1, 2010 by and between the City and the Colorado Water Resources and Power Development Authority, and related Governmental Agency Bond, dated May 13, 2010, issued in the aggregate principal amount of $29,820,000.

"*Dated Date*" means the date of the issuance and delivery of the Note as set forth in the Note, which date is currently expected to be December 1, 2021.

"*Enabling Law*" means collectively, the Charter, the Municipal Code, Part 4 of Article 35 of Title 31, Colorado Revised Statutes, the Supplemental Act, and all other State laws enabling the actions taken pursuant to this Ordinance.

"*Event of Default*" means any of the events specified in the section hereof entitled "Events of Default."

"*Federal Securities*" means bills, certificates of indebtedness, bonds, notes or similar securities which are direct non-callable obligations of the United States of America or which are fully and unconditionally guaranteed as to the timely payment of principal and interest by the United States of America.

"Generally Accepted Accounting Principles" shall mean accounting principles, methods and terminology followed and construed for enterprises which are employed in business comparable to the business of the Utility Enterprise, as amended from time to time.

"*Gross Revenue*" means (a) all rates, fees (including system improvement fees), charges and revenues directly or indirectly derived by the City for the services furnished by, or use of, the System, or any part thereof, including all income attributable to any future dispositions of property or rights or related contracts, settlements, or judgments held or obtained in connection with the System or its operations, (b) the proceeds of any insurance covering business interruption loss relating to the System, and (c) all income and revenue derived from the investment of any of the funds used to account for the financial activity of the System; provided however, that there shall be excluded from Gross Revenues (i) moneys borrowed and used for providing Capital Improvements, (ii) any money and securities, and investment income therefrom, in any refunding fund, escrow account, or similar account pledged to the payment of any bonds or other obligations for the purpose of defeasing the same, and (iii) any moneys received as grants or appropriations from the United States, the State of Colorado, or other sources, the use of which is limited or restricted by the grantor or donor to the provision of Capital Improvements or for other purposes resulting in the general unavailability thereof, except to the extent any such moneys shall be received as payments for the use of the System, services rendered thereby, the availability of any

such service, or the disposal of any commodities therein. Notwithstanding anything contained above, amounts deposited in a rate stabilization account shall not be deemed Gross Revenues in the calendar year deposited and amounts withdrawn from such rate stabilization account shall be deemed Gross Revenues in the year withdrawn.

"*Interest Payment Date*" means the first day of each month, commencing on the month following the Dated Date, or such other dates as set forth in the Note.

"*Interest Rate*" means the per annum rate of interest for the Note which shall be fixed at 2.54% until December 1, 2031 and reset on and after December 1, 2031, to the greater of 2.54% or the published 10-year U.S. Treasury Rate plus 1.25% (one hundred twenty-five basis points).

"*Interest Sub-Account*" means a sub-account of the Note Account established by the provisions hereof for the purpose of paying the interest on the Note.

"*Lender*" means Bank of Colorado, the initial registered owner of the Note.

"*Letter of Instructions*" means the Letter of Instructions, dated the Dated Date and delivered by Note Counsel to the City, as it may be superseded or amended in accordance with its terms.

"*Loan*" means the loan extended by the Lender pursuant to the terms established in the Term Sheet and this Ordinance and evidenced through the issuance and delivery of the Note by the City.

"*Loan Delegate*" means the Mayor or, in the absence of the Mayor, the Mayor Pro Tem of the City.

"*Maturity Date*" means December 1, 2041.

"*Municipal Code*" means the Glenwood Springs Municipal Code.

"*Net Revenues*" means Gross Revenue after deducting Operation and Maintenance Expenses.

"*Note*" means the Water and Wastewater Revenue Note, dated as of the Dated Date, which will be issued and delivered pursuant to this Ordinance.

"*Note Account*" means the "2021 Water and Wastewater Note Account" established in the Section hereof entitled "Reaffirmation of Water and Sewer Fund; Establishment of Accounts."

"*Note Counsel*" means (a) as of the date of issuance of the Note, Kutak Rock LLP, and (b) as of any other date, Kutak Rock LLP or such other attorneys selected by the City with nationally recognized expertise in the issuance of municipal obligations.

"*Operation and Maintenance Expenses*" means all reasonable and necessary current expenses of the City, paid or accrued, for operating, maintaining, and repairing the System, but only if such charges are applied on a consistent basis and made in conformity with Generally

Accepted Accounting Principles; provided however, that there shall be excluded from Operating Expenses any allowance or transfers for depreciation, payments in lieu of taxes or franchise fees, legal liabilities not based on contract, expenses incurred in connection with Capital Improvements, and payments due in connection with any bonds or other obligations issued to provide Capital Improvements.

"*Ordinance*" means this ordinance which authorizes the issuance of the Note, including any amendments or supplements properly made hereto.

"*Owner*" means the Lender as of the Dated Date, and thereafter, following a transfer and exchange of the Note, the Person in whose name such Note is registered on the registration books maintained by the Paying Agent pursuant hereto.

"*Parity Obligations*" means the CWRPDA 2010 Loan, the CWCB 2021 Loan, and any bond, note or other obligation (which may or may not be multiple-fiscal year financial obligations), permitted to be issued in the future pursuant to the Section hereof entitled "Conditions to the Issuance of Parity Obligations," with a lien that is equal and on a parity with the lien of the Note on the Net Revenues.

"*Paying Agent*" means the City Director of Finance and its successors in interest or assigns approved by the City with prior written notice to the Owner, which shall act as paying agent, registrar, and authenticating agent for the Note.

"*Permitted Investments*" means any lawful investment permitted for the investment of funds of the City by the Enabling Law.

"*Person*" means a corporation, firm, other body corporate, partnership, association or individual and also includes an executor, administrator, trustee, receiver or other representative appointed according to law.

"*Principal Redemption Date*" means the first day of each month, commencing on the first full month which is three years after the Dated Date, or such other dates as set forth in the Note.

"*Principal Sub-Account*" means a sub-account of the Note Account established by the provisions hereof for the purpose of paying the principal of and premium, if any, on the Note.

"*Pro Rata Portion*" means when used with respect to a required credit to the accounts or subaccounts established for the payment of the principal of and interest on the Note and any Parity Obligations, the dollar amount derived by dividing the amount of principal or interest to come due on the next principal or interest payment date by the number of monthly credits required to be made prior to such payment date.

"*Project*" means any Capital Improvements permitted under the Enabling Law which would comprise a portion of the System.

"*Project Account*" means the "2021 System Project Account" established in the Section hereof entitled "Reaffirmation of Water and Sewer Fund; Establishment of Accounts."

"*Project Costs*" means the City's costs properly attributable to the Project, or any parts thereof, including without limitation: all engineering, construction, inspection, fiscal and legal expenses; the costs of reimbursing funds advanced by the City in anticipation of reimbursement from Note proceeds, including any intrafund or interfund loan; the costs of contingencies or reserves; the costs of issuing the Note, including without limitation any Loan origination fee; all expenses as may be necessary or incident to the financing, acquisition, improvement, equipment, and completion of the Project; and all other lawful costs as determined by the City Manager.

"*State*" means the State of Colorado.

"*Subordinate Obligations*" means loans, bonds, notes or other multiple fiscal year financial obligations having a lien upon the Pledged Revenues or any part thereof junior and subordinate to the lien thereon of the Note.

"*System*" means the Wastewater Facilities and Water Facilities.

"*Supplemental Act*" means Part 2 of Article 57 of Title 11, of the Colorado Revised Statutes.

"*Tax Code*" means the Internal Revenue Code of 1986, as amended. Each reference to a section of the Tax Code herein shall be deemed to include the United States Treasury Regulations proposed or in effect thereunder and applicable to the Note or the use of proceeds thereof, unless the context clearly requires otherwise.

"*Term Sheet*" means collectively, the term sheet of the Lender, dated on October 13, 2021, as supplemented or revised, which sets forth the terms pursuant to which the Lender is making the Loan to the City.

"Utility Enterprise" means the Utility Enterprise which has been established by the City, as codified in Article 080.070 of the Municipal Code, and which includes, but is not limited to, the activities and operations of the System.

"Wastewater Facilities" means (as defined in Article 080.070.020 of the Municipal Code) any one or more of the various devices used in collection, treatment, or disposition of sewage or industrial, commercial, or domestic wastes of a liquid or water-carried nature, together with any ground water, surface water, or stormwater that may be contributed into or permitted to enter such devices.

"Water and Sewer Fund" means the City's Water and Sewer Fund, which is a proprietary enterprise funds of the City, or any successor fund or accounts within which the City records and accounts for the financial activity of the System.

"Water Facilities" means (as defined in Article 080.070.020 of the Municipal Code) any one or more works and improvements used in and as a part of the collection, treatment, or distribution of water for the beneficial uses and purposes for which the water has been or may be appropriated.

Section 2. Authorization and Purpose of the Note. Pursuant to and in accordance with the Enabling Law, the City hereby approves the Loan in the principal amount of $8,100,000 and, to evidence the Loan, authorizes and orders that there shall be issued the City of Glenwood Springs, acting by and through its Utility Enterprise, Water and Wastewater Revenue Note for the purpose of financing Project Costs. The caption on the Note shall include a series reference that identifies the Note by the year of its issuance.

Section 3. Note Details.

(a) ***Registered Form, Denomination, Dated Date and Numbering***. The Note shall be issued as a single, fully registered promissory note, which shall be dated as of the Dated Date and registered in the name of the Lender, or if later transferred pursuant to the Section hereof entitled "Registration, Transfer and Exchange of the Note," in the name of the Person identified in the registration books of the City maintained by the Paying Agent. The Note shall be issued in the Authorized Denomination and shall be in substantially the form set forth in Appendix A hereto, with such changes and additions requested by the Lender which the Loan Delegate determines to be consistent with the provisions of this Ordinance, and approved by the City officials executing the same (whose signatures thereon shall constitute conclusive evidence of such determinations and approval). The Note may be numbered in such manner as determined by the Paying Agent to facilitate registration. The Note shall recite that it is issued under the authority of the Supplemental Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Note after its deliver for value.

(b) ***Maturity Date, Interest Rate and Accrual of Interest***. As set forth in Note executed by the Loan Delegate, the Note shall be dated as of the Dated Date, mature on the Maturity Date and bear per annum interest at the Interest Rate from the Dated Date (calculated based on a 360-day year of twelve 30-day months) payable on each Interest Payment Date.

(c) ***Manner and Form of Payment***. The interest on and principal of the Note is payable in lawful money of the United States of America to the Owner at its address as it appears on the registration books maintained by or on behalf of the City by the Paying Agent. Interest and principal payments shall be paid by check or draft of the Paying Agent mailed on or before each Interest Payment Date and Principal Redemption Date to the Owner. The Paying Agent shall make payments of interest and principal by alternative means, such as by wire transfer, if mutually agreed to between the Owner of the Note and the Paying Agent.

The Note certificate must be presented for the final payment of the principal of the Note on the Maturity Date or date on which the principal of the Note is to be paid in full and need not be presented for mandatory scheduled redemption of the Note. Presentation of the Note to the Paying Agent shall be made at the principal office of the Paying Agent, or at such other address or location as provided in writing by the Paying Agent to the Owner.

Section 4. Redemption of the Note Prior to Maturity.

(a) ***Optional Redemption***. The Note shall be subject to redemption at the option of the City, in whole but not in part, on any Interest Payment Date; upon payment of the outstanding and unpaid principal amount and accrued interest to the Interest Payment Date on which such optional redemption is made, without redemption premium.

(b) ***Mandatory Scheduled Redemption***. The principal amount of the Note shall be subject to mandatory scheduled redemption on each Principal Redemption Date and in the principal amounts specified in, or attached as an Exhibit to, the Note at a redemption price equal to the principal amount thereof (with no redemption premium), plus accrued interest to the scheduled Principal Redemption Date.

(c) ***Redemption Procedures***. No notice shall be required for mandatory scheduled redemption to occur on each Principal Redemption Date. Notice of optional redemption of the Note shall be given at the direction of the City by the Paying Agent, not less than fifteen days prior to the optional redemption date, by electronic means (provided that the Owner has consented to such means of notification at the address provided by the Owner to the Paying Agent), by first class mail or by such other means acknowledged by the Owner of the Note. Such notice shall specify the Interest Payment Date on which optional redemption is to occur.

Section 5. Execution, Authentication and Delivery of the Note.

(a) ***Execution***. The Note shall be executed in the name and on behalf of the City with the manual signature of the Mayor, shall bear a manual or facsimile of the seal of the City and shall be attested by the manual signature of the City Clerk, both of whom are hereby authorized and directed to prepare and execute the Note in accordance with the requirements hereof. Should any officer whose signature appears on the Note cease to be such officer before delivery of the Note, such signature shall nevertheless be valid and sufficient for all purposes.

(b) ***Authentication***. When the Note has been executed, the Note shall be delivered to the Paying Agent for authentication. No executed Note shall be secured by or entitled to the benefit of this Ordinance, or shall be valid or obligatory for any purpose, unless the certificate of authentication of the Paying Agent has been manually executed by an authorized signatory of the Paying Agent. The executed certificate of authentication of the Paying Agent upon an executed Note shall be conclusive evidence, and the only competent evidence, that the Note has been properly authenticated hereunder.

(c) ***Delivery***. Upon the authentication of an executed Note, receipt of the principal amount of the Note from the Lender and issuance of the approving opinion of Note Counsel, the Paying Agent shall release the Note and deliver the same to the Lender in accordance with the directions of the Lender.

Section 6. Registration, Transfer and Exchange of the Note.

(a) ***Registration***. The Paying Agent shall maintain the registration book or similar record retention system in which the ownership, transfer and exchange of the Note shall be

recorded. The Person in whose name the Note shall be registered in such registration book shall be deemed to be the absolute owner thereof for all purposes.

(b) ***Transfer and Exchange***. The Note may be transferred at the principal office of the Paying Agent or at such other location designated by the Paying Agent for such purpose, for a like aggregate outstanding principal amount of the same Maturity Date and Interest Rate. Upon surrender for transfer of the Note, duly endorsed for transfer or accompanied by an assignment duly executed by the Owner or his or her attorney duly authorized in writing, the City shall execute and the Paying Agent shall authenticate and deliver in the name of the transferee a new Note.

Section 7. Replacement of Lost, Destroyed or Stolen Note. If the Note shall become lost, apparently destroyed, stolen or wrongfully taken, it may be replaced in the form and tenor of the lost, destroyed, stolen or taken Note and the City shall execute and the Paying Agent shall authenticate and deliver a replacement Note upon the Owner furnishing, to the satisfaction of the Paying Agent: (a) proof of ownership (which shall be shown by the registration books of the Paying Agent), (b) proof of loss, destruction or theft, (c) an indemnity to the City and the Paying Agent with respect to the Note lost, destroyed or taken, and (d) payment of the cost of preparing and executing the new Note.

Section 8. Reaffirmation of Water and Sewer Fund; Establishment of Accounts. There is hereby reaffirmed the Water and Sewer Fund. Moneys credited to the Water and Sewer Fund shall be appropriated and distributed in accordance with the Municipal Code and this Ordinance. There also are hereby established within the Water and Sewer Fund the following accounts: (a) the Note Account, which shall include the Interest Sub-Account and the Principal Sub-Account; and (b) the Project Account.

Section 9. Application of Proceeds of the Note. Upon payment to the City of all or a portion of the Loan evidenced by the Note, the Loan proceeds received by the City shall be credited to the Project Account and applied as a supplemental appropriation of the City, provided however, the cost of issuance relating to the Note may be paid by or on the City's behalf from proceeds of the Loan prior to the credit of such Loan proceeds into the Project Account.

Section 10. Net Revenues. All Gross Revenues shall continue to be credited to the Water and Sewer Fund, a proprietary and enterprise fund of the City. The City shall apply the moneys credited to the Water and Sewer Fund to Operation and Maintenance Expenses as the same becomes due, and thereafter shall apply the Net Revenues in the following order of priority (for purposes of the following when credits to more than one account or purpose are required at any single priority level, such credits shall rank pari passu with each other and, in the event that Net Revenues are not sufficient to fully fund all amounts required at any single priority level, credits shall be made pro rata, in accordance with the relative amounts required to be credited to such accounts or purposes):

FIRST, to the credit of or deposit in the accounts or subaccounts established for the payment of interest on the Note and Parity Obligations, if any, the Pro Rata Portion equal to the interest coming due on the next succeeding interest payment date for the respective obligations;

SECOND, to the credit of or deposit in the accounts or subaccounts established for the payment of principal on the Note and Parity Obligations, if any, the Pro Rata Portion equal to the principal coming due on the next succeeding principal payment date for the respective obligations;

THIRD, to the credit of any reserve accounts established for the payment of the Note and the Parity Obligations, if any, the amounts required in the Ordinances or related documents authorizing and controlling the establishment of such reserve accounts; and

FOURTH, to the credit of any other fund or account as may be designated by the City, to be used for any lawful purpose, any moneys remaining in the Water and Sewer Fund after the payments and accumulations set forth in FIRST through THIRD hereof.

Section 11. Note Account.

(a) ***Use of Moneys in the Note Account***. Moneys credited to the Note Account shall be used solely for the purpose of paying the principal of, premium if any, and interest on the Note. The Interest Sub-Account shall be used to pay the interest on the Note and the Principal Sub-Account shall be used to pay the principal of, and premium if any on, the Note.

(b) ***Credits to the Interest Sub-Account***. Commencing on or before the last Business Day of each month following the Dated Date and taking into consideration moneys then credited to the Interest Sub-Account, Net Revenues shall be credited to the Interest Sub-Account in an amount equal to the interest to come due on the Note on the next succeeding Interest Payment Date and made available to the Paying Agent for the timely payment of interest on the Note on the next succeeding payment date.

(c) ***Credits to the Principal Sub-Account***. Commencing on or before the last Business Day of the month preceding each Principal Redemption Date and taking into consideration moneys then credited to the Principal Sub-Account, there shall be credited to the Principal Sub-Account Net Revenues in an amount equal to the principal to come due on the Note on the next succeeding Principal Redemption Date and on the Maturity Date (following the last Principal Redemption Date for the Note) and made available to the Paying Agent for the timely payment of the principal of the Note on the next succeeding payment date.

(d) ***Investments***. Moneys credited to the Note Account may be invested or credited to securities or obligations that are Permitted Investments. The investment of moneys credited to the Note Account shall, however, be subject to the covenants and provisions of the Section hereof entitled "Covenants Regarding Exclusion of Interest on the Note from Gross Income for Federal Income Tax Purposes."

Section 12. Project Account.

(a) ***Use of Moneys in Project Account***. All moneys credited to the Project Account shall be applied solely to the payment of Project Costs. Upon the determination of the City Manager that all Project Costs have been paid or are determinable, any balance remaining in the Project Account (less any amounts necessary to pay the Project Costs not then due and owing) shall be transferred to any sub-account of the Note Account.

(b) ***Investments***. Moneys credited to the Project Account may be invested or credited to securities or obligations that are Permitted Investments. The investment of moneys credited to the Project Account shall, however, be subject to the covenants and provisions of the Section hereof entitled "Covenants Regarding Exclusion of Interest on the Note from Gross Income for Federal Income Tax Purposes." Except to the extent otherwise required by such section, interest income from the investment or reinvestment of moneys shall remain in and become part of the Project Account.

Section 13. Pledge and Lien for Payment of the Note.

(a) ***Pledge of Revenues***. The City hereby pledges for the payment of the principal of and interest on the Note and grants a first lien (but not necessarily an exclusive first lien) for such purpose on the Net Revenues, including without limitation moneys credited to the Note Account, as well as moneys on deposit in the Project Account until they are applied to the payment of Project Costs. The creation, perfection, enforcement, and priority of the pledge of Net Revenues shall be governed by Section 208 of the Supplemental Act and this Ordinance. The Net Revenues shall immediately be subject to the lien of such pledge without any physical delivery, filing, or further act. The lien of such pledge shall have the priority described herein. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the City irrespective of whether such persons have notice of such liens.

(b) ***Superior Liens Prohibited***. The City shall not pledge or create any other lien on the Net Revenues that is superior to the pledge thereof or lien thereon pursuant to such paragraphs.

(c) ***Subordinate Liens Require Consent***. For such period of time that the Lender is the Owner of the Note, the City shall not issue subordinate lien obligations or pledge or create a lien on the Net Revenues that is subordinate to the pledge for payment of the Note and Parity Obligations, if any, without the prior written consent of the Lender. If the Lender is no longer the Owner of the Note, nothing herein shall prohibit the City from issuing subordinate lien obligations and pledging or creating a lien on the Net Revenues that is subordinate to the pledge thereof or lien thereon established pursuant to paragraph (a) of this Section, provided that no Event of Default shall have occurred and be continuing.

(d) ***No Prohibition on Additional Security***. Nothing herein shall prohibit the City from crediting any legally available revenues that are not Net Revenues or any other moneys into any account of the Water and Sewer Fund pledged to the payment of the Note (and thereby subjecting the moneys so credited to the pledge made and lien granted in paragraph (a) of this Section).

(e) ***The Note is Special, Limited Obligation of the City***. The Note is a special, limited obligation of the City payable solely from the Net Revenues. The Note shall not constitute a general obligation of the City. This Note shall not be payable in whole or in part from the proceeds of general property taxes, and the full faith and credit of the City is not pledged for payment thereof.

(f) ***Outstanding Parity Obligations.*** As of the date of this Ordinance, the CWRPDA 2010 Loan and the CWCB 2021 Loan are the City's only outstanding loan, bonds, notes or other multiple fiscal year obligations with a parity lien on the Pledges Revenues. .

Section 14. Conditions to the Issuance of Parity Obligations. The City may issue Parity Obligations without the prior written consent of the Owner if (i) the Net Revenues for the 12 consecutive months out of the immediately preceding 18 months in which the Parity Obligations are issued, have been equal to at least 110% of (1.1 times) the sum of the Combined Maximum Annual Principal and Interest Requirements on the Note, any outstanding Parity Obligations and the proposed Parity Obligations during each calendar year following the date of issuance of the Parity Obligations and (ii) no Event of Default has occurred and is continuing under this Ordinance. Compliance with such covenant shall be certified by the City Manager or the City Finance Director to the Owner and concurrence to the calculation shall be obtained from the Owner prior to the issuance of the Parity Obligations. Except as set forth above, the City shall not issue Parity Obligations without the prior written consent of the Owner.

Section 15. Additional General Covenants. In addition to the other covenants of the City contained herein, the City hereby further covenants for the benefit of Owner of the Note that:

(a) ***Maintenance of System Rates, Fees and Coverage.*** The City will establish, maintain, enforce, and collect rates, fees, and charges for services furnished by the System or the use of the System to create Net Revenues in an amount equal to not less than 110% of (1.1 times) the amount necessary to pay when due the principal of and interest on the Note and any Parity Obligations coming due during such calendar year. If the Net Revenues at any time are not sufficient to make such payments, the City shall promptly increase such rates, fees, and charges to an extent which will ensure the payments and accumulations required by this Ordinance.

(b) ***Efficient Operations.*** The City will continue to operate and manage the System in an efficient and economical manner in accordance with all applicable laws, rules, and regulations, and keep and maintain separate accounts of the receipts and expenses thereof in such manner that the Net Revenues may at all times be readily and accurately determined. The City will promptly charge for service furnished by, or the use of, the System and shall use all legal means to assure prompt payment thereof.

(c) ***No Free Service Upon and Event of Default.*** Upon the occurrence of an Event of Default and for so long as the Event of Default is continuing, the City will furnish no free service from the System and, other than for use related to the operation of the System, the City shall pay a fair and reasonable amount for the use of services which it receives from the System.

(d) ***Sale or Alienation of Property.*** The City will not sell or alienate any of the property constituting any part of the System in any manner or to any extent as might reduce the security provided for the payment of the Note, but the City may sell any portion of such property which shall have been replaced by other similar property of at least equal value, or which shall cease to be necessary for the efficient operations; provided however, that the proceeds of any such sale of a part of the System shall be included as part of the Gross Revenue.

(e) ***Audits.*** At least once a year in the time and manner provided by law, the City will cause an audit to be performed of the records relating to the revenues and

expenditures of the System. Such audit may be made part of and included within the general audit of the City and made at the same time as the general audit. In addition, at least once a year in the time and manner provided by law, the City will cause a budget to be prepared and adopted. Copies of the budget and the audit will be filed and recorded in the places, time, and manner provided by law. Additionally, the City shall provide the Lender with such financial statements and other related publicly available information at such frequencies and in such detail that the Lender may reasonably request.

(f) ***Insurance.*** The City will carry public liability and such other forms of insurance on insurable Water Facilities and Wastewater Facilities as would ordinarily be carried by utilities having similar properties of equal value, such insurance being in such amounts as will protect the System and its operations. In the event of any loss or damage to Water Facilities or Wastewater Facilities, or in the event part or all of Water Facilities or Wastewater Facilities are taken by the exercise of a power of eminent domain, the insurance proceeds or the condemnation award shall be used for restoring, replacing, or repairing the property lost, damaged, or taken, and the remainder thereof, if any, shall be considered as Gross Revenue; provided however, that if the City Council determines that the System and the security for the Note will not be adversely affected thereby, the City Council may determine not to restore, replace, or repair the property lost, damaged, or taken and all of the insurance proceeds or condemnation award shall be considered as Gross Revenue.

(g) ***Enterprise Status.*** The City has and will continue to maintain the System as an "enterprise" or as part of the Utility Enterprise within the meaning Article X, Section 20 of the Colorado Constitution; provided, however, after the current calendar year the City may disqualify the System as an "enterprise" or part of the Utility Enterprise in any year in which said disqualification does not materially, adversely affect the enforceability of the covenants made pursuant to this Ordinance. In the event that the System or the Utility Enterprise is disqualified as an enterprise and the enforceability of the covenants made pursuant to this Ordinance are materially, adversely affected, the City covenants to (i) immediately take all actions necessary to qualify the System as an enterprise within the meaning of Article X, Section 20 of the Colorado Constitution and (ii) permit the enforcement of the covenants made herein.

(h) ***Protection of Security.*** The City, its officers, agents and employees, shall not take any action in such manner or to such extent as might prejudice the security for the payment of the principal of and interest on the Note and any other securities payable from the Net Revenues according to the terms thereof No contract shall be entered into nor any other action taken by which the rights of the Owners might be prejudicially and materially impaired or diminished.

(i) ***Project Useful Life.*** The Note matures at such time not exceeding the estimated useful life of the Project.

Section 16. Covenants Regarding Exclusion of Interest on the Note from Gross Income for Federal Income Tax Purposes. For purposes of ensuring that the interest on the Note

is and remains excluded from gross income for federal income tax purposes, the City hereby covenants that:

(a) ***Prohibited Actions***. The City will not use or permit the use of any proceeds of the Note or any other funds of the City from whatever source derived, directly or indirectly, to acquire any securities or obligations and shall not take or permit to be taken any other action or actions, which would cause the Note to be an "arbitrage bond" within the meaning of Section 148 of the Tax Code, or would otherwise cause the interest on the Note to be includible in gross income for federal income tax purposes.

(b) ***Affirmative Actions***. The City will at all times do and perform all acts permitted by law that are necessary in order to assure that interest paid by the City on the Note shall not be includible in gross income for federal income tax purposes under the Tax Code or any other valid provision of law. In particular, but without limitation, the City represents, warrants and covenants to comply with the following rules unless it receives an opinion of Note Counsel stating that such compliance is not necessary: (i) gross proceeds of the Note will not be used in a manner that will cause the Note to be considered "private activity bond" within the meaning of the Tax Code; (ii) the Note is not and will not become directly or indirectly "federally guaranteed"; and (iii) the City will timely file Internal Revenue Form 8038-G which shall contain the information required to be filed pursuant to Section 149(e) of the Tax Code.

(c) ***Letter of Instructions***. The City will comply with the Letter of Instructions delivered to it on the date of issuance of the Note, including but not limited by the provisions of the Letter of Instructions regarding the application and investment of Note proceeds, the use of the Project, the calculations, the deposits, the disbursements, the investments and the retention of records described in the Letter of Instructions; provided that, in the event the original Letter of Instructions is superseded or amended by a new Letter of Instructions drafted by, and accompanied by an opinion of Note Counsel stating that the use of the new Letter of Instructions will not cause the interest on the Note to become includible in gross income for federal income tax purposes, the City will thereafter comply with the new Letter of Instructions.

(d) ***Qualified Tax-Exempt Obligation Designation***. The City hereby designates the Note as a qualified tax-exempt obligation within the meaning of Section 265(b)(3) of the Tax Code. The City covenants that the aggregate face amount of all tax-exempt obligations issued by the City, together with governmental entities which derive their issuing authority from the City or are subject to substantial control by the City, shall not be more than $10,000,000 during calendar year 2021. The City recognizes that such tax-exempt obligations include bonds, notes, leases, loans and warrants, as well as the Note to be issued and delivered pursuant to this Ordinance. The City further recognizes that any Owner will rely on the City's designation of the Note as a qualified tax-exempt obligation.

Section 17. Defeasance. The Note shall not be deemed to be outstanding hereunder if it shall have been paid and cancelled or if cash or Federal Securities shall have been credited to trust for the payment thereof (whether upon or prior to the maturity of the Note, but if the Note is to be paid prior to maturity, the City shall have given the Paying Agent irrevocable directions to give notice of redemption as required by this Ordinance, or such notice shall have been given in

accordance with this Ordinance). In computing the amount of the deposit described above, the City may include interest to be earned on the Federal Securities.

Section 18. Events of Default. Each of the following events constitutes an Event of Default:

(a) ***Nonpayment of Principal, Premium or Interest***. Failure to make any payment of principal of, premium, if any, or interest on the Note when due hereunder;

(b) ***Breach or Nonperformance of Duties***. Breach by the City of any covenant set forth herein or failure by the City to perform any duty imposed on it hereunder and continuation of such breach or failure for a period of thirty days after receipt by the City Clerk of written notice thereof from the Paying Agent or from the Owner; or

(c) ***Appointment of Receiver***. An order or decree is entered by a court of competent jurisdiction appointing a receiver for all or any portion of the revenues and moneys pledged for the payment of the Note pursuant hereto is entered with the consent or acquiescence of the City or is entered without the consent or acquiescence of the City but is not vacated, discharged or stayed within thirty days after it is entered.

Section 19. Remedies for Events of Default.

(a) ***Remedies***. Upon the occurrence and continuance of any Event of Default, the Owner, or a trustee therefor, may protect and enforce its rights hereunder by proper legal or equitable remedy deemed most effectual including mandamus, specific performance of any covenants, the appointment of a receiver (the consent of such appointment being hereby granted), injunctive relief, or requiring the City Council to act as if it were the trustee of an express trust, or any combination of such remedies. All proceedings shall be maintained for the benefit of the Owner of the Note. Additionally, upon the occurrence of any payment Event of Default as provided in Section 19(a) hereof, an additional 2.00% (two hundred basis point) shall be added to the annual Interest Rate then in effect as the default rate for each day in which such payment Event of Default is in effect.

(b) ***Failure to Pursue Remedies Not a Release; Rights Cumulative***. The failure of the Owner to proceed in any manner herein provided shall not relieve the City of any liability for failure to perform or carry out its duties hereunder. The foregoing rights are in addition to any other right available to the Owner of the Note and the exercise of any right by the Owner shall not be deemed a waiver of any other right.

Section 20. Amendment of Ordinance. The City may not amend this Ordinance without the prior written consent of the Owner of the Note.

Section 21. Findings and Determinations. Having been fully informed of and having considered all the pertinent facts and circumstances, the City Council does hereby find, determine, and declare:

(a) ***Compliance with Law.*** The issuance of the Note and all procedures undertaken incident thereto are in full compliance and conformity with all applicable requirements, provisions

and limitations prescribed by the State Constitution and the Enabling Law, and all conditions and limitations of the State Constitution and the Enabling Law have been satisfied.

(b) ***Best Interests.*** It is to the best advantage of the City and its residents that the Note be authorized, issued and delivered at the time, in the manner and for the purposes provided in this Ordinance.

(c) ***Supplemental Public Securities Act.*** The City hereby elects to apply the provisions of Section 11-57-209, C.R.S. Section 11-57-210, C.R.S. and Section 11-57-212, C.R.S. to the authorization of the Loan and the issuance and delivery of the Note.

(d) ***No Advisory of Fiduciary Role.*** The City acknowledges and agrees that (i) the transaction contemplated herein is an arm's length commercial transaction between the City and the Lender and its affiliates, (ii) in connection with such transaction, the Lender and its affiliates are acting solely as a principal and not as an advisor including, without limitation, a "Municipal Advisor" as such term is defined in Section 15B of the Securities and Exchange Act of 1934, as amended, and the related final rules (the "Municipal Advisor Rules"), agent or a fiduciary of the City, (iii) the Lender and its affiliates are relying on the bank exemption in the Municipal Advisor Rules, (iv) the Lender and its affiliates have not provided any advice or assumed any advisory or fiduciary responsibility in favor of the City with respect to the transaction contemplated hereby and the discussions, undertakings and procedures leading thereto (whether or not the Lender, or any affiliate of the Lender, has provided other services or advised, or is currently providing other services or advising the City on other matters), (v) the Lender and its affiliates have financial and other interests that differ from those of the City, and (vi) the City has consulted with its own financial, legal, accounting, tax and other advisors, as applicable, to the extent it deemed appropriate.

Section 22. Appointment and Duties of Paying Agent. The Paying Agent is hereby appointed as paying agent, registrar and authenticating agent for the Note unless and until the City removes it as such and appoints a successor Paying Agent, in which event such successor shall automatically succeed to the duties of the Paying Agent hereunder and its predecessor shall immediately turn over all its records regarding the Note to such successor. The Paying Agent, by accepting its duties as such, agrees to perform all duties and to take all actions assigned to it hereunder in accordance with the terms hereof. The appointment and acceptance of the duties of Paying Agent hereunder shall be affected through the execution of an agreement by the Paying Agent.

Section 23. Approval of Miscellaneous Documents. The City Council hereby authorizes and approves the execution of all documents and certificates necessary or desirable to effectuate the issuance of the Note and the transaction contemplated hereby, including without limitation the Term Sheet, and execution by the parties thereto shall constitute the City Council's approval of such documents and certificates in the form so executed. In the discretion of City officials, the use of electronic signatures as authorized pursuant to Resolution 2021-19 of the City shall be permitted except in relation to the manual signatures required for the execution of the Note.

Section 24. Ratification of Prior Actions. All actions heretofore taken (not inconsistent with the provisions of this Ordinance) by the City Council or by the officers and employees of the

City directed toward the issuance of the Note for the purposes herein set forth, including without limitation actions taken on the City's behalf in connection with the request for proposals are hereby ratified, approved and confirmed.

Section 25. Events Occurring on Days That Are Not Business Days. Except as otherwise specifically provided herein with respect to a particular payment, event or action, if any payment to be made hereunder or any event or action to occur hereunder which, but for this Section, is to be made or is to occur on a day that is not a Business Day shall instead be made or occur on the next succeeding day that is a Business Day.

Section 26. Headings. The headings to the various sections and paragraphs to this Ordinance have been inserted solely for the convenience of the reader, are not a part of this Ordinance, and shall not be used in any manner to interpret this Ordinance.

Section 27. Ordinance Irrepealable. After the Note has been issued, this Ordinance shall constitute a contract between the Owner and the City and shall be and remain irrepealable until the principal of the Note and all interest accruing thereon shall have been fully paid, satisfied, and discharged, as herein provided.

Section 28. Severability. It is hereby expressly declared that all provisions hereof and their application are intended to be and are severable. In order to implement such intent, if any provision hereof or the application thereof is determined by a court or administrative body to be invalid or unenforceable, in whole or in part, such determination shall not affect, impair or invalidate any other provision hereof or the application of the provision in question to any other situation; and if any provision hereof or the application thereof is determined by a court or administrative body to be valid or enforceable only if its application is limited, its application shall be limited as required to most fully implement its purpose.

Section 29. Repealer. All orders, bylaws, ordinances, and resolutions of the City, or parts thereof, inconsistent or in conflict with this Ordinance, are hereby repealed to the extent only of such inconsistency or conflict.

INTRODUCED, READ ON FIRST READING, PASSED AND ORDERED PUBLISHED BY TITLE ONLY THIS 4th DAY NOVEMBER 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

_____

Jonathan Godes, Mayor

ATTEST:

_____

Catherine Mythen-Fletcher, City Clerk

INTRODUCED, READ ON SECOND READING, AND ORDERED PUBLISHED BY TITLE ONLY TO BE EFFECTIVE TEN DAYS FOLLOWING THE DATE OF SECOND PUBLICATION THIS 18th DAY OF NOVEMBER 2021.

CITY OF GLENWOOD SPRINGS, COLORADO

_____

Jonathan Godes, Mayor

ATTEST:

_____

Catherine Mythen-Fletcher, City Clerk

APPENDIX A

FORM OF NOTE

UNITED STATES OF AMERICA

CITY OF GLENWOOD SPRINGS, COLORADO
ACTING BY AND THROUGH ITS UTILITY ENTERPRISE
WATER AND WASTEWATER REVENUE NOTE
SERIES 2021

R-1 $8,100,000

Interest Rate	Maturity Date	Dated Date
2.54% until December 1, 2031	December 1, 2041	December 1, 2021

REGISTERED OWNER:

PRINCIPAL SUM: EIGHT MILLION ONE HUNDRED THOUSAND DOLLARS

CITY OF GLENWOOD SPRINGS, COLORADO, in the State of Colorado, a duly organized and validly existing home-rule City and political subdivision of the State of Colorado, acting by and through its Utility Enterprise (the "City"), for value received, hereby promises to pay, solely out of the special funds hereinafter designated but not otherwise, to the registered owner named above, or registered assigns, on Principal Redemption Dates or on the Maturity Date specified above or, the principal amount specified above (capitalized terms used herein shall have the meanings set forth in City Ordinance No. 2021-13 authorizing the issuance of this Note (the "Ordinance")). In like manner the City promises to pay interest on the unpaid principal amount (computed on the basis of a 360-day year of twelve 30-day months) on each monthly Interest Payment Date, computed initially from the Dated Date set forth above, at the Interest Rate per annum specified above (which rate resets on and after December 1, 2031, to the greater of 2.54% or the published 10-year U.S. Treasury Rate plus one hundred twenty-five basis points), until the outstanding principal amount is paid in full.

Attached as an Exhibit to this Note is a schedule of the monthly principal and interest due on this Note on each Interest Payment Date and Principal Redemption Date, as well as on the Maturity Date.

The principal of and interest on this Note shall be paid by check or draft of the Paying Agent mailed on or before each Interest Payment Date and Principal Redemption Date to the registered owner of this Note; provided however, the Paying Agent shall make such payments by wire transfer or such alternative means as may be mutually agreed to between the registered owner of this Note and the Paying Agent. The final installment of the principal of and interest on this Note shall only be payable upon presentation and surrender of this Note to the Paying Agent, provided however this Note need not be presented for the payment of principal when redeemed in the case of mandatory scheduled redemption. THE ORDINANCE CONSTITUTES THE

CONTRACT BETWEEN THE REGISTERED OWNER OF THIS NOTE AND THE CITY. THIS NOTE IS ONLY EVIDENCE OF SUCH CONTRACT AND, AS SUCH, IS SUBJECT IN ALL RESPECTS TO THE TERMS OF THE ORDINANCE, WHICH SUPERSEDES ANY INCONSISTENT STATEMENT IN THIS NOTE.

This Note is subject to redemption at the option of the City, in whole but not in part, on any Interest Payment Date; upon payment of the outstanding and unpaid principal amount and accrued interest to the Interest Payment Date on which such optional redemption is made, without redemption premium

The Note is special, limited obligation of the City payable solely from and secured solely from the Net Revenues generated from the System as provided in the Ordinance and shall not constitute a general obligation of the City. Pursuant to the Ordinance the City pledged for the payment of the principal of, premium if any, and interest on the Note at any time outstanding, and granted a lien for such purpose on the Net Revenues. This Note is issued under authority of the City Charter and, among other things, under the authority of the Part 2 of Article 57 of Title 11, of the Colorado Revised Statutes. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of this Note after its deliver for value.

If any payment required by this Note is not made at the time it becomes due and remains unpaid for a period of 10 days or if any other Event of Default shall have occurred under the City's obligations under the Ordinance then the unpaid balance of this Note may be accelerated by the holder of this Note, and the unpaid principal balance of this Note plus all accrued interest and any reimbursable fees and costs shall be due and payable in full. Additionally, upon the occurrence of a payment Event of Default, an additional 2.00% per annum interest rate shall be added to the annual Interest Rate then in effect as the default rate for each day in which such payment Event of Default is in effect. The City waives presentment, notice of dishonor and protest and agrees that any extension of time with respect to any payment shall not affect the City's liability under this Note. No waiver by the holder of this Note of any payment or right under this Note shall operate as a waiver of any other payment or right under this Note. The City will pay all costs and expenses, including reasonable attorney fees, incurred by the holder of this Note on default regardless of whether an action shall be instituted to collect this Note and in collecting any judgment thereon.

The City agrees with the Owner of this Note that it will keep and perform all the covenants and agreements contained in the Ordinance.

It is hereby certified that all conditions, acts and things required by the City Charter, and the constitution and laws of the State of Colorado, and the ordinances of the City, to exist, to happen and to be performed, precedent to and in the issuance of this Note, exist, have happened and have been performed, and that the Note do not exceed any limitations prescribed by said City Charter, Constitution or laws of the State of Colorado, or the ordinances of the City.

This Note shall not be entitled to any benefit under the Ordinance, or become valid or obligatory for any purpose, until the Paying Agent shall have signed the certificate of authentication hereon.

IN WITNESS WHEREOF, City of Glenwood Springs, Colorado, has caused this Note to be signed in the name and on behalf of the City with the manual signature of the Mayor, to be sealed with the seal of the City or a facsimile thereof and to be attested by the manual signature of the City Clerk.

[MANUAL OR FACSIMILE SEAL] GLENWOOD SPRINGS, COLORADO

By (Manual Signature)
Mayor

ATTEST:

By (Manual Signature)
City Clerk

CERTIFICATE OF AUTHENTICATION

This is the Note described in the within-mentioned Ordinance.

City Director of Finance, as Paying Agent

By _____
Authorized Representative

Date of Authentication: _____

CERTIFICATE OF TRANSFER

FOR VALUE RECEIVED, _____, the undersigned, hereby sells, assigns and transfers unto _____ (Tax Identification or Social Security No. _____) the within Note and all rights thereunder, and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Note on the books kept for registration thereof, with full power of substitution in the premises.

Dated: _____

_____
NOTICE: The signature to this assignment must correspond with the name as it appears upon the face of the within Note in every particular, without alteration or enlargement or any change whatever.

City Council
STAFF REPORT
City of Glenwood Springs
November 4, 2021

Agenda Item: Ad Hoc Affordable Housing Committee

Action Requested: Provide Direction on Ad Hoc Affordable Housing Committee

Department: City Administration

Presented By: Debra Figueroa, City Manager

Background Info: At the September 2, 2021 meeting, City Council approved the formation of an Ad-Hoc Committee to review and recommend policies for an Accommodations Tax Increase and Attraction Tax. The committee organization was tasked to the Housing Commission with Staff support. The original list and direction are included as Attachment A.

Housing Commission reviewed the approved committee list and proposes revisions to the makeup and scope of work identified. The Commission, lead by proposed Ad Hoc Committee Chair Sumner Schachter, drafted a new Ad Hoc Committee proposal for review and approval by Council. This new list was approved by City Council on November October 21, 2021. This document is included as Attachment B. City Council added a representative from the restaurant industry.

Issues: Revisions include a reduction in the size of committee from 15 members to 7 as well as a refined scope of work. With the addition of the restaurant representative, the new proposed Committee would have 8 members.

Sumner Schachter and the Housing Commission no longer wish to lead this process. Staff would suggest City Council proceed in one of three ways:

1. Ask a different Board or Commission to run this process or an individual that Chairs a Board or Commission. This could be the Planning Commission or Chair of the Planning Commission.

2. Have Staff run the Ad Hoc Committee based upon the direction received in Attachment A or Attachment B.

3. City Council could run the Ad Hoc Committee with support from City Staff.

4. City Council could hire a professional consultant to run the Ad Hoc Committee. Staff would still support this consultant.

No matter the process selected by City Council, Staff believes more time may be necessary than initially allotted by City Council. A more realistic time frame would be June of 2022.

Staff Recommendation: Staff recommends that City Council allow City Staff to run the Ad Hoc Committee and will bring back recommendations to City Council for consideration. Staff would need further direction on the final composition of the Ad Hoc Group from City Council.

Proposed Ad Hoc Study Committee for tourist revenue to support affordable workforce housing

Goals

- Clarify the specific community gaps and barriers in housing the employees of Glenwood Springs businesses
- Determine best practices of a community workforce housing plan
- Make recommendations on priorities, opportunities and implementation strategies for the recently passed Accommodations/Attractions tax

Guidance Document

- Greater Roaring Fork Regional Housing Study

Makeup of Committee

- Organized and lead by our Housing Commission, supported by City Staff

One representative each from the following areas

<u>Organizations that have expertise in affordable workforce housing</u>

- School District superintend/board member
- Garfield County Housing Authority Director
- Habitat for Humanity
- APCHA

<u>Businesses, workers and community members that are impacted by the housing crisis</u>

- School District teacher/staff
- Valley View nurse/staff
- Mountain Family staff
- Retail staff
- Restaurant industry staff

<u>Organization/people that are subject matter experts</u>

- Debbie Wilde (homeless expert)
- Faith community (Catholic Charities?)
- Voces Unidas/Mountain Voices
- Kathryn Grosscup of CHFA

<u>Businesses that are impacted by the recently passed tax</u>

- Lodging
- Attractions

Schedule

- Start by November 5th
- Recommendation to Council by 2nd meeting in April
- Expected commitment of 1-2 meetings a month

Considerations for 'revised' Ad Hoc Study Committee scope and sequence

The Goal of the committee will be to make recommendations to council on:

- Priorities, opportunities and implementation of an attractions tax and increased accommodations tax for ballot consideration.The purpose of such taxes will be to provide a dedicated source of funding for increasing inventory and availability of affordable/workforce housing.

The committee will provide a 'toolbox' of applications and uses of funding for support of affordable/workforce housing. Examples include but are not limited to:

- Funding to preserve/protect current MHP and conversion to owner coop
- Contributions to infrastructure and/or acquisition costs for employer build employee/deed restricted housing
- Technical support for housing grants/proposals; acquisition of land or units
- Contributions to partnered affordable/workforce housing projects
- Grants for ADU additions with deed restrictions
- Down payment assistance for 'qualified' applicants and housing
- Provide matching funds for housing grants/projects when applicable

The committee will explore and provide the council with recommendations on:

- Tax levels/proposed revenue stream
- Proposed definitions as to 'attractions' and businesses targeted for tax collection.
- Types and parameters of housing including occupancy type and income-based affordability levels by Area Median Income.

Guidance Documents: Greater Roaring Fork Regional Housing Study completed in 2018
2010 Strategic Housing Plan

In order to be both representative and still efficient a committee of seven members is proposed.

Candidates:
Sumner Schachter

1. Chairperson (and housing commission representative)
2. Representative from the accommodations industry.
3. Representative from the attractions industry.
4. Technical/Funding/Housing expert (CHAFA/ GCHA)
5. Finance/Banker representative
6. Latinx Community Representative
7. Chamber/Community on the Move Representative

These members will be responsible for reaching out to their peers/interest groups/community for broader based input.

Tentative schedule:

October:	initial meeting and goals and ‘ground rules’
November - February:	Two meetings per month (schedule allowing for Holidays)
March	Prep for final recommendations for council presentation
April	Final recommendation to Council

Meetings will invite/use city staff and regional experts as needed and available for guidance and technical assistance.

State Representative
BRIANNA C. TITONE
She/Her/Hers
Colorado State Capitol
200 East Colfax Avenue, Room 307
Denver, Colorado 80203
Office: 303-866-2962
Cell: 720-213-6660
Email: brianna.titone.house@state.co.us

Vice-Chair:
Joint Technology Committee
Member:
Energy & Environment Committee
Health & Insurance Committee

COLORADO
HOUSE OF REPRESENTATIVES
State Capitol
Denver
80203

October 15, 2021

Dr. Robert C. Eaton
Amtrak
10 G St NE
Suite 3W-300
Washington, D.C. 20002

Dear Mr. Eaton:

As the state representative of Colorado House District 27 in Arvada, I am writing to request a station stop on the west side of Arvada along the California Zephyr line which parallels Highway 72 near Highway 93. Having concurred with several of the undersigned community leaders, we believe that a station in west Arvada will help the population on the west side of the Denver metro area gain access to transportation and tourism which they would have to access in downtown Denver. Communities are continuing to grow along the western front range. The location of this station stop is ideal for several west communities of the Denver Metro, including the City of Boulder, City of Arvada, Boulder and Jefferson County.

This station stop would help with Denver Metro traffic congestion, by reducing the number of vehicles traveling to downtown Denver or mountain communities. For example, I live adjacent to a community near this proposed station. If I were to ride the Amtrak line to go into the mountains, I would have to drive 40+ minutes to Denver, then sit on the train for over 40 minutes to pass by where I started from. Our Regional goals look for opportunities to reduce the number of vehicles on our roadways, reduce pollution and greenhouse gases, while improving our overall transportation network, and we believe we found one, west Arvada!

To encourage more train riders, we need to make it easier to access, the proximity to Hwy 72 and Hwy 93 is prime for such a location for rail commuting. Traffic into Denver can escalate quickly and the air quality in Denver has been some of the worst in the world this summer. Having an additional station closer to western population centers can help consolidate and shorten car trips to access the train. Ski traffic in the winter is becoming unbearable with long commutes where travelers spend more than 50% of their time driving to ski resorts in Colorado. This train line has

direct access to several mountain communities and Winter Park Ski area which would help more vacationers and skiers leverage this new mode of travel within our State. There is also talk about forming more multi-modal transportation centers. This would be a great candidate location for this to get people on buses to ride the train. We envision the potential for this station to be an extension of the RTD commuter line with minimal additional infrastructure.

The city of Arvada is working on examining a parcel of land that would be suitable for the new station location. There is vacant land available along the line in the west part of Arvada, but it won't be for long. Much of the commercial land is being sold and developed which means this opportunity may not be available if this is pushed back. With the availability of Federal funding and the push of the Biden administration to build out more rail, this is an excellent opportunity to build on existing infrastructure. By including regional and state affiliated transportation entities in the conversation, this could serve as a valuable location for a much needed regional transportation hub. The undersigned leaders would like Amtrak to consider approving a station in the west Arvada area.

Sincerely,



Brianna Titone
State Representative
House District 27

Marc Williams, Arvada Mayor
Bob Fifer, Arvada City Council At- Large
Lauren Simpson, Arvada City Council District 2
David Jones, Arvada City Council District 4
Dot Miller, Arvada City Council At-Large
John Marriott, Arvada City Council, District 3
Nancy Ford, Arvada City Council District 1
Sam Weaver, Boulder Mayor
Aaron Brockett, Boulder City Council
Rachel Friend, Boulder City Council
Guyleen Castriota, Broomfield Mayor
Deven Shaff, Broomfield City Council Ward 3
Jean Lim, Broomfield City Council Ward 3
Todd Cohen, Broomfield City Council Ward 5
Laura Weinberg, Golden Mayor
Casey Brown, Golden City Council Ward 2 - Mayor Pro Tem
JJ Trout, Golden City Council Ward 1
Jim Dale, Golden City Council Ward 3
Bill Fisher, Golden City Council Ward 4
Andy Kerr, Jefferson County Commissioner
Tracy Kraft-Tharp, Jefferson County Commissioner
Lesley Dahlkemper, Jefferson County Commissioner
Anita Seitz, City of Westminster Mayor
John Voelz, Westminster City Council
Lauren Skully, Westminster City Council
Richard Seymour, Westminster City Council
Lindsey Smith Westminster City Council

Winter Park, Glenwood Springs, and Ski Industry Stakeholders,

Last week I sent the attached letter to Amtrak requesting a new train stop in west Arvada. It was signed by the majority of Arvada, Boulder, Golden, Westminster, and Broomfield Council members, as well as the three Jefferson County Commissioners. The goal is to get more passengers on to Amtrak trains, especially in the wintertime, to reduce traffic on the highways. Cutting off the time it takes to drive to Denver by accessing a new station just before the mountains makes a lot of sense. If this station can be utilized as a multi-modal transportation center (DRCOG is interested in this), we could really cut down on traffic and get more people on trains and get them to the mountains for tourism and for skiing. We believe that this additional access to the Amtrak train could help increase ridership to mountain communities and help alleviate traffic congestion.

If you believe in this proposal and believe that it will be beneficial to helping your industries, I encourage you to write a letter of support to the Amtrak lobbyist, Robert Eaton, to support this proposal. His email is robert.eaton@amtrak.com

Please also forward to any others who may wish to show support for this project.

If you have any questions, please let me know.

--
Representative Brianna Titone, HD27 (she/her/hers)
73rd Colorado State General Assembly
Vice Chair, Joint Technology Committee
Health and Insurance Committee
Energy and Environment Committee
200 E. Colfax Ave - Room 301, Denver CO 80203
C - 720-213-6660
O - 303-866-2962

Legislative Aide

Michelle Zajic (she/her/hers)