City & Borough of Juneau, Alaska
155 Heritage Way Juneau, AK 99801

Plan NO.: ***AME20260004***
Plan Type: **PL - AME - Zone Change**
Work Classification: **AME - Zone Change - Commission**
Plan Status: **In Review**
Apply Date: **07/31/2026**
Expiration: **[None Listed]**

Location Address

Parcel Number

UNASSIGNED

Contacts

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Description: Zone Change from RR to D5 with concurrent comprehensive plan map amendments of the Urban Service Area Boundary and Land Use Designation Maps

Fees	Amount
Zone Change Fee	600.00
Public Notice Sign Fee	50.00
Public Notice Sign Deposit	100.00
Total:	**$750.00**

Payments	Amt Paid
Total Fees	**$750.00**
Cash	$-100.00
Check # 92845	$650.00
Cash	$100.00
Check # 92845	$100.00
Amount Due:	**$0.00**

Additional Information:

Note: *Only answered questions are listed below. For a full view of all application questions see Civic Access More Info Tab:*

https://cityandboroughofjuneauak-energovweb.tylerhost.net/apps/selfservice#/plan/837b6e3a-7c22-40fe-b774-df0d30dfdca5?tab=moreinfo

[No Responses Provided]

Proposal

Zone change and concurrent Land Use Designation Map Amendment and Urban Service Area Boundary (USAB) amendment from REC to UDLR, RR to D5; within the USAB.

Property Owner: State of Alaska, Department of Natural Resources

Applicant: R&M Consultants, Inc.

Property Address: None

Legal Description: meets and bounds provided – see map C

Parcel Number: Not assigned

Site Size: 51.7 acres (for map amendments/zone change) 82 total

Existing Land Use: Vacant

Access: Blackerby Street/Mary Ellen Way

Table 1: Amendment Requests

	Current	Proposed
Zoning	Rural Reserve (RR)	D5
Land Use Designation (Subarea 5)	Recreational Resource (REC)	Urban Low Density Residential (UDLR)
USAB	Outside	Inside
Water/Sewer	None	To be extended with USAB amendment

Introduction

The State of Alaska Department of Natural Resources (DNR) owns the parcel shown in Map A. It does not have a parcel identification number. The site is 82 acres. It is currently zoned Rural Reserve (RR) and is located just outside the Urban Service Area Boundary (USAB), accessed by Blackerby Street and Mary Ellen Way via undeveloped stub streets as shown in Plat 82-6 and Plat 83-146. DNR wishes to develop this site as a residential subdivision to provide much needed housing.

The 82-acre site is zoned Rural Reserve (RR). In anticipation of subdivision DNR completed a subdivision feasibility study (Attachment 2). This study demonstrates that the Blackerby parcel is physically and technically feasible for residential subdivision. Based on the result

of the study DNR would only consider development of approximately 51.7 acres. This preserves the most sensitive areas from development. The remaining area can safely be developed in conformance with CBJ regulations. Steep slopes, geohazards, and environmental considerations require careful design and mitigation.

The land could be subdivided if lots were to remain Rural Reserve, provided each new lot meets RR dimensional standards, including a minimum lot size of 36,000 square feet and minimum lot width and depth of 150 feet (CBJ 49.25.400). Subdivision at this scale would require internal access and other public/private improvements to be constructed, with the developer responsible for the cost of right-of-way and street improvements and for providing access that can be improved to meet emergency service access requirements (CBJ 49.35.210–.272, including 49.35.240 and 49.35.260–.263; CBJ 19.10). However, CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities. This parcel is within 500 feet of existing utilities, but outside the USAB, which appears to preclude subdivision, effectively rendering the property unusable for anything other than passive recreation and inhibits economically viable use.

The Blackerby parcel presents a unique opportunity to expand housing supply in Juneau; however, its current land use designation and location outside the USAB create a fundamental misalignment between regulatory requirements and adopted policy. While CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities, the CBJ Comprehensive Plan discourages such extensions outside the USAB and for lower-density development. This conflict limits the ability to develop land that is otherwise adjacent to existing infrastructure and established neighborhoods.

DNR wants to work with CBJ to amend the comprehensive plan maps to create harmony between Title regulation and policy guidance. The first step is to amend the USAB to facilitate future development of the site, consistent with CBJ requirements. Concurrently, an amendment to the Comprehensive Plan Land Use Maps to change the parcel's designation from REC to ULDR. These amendments acknowledge the parcel's proximity to existing development and infrastructure and its suitability for residential use.

Because the parcel contains extensive slopes >18% (some >30%), triggering CBJ hillside provisions and limiting buildable area; careful siting, grading, drainage, and mass-wasting hazard avoidance are required. Therefore, ADNR only seeks to include approximately 51.7 acres as shown on Map B in the requested USAB and Land Use Designation amendments and subsequent zone change. This ensures the areas least suited for development remain as Rural Reserve.

The ADNR Area Plan, Juneau Region 5 Land Use Map, calls out the land use designation for the land in which the Blackerby parcel is located to be general land. Blackerby is located on the Lemon Creek 5a31G – General Land.

Therefore, ADNR requests an amendment of the future land use map and the USAB to facilitate the requested zone change.

Unlike the land use code (Title 49) the Comprehensive Plan is a guiding document. Chapter 1, Introduction and Background contains the following guidance:

> "To be a meaningful and effective document the Comprehensive Plan must be considered regularly and used by residents, the Planning Commission, and the governing body to guide its decisions and resource allocations and must be kept current to reflect community values, resources, constraints and opportunities. Discussions related to community growth, redevelopment, capital and social improvements, or budget, must occur in consultation with the Plan. This is not to say that the Plan will be infallible or that it is cast in concrete. It should, however, bring into focus sufficient information and data so that the best possible considered and objective judgements can be made, using the most current data available when the date (data?) in the Plan is out of date."

DNR's interest in developing this site, and willingness to work collaboratively with the CBJ presents a unique opportunity to use current information and circumstances to update the plan.

Urban Service Area Boundary (USAB)

As noted above, CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 feet of existing utilities. This parcel is within 500 feet of existing utilities, but outside the USAB, which appears to preclude subdivision -even under the current zoning of Rural Reserve.

> CBJ 49.80.120 Definitions
>
> *Urban service area* means the urban service area established in the comprehensive plan.
>
> *Urban service boundary* means the boundary of the urban service established in the comprehensive plan.

The CBJ Comprehensive Plan received its last substantial rewrite in 1995. Since then, there have been updates to this plan, in 2003, 2005 and 2013. The plan has a 20-year planning

horizon. We have been unable to determine a clear history but believe the USAB was established in 1995. It was last amended in 2003 with ordinance 2003-06 (Attachment 1)

The Comprehensive Plan definition (pg. 242):

> URBAN SERVICE AREA OR URBAN SERVICE AREA BOUNDARY (USAB): In the CBJ, an area within the municipality that represents a legal, orderly expansion of urban development patterns where municipal services, particularly water and sewer service, is provided. Lands located within the CBJ Urban Service Area boundary designated on the Land Use Maps 2013 CBJ Comprehensive Plan Update 242 Appendix A of the Comprehensive Plan are deemed suitable for urban and suburban-scale development, for which municipal and private utilities, roads, water systems, sewer systems, schools, police, fire, emergency medical care and other similar services are provided or are to be provided in the near future.

The purpose of the USAB is to facilitate compact, cost-effective urban services and to deter sprawl. The Comprehensive Plan has many policies in place to only provide public services and facilities within the USAB. **Implementing Action 12.2 (pg. 201) states that extensions should only be considered after a decision has been made to expand the USAB as a Comprehensive Plan Land Use Map Amendment.**

The Plan further states in Policy 18.2 (pg. 229) that the Planning Commission should initiate a general review of the plan two years after adoption of the last update, and to make recommendations to the Assembly to amend as necessary to reflect changing conditions and needs and to **consider and enact amendments to the Plan, Land Use Maps, including amendments to the USAB** at any time the Planning Commission and Assembly determine that amendments are needed.

For a variety of reasons regular review of the plan and maps have not taken place. However, conditions and needs have changed since the last update in 2013. The plan clearly acknowledges amendments should be considered and may be appropriate.

The Implementing Actions for this policy include adopting procedures for considering amendments initiated by property owners or residents between major updates. While we acknowledge CBJ is currently undergoing a major update, this process is not intended, and does not provide, an opportunity for a site-by-site consideration of the maps. DNR does not wish to have its request for amending the Comprehensive Plan and USAB to be seen as statement of preferences or opinion. Instead DNR as a landowner intends to seek specific changes based on a plan to rezone, subdivide, develop and/or sell land within the Blackerby parcel, which is consistent with numerous goals and policies of the Plan.

The Plan identifies three factors to be considered for amendments and suggests that an amendment be considered if one or more can be demonstrated. The factors are (pg. 229):

A. The original decision was in error because important information available at the time was not adequately considered.

   Response: The Plan is silent in regard to state owned land. Many recommendations and policies address the disposal and development of CBJ owned parcels, including reference to a 2006 study that explored buildable lands that have city water/sewer service and road extensions that are possible. The study focused on lands within or near the USAB where services could be extended within a 20-year planning horizon. This area under consideration meets all this criterion -except it is owned by the State and not CBJ. This oversight constitutes an error. DNR wishes to develop its property and contribute much needed housing to the community. DNR is a willing partner and wants to work with CBJ to amend the comprehensive plan maps to create harmony between Title regulation and policy guidance.

B. Changing conditions and/or new information renders the original decision inappropriate.

   Response: The Comprehensive Plan (pg. 15) states one of the primary responsibilities of the CBJ government is to facilitate future growth by ensuring that adequate land is available when needed and in providing a level of public services and facilities sufficient to promote public health, safety, and convenience.

   The Plan also states it is advisable to have more than a 15-year supply of vacant land to facilitate choice in location, price and size of development and the CBJ government is no longer in a position to provide this inventory of land zoned for those uses, as most of the undeveloped land in the borough is dominated by wetlands, forests, steep slopes, variable terrain and/or is inaccessible by roads.

   The changing conditions since the establishment of the USAB are the passage of time, and continued development of what little developable land is available within the USAB. Juneau is land constrained – we have a limited supply of land, and an even more limited supply of land well suited for development. Less developable land is available now than when the plan was last updated in 2013, and even less than when the USAB was updated in 2003.

   DNR has done due diligence through the procurement of the Blackerby Subdivision Development Study. The study includes geotechnical engineering and geohazards assessment which is why this request does not include the

entire 82-acre site. This study has determined that approximately 51.7 acres can safely be developed in compliance with CBJ's development regulations and provide more than 100 lots for residential development with the provision of city water and sewer at a D5 density.

C. The proposed change is consistent with other applicable policies of the Comprehensive Plan, other CBJ adopted Plans, and any specific subarea plans that apply to the site/area.

   Response: The zone change from RR to D5 is consistent with many policies of the Plan. A few examples are cited below.

   POLICY 10.3. TO FACILITATE RESIDENTIAL DEVELOPMENTS OF VARIOUS TYPES AND DENSITIES THAT ARE APPROPRIATELY LOCATED IN RELATION TO SITE CONDITIONS, SURROUNDING LAND USES, AND CAPACITY OF PUBLIC FACILITIES AND TRANSPORTATION SYSTEMS

   POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

   POLICY 4.3. TO DESIGNATE ON LAND USE MAPS AN ADEQUATE SUPPLY OF BUILDABLE LAND WITHIN THE URBAN SERVICE AREA, AND PARTICULARLY ALONG TRANSIT CORRIDORS, FOR RESIDENTIAL USE AT DENSITIES THAT CAN PRODUCE HOUSING AFFORDABLE TO ALL ECONOMIC GROUPS.

The Comprehensive Plan defines Rural Areas:

RURAL AREAS: Land located outside the Urban Service Area boundary accessible by a public road and which contain natural resources in need of protection from development, or areas unsuitable or not needed for urban development. In the CBJ, the Comprehensive Plan provides that urban services are not to be planned or extended to these areas.

We believe the site was not included in the USAB and was considered rural primarily because it is owned by the State of Alaska. The site does not contain natural resources in need of protection. DNR's proposal will retain sensitive areas not suited for development outside the USAB and zoned Rural Reserve. The site is immediately adjacent to the USAB, city water and sewer service and well suited for residential development. The site is within approximately one-half mile of transit.

However, subdivision is prevented (even without the zone change) because CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities. This parcel is within 500 feet of existing utilities. Extension of utilities beyond the USAB is strongly discouraged by the Comprehensive Plan.

Future Land Use Designation Map

To facilitate the zone change request DNR requests a concurrent amendment to the Maps of the Comprehensive Plan to change the future land use designation of approximately 51.7 acres from Recreational Resource (REC) to Urban Low Density Residential (ULDR). Together, with the amendment to the USAB, this amendment would allow development to proceed in a manner consistent with both regulatory requirements and long-term planning objectives.

The amendment of the land use designation from REC to ULDR will facilitate rezoning of the site to D5 zoning. This higher density zoning (on city utilities) provides more flexibility in site layout/design. This flexibility means the site could be developed in a way that protects and preserves the sensitive areas, and still provides additional housing. A completed subdivision feasibility study demonstrates that the Blackerby parcel is physically and technically feasible for residential subdivision.

Access to the future subdivision would be via Mary Ellen Way and Blackerby Street. In the planning phase AK Built adhered to CBJ hillside plan development standards. If the project moves forward additional coordination will be conducted with EMS and Fire Safety to determine appropriate roadway grade. Blackerby Street exceeds the currently recommended 10% slope as specified in 2024 International Fire Code Appendix D but adheres to CBJ hillside development standards for street construction. It should be noted that the Fire Service Area automatically expands to encompass a new subdivision when the subdivision is complete and recorded.

The Plan states (pg. 227) that proper implementation and administration of the Plan depends on a number of other activities, not the least of which is to be aware of where the Plan is inadequate to address an issue or where the Plan has unintended consequences. In these cases, the CBJ must consider amending the Plan in the face of new information or unexpected or changed circumstances. For both assuring that actions are consistent with the Plan, and for **assuring the Plan is responsive to public needs and changing conditions**, the CBJ must:

- Monitor changes in land use, social, economic and environmental conditions and periodically review and update the Plan to reflect these factors.

- Maintain and use procedures to amend the Plan to address needs of individual property owners.
- Provide for ongoing resident involvement in the land use decision making process.
- Coordinate municipal activities with state and federal agencies with regard to decisions of mutual concern.

As stated above, we believe this area was designated as REC because it is owned by the State of Alaska. Also stated above is the State's Land Management Plan - Juneau Region 5 Land Use Map, calls out the land use designation for the land in which the Blackerby parcel is located to be general land. This State's Land Management Plan was adopted in 1993.

The Plan defines Recreational Resources as "Land primarily under federal or state management for a range of resources, such as timber, minerals, fish and wildlife and recreation uses, including recreation cabins. Uses may include small-scale, visitor-oriented, and/or seasonal recreational facilities. These lands should be zoned to prevent residential, commercial, and industrial development."

The site will not be developed for resources such as timber or minerals. It is used for passive recreation and the State has no plans to develop it further for recreational uses, including cabins. DNR wishes to make this site available for much needed housing. The REC land use designation does not facilitate that development. The unintended consequence of the USAB boundary, land use designation and requirements for connections to city water and sewer makes the site undevelopable. Ultimately eliminating any economic value as well as removing the opportunity for more housing.

The Plan identifies three factors to be considered for amendments and suggests that an amendment be considered if one or more can be demonstrated. The factors are (pg. 229):

A. The original decision was in error because important information available at the time was not adequately considered.

   Response: The Plan is largely silent in regard to State owned land. While the original decision may not have been in error, it may not have been a fully informed decision and based on misinformation. DNR does not want to use the property for recreation or resource development. They want to develop the site for much needed housing.

B. Changing conditions and/or new information renders the original decision inappropriate.

   Response: As stated above (USAB) the changing conditions since the establishment of the Land Use Designation is the passage of time, and continued

development of what little developable land is available within the USAB. Juneau is land constrained – we have a limited supply of land, and an even more limited supply of land well suited for development. Less developable land is available now than when the plan was last updated in 2013.

Additionally, DNR is a willing partner interested in developing this centrally located site for housing. The Plan encourages coordination of municipal activities with state and federal agencies concerning decision of mutual concern – such as the development of this State owned parcel for housing.

C. The proposed change is consistent with other applicable policies of the Comprehensive Plan, other CBJ adopted Plans, and any specific subarea plans that apply to the site/area.

Response: The site is located in Subarea 5 – Map H.

Guidelines and considerations:

2. Provide for additional medium- to high density residential development in areas with access to arterial roadways from collector streets. Encourage the efficient use of land by allowing non-family housing, such as for students, single-adults or seniors, in mixed use districts within shopping centers or malls. Increase building height limits and decease or eliminate parking requirements for such residential developments where adequately served by public transit.

The site has access to arterial roadways from collector streets. The site is immediately adjacent to city water and sewer services. The site is within approximately one-half mile of transit. It is centrally located, midway between downtown Juneau and the Mendenhall Valley and airport.

Changing the Land Use Designation from REC to UDLR will allow for additional residential development, with city services, and access to transit in a centrally located area, consistent with multiple policies of the Comprehensive Plan – a few are cited below:

Policy 4.2 TO FACILITATE THE PROVISION OF AN ADEQUATE SUPPLY OF VARIOUS HOUSING TYPES AND SIZES TO ACCOMMODATE PRESENT AND FUTURE HOUSING NEEDS FOR ALL ECONOMIC GROUPS.

Policy 4.3 TO DESIGNATE ON LAND USE MAPS AN ADEQUATE SUPPLY OF BUILDABLE LAND WITHIN THE URBAN SERVICE AREA, AND PARTICULARLY ALONG TRANSIT CORRIDORS, FOR RESIDENTIAL USE AT DENSITIES THAT CAN PRODUCE HOUSING AFFORDABLE TO ALL ECONOMIC GROUPS. (noting need to concurrently amend the USAB)

Policy 4.8 TO BALANCE THE PROTECTION AND PRESERVATION OF THE CHARACTER AND QUALITY OF LIFE OF EXISTING NEIGHBORHOODS WITHIN THE URBAN SERVICE AREA WHILE PROVIDING OPPORTUNTIIES FOR A MIXTURE OF NEW HOUSING TYPES. (noting the need to concurrently amend the USAB)

Policy 10.3 TO FACILITATE RESIDENTAIL DEVELOPMENT OF VARIOUS TYPES AND DENSITIES THAT ARE APPROPRIATELY LOCATED IN RELATION TO SITE CONDITIONS, SURROUNDING LAND USES, AND COMPACITY OF PUBLIC FACILITIES AND TRANSPORATATION SYSTEMS AFFORDABLE TO ALL ECONOMIC GROUPS.

The above listed policies of the Comprehensive Plan acknowledge the need for additional housing in Juneau, while balancing the need for adequate public infrastructure, including roads, water, and sewer. Additionally, the Plan identifies a need to facilitate varying densities while resolving conflicts between single-family neighborhoods and other types of development. The Plan recognizes that amendments maybe necessary and conditions change over time.

The 2016 Housing Action Plan states that "publicly owned land and assets can be one of the most powerful tools a local government has to address housing availability and affordability issues." (pg. 42) and that "public land should be thought of not only as a means by which Juneau can encourage beneficial private economic activity and guide a rational growth pattern, but also, importantly, as a means by which Juneau can achieve key policy goals. These goals include filling key housing gaps" (p. 43).

This plan speaks to CBJ owned lands – but the philosophy applies to State owned land as well. As previously stated, DNR seeks to contribute its publicly owned land to address housing availability to help achieve key goals.

It is important to note that a failure to comply with one policy in the CBJ Comprehensive Plan does not automatically mean that a development is inappropriate if conformance is shown with other policies identified in the Plan. A decision on land-use conformance requires balancing the many relevant policies and holistically looking at each proposed development.

Zone Change (RR to D5)

The amendment of the USAB and the land use designation from REC to ULDR will facilitate the rezoning of the site to D5 zoning. This higher density zoning (on city utilities) provides the applicant with more flexibility in site layout/design. This flexibility means the site could be developed in a way that protects and preserves the sensitive areas, and still provides

additional housing. Housing development is prioritized as land use by the Assembly. Additionally, the higher density economizes the extension of city services -which is consistent with guidance from the Comprehensive Plan.

The subdivision feasibility study demonstrates that the Blackerby parcel is physically and technically viable for a residential subdivision. Careful site design and mitigation will be required, even for the 51.7 acres proposed for a zone change. Yet, the site can safely be developed in compliance with all CBJ requirements.

Access to the proposed subdivision would be via Mary Ellen Way and Blackerby Street. In the planning phase AK Built adhered to CBJ hillside plan development standards. If the project moves forward additional coordination will be conducted with EMS and Fire Safety to determine appropriate roadway grade. Blackerby Street exceeds the currently recommended 10% slope as specified in 2024 Internation Fire Code Appendix D but adheres to CBJ hillside development standards for street construction. Based on estimated average daily trips, the roadway width will need to be a minimum of 24-feet wide and at least one sidewalk provided. Do note, the existing roadways for Mary Ellen Way and Blackerby street currently do not have sidewalks. DNR proposes access be allowed off the existing streets of Blackerby Street and Mary Ellen Way utilizing a 24-foot wide street with one sidewalk.

The site is within close proximity to transit on Old Glacier Highway. From the Blackerby Drive access point it is 0.21 miles to Old Glacier Highway. From the Mary Ellen Way access point it is 0.57 miles. City water and sewer service are immediately adjacent in the Twin Lakes subdivision (accessed via Blackerby Street) and Mountainside Estates, including Mary Ellen Way.

A Traffic Impact Analysis may be required through the subdivision process to assess impacts to the transportation system and determine any needed mitigation. As noted previously, the Blackerby Drive access point is less than ¼ mile from transit and the Mary Ellen Way access point is just over ½ mile from transit. Interestingly, the Plan (pg. 14) states that buildable lands should be developed as medium to high density affordable housing wherever possible and practical. Noting this is particularly true for lands within walking distance (1/4 mile) of public transit. Because of this site's proximity to existing D5 zoning, and site constraints, medium to high density housing is not appropriate. But its proximity to transit is notable and supports its inclusion in the USAB and higher density zoning.

Should the CBJ approve the requested USAB and land use designation map amendments, this zone change request meets all of Title 49 restrictions on rezoning:

- Rezoning of less than 2 acres will not be considered unless the zone change constitutes the expansion of an existing zoning district. **This requested zone change is larger than 2 acres and is an expansion of an existing D5 zoning district.**

- Rezone requests that are substantially the same as a rezone request rejected within the previous 12 months shall not be considered. **This requested zone change is a new request.**

- The proposed zoning district and the uses allowed are in substantial conformance with the land use maps of the comprehensive plan. **This requested zone change is in conformance with the land use maps of the comprehensive plan IF the USAB and Land Use Designation maps are amended.**

As previously discussed, the Comprehensive Plan and Housing Action Plan include numerous policies supporting more and various housing types. This zone change minimizes impacts to existing neighborhoods by providing for similar development. The feasibility study shows the site can safely be developed in conformance with all CBJ requirements. The rezone will facilitate future growth by ensuring that adequate land is available when needed and in providing a level of public services and facilities sufficient to promote public health, safety, and convenience.

The City and Borough of Juneau lacks affordable housing. Choices are limited by location, size, cost; a large proportion of homeowners are spending more than 30% of their income on housing. The American Community Survey reports the ownership vacancy rate in the CBJ has ranged from 1.2 percent in 2020 down to 0.6 percent in 2022. A vacancy rate of five percent or lower indicates that housing supply is limited, and demand is outpacing available units. Five percent and above is considered a “normal” vacancy rate allowing households to move in and out of units due to normal relocation patterns. Thus, a lower than 5 percent vacancy rate in Juneau indicates that meeting future demand for new housing will require additional housing construction. Currently, there is no extra supply within the existing housing market to absorb this demand.

The proposed Blackerby subdivision would open land for housing in a centrally located area, with access to city services. The requested zone change is intended to facilitate development at densities that more effectively meet local housing needs. Coordination between CBJ and the State of Alaska will be essential to ensure that infrastructure planning, permitting, and development phasing are aligned with community goals and available resources. DNR is a willing partner seeking to collaborate with the CBJ in this endeavor.

A few Comprehensive Plan policies that support this rezone request:

POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

POLICY 10.2. TO ALLOW FLEXIBILITY AND A WIDE RANGE OF CREATIVE SOLUTIONS IN RESIDENTIAL AND MIXED-USE LAND DEVELOPMENT WITHIN THE URBAN SERVICE AREA.

POLICY 10.5. THAT RESIDENTIAL DEVELOPMENT PROPOSALS, OTHER THAN SINGLE-FAMILY RESIDENCES, MUST BE LOCATED WITHIN THE URBAN SERVICE AREA BOUNDARY OR WITHIN A DESIGNATED NEW GROWTH AREA. APPROVAL OF NEW RESIDENTIAL DEVELOPMENT PERMITS DEPENDS ON THE PROVISION OR AVAILABILITY OF NECESSARY PUBLIC AMENITIES AND FACILITIES, SUCH AS ACCESS, SEWER, AND WATER.

POLICY 10.6. TO REQUIRE NEW RESIDENTIAL DEVELOPMENTS TO MEET MINIMUM CRITERIA FOR OVERALL SITE DESIGN INCLUDING PROVISION OF LIGHT, AIR AND PRIVACY.

Conclusion

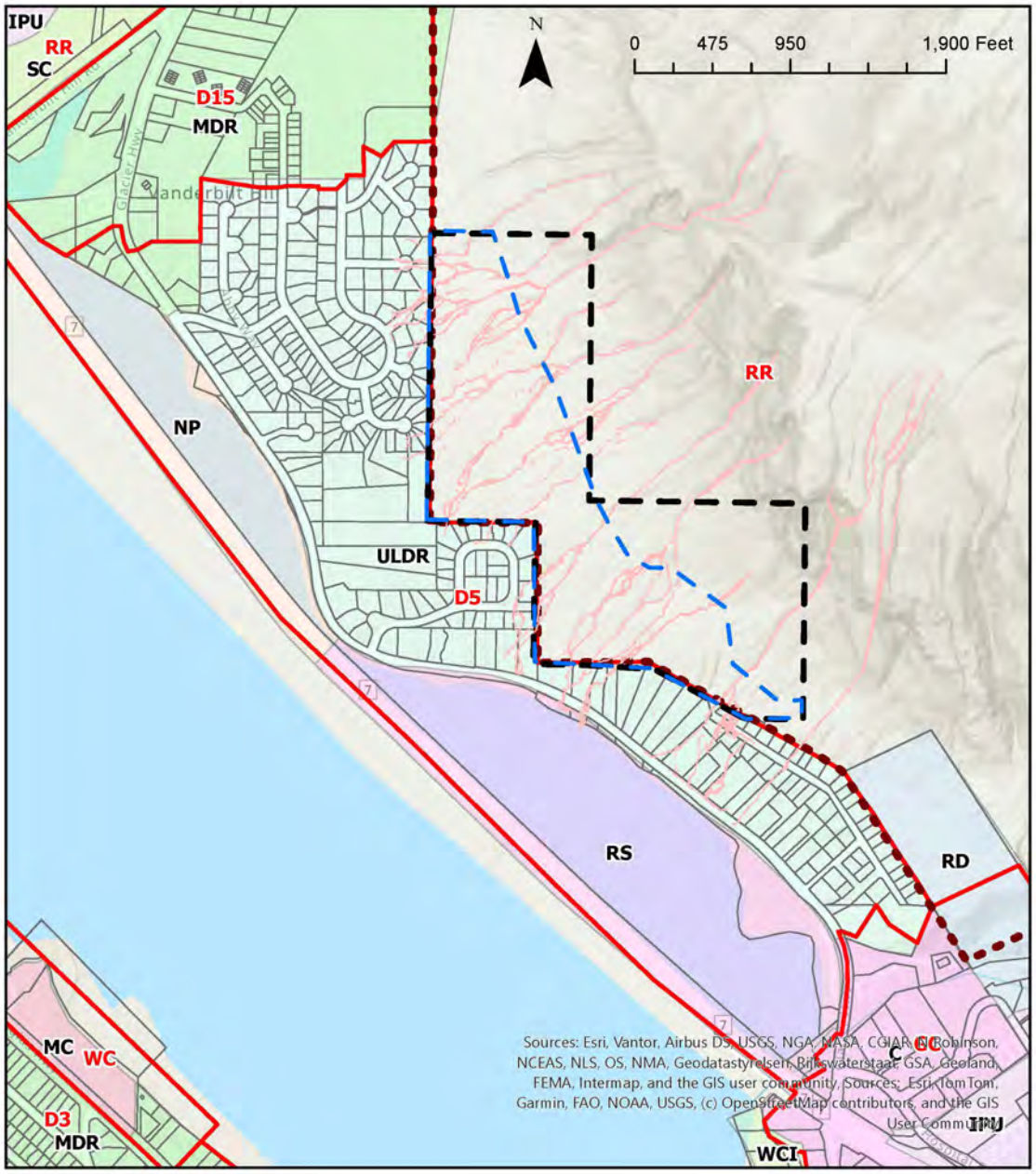
DNR wants to work with CBJ to amend the Comprehensive Plan USAB and land use maps to create harmony between Title regulation and policy guidance to facilitate a zone change from RR to D5. These amendments acknowledge the parcel's proximity to existing development and its suitability for residential use.

The Comprehensive Plan recognizes the need for change to the plan and its maps. Conditions have changed since these maps were adopted and their amendment is consistent with the Plan's policies and will facilitate a zone change that will in turn facilitate the development of more housing – the Assembly's top priority for our community.

The requested map amendments (USAB and Land Use Designation) and zone change aim to support future development ensuring that sufficient land is available when needed and by providing public services and facilities that promote public health, safety, and convenience.


Coogan Dr
Tongass National Forest
Hooter Ln
Egan Dr
Vanderbilt Hill Rd
Glacier Hwy
Vanderbilt Hill
Robbie Rd
Hillcrest Ave
5
4
Egan Dr
7
Craig St
Abby Way
Mountainside Dr
Venus Ln
SALMON CREEK
PROJECT AREA
ADL 109276
APLN
Ridge Way
Blackerby St
Glacier Hwy
Egan Dr
Egan Dr
7
Egan Dr
Twin Lakes Park Pathway
Greenwood Ave
Greenwood Ave

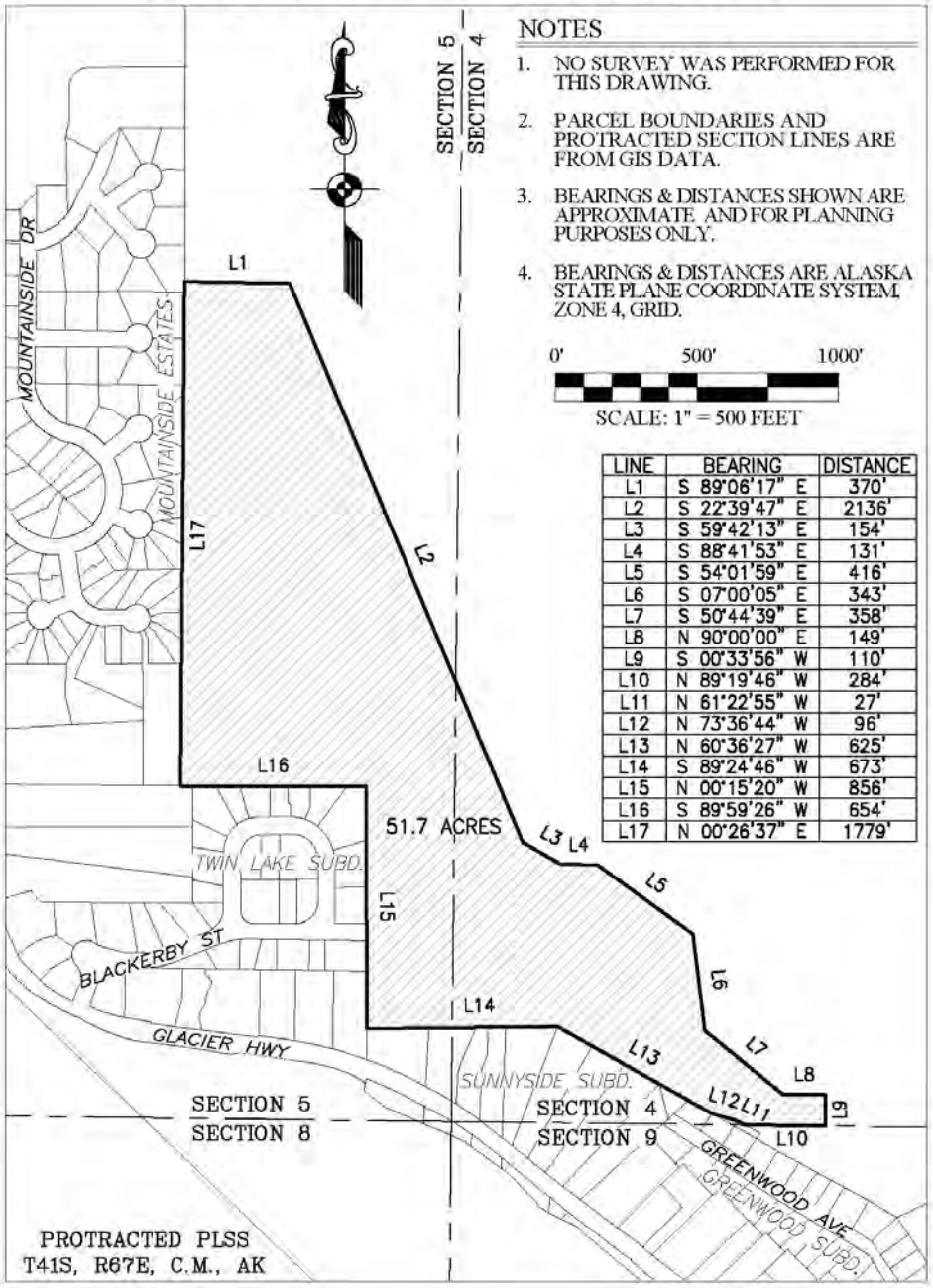
Map A



Urban Service Area Boundary
Zoning
SOA Blackerby Parcel
Debris Flood Susceptibility
Geotechnical Recommended Development Area & Rezone Request

Map B

PROPOSED DEVELOPABLE AREA



LINE	BEARING	DISTANCE
L1	S 89°06'17" E	370'
L2	S 22°39'47" E	2136'
L3	S 59°42'13" E	154'
L4	S 88°41'53" E	131'
L5	S 54°01'59" E	416'
L6	S 07°00'05" E	343'
L7	S 50°44'39" E	358'
L8	N 90°00'00" E	149'
L9	S 00°33'56" W	110'
L10	N 89°19'46" W	284'
L11	N 61°22'55" W	27'
L12	N 73°36'44" W	96'
L13	N 60°36'27" W	625'
L14	S 89°24'46" W	673'
L15	N 00°15'20" W	856'
L16	S 89°59'26" W	654'
L17	N 00°26'37" E	1779'

Map C

URBAN SERVICE AREA

Revised - March 2003 with Ordinance N0. 2003-06





Attachment 1

Blackerby Subdivision Development Study

Work Order # 02-25

Prepared For:

State of Alaska

Department of Natural Resources

Division of Mining, Land and Water

Prepare By:

AK Built Construction & Design, LLC

PO Box 771203

Eagle River, AK 99577

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General Developmental Constraints Identification

The development of the Blackerby parcel is subject to physical, regulatory, and procedural constraints that will influence subdivision design and implementation. These constraints include topography, zoning, access, utilities, and conflicts between the CBJ (City and Borough of Juneau) Comprehensive Plan and CBJ Title 49.

The parcel of interest for this study contains substantial areas with slopes exceeding 18 percent, with some portions steeper than 30 percent. Pursuant to CBJ definitions, slopes greater than 18 percent invoke the hillside development provisions of Title 49, while slopes greater than 30 percent are considered very steep slopes. These conditions limit the extent of buildable land and will require careful sitting of parcels to avoid mass wasting hazards and to minimize grading and drainage concerns.

The subject parcel is located outside of the CBJ Urban Service Area Boundary, although adjacent subdivisions are within the boundary. CBJ Title 49 requires extension of public water and sewer services for subdivisions that create more than five lots within 500 feet of existing utilities. The utility requirement creates a conflict with the CBJ Comprehensive Plan, which discourages extension of utilities into areas of less than ten units per acre. Development of the parcel will therefore require coordination with CBJ to determine whether the Urban Service Area Boundary can be expanded, or whether on-site water and sewer systems will be required.

The existing land use classification of the parcel is Recreational Resource (REC), with a zoning designation of Rural Reserve (RR). These classifications are not intended to accommodate residential development at the densities needed to address Juneau's housing needs. Rezoning to a residential district, such as D-3 or D-5, would be required to allow for economical subdivision development. Rezoning procedures under CBJ Title 49 will require a Subarea Land Use Map amendment, public hearings, and approval through the CBJ planning process.

While no avalanche zones are present in the project area, steep slopes present a risk of landslides and debris flows, particularly during high precipitation events. The potential for eagle nesting sites, stream corridors, and wetlands must also be considered. A preliminary Geohazards Assessment was conducted as part of the Blackerby feasibility study to identify geological hazards. To mitigate the identified hazards green space buffers and drainage systems will be required.

Access to the parcel is limited to extensions from existing subdivisions. The most feasible access points are from Blackerby Street and Mary Ellen Way, though the latter is complicated by the presence of existing residential improvements. CBJ Title 49 roadway standards will govern alignment, profile, and right-of-way (ROW) dimensions.

As the Blackerby parcel subdivision would generate more than 14 lots, it qualifies as a major subdivision under CBJ Title 49. Major subdivision procedures require a pre-application conference, sketch plat, preliminary plat, construction plan review, survey and monumentation, final plat approval, and recording. Additional requirements include hillside development endorsement under Chapter 49.70, drainage planning under Chapter 49.35, and a traffic impact analysis, as average daily trips are projected to exceed 500 under both RR and D-5 scenarios.

It has been discussed pursuing a minor subdivision process, by producing larger tracts of parcels, but CBJ would likely qualify the application to fall under the major subdivision process per Title 49.15.401(a)(1).

Conformance with CBJ Comprehensive Plan & Title – 49

Comprehensive Plan of the City & Borough of Juneau, 2013

CBJ manages land within the city and borough boundaries in accordance with Title 49. Title 49 aims to achieve the goals and objectives, and implement the policies of the CBJ Comprehensive Plan, 2013 Update and Coastal Management Plan. The CBJ Comprehensive Plan will have influence over the development of the proposed subdivision in this study. Compliance with the CBJ Comprehensive Plan ensures future growth is of the appropriate type, design and location, and is served by a proper range of public services and facilities to promote public health, safety and general welfare.

The parcel contemplated in this study is in Subarea 5: Switzer Creek, Lemon Creek, & Salmon Creek (Maps G, H, & K). The community form for this area is suburban/urban. Urban areas are typically comprised of residential, commercial, mixed use and/or public facilities that share land and utilities in a compact area. Urban area neighborhoods are characterized by 2 to 3-story structures separated by parking lots, roads, sidewalks and landscaping or small yards. Suburban areas have some commercial and industrial development clusters. Residential zones are typically single-family, detached homes at a density of 3 to 5 units per acre with 1 to 2-story home construction with attached garages on parcels smaller than 1/3 acre. The neighborhoods are separated with modest yards, streets, sidewalks, and landscaping. When possible, vacant parcels within suburban neighborhoods served by water and sewer should be developed at higher residential densities. The CBJ Comprehensive Plan defined a buildable site as: one that is at least a quarter acre or more in size, located within the Urban Service Area Boundary that is vacant or has an improvement, such as a structure, that is valued at less than $50,000 by the CBJ Assessor and upon which large portions of the land do not contain slopes greater than 18 percent or class A or B wetlands and are located near municipal water and sewer service, roads, utilities and other public services. The Blackerby parcel contemplated in this study does not meet this definition of a buildable site because of the presence of slopes greater than 18 percent and it is located outside the Urban Service Area.

New development opportunities identified in the CBJ Comprehensive Plan are largely focused on in-fill developments on vacant lots or underutilized parcels within the Urban Service Area. New growth developments are identified in the Echo Cove and West Douglas New Growth Areas. The parcel of focus in this study is not identified in the CBJ Comprehensive Plan, but the CBJ primarily identified lands under CBJ ownership and not State ownership. The Plan's discussion on new growth areas provides strategies for growth, but the concept of partnering with other land-owning entities is not addressed. The Blackerby parcel, the focus of this study, provides an opportunity for CBJ to allow for residential growth that was not previously identified. The CBJ Comprehensive Plan recommends development focus to be inside the Urban Service Area before expanding the Urban Service Area. The State owned parcel contemplated for subdivision is currently outside of the

Urban Service Area, but the adjacent existing subdivisions are within the Urban Service Area. Title 49 does require the extension of public utilities into a new subdivision that is developed adjacent to the existing subdivisions. This is based solely on language within 49.35.310 – Water Systems and 49.35.410 – Sewer Systems. An extension of the Urban Service Area Boundary is in the best interest of CBJ if a new subdivision is progressed in this study's area of interest. This will require an amendment to the Subarea Land Use Map. It is unknown the timeline the CBJ would need to be able to accommodate a higher density residential use if a Subarea Land Use Map amendment is successful.

Housing availability is identified in the CBJ Comprehensive Plan as an obstacle to growth for the community of Juneau. The 2010 Juneau Housing Needs Inventory estimates Juneau needs 343 more housing units. The CBJ Comprehensive Plan identifies the need for small unit sizes and high-density developments located in areas served by sewers are needed to improve housing affordability. It will be a challenge to provide high density housing units in the proposed Blackerby parcel because of the presence of steep slopes. Nevertheless, increasing the supply of residential parcels near urban areas has a positive impact on housing demand and affordability. The CBJ Comprehensive Plan has policies and procedures identified to support the development of land. This study section identifies CBJ policies that may be applicable to the development of the proposed subdivision.

POLICY 4.2. TO FACILITATE THE PROVISION OF AN ADEQUATE SUPPLY OF VARIOUS HOUSING TYPES AND SIZES TO ACCOMMODATE PRESENT AND FUTURE HOUSING NEEDS FOR ALL ECONOMIC GROUPS.

POLICY 7.1. TO PROTECT THE REGION'S SCENIC, ENVIRONMENTAL, AND ECONOMICALLY VALUABLE NATURAL RESOURCES FROM THE ADVERSE IMPACTS OF URBAN DEVELOPMENT. DEVELOPMENT SHALL BE CONTROLLED CAREFULLY AND, IF NECESSARY, PROHIBITED IN NATURALLY HAZARDOUS AND ECOLOGICALLY-PRODUCTIVE OR SENSITIVE AREAS.

POLICY 7.7. TO PROTECT, MAINTAIN AND IMPROVE SURFACE WATER, GROUNDWATER AND MARINE WATER QUALITY IN ITS JURISDICTION SO THAT ALL WATERS ARE IN COMPLIANCE WITH FEDERAL AND STATE WATER QUALITY STANDARDS AND CONTINUE TO ALLOW AQUATIC LIFE TO THRIVE.

POLICY 7.14. TO PROTECT AREAS SURROUNDING IDENTIFIED EAGLE NESTS FROM CONFLICTION LAND USES.

POLICY 7.17. TO MINIMIZE THE THREAT TO HUMAN SAFETY AND DEVELOPMENT POSED BY LANDSLIDES (MASS WASTING) AND AVALANCHES

Policies in chapter 4 relate to housing affordability and supply. Chapter 7 policies are in place to guide CBJ decision making as it relates to natural resources and hazards. Table 1 is an excerpt from the CBJ Comprehensive Plan and identifies known natural resources and hazards in the vicinity. In general, this study's project area is free of most previously identified hazards and negative natural resource impacts. Eagle nests may be in the project area, but none have been observed at the time of this writing. Flooding is unlikely to occur given the steep terrain of the topography, but flash flooding may move material or promote landslide activities. A geohazards analysis was conducted

as a part of this study. There are no avalanche hazard areas identified in the proposed parcel, but mass wasting events may be of greater concern and requires careful consideration.

Table 1 - Natural Resources and Hazards

Type	General Location
Wildlife (Eagle nests)	Vanderbilt Hill, Lemon Creek, and Switzer Creek
Stream and Lakeshore Corridors	Lemon, Switzer, Vanderbilt, Salmon, and unnamed Creeks
Wetlands/Tidelands	Mendenhall Flats, Lower Lemon Creek, Switzer Creek, Vanderbilt Creek
Gravel and Mineral Resource	Lemon Creek, Hidden Valley
Impaired Water Bodies	Jordan Creek, Lemon Creek, Vanderbilt Creek
Flooding	Lower Lemon Creek/Switzer Creek, all coastal areas
Hazards	Flooding: Salmon Creek Dam Inundation Area. Landslide and Avalanche: Thunder Mountain, Upper Lemon Creek Valley
Watershed	Upper Salmon Creek
Cultural and Historic Resources	Subarea-wide

The CBJ stives to maintain a robust multi-modal system. New subdivisions are required to take into consideration the transportation needs of multiple modes of transportation.

POLICY 8.5. TO PROMOTE A BALANCED, WELL-INTEGRATED LOCAL MULTI-MODAL SURFACE TRANSPORTATION SYSTEM THAT PROVIDES SAFE, CONVENIENT AND ENERGY-EFFICIENT ACCESS AND TRANSPORT FOR PEOPLE AND COMMODITIES.

POLICY 8.6. TO PROMOTE AND FACILITATE TRANSPORTATION ALTERNATIVES TO PRIVATE VEHICLES AS A MEANS OF REDUCING TRAFFIC CONGESTION, AIR POLLUTION AND THE CONSUMPTION OF FOSSIL FUELS, AND TO PROVIDE SAFE AND HEALTHY MEANS OF TRANSPORTATION TO ALL PEOPLE.

POLICY 8.8. TO RESPOND TO THE SPECIAL TRANSPORTATION NEEDS OF EACH SUBAREA OF THE CBJ AND TO INTEGRATE THEM INTO A BOROUGH-WIDE COMPREHENSIVE TRANSPORTATION PLAN. THIS SYSTEM SHOULD SEEK TO REDUCE THE CONSUMPTION OF FOSSIL FUELS BY FACILITATING EFFICIENT ROUTES OF TRAVEL, CONVENIENT AND RAPID TRANSIT, AND SAFE MOTORIZED- AND NON-MOTORIZE TRAVELWAYS.

Subarea 5 is home to adults and children who use public transportation. Subarea 5 has discontinuous segments of sidewalks which create conflict points between various transportation modes. An implementing action is to require sidewalks and bicycle paths or lanes along newly constructed roads, as appropriate. The proposed subdivision should plan to utilize a roadway section that includes a sidewalk.

CBJ has adopted a Juneau Parks and Recreation Comprehensive Plan to provide recommendations on parks and natural area improvements and development standards. The Blackerby parcel contemplates a 30’ to 50’ buffer zone along the southwest perimeter of the parcel that could serve as walking trail corridor to add to the area’s recreation opportunities. A new trail would expand non-

motorized access options that would provide current and future CBJ citizens with the ability to connect to the Blackerby Ridge Trail or Salmon Creek Trail. The Blackerby parcel is not fully developable with the presence of very steep slopes. This natural hazard creates the opportunity for the identification of parcels that can be designated as open space and incorporate the natural features into the proposed subdivision aesthetic.

POLICY 9.1. TO PROVIDE QUALITY DISPERSED OUTDOOR RECREATIONAL OPPORTUNITIES AND TO ACQUIRE AND DEVELOP SUFFICIENT LOCAL PARKS AND RECREATIONAL FACILITIES IN LOCATIONS CONVENIENT TO ALL AREAS OF THE CBJ. PLACES GIVEN PRIORITY FOR NEW FACILITIES INCLUDE RAPIDLY DEVELOPING AREAS AND CURRENTLY DEVELOPED AREAS THAT LACK ADEQUATE PARKS AND RECREATION FACILITIES.

POLICY 9.2. TO DEVELOP AND MAINTAIN AN INTERCONNECTED NON-MOTORIZED TRAIL SYSTEM THAT IS COMPLEMENTARY WITH, AND MAY BE CONTIGUOUS WITH, UN-FRAGMENTED FISH AND WILDLIFE CORRIDORS ALONG ANADROMOUS FISH STREAMS WITHIN THE ROADED AREA THAT PROVIDES FISH AND WILDLIFE AND HUMAN ACCESS TO THE SEA FROM THE UPLANDS.

POLICY 9.3. TO PRESERVE AS PUBLIC NATURAL AREAS THOSE PUBLICLY-OWNED LANDS AND SHORELINE AREAS THAT POSSESS IMPORTANT RECREATIONAL, SCENIC, FISH AND WILDLIFE, AND OTHER ENVIRONMENTAL QUALITIES OR ARE SUBJECT TO NATURAL HAZARDS.

Residential use of lands is encouraged to be at the highest density feasible for the lands characteristics to effectively utilize the limited amount of buildable land and provide public services efficiently. This study's focus is on a parcel abutting the Urban Service Area and provides a partnership opportunity to work with CBJ to extend the Urban Service Area Boundary and provide public services that accommodate higher density residential dwellings. The proposed subdivision is adjacent to a CBJ owned parcel located in the Mountainside Estates Subdivision Phase I, at the end of Timberline Court. This CBJ owned parcel would abut the proposed green space buffer and could provide an opportunity to develop a park or serve as a trail access point for a recreational trail traversing the proposed subdivision's green space buffer.

POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

POLICY 10.2. TO ALLOW FLEXIBILITY AND A WIDE RANGE OF CREATIVE SOLUTIONS IN RESIDENTIAL AND MIXED USE LAND DEVELOPMENT WITHIN THE URBAN SERVICE AREA.

POLICY 10.5. THAT RESIDENTIAL DEVELOPMENT PROPOSALS, OTHER THAN SINGLE-FAMILY RESIDENCES, MUST BE LOCATED WITHIN THE URBAN SERVICE AREA BOUNDARY OR WITHIN A DESIGNATED NEW GROWTH AREA. APPROVAL OF NEW RESIDENTIAL DEVELOPMENT PERMITS DEPENDS ON THE PROVISION OR AVAILABILITY OF NECESSARY PUBLIC AMENITIES AND FACILITIES, SUCH AS ACCESS, SEWER, AND WATER.

POLICY 10.6. TO REQUIRE NEW RESIDENTIAL DEVELOPMENTS TO MEET MINIMUM CRITERIA FOR OVERALL SITE DESIGN INCLUDING PROVISION OF LIGHT, AIR AND PRIVACY.

The existing Land Use classification of the Blackerby parcel is Recreational Resource (REC). The existing, adjacent subdivisions are Urban/Low Density Residential (ULDR). The development of the Blackerby parcel is counter to the recommendation of CBJ to prevent residential development but a common theme throughout the CBJ Comprehensive Plan is the idea of flexibility in land use decision making to allow for creative solutions that would benefit the citizens of Juneau. The existing subdivisions abutting the proposed subdivision area are generally comprised of single-family, duplex, and zero-lot-line residences with public services. A Subarea Land Use Plan Amendment should be pursued to expand the ULDR limits to include the proposed parcel area.

REC – Land primarily under federal or state management for a range of resources, such as timber, minerals, fish and wildlife and recreation uses, including recreation cabins. Uses may include small-scale, visitor-oriented, and/or seasonal recreational facilities. These lands should be zoned to prevent residential, commercial, and industrial development.

ULDR – These lands are characterized by urban or suburban residential lands with detached single-family units, duplex, cottage or bungalow housing, zero-lot-line dwelling units and manufactured homes on permanent foundations at densities of one to six units per acre. Any commercial development should be of a scale consistent with a single-family residential neighborhood, as regulated in the Table of Permissible Uses (CBJ 49.25.300).

Chapter 11 of the CBJ Comprehensive Plan has published guidelines and considerations for Subarea 5. Guidelines and considerations that provide support for this study's proposed subdivision are listed. The Blackerby parcel was not included in the scope of CBJ's land use recommendations because the parcel was not under CBJ or private ownership at the time of the last CBJ Comprehensive Plan update.

2. Provide for additional medium- to high density residential development in areas with access to arterial roadways from collector streets. Encourage the efficient use of land by allowing non-family housing, such as for students, single adults or seniors, in mixed use districts within shopping centers or malls. Increase building height limits and decrease or eliminate parking requirements for such residential developments where adequately served by public transit.

13. The Parks and Recreation Comprehensive Plan, Chapter 8, recommends a number of parks, trail, community garden and stream corridor improvements. Those recommendations include: (a) construction of a coastal trail along Egan Drive or along the "inside" or north side of Egan Drive, connecting Sunny Point to neighborhoods to the east and west; (b) Upgrade the Dzantik'i Heeni Middle School and the Switzer Creek/Richard Marriott trail; (c) construct a covered basketball court/play area at Dzantik'i Heeni Middle School; (d) reserve a stream corridor on Switzer Creek; (e) resolve Lemon Creek Trail issues; (f) develop an All-Terrain-Vehicle (ATV) or Off-Highway Vehicle (OHV) course in the Upper Lemon Creek area; (g) develop a trail from the Sunny Point intersection to the Pioneer's Home intersection and along the Pioneer's Home marsh with an accessible viewing platform for bird watchers; (h) protect access to the Heintzleman Ridge trail; ***(i) review the area for suitability for mini-parks; (k) establish a community garden area; (l) study the Lemon Creek area for suitable park sites****; and, (m) continue ADA improvements at Twin Lakes.*

14. Identify historic and cultural resources within the subarea. Project that may impact historic resources identified within this subarea are to be reviewed by the Historic Resources Advisory

Committee (HRAC) prior to issuance of a permit. Where new historic or cultural resources are discovered or identified, the Juneau-Douglas City Museum should be contacted immediately for documentation and technical assistance toward preservation and/or curating of the resource. The demolition or removal of historic resources should be avoided and should only occur when no other option for its preservation or relocation to a suitable site exists.

The Blackerby parcel subdivision is greatly influenced by the availability of public and private utilities and facilities. As the existing parcel is not currently included in the Urban Service Area, there is no future planning or investment provided by the CBJ. The development of the proposed parcel will require close coordination with CBJ to determine if the preferred action is to expand the Urban Service Area Boundary with the development of the proposed subdivision or if the proposed subdivision would need to be self-sufficient parcels that provide private on-site water and sewer systems.

POLICY 12.1 TO PLAN FOR THE TIMELY AND EFFICIENT PROVISION OF AN APPROPRIATE LEVEL OF PUBLIC FACILITIES AND SERVICES IN ALL DEVELOPED AND DEVELOPING AREAS WITHIN THE URBAN SERVICE AREA.

The current zoning of the parcel would not support CBJ action to invest in water or sewer service expansion. If a re-zone were pursued to achieve a higher residential density, then CBJ may invest in expanding water and sewer services. This is a point of conflict between the CBJ Comprehensive Plan and Title 49 zoning requirements. The CBJ Comprehensive Plan guides against public utility expansion for low or medium residential densities, but Title 49 zoning requirements require new subdivisions within 500' of existing public utilities to extend the utility services. This is a point of conflict that will require coordination and interpretation by CBJ for the acceptable path forward. A revision to the Urban Service Area Boundary to encompass the Blackerby parcel will need to occur to allow higher density residential development.

POLICY 12.2. TO EXTEND PUBLIC WATER, SEWER, STORM DRAINAGE, AND EARTH RETENTION FACILITIES TO ALL AREAS WITHIN THE URBAN SERVICE AREA.

The CBJ Comprehensive Plan serves as a tool to guide the decision-making process in regard to land use compliance. Not all policies published are relevant to every development project. The CBJ Comprehensive Plan also acknowledges that not all development projects can be predicted and there may be instances not fully addressed for how development should proceed. The development of the Blackerby parcel is one such instance. The development of state-owned lands is not discussed in the CBJ Comprehensive Plan. It is also important to note that a failure to comply with one policy in the CBJ Comprehensive Plan does not automatically mean that a development is inappropriate if conformance is shown with other policies identified in the CBJ Comprehensive Plan. A decision on land-use conformance requires balancing the many relevant policies and holistically looking at each particular proposed development.

POLICY 18.1. TO ESTABLISH THIS COMPREHENSIVE PLAN AS THE PRIMARY POLICY DOCUMENT WITH WHICH TO GUIDE RESOURCE CONSERVATION AND FUTURE GROWTH AND DEVELOPMENT AND TO MANAGE THE PHYSICAL ENVIRONMENT.

POLICY 18.5. TO FACILITATE INTER-GOVERNMENTAL COORDINATION SO THAT DECISIONS AFFECTING LOCAL PLANNING AND DEVELOPMENT ARE RENDERED IN AN EFFICIENT AND CONSISTENT MANNER.

CBJ Title 49

A subdivision in the project area will require obtaining a permit as stipulated in Chapter 49.15 – Permits. Article IV of Chapter 49.15 specifically addresses land subdivisions and permit requirements. Land subdivisions should be for the betterment of CBJ citizens by positively impacting public health, safety, and general welfare. The objectives of a subdivision are to facilitate the fair and predictable division of land, encourage the efficient and cost-effective provision of public services, address traffic and circulation to reduce congestion, provide flexibility in the division and establishment of lots, and accomplish uniform monumentation for land subdivision to facilitate accurate legal descriptions for land conveyance.

The parcel area of interest would generate more than 14 lots and therefore a subdivision of the parcel would classify as a major subdivision and need to adhere to 49.15.402 – Major subdivisions. Minor subdivisions are for when the subdivision generates 13 or fewer lots. No minor subdivision application may be filed if it is a part of or is made in connection with a present or projected major subdivision development as determined by the CBJ Planning director. This study's parcel will fall under the major subdivision requirements. A key distinction between major and minor subdivisions is that minor subdivisions are reviewed by the planning director whereas major subdivisions are reviewed by the planning commission. The application requirements are the same between a minor and major subdivision. The major subdivision process requires the following sequence application requirements,

1. A major subdivision permit,
2. Pre-application conference (49.15.310(c)) and sketch plat (49.15.410),
3. Preliminary plat (49.15.411),
4. Construction plans (49.35.140),
5. Survey and monumentation (49.15, Arcticle IV, Division 6),
6. Final plat (49.15.412), and
7. Plat recording (49.15.412(f))

The requirements of sketch plats, preliminary plats, and final plats are detailed in Division 2 of 49.15.

Division 3 of 49.15 provides subdivision design standards for proposed lots, culdesac lots, panhandle lots, and public use lots. In general, lots should have one practical building site, lot lines should be perpendicular to frontages.

Article V of 49.15 applies additional project review requirements on State of Alaska capital improvement projects. 49.15.580(b) calls for the commission to review state projects for consistency with Title 49 pursuant to AS 35.30.010.

Chapter 49.25 establishes the various zoning districts of the CBJ. The current zoning map adopted is "Zoning Maps of the City and Borough of Juneau, Alaska" dated June 5, 2006. Any unmapped property within the CBJ jurisdiction is in the Rural Reserve (RR) zoning district. The Blackerby parcel

explored in this study is currently zoned RR. The adjacent subdivisions to the west and south are currently zoned D5.

49.25.200 – The RR, rural reserve zoning district, is intended for lands primarily in public ownership managed for the conservation and development of natural resources and for future community growth. In addition, recreation cabins, lodges and small seasonal recreational facilities may be allowed.

49.25.210(c) – The D-5, residential district, is intended to accommodate primarily single-family and duplex residential development at a density of five dwelling units per acre. D-5 zoned lands are located in the urban service boundary and are served or can be served by public water and sewer.

Residential development is a permissible use for RR zoned parcels as identified in 49.252.300 Table of Permissible Uses. RR zoned lands can be utilized to support future community growth. The Blackerby parcel, if conveyed to private ownership, may be re-zoned to a D-1 or D-3 residential district. D-1 and D-3 residential districts are located outside the Urban Service Area. If public sewer and water are extended into the proposed subdivision, the parcels would be zoned for a D-5 residential district.

49.25.210(a) – The D-1, residential district, is intended to accommodate primarily single-family and duplex residential development in areas outside the urban service boundary at a density of one dwelling unit per acre. Certain D-1 zoned lands, however, may exist within the urban service boundary in transition areas if public sewer or water are absent but planned for. The D-1 classification will be changed to a higher density upon provision of services.

49.25.210(b) – The D-3, residential district, is intended to accommodate primarily single-family and duplex residential development at a density of three dwelling units per acre. D-3 zoned lands are primarily located outside the urban service boundary where public utilities are not provided. The density reflects the existing pattern of development of properties in the district. There is a limited amount of D-3 zoned lands located within the urban service boundary. These are lands for which a lower density is deemed appropriate or, in the case of transition zones, where the zoning will be changed to a higher density when sewer and water are provided.

49.25.400 provides minimum dimensional standards for all zoning districts. The minimum dimensional standards for RR, single-family dwellings and D5, single-family dwellings were used to develop conceptual subdivision layouts in the Blackerby parcel. Table 2 provides a summary of the CBJ Title 49 land use and zoning dimensional standards of the Blackerby parcel and adjoining subdivisions.

Table 2 - Land Use and Zoning Dimension Summary

CBJ TITLE 49 - LAND USE			
49.05.200 - Comprehensive Plan			
Subarea 5 - Switzer Creek, Lemon Creek, Salmon Creek (Map H)			
	Existing	Adjacent Subdivisions	
Land Use Classification	REC	ULDR	
49.25 - ZONING DISTRICTS			
	Existing	Adjacent Subdivisions	Additionally Considered
Zoning	RR	D-5	D-3
Minimum Lot Size – Single-family	36,000 Sq Ft	7,000 Sq Ft	12,000 Sq Ft
Minimum Lot Size - Duplex	54,000 Sq Ft	10,500 Sq Ft	18,000 Sq Ft
Minimum Lot Size – Zero-lot-line	-	7,000 Sq Ft	-
Minimum Lot Width	150	70	100
Maximum Lot Coverage	10%	50%	30%
Maximum Height	45'	25'	25'
Minimum Front Yard Setback	25'	20'	25'
Maximum Front Yard Setback	N/A	N/A	N/A
Minimum Street Side Yard Setback	17'	13'	17'
Maximum Street Side Yard Setback	N/A	N/A	N/A
Minimum Rear Yard Setback	25'	20'	25'
Minimum Side Yard Setback	15'	5'	10'

Chapter 49.35 establishes design and development criteria for public and private improvements. 49.35.120 stipulates it is the developer's responsibility to install all of the required improvements within the boundaries of the development as well as beyond the development to ensure properly functioning improvements. The development of the Blackerby parcel also requires any improvements made to be designed and constructed to provide for future extensions to adjoining land. If a subdivision includes an extension of publicly maintained streets, then the roaded service area boundary, and fire service area boundary, shall be extended to the newly created subdivision. Design and construction of new subdivisions shall adhere to the latest revision of the City and Borough subdivision standard specifications and details on file in the engineering and public works department as required by 49.35.130. The developer is responsible for constructing required improvements regardless of subdivision type pursued, minor subdivision or major subdivision.

Construction plans are the responsibility of the developer. 49.35.140 requires construction plans to detail all proposed public improvements and associated private improvements and utilities. Steets within subdivisions shall be designed for the most advantageous development of the entire parcel to include connecting streets into adjoining unsubdivided lands, maximize the number of

connecting streets, facilitate safer bicycle and pedestrian travel, and consider traffic calming design.

49.35.240 – Improvement standards require right-of-way widths for streets other than arterials and collectors to be 60', cul-de-sacs, either temporary or permanent, shall have a right-of-way diameter of 120', street grades must not exceed 12 percent, except as allowed under Chapter 49.70, street grades must have a minimum grade of one-half percent, and street cross slopes is a minimum of three percent. Other elements of roadway design shall be in accordance with "A Policy on Geometric Design of Highways and Streets". Cul-de-sacs shall not be longer than 600'. Streets should have the physical characteristics given in Table 3.

Table 3 - Table 49.35.240 Roadway Construction Standards

Avg. Daily Trips (ADT)	Adopted Traffic Impact Analysis Required	Sidewalks	Travel Way Width	Street Lights	Width	Paved Roadway Required	Publicly Maintained
≥500	Yes	Both sides	26 ft	At all intersections	60 ft Public ROW[ii]	Yes	Yes
212 to 499	Maybe	One side	24 ft	At all intersections	60 ft Public ROW[ii]	Yes	Yes
0 to 211	No	Not required	22 ft	At intersection of subdivision streets and external street system	60 ft Public ROW[ii]	Yes	Yes
0 to 211	No	Not required	20 ft[i]	At intersection of subdivision streets and external street systems	60 ft Public ROW[ii]	No, if outside the urban service area	No
0 to 70	No	Not required	20 ft[i]	No	50 ft Private easement	No[iii]	No

[i] Or as required by the Fire Code at CBJ 19.10.

[ii] ROW width may be reduced as prescribed at CBJ 49.35.240.

[iii] Except as provided by CBJ 49.35.262(b)(9).

49.35.310 – Water Systems requires new development to construct a public water system if the proposed development is for more than five lots and the new development is within 500' of an existing public water system. 49.35.410 – Sewer Systems requires new development to construct a public sewer system if the proposed development is for more than five lots and the new development is within 500' of an existing sewer system. The Blackerby parcel can produce more than five lots and will be within 500' of existing public water and public sewer systems. This is an

area of conflict between Title 49 requirements for zones and land use classification. The CBJ Comprehensive plan guides against the extension of public water and sewer utilities for residential densities less than ten units per acre, but Chapter 49.35 requires the development of these utilities if a proposed subdivision is developed on the Blackerby parcel.

49.35.510 – Drainage plan requires the developer to produce a total surface drainage plan. This is to ensure the calculated increase in stormwater runoff is adequately accounted for and does not negatively impact existing drainage systems downstream of the proposed development. Drainage systems are to be constructed at the same time as street construction. The drainage systems for the Blackerby parcel will also need to consider the potential for debris flow events such as oversizing culverts and enlarging ditches to accommodate the passage of debris while protecting infrastructure. A drainage plan will aid in the siting of drainage easements across various parcels that make sense to discourage development in areas critical to impacting flow patterns.

Underground utilities provided for a new development will need to be in conformance with 49.35.710 which cross references to CBJ Code 62.40. Utility access easements are per 49.35.720 to allow for the efficient maintenance of utility systems. Per CBJ 62.40.070, new subdivisions are required to construct underground transmission utilities.

Off street parking is to be provided for single-family residences per CBJ Chapter 49.40 – Parking and Traffic. Any proposed development should keep parking requirements in mind when determining size and layout of lots. Single-family and duplex structures are required to have two parking spaces per each dwelling unit. Multifamily units need to provide one parking space per one bedroom unit, one and one-half parking space per two-bedroom unit, and two parking spaces per three- or more bedroom unit.

Development in the proposed Blackerby parcel is to be evaluated for triggering a traffic impact analysis per 49.40.300. Developments projected to produce 500 or more average daily trips shall be required to have a traffic impact analysis. Developments that generate fewer than 250 average daily trips are not required to have a traffic impact analysis.

49.50.300 stipulates minimum vegetative cover on lots based on zoning districts. D-1, D-3, and D-5, residential districts shall maintain 20 percent minimum vegetative cover. The entirety of the proposed Blackerby parcel is comprised of old-growth forest. Maintaining minimum vegetative requirements of proposed developments is not anticipated to be a challenge.

The CBJ requires financial responsibility for proposed developments. 49.55.010 presents available options to subdividers and developers to guarantee proper installation of proposed developments.

49.55.010(2) Subdivisions. The developer may, at the developer's option, complete the required improvements for a subdivision after approval and recording of the final plat if the improvements are guaranteed according to this section. The developer shall remain responsible for completion of the improvements, and the guarantee thereof shall remain in force notwithstanding damage to or interference with the construction of the improvements by individual lot construction contractors or other third parties.

Article II of Chapter 49.70 presents development criteria for hillside development. The Blackerby parcel is considered a hillside development because slopes exceed 18 percent within the proposed

development limits. Adherence to this article ensures hillside development provides erosion and drainage control, protect waterways from sedimentation and pollution, minimize injury or damage to people or property from natural or artificial hazards in hillside development, and minimize any adverse aesthetic impact of hillside development. 49.70.220 requires the developer to obtain a hillside development endorsement prior to construction proposed developments. A hillside development application is to submit a vicinity map, site maps, finished proposed site plans, engineering drawings for construction, fill sources and type, landscaping plan, geologic report, and work schedule as detailed in 49.70.240. This is an increased level of effort to develop lots within the Blackerby parcel, but development is still considered feasible.

The proposed Blackerby parcel is currently zoned RR and would require a rezone if more dense residential lots are to be developed. Chapter 49.75, Article I discusses the rezoning process. 49.75.110 allows developers and property owners to initiate a rezone request in January or July only. A rezoning follows the procedures for a major development permit except the provision of 49.75.130(a).

Fees required for the development of major subdivisions are scheduled in Chapter 49.85. Generally, a major subdivision is subject to a preliminary plat fee of $110.00 per lot, final plat fee of $70.00 per lot, and plat amendments at $110.00 plus $25.00 per lot. Administration of developer's subdivision improvement guaranty is scheduled at $50.00 for performance bonds, $140.00 for deposit in escrow, and $140.00 for the first lot plus $25.00 for each additional lot for Deed of trust, reconveyance, agreement or substitution of trust and reconveyance lots. Hillside development endorsement review fees is for the gross hourly rate for professional review and inspection, $60.00. Zone changes and comprehensive plan amendments are $600.00.

Housing Needs Benefit Analysis

The city of Juneau lacks affordable housing. Homeowners choices are limited by location, size, cost; a large proportion of homeowners are spending more than 30% of their income on housing. The American Community Survey reports the ownership vacancy rate in the CBJ has ranged from 1.2 percent in 2020 down to 0.6 percent in 2022. A vacancy rate of five percent or lower indicates that housing supply is limited, and demand is outpacing available units. Five percent and above is considered a "normal" vacancy rate allowing households to move in and out of units due to normal relocation patterns. Thus, a lower than 5 percent vacancy rate in Juneau indicates that meeting future demand for new housing will require additional housing construction. Currently, there is no extra supply within the existing housing market to absorb this demand.[1]

Juneau lacks affordable housing for low-income and middle-income families. Families that are renting are unable to buy new homes because they are priced out of the market. Those that can purchase their first home lack options that are worth the upgrade when they are ready. Thus, first time homeowners stay in the home they first bought and make improvements to those homes. This conundrum perpetuates the housing problem. The lack of first-time family starter homes is a barrier to the cultivation of the workforce. It is estimated that approximately 312 new units are

[1] Summary Memo - NW Douglas Sub Area Study Housing Need and Residential Financial Feasibility Findings

needed to meet low-income housing needs. Then an additional 88 new units for middle-income families. The number of new units available to each income category ideally would be split between rental options and home purchases.

The proposed Blackerby subdivision would open up land area for units to be built on within the CBJ. The suggestion is to convey public lands at parcel sizes to maximize the residential usage of the proposed land area.

Geotechnical Hazards Analysis

Emprise Concepts (Emprise) was contracted by AK Built to provide geotechnical engineering and geohazards assessment services for the purpose of creating a development plan for the Blackerby Subdivision in Juneau, Alaska. The memorandum located in Appendix A focuses on the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geologic hazards that may affect the site, and conclusions and recommendations for future work and site development. The Blackerby area is predominately sloped towards the southwest. Slope angles are shallower in the southwest and become steeper as elevation increases towards the northwest corner of the proposed Blackerby subdivision. Surficial geology in the area is glaciomarine deposits, mass wasting deposits, and minor amounts of alluvial deposits. Reference Appendix A for details.

The main geologic hazards that impose a risk to the Blackerby Subdivision are slope instability, primarily precipitation-driven debris flows and debris floods, and earthquakes. A preliminary-level debris flow/debris flood analysis was performed to aid in assessing the feasibility of the subdivision and to assist in determining conceptual design options. Debris floods are common in steep, mountainous stream drainages. Figures are included in the reference section of the memorandum for the debris flood modeling. The results of the modeling results show the theorized impact of debris floods in the Blackerby Subdivision would originate within steep gullies and drainages upslope to the northeast of the subdivision boundary. The areas most susceptible to inundation from debris floods downslope are generally constrained to the shallow channels that exist within the subdivision area. See Appendix A for the debris flood modeling results.

Recommendations for the Blackerby subdivision were developed based on site observations, historical records, and modeling. It is recommended that consistent slopes steeper than 17 degrees are avoided in the Blackerby subdivision. Areas in which the surficial geology is mapped as talus because that can be an indicator of historical wasting events. Talus in the area is generally constrained to slopes steeper than 17 degrees. A hydraulics analysis should be performed to design proper drainage within the subdivision area. The information from the hydraulics analysis can be used to locate areas that should be avoided due to channel size. See Appendix A for additional details. Based on observations and the understanding of the soils at the site it is believed that the soil is generally suitable for residential structures typically found on spread footings and residential roadways.

Conceptual Designs

Three concepts were explored for the purpose of this study. Concepts are for a proposed subdivision meeting the requirements of the existing zoning, RR, with a transition to a proposed subdivision meeting the requirements of a D5 zoning to reflect an increase in density with time. The third concept produces a D5 subdivision that aims to maximize the feasible number of buildable parcels. As a starting point, roadway alignments were first sited to ensure CBJ roadway standards are feasible. CBJ roadway standards are detailed in CBJ Chapter 49.35 Article II. Table 4 lists the standards utilized in the development of the alignments presented in this study.

Table 4 - CBJ 49.35.240 Improvement Standards Utilized for Concepts

Street Feature	Standard
Right-of-Way Width, Streets	60’
Right-of-Way Width, Cul-de-sacs	Diameter of 120’
Sight Distance	AASHTO “Green” Book
Maximum Street Grade	12%, 15% for ≤200’ in Hill Development areas
Minimum Street Grade	0.5%
Street Cross Slope	3%
Intersection Angle	Not less than 60°
Intersection Grade	< 2% for the first 30’, then < 6% for the next 70’
Horizontal Curves	AASHTO “Green” Book
Vertical Curves	200’ minimum
Travel Way Width	24’
Sidewalks	One side
Paved Roadway	Yes

RR Zone Subdivision Transitioning to D-5 Zone Subdivision

Proposed layouts for the RR zone transitioning into a D-5 zone feature the same overall parcel footprints, utilize a 50-foot green space to serve as a buffer between the existing subdivisions and the proposed subdivision, and both utilize the same ROW alignments. This study first produced the RR zoning subdivision parcel layout and then produced parcels compliant with D-5 residential district zoning to evaluate the progression of potential development over time. Appendix B provides the parcel overviews for RR zoning, Appendix C provides the parcel overviews for D-5 residential district zoning, and Appendix D provides the ROW alignments’ profiles.

The parcel of interest to ADNR was overlaid on a slope map of the existing terrain to identify the possible extents of feasible parcels. The three slope bands analyzed were 0 – 18%, 18 – 30%, and greater than 30%. Slopes less than 18% represents buildable land, 18 – 30% slopes represent lands subject to Title 49 Hill Development provisions, and slopes over 30% are considered very steep. This slope mapping guided the extents layout for the perimeter of the proposed subdivision.

ROW alignments were then projected across the “buildable” parcel extents. Access streets sited are off Blackerby Street and Mary Ellen Way. Profiles were established to confirm conformance with CBJ Title 49 and a ROW named Traverse Drive was used to connect both existing access road

extensions. A ROW named Hill Climb Court was developed off Traverse Drive to increase the number of feasible parcels that could be developed. Traverse Drive and Hill Climb Court alignments and profiles are in conformance with CBJ Title 49.

With the outer perimeter of the subdivision established and the ROW alignments sited, RR zoning compliant parcels were laid out. The parcels developed were established to have primary access off Traverse Drive and Hill Climb Court, rather than the access street ROWs. The proposed RR subdivision produces 36 parcels. With the parcel layout completed, the results of the geologic hazards assessment, with a focus on debris flow modeling, were overlain by the proposed RR subdivision parcel lines. The geohazards debris flow paths will aid in the design of drainage systems and easement sitings, such as oversized culverts to allow the conveyance of debris or sitting drainage easements along parcel lines to discourage development that would alter historical flows. Concurrently with this analysis, the proposed subdivision was reviewed against the geotechnical engineer's recommended subdivision area and found to be largely within the feasible building extents identified in the geotechnical memorandum.

This study assumes the most feasible approach to developing the proposed subdivision is to first develop a RR zoning subdivision. Subsequent development and increasing densities will then be pursued by the initial parcel owners and/or developers. A projected higher density subdivision is presented in this study utilizing the D-5 residential district zoning requirements. The proposed RR subdivision parcels were individually subdivided to meet higher density parcel standards. The D-5 residential district subdivision produced 118 parcels. It should be noted that not all parcels are readily buildable at a D-5 density. Ultimately, a blend of D-1, D-3, and D-5 residential densities is considered the most feasible approach to maximizing the number of parcels that could be made available. The transition from RR to D-5 creates multiple panhandle lots. It is understood the use of panhandle lots to maximize density is not ideal and can be difficult to create adequate access to individual parcels when developed in steep terrain.

Maximum Feasible D-5 Zone Subdivision

The third concept explored for this study is a D5 zone subdivision with a focus on maximizing the number of feasible parcels utilizing the same zone designation as the adjacent subdivisions. An approach like this will require the pursuit of a rezone prior to development of the Blackerby parcel.

This concept utilizes a 30-foot green space buffer between the new subdivision and existing subdivisions. ROW alignments were developed by utilizing the geotechnical recommended building area as the maximum development extents. Access streets sited are off Blackerby Street and Mary Ellen Way. Mary Ellen Way is extended across the proposed subdivision and intersects Blackerby Street. An additional ROW, Ridge Drive, parallels the Mary Ellen Way ROW extension. A connecting street ROW, Step Up Street, is used to connect the proposed Mary Ellen Way to Ridge Drive. To access additional buildable land, two cul-de-sac ROWs named Mary's Court and Ellen's Court were sited. Proposed ROWs are developed to be in conformance with CBJ Title 49. Appendix F provides the parcel overview for a maximum feasible D-5 residential district zoning. Appendix G provides the proposed ROW alignment profiles.

The maximum feasible D-5 zone subdivision concept in this plan produces 135 parcels. Not all parcels were laid out at the minimum lots size. Oversized parcels were provided in areas of

increased geohazard risk and where steep slopes are more prevalent. Additional items to consider would be the use of slope easements along the proposed ROWs to allow road maintenance crews to make repairs or adjustments due to the presence of steep slopes.

Infrastructure Development & Cost Estimates

The development of a subdivision within the CBJ jurisdiction is required to be accomplished in accordance with Title 49 requirements. Title 49 requires the subdivision developer to construct the initial infrastructure required to support newly created parcels, such as access and utilities. Title 49 does not change the development requirements between a minor subdivision and major subdivision project. The adjacent, existing subdivisions are located within the CBJ Urban Service Area Boundary which means public utilities exist adjacent to the proposed subdivision. Access requirements have been assessed and developed in accordance with CBJ Title 49 and Engineering requirements. Road profiles meeting CBJ requirements are feasible within the proposed subdivision parcel. Future road construction would be concurrent with extensions of municipal water and sewer mains, expansion of electrical and telecommunication networks, and drainage networks constructed to tie-in with existing downstream channels.

A proposed subdivision layout has been produced for the existing RR zoning classification of the land and is appended to this document in Appendix B. The layout of the parcels was developed by first identifying road alignments that comply with Title 49 road grade requirements. Mary Ellen Way and Blackerby Street serve as access into the proposed subdivision and alignments have been developed extending these existing points of entry. Running north-south across the proposed parcel and connecting Mary Ellen Way access and Blackerby access is Traverse Drive. To increase the number of potential parcels, a cul-de-sac alignment named Hill Climb Court was developed off Traverse Drive. The project area slopes were then analyzed based upon CBJ definitions for steep slopes. The CBJ identifies building slopes between 18% and 30% as steep slopes and parcels located on such slopes are subject to CBJ's hill development requirements. Slopes more than 30% are considered very steep. Parcels within the subdivision development study area were then laid out along the feasible road alignments and in areas with slopes predominantly less than 30%. This produced 36 individual parcels with a minimum lot size of 36,000 square feet, a requirement of RR zoning. These 36 parcels were then overlayed with the geotechnical recommended building area and confirmed to be adequately sited. Debris flow runouts were also overlaid on the proposed parcels to serve as future guidance for future engineering efforts to best implement mitigating measures.

Cost estimates are developed for each of the individual road alignments depicted through the proposed subdivision. A summary of estimated costs is in Table 5.

Table 5 - Estimated Development Costs

Alignment	Estimated Cost
Traverse Drive	$5,253,605.00
Blackerby Street	$2,386,691.25
Mary Ellen Way	$867,308.75
Hill Climb Court	$988,872.50

Total Development Cost: $9,496,477.50

As this study progressed, an additional subdivision concept for a maximum feasible D-5 zone was produced. This maximum feasible D-5 zone subdivision was sited entirely within the geotechnical recommended building area and utilizes additional road ROWs and cul-de-sacs to generate 135 parcels. Table 6 gives a breakdown of estimated costs for this third concept. It is noted that the use of two ROWs, Ridge Drive and Mary Ellen Way, running parallel across the proposed Blackerby parcel creates a significant amount of road construction. Greater economic value may be obtained if a subdivision layout is produced utilizing only one ROW that traverses the Blackerby parcel, and more cul-de-sacs branched off both sides of this hypothetical ROW. The challenge is creating cul-de-sacs that would not be directly aligned into the contours of the steep slopes.

Table 6 - Estimated Development Costs (Maximum Feasible D-5 Zone)

Alignment	Estimated Cost
Ridge Drive	$4,900,284.26
Blackerby Street	$2,386,691.25
Mary Ellen Way	$4,667,839.30
Step Up Street	$857,463.66
Mary's Court	$988,872.50
Ellen's Court	$814,418.29
Blackerby Court	$215,226.82

Total Development Cost: $14,831,966.95

Development activities will need to be coordinated through the CBJ Engineering Department for extensions of existing roads, construction of new roads, and extension of utilities. The CBJ Engineering Department maintains Standard Specifications for Civil Engineering Projects and Subdivision Improvements and Standard Details. Items not specifically identified in the CBJ specifications and details are to be supplemented by the State of Alaska Department of Transportation & Public Facilities (ADOT&PF) Standard Specifications for Highway Construction and associated Standard Plans.

Coordination with the CBJ is encouraged to amend the Comprehensive Plan Land Use Map for the project area. If an amendment to the land use map to expand the Urban Service Area Boundary to encompass the proposed subdivision is approved, economic support from the CBJ may be gained for the expansion of public utilities. Policy 12.1guides the CBJ to plan for the provision of public facilities and Policy 12.2 guides the CBJ to extend public water and sewer to all areas within the Urban Service Area Boundary. Amending the Land Use Map would also open the door to developing a higher density subdivision within the proposed parcel. This approach would open discussions with CBJ to better gauge if there is a partnership opportunity between the State of Alaska and the CBJ to share investment costs and create opportunities for the citizens within the CBJ.

There is a CBJ owned parcel on the west side of the proposed Blackerby parcel, Tract A in the Mountain Side Estates subdivision. A partnership between the State of Alaska and the CBJ could

develop this parcel into useable green space or parkland for the benefit of CBJ citizens. A trail is feasible along the southwest perimeter of the Blackerby parcel that could connect Tract A in Mountain Side Estates to the Public ROW in Sunnyside subdivision, at the end of Greenwood Avenue.

Additional economic support for the proposed subdivision may be achieved through timber sales. Coordination and discussion would need to occur between the Division of Mining, Land and Water and Division of Forestry to explore the feasibility of this option. A negative to a timber sale process would be the removal of old growth forest which may be an attractive quality to potential land sale purchasers.

There is the possibility to partner with existing land developers to pursue this proposed project, but what that partnership looks like is largely up the State of Alaska. The State of Alaska could be responsible for development of the preliminary plat which could include phases, larger tracts, that would encompass developable areas that are executed upon and finalized by a developer. This would be a deviation from the Alaska Land Auction process that has historically been used to convey state lands into private ownership. The State of Alaska would have to give consideration into how the partnership would be managed and which party would be responsible for development costs or the share in revenue generated.

Subdivision Legal Access

The proposed subdivision will require access from existing residential developments. There is a dedicated ROW stub street at the end of Blackerby Street in Twin Lakes Subdivision (Plat 82-6), a public ROW at the end of Greenwood Avenue as a part of Sunnyside Subdivision (Plat 84-61), and a roadway easement at the end of Mary Ellen Way in Mountainside Estates Subdivision Phase – I (Plat 83-146). The stub street that continues Blackerby Street is a 60-foot wide ROW and allows for a street alignment and profile to meet CBJ standards, but is currently allowed for driveway use by Lots 13 and 14 of the Twin Lakes Subdivision, see Figure 1. Based on a review of readily available plats and deeds, it appears these accesses are available for use by the proposed subdivision. A formal Title Report will be necessary to determine a more accurate picture of ownership. The public ROW at the end of Greenwood Avenue does not provide full 60-foot width for access, would orient a street directly into steep terrain, and would be subject to potential debris flow movements, see Figure 2. The roadway easement at the end of Mary Ellen Way, shared equally by Lots 23 and 24, Block B of the Mountainside Estates Subdivision Phase – I, is a 60-foot wide easement and allows for an extension to comply with CBJ road standards but the existing residential driveways, gardens, and utilities will be impacted, see Figure 3.

This study deemed access into the proposed subdivision to be most feasible from Blackerby Street and Mary Ellen Way. Development of an extension of Blackerby Street is contemplated to be the least challenging and of minimal disruption to existing property owners. Access from Mary Ellen Way into the proposed subdivision is envisioned to be more complicated as the subdivision plat only notes the existence of a roadway easement, not a formal ROW. The Mary Ellen Way access development will create conflict with existing properties owners on Lots 23 and 24 of Block B. A formal ROW acquisition may be warranted to adequately develop access into the proposed

subdivision area and would serve as an opportunity to open discussions with the existing parcel owners.



Figure 1 - Access off Blackerby Street



Figure 2 - Access off Greenwood Avenue



Figure 3 - Access off Mary Ellen Way

Traffic Impact Analysis

In accordance with CBJ Title 49, Table 49.35.240 'Table of Roadway Construction Standards', roadways generating 500 or more average daily trips (ADT) will require a Traffic Impact Analysis. Roadways generating between 212 and 499 may be required to conduct a Traffic Impact Analysis.

A preliminary analysis of the subdivision was conducted using the Institute of Transportation Engineers (ITE) TripGen 12 web based application[2]. Two scenarios were examined, the low-density RR zoning layout (36 dwelling units) and the higher density D5 zoning layout (139 dwelling units). All dwelling units were assumed to be single family detached housing.

Table 7 - Estimated Daily Trips Generated

Zoning	Dwelling Units	Land Use Code	Generated ADT	TIA Required
RR	36	210	556	Yes
D-5	139	210	1387	Yes

[2] *Institute of Transportation Engineers (ITE), Trip Generation Manual, 12th Edition; TripGen 12 web app output for LUC 210 (equation-based daily vehicle trips)*

ADTs, as estimated by the *ITE Trip Generation Manual*, are estimated utilizing an empirically derived equation, T = 8.07*X + 265.45. T is the estimated average weekday vehicle trips and X is the number of dwelling units.

Using the *ITE Trip Generation Manual, 12th Edition* TripGen 12 fitted equation for LUC 210 (Single-Family Detached Housing), T = 8.07*X + 265.45 where X = 36 dwelling units, the project is estimated to generate ≈556 average weekday vehicle trip-ends (8.07×36 + 265.45 = 555.97 → 556).

Using the *ITE Trip Generation Manual, 12th Edition* TripGen 12 fitted equation for LUC 210 (Single-Family Detached Housing), T = 8.07*X + 265.45 with X = 139 dwelling units, the project is estimated to generate ≈1,387 average weekday vehicle trip-ends (8.07×139 + 265.45 = 1,387.18 → 1,387).

TripGen 12 trip generation study data set was filtered to the 'Pacific Coast' Region, which includes the State of Alaska. Appendix G provides the TripGen 12 reports generated for this analysis.

When evaluating the need for a TIA, Table 49.35.240 indicates the need for a TIA when traffic volumes are equal to or more than 500 ADT. When traffic volumes are between 212 and 499 ADT then a TIA is a 'Maybe'. The primary design used for analysis in this study report is the RR zoning, resulting in 556 ADT.

Proposed Development Phasing & Timelines

The proposed subdivision will require substantial infrastructure improvements to be built. It is feasible to construct the entire proposed subdivision with no consideration given to economics. To aid in determining a path forward, a breakdown of each ROW is provided based on a cost per parcel. Table 8 presents Traverse Way cost per parcel, Table 9 presents Blackerby Street cost per parcel, Table 10 presents Mary Ellen Way cost per parcel, and Table 11 presents Hill Climb Court cost per parcel. The proposed RR subdivision has higher costs per parcel because of the low-density zoning requirements. Should a higher density zoning be developed, such as a D-5 residential district, then the cost per parcel is more economical in comparison to a RR zoning. As such, a D-3 residential district would fall between the high end and low end of cost per parcel.

Table 8 - Traverse Way Development Cost/Lot

Traverse Way Development Cost Per Lot		
Estimated Alignment Cost:		$ 5,253,256.25
Zoning	# Parcels	Cost/Parcel
RR	27	$ 194,565.05
D-5	73	$ 71,962.41

Traverse Way is the primary frontage used in the layout of proposed subdivision parcels and therefore has the lowest cost per parcel for development.

Table 9 - Blackerby Street Development Cost/Lot

Blackerby Street Development Cost Per Lot		
Estimated Alignment Cost:		$ 2,386,691.25
Zoning	# Parcels	Cost/Parcel
RR	3	$ 795,563.75
D-5	21	$ 113,651.96

Blackerby Street is used as an access street to the proposed subdivision. In the proposed RR zoning subdivision, there are few parcels that utilize Blackerby Street as a frontage. But in the transitioned D-5 residential district zoning subdivision, Blackerby Street becomes a frontage for parcels to accommodate a higher density layout. The use of Blackerby Street as a frontage significantly reduces the cost per parcel development cost.

Table 10 - Mary Ellen Way Development Cost/Lot

Mary Ellen Way Development Cost Per Lot		
Estimated Alignment Cost:		$ 867,308.75
Zoning	# Parcels	Cost/Parcel
RR	1	$ 867,308.75
D-5	7	$ 123,901.25

Mary Ellen Way is used as an access street to the proposed subdivision. In the proposed RR zoning subdivision, there is only one parcel that utilizes Mary Ellen Way as a frontage. But in the proposed transitioned D-5 residential district zoning subdivision, Mary Ellen Way becomes a frontage for parcels to accommodate a higher density layout, thus improving the economics of development.

Table 11 - Hill Climb Court Development Cost/Lot

Hill Climb Court Development Cost Per Lot		
Estimated Alignment Cost:		$ 988,872.50
Zoning	# Parcels	Cost/Parcel
RR	5	$ 197,774.50
D-5	17	$ 58,168.97

Hill Climb Court is a cul-de-sac off Traverse Way. The development of Hill Climb Court creates additional access to feasible parcel locations. Development costs of Hill Climb Court on a per parcel basis is comparable to Traverse Way development costs.

In general, a larger upfront cost is associated with the development of the access points, Blackerby Street and Mary Ellen Way. Traverse Way and Hill Climb Court are the primary frontages in the proposed subdivision and as such are more economical per parcel. The Mary Ellen Way access is the least economical for development. Blackerby Street is the more economical access street to develop; therefore, the proposed subdivision should consider building out from Blackerby Street

first. Blackerby Street then leads into Traverse Way. Blackerby Street access should not be developed on its own as the primary frontage of Traverse Way is needed to create access to proposed parcels. Based on funding available, Traverse Way can be developed in multiple phases to match funding limits, if necessary. Traverse Way development can then be followed by Hill Climb Court. Mary Ellen Way access will require additional coordination with existing property owners and establishing a formal ROW. Figure 4 presents a proposed phasing layout for RR zoning and Figure 5 presents a phasing layout for D-5 residential district zoning.

Table 12 presents a breakdown of estimated development cost per phase. The phasing differences between the proposed RR zoning subdivision and the proposed D-5 residential district zoning subdivision are minor as the overall footprint of the phases are similar, but the cost per parcel varies. A higher density lends itself to better economics.

Table 12 - Estimated Cost per Phase

Phased Development Cost Estimates				
Phase	RR Estimated Cost	RR Cost/Parcel	D-5 Estimated Cost	D-5 Cost/Parcel
1	$ 4,137,776.70	$ 344,814.73	$ 4,055,372.41	$ 81,107.45
2	$ 3,502,170.90	$ 194,565.05	$ 3,584,574.58	$ 61,803.01
3	$ 988,872.50	$ 197,774.50	$ 988,872.48	$ 41,203.02
4	$ 867,308.75	$ 867,308.75	$ 867,308.75	$ 123,901.25

An additional third subdivision concept was produced as this study was developed. This third subdivision presents an alternative road layout and aims to maximize the number of feasible parcels utilizing a D-5 zone. Table 13 estimates the cost of each phase and provides a per parcel cost. See Figure 6 for proposed phasing layout.

Table 13 - Maximum Feasible D-5 Cost per Phase

Phased Development Cost Estimates		
Phase	Estimated Cost	Cost/Parcel
1	$ 2,601,918.07	$ 153,054.00
2	$ 4,667,839.30	$ 95,262.03
3	$ 5,757,747.96	$ 155,614.81
4	$ 990,043.38	$ 61,877.71
5	$ 814,418.29	$ 50,901.14

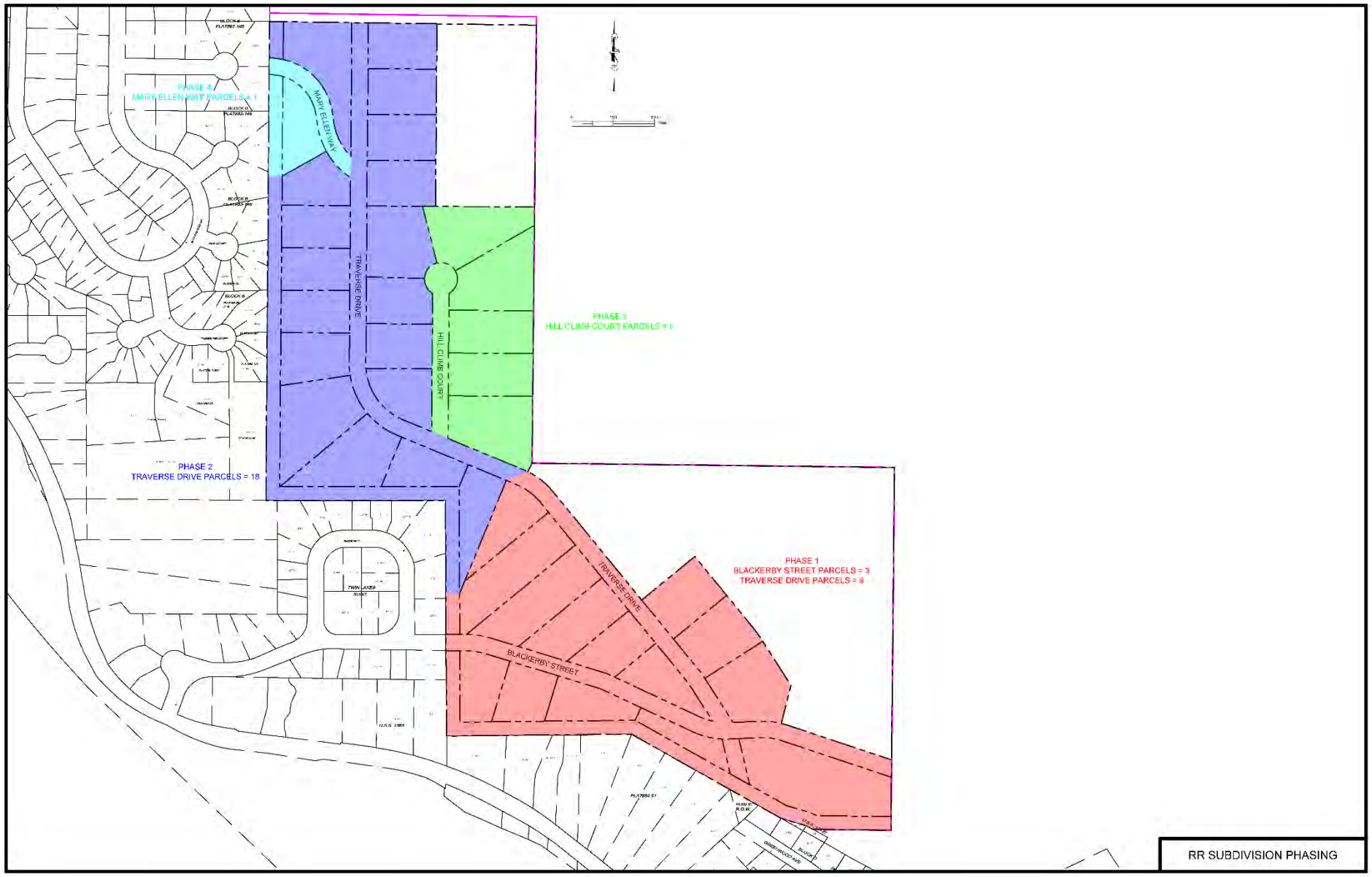


Figure 4 - RR Zoning Subdivision Phasing

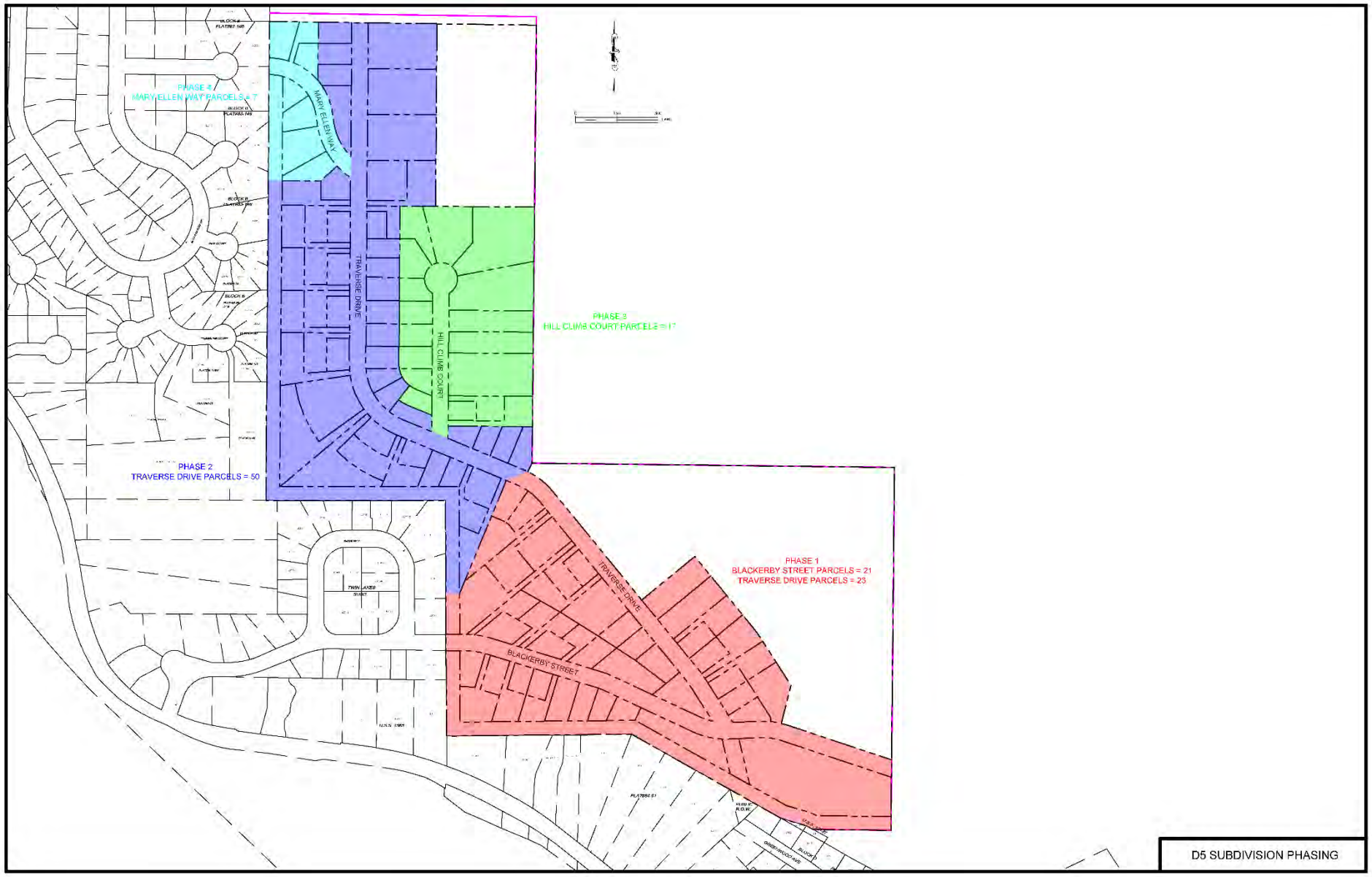


Figure 5 - D-5 Residential District Zoning Subdivision Phasing

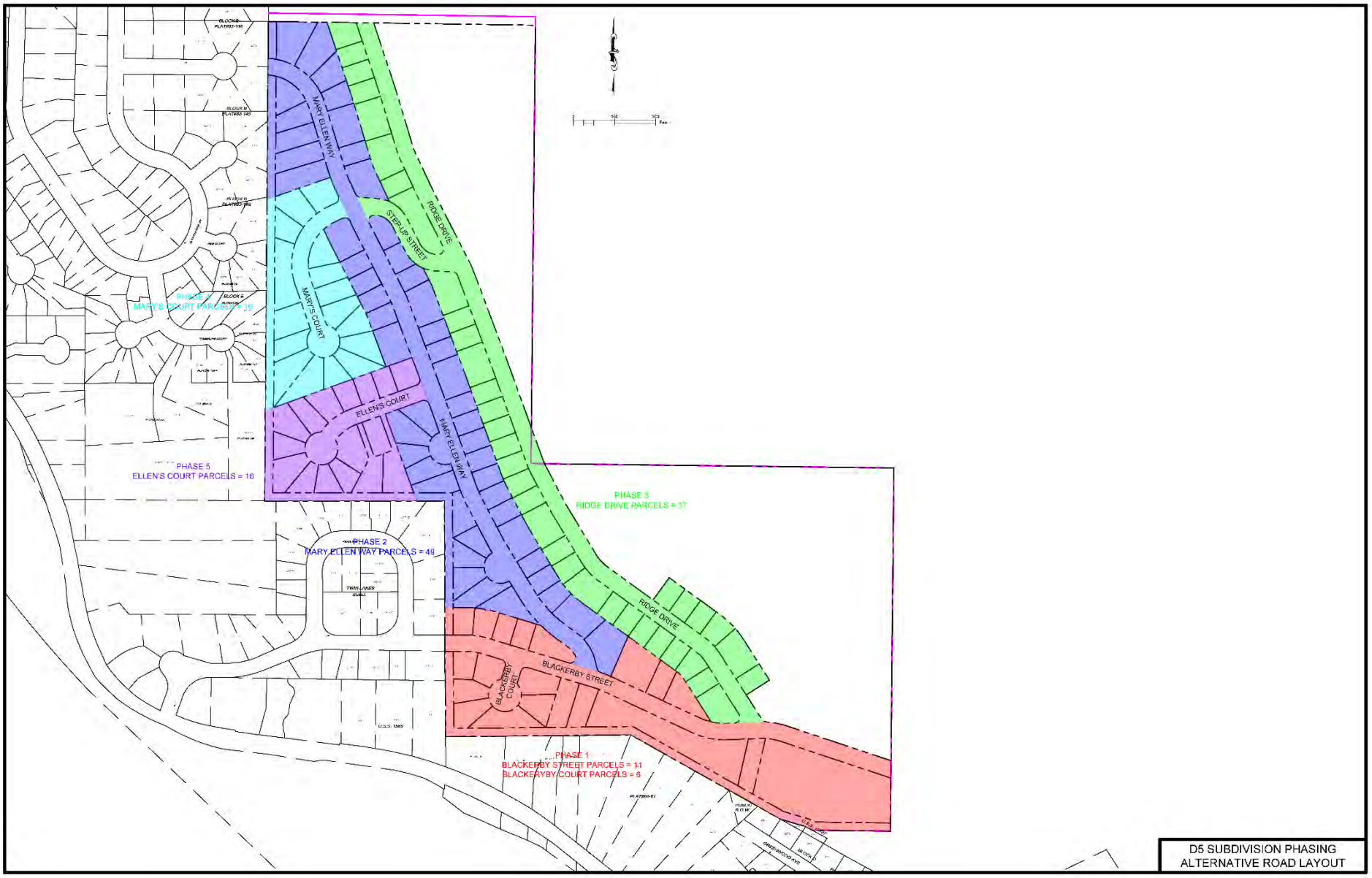


Figure 6 – Alternative Road Layout D-5 Residential District Zoning Subdivision Phasing

Appendix A – Geotechnical Engineering and Geologic Hazards

6 October 2025

Memorandum

Date:	6 October 2025
To:	Robert Colles, P.E. Victoria Colles AK Built Construction and Design
From:	Noah Kimmes, P.E., C.E.G., P.G. Emprise Concepts
Subject:	Alaska Department of Natural Resources – Blackerby Subdivision Development Geotechnical Engineering and Geologic Hazards

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- Attachment 1: Photo Exhibit
- Attachment 2: DGGS Shallow Landslide Susceptibility and Channelized Debris Flow Susceptibility Maps

INTRODUCTION

Emprise Concepts (Emprise) was contracted by AK Built Construction and Design (AK Built) to provide geotechnical engineering and geohazards assessment services for the purpose of creating a development plan for the Blackerby Subdivision in Juneau, Alaska. The Blackerby Subdivision is located on land owned by the Alaska Department of Natural Resources (DNR). DNR has issued the work order for the Blackerby Subdivision development study. The purpose of the subdivision development plan is to help the DNR understand the opportunities and constraints for creating a subdivision within Blackerby, including conceptual design options, a rough approximation of development costs, and evaluation of limiting factors.

This memorandum focuses on the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geologic hazards that may affect the site, and conclusions and recommendations for future work and site development. A photo exhibit is included with this memorandum as Attachment 1 and should be reviewed in conjunction with this document. Photos are referenced in the text of this document, where applicable.

SITE LOCATION AND GEOLOGIC SETTING

The Blackerby Subdivision area consists of approximately 82 acres in Juneau, Alaska located along the Gastineau Channel between Downtown Juneau and the Mendenhall Valley. Specifically, the Blackerby Subdivision is located between the Vanderbilt Hill neighborhood to the north and the Twin Lakes neighborhood to the south. A vicinity map of the project is shown on Figure 1, and a site map is shown on Figure 2. The subdivision area is composed of two rectangular shaped areas that intersect near the middle of the subdivision, as shown on Figure 2.

The majority of the subdivision area is sloped. The site generally slopes to the southwest. Slope angles are shallower in the southwestern portions of the subdivision area and increase to the northeast as the elevation increases. Slope angles are slightly steeper in the southern area of the subdivision than in the northern area. A slope angle map is shown on Figure 3.

The surficial geology of the site consists of glaciomarine deposits, mass wasting deposits, and minor amounts of alluvial deposits. The lower elevation portions of the site (below elevations of approximately 350 to 300 feet above sea level) are composed of the Holocene to Pleistocene aged First facies of the Gastineau Channel Formation. The First facies of the Gastineau Channel Formation is a gray to light-gray to greenish-gray, hard/dense, till-like, stony diamicton (a diamicton is a soil that is poorly sorted, contains a wide range of particle sizes, and is of marine origin). The First facies of the Gastineau Channel Formation is the primary member located within the subdivision area, but

minor amounts of the Third facies have been mapped within the southern portion of the subdivision area. The Third facies of the Gastineau Channel Formation is less dense and contains a more sand-sized dominant particle size when compared to the First facies. The First facies directly overlies bedrock, while the Third facies generally overlies the First facies, but may overly bedrock locally. The Gastineau Channel Formation is known to have occasional boulders up to 10-feet in size (Miller, 1973; Miller, 1975). Development and construction within the Blackerby Subdivision is anticipated to occur primarily within the First facies of the Gastineau Channel Formation.

The higher elevation portions of the site (above elevations of approximately 300 to 350 feet above seal level) are composed of recent (Holocene aged) talus. The talus is generally composed of angular gravel- to boulder- sized rock fragments that have fallen from the overlying rock slopes. The talus at the site is mapped as being "stabilized" due to being covered with trees and other vegetation and is thought to range in thickness between a few feet to more than 10 feet (Miller, 1975). A small, Holocene-aged alluvial fan is located at the southeast corner of the subdivision area, near the western end of Greenwood Ave. This unit is located within and adjacent to the bottom of a prominent channel fed from the slopes above the subdivision area. A surficial geologic map is shown on Figure 4.

The Bedrock geology of the site consists of metamorphic rocks of the Coast plutonic-metamorphic complex. The bedrock across much of the subdivision area is mapped as Phyllite of Late Cretaceous to Paleocene age. The phyllite is generally well foliated, dark gray, very fine to fine grained and weathers to a medium gray color. The slopes above the subdivision area, and a small area in the eastern corner of the subdivision, are mapped as chlorite schist, greenschist, and greenstone (Brew & Ford, 1985). A bedrock geologic map is shown on Figure 5.

AVAILABLE GEOTECHNICAL DATA AND SIMILAR DEVELOPMENTS

No geotechnical data or geotechnical engineering reports were available from publicly available sources as of the date of this memorandum. A public information request was submitted with the City and Borough of Juneau for any geotechnical information within the proposed Blackerby Subdivision area, and within adjacent developments. Unfortunately, this public information request did not yield any geotechnical information. The DNR Well Log Tracking System contains information for 5 wells drilled within 0.5 miles of the proposed subdivision, but these records contain limited geologic interpretations by the driller during well installation and no geotechnical data.

As discussed previously, the development and construction within the Blackerby Subdivision is anticipated to occur primarily within the First facies of the Gastineau Channel Formation. This surficial geologic unit (soil) is not unique to the Blackerby Subdivision area but rather is present across the Juneau and Douglas Island region, as shown on Figure 6. The eastern portion of the Twin Lakes neighborhood is constructed on this same soil unit, which is located adjacent to the northern portion of the proposed Blackerby Subdivision. The First facies of the Gastineau Channel Formation has been

built upon in Downtown Juneau, across Douglas Island, and along the northeastern shore of Auke Bay. Local contractors likely have experience building upon and working with this soil unit. They likely refer to this soil as "till" or "glacial till". Although outside of the scope of this study, interviews with local contractors may provide valuable information related to the behavior of this soil unit and any difficulties related to construction, drainage, short term stability, and long-term building and road performance. We also anticipate that there are many geotechnical boring logs and geotechnical reports, including geotechnical lab test data for this soil unit, which are not publicly available but may be obtained directly by the DNR.

SITE RECONNAISSANCE AND OBSERVATIONS

A site reconnaissance was performed by one geological engineer from Emprise Concepts, two personnel from AK Built, and one personnel from DNR on April 7th, 2025. The proposed Blackerby Subdivision area was investigated on foot by following existing trails and by traveling off-trail to observe terrain and geologic features identified by prior analysis of existing geologic maps and terrain (LiDAR) data. A summary of the site reconnaissance and significant observations is provided in the following discussion, with several references to photos included in the photo exhibit (Attachment 1). Locations of photos included in the photo exhibit are shown on Figure 7.

The proposed Blackerby Subdivision is heavily vegetated with large, old-growth trees, shrubs/bushes, devils club, and significant moss growth. Most of the trees observed during out site reconnaissance were straight and non-pistol butted (see Photos 1 and 2). One pistol butted tree was observed near the southeast portion of the subdivision (see Photo 3). Pistol butted trees can be an indicator of slope movement but can also be caused by other external forces such as snow creep. No major signs of shallow landslides (such as slumping, tension cracks, abundant pistol butted trees, or hummocky terrain) were observed during our site reconnaissance.

Several shallow stream channels with primarily coarse-grained (gravel to small boulder) streambeds were observed to cut through the subdivision, generally running from northeast to southwest (see Photos 4 and 5). Exposed soil was limited to underneath fallen trees or within the stream channels (See Photos 6 through 8). Exposed soil that was observed was primarily composed of loose, brown, silty, angular to subangular gravel with sand and cobbles. This soil appeared to be recent alluvial or debris flood deposits likely overlying the Gastineau Channel Formation that was mapped by others within the subdivision area (Miller, 1975).

The debris flood channel present to the east of Mary Ellen Way and within the northern limits of the subdivision area was deeply incised and contained abundant woody debris aligned with the stream channel (See Photos 9 through 12). A portion of the channel close to Mary Ellen Way where the channel becomes less incised was lined with sandbags at the time of the field reconnaissance. Approximately 400 vertical feet (from about 270 feet to 670 feet above sea level) of another significant

debris flood channel near the middle of the subdivision was investigated and mapped. This channel was observed to be relatively small and shallow at lower elevations (see Photos 4 and 5), broad and up to 6 feet deep at mid elevations (see Photos 13 and 14) and deeply incised and over 10 feet deep at upper elevations (see Photos 15 through 17). Many fallen trees and woody debris lined the banks of this channel. The stream bed was covered with cobbles and boulders up to 6 feet in maximum dimension and was dry to an elevation of about 600 feet at the time of our site reconnaissance. This channel showed signs of significant flow events that have transported material (both soil/rock and trees) downslope. Traditional debris flow deposits were not observed at the bottom of these channels but the channels suggest that debris floods (debris floods are generally more fluid-rich than debris flows and are initiated by mobilization of the stream bed by flowing water) occur during large precipitation events common to southeast Alaska.

A large channel mapped as an alluvial fan (Miller, 1975) was observed near the southern extent of the subdivision area (see Photos 18 and 19). This channel was the largest observed within the subdivision area, with a depth of up to 20 feet and width of over 30 feet at its top. The debris flood channel present above Wire Street, to the southeast of the south end of the subdivision, was similar to the debris flood channel observed within the middle of the subdivision. This channel was incised, had a coarse-grained stream bed, and numerous woody debris aligned with the stream channel (see Photos 20 and 21).

A small cut into soil was observed at a construction site within the Vanderbilt Hills neighborhood. The surficial geology in this area is mapped as the First facies of the Gastineau Channel Formation (Miller, 1975). Our observations of this soil are consistent with the description provided by Miller (1973). Based solely upon visual observation, this soil appeared to be adequate for use as foundation soils for residential structures typically founded on spread footings, and as subgrade soils for residential roadways.

GEOLOGIC HAZARDS ANALYSIS

A geologic hazard is an adverse geologic condition capable of causing damage or loss of property or life (DGGS, n.d.). Geologic hazards are common in Alaska due to the often mountainous and steep ground, complex geologic environment, high seismicity, and dynamic weather and climate. Common geologic hazards include landslides, debris flows, rock fall, and other mass wasting/slope instability events, earthquakes, tsunamis, flooding, erosion, avalanches, volcanism, and thawing permafrost. Juneau and much of Southeast Alaska are at risk from several of these geologic hazards due to most of the developable ground located between steep mountains and the ocean, and large storms with high intensity precipitation. The main geologic hazards that impose a risk to the Blackerby Subdivision are slope instability (primarily precipitation-driven debris flows and debris floods) and earthquakes.

A detailed geologic hazard analysis is outside of the scope of this study, but we believe that a thorough, preliminary-level debris flow/debris flood analysis was performed to aid in assessing feasibility and determining conceptual design options.

Juneau is also subject to significant earthquakes from the Queen Charlotte-Fairweather fault which runs northwest-southeast to the west of Juneau. This fault system has generated several large-magnitude earthquakes, including a magnitude 8.1 in 1949, a magnitude 7.9 in 1958, and a magnitude 7.6 in 1972 (City and Borough of Juneau, n.d.). Large magnitude earthquakes have the potential to create seismically induced slope failures. A detailed seismic analysis, including seismic slope stability analysis of the slopes above (to the northeast of) the proposed Blackerby Subdivision, is outside of the scope of this study. Much of Juneau is exposed to hazards from snow avalanches during the winter and spring. We did not observe indications of avalanche activity within the proposed subdevelopment area during our site visit and did not see any prominent avalanche paths during review of satellite imagery of the slopes above the proposed subdevelopment.

Previous Analysis by Others

The DNR's Department of Geological and Geophysical Surveys (DGGS) performed a site-specific slope stability analysis for the Blackerby Subdivision area between 2023 and 2024. This analysis produced a shallow-landslide susceptibility map and a channelized debris flow susceptibility map (Nicolazzo and Larsen, 2025). These susceptibility maps are included in Attachment 2 of this memorandum. DGGS used a smaller proposed development area than that provided in the scope of work for the Blackerby Subdivision development study discussed in this memo. The smaller development area can be seen on the maps in Attachment 2.

DGGS utilized shallow landslide susceptibility protocols created by Burns and others (2012) that approximates a factor of safety (FS) for each soil type and slope angle. DGGS found that much of the northern portion of the proposed subdivision, and approximately half of the southern portion of the proposed subdivision have generally low to moderate susceptibility to shallow landslides, with moderate susceptibility defined as having a FS < 1.5 but > 1.25. DGGS state that they believe their approach used to assess shallow landslide susceptibility is conservative.

DGGS utilized channelized debris flow susceptibility mapping protocols created by Burns and others (2022) that approximates debris flow inundation potential based upon slope characteristics and the terrain's proximity to streams/channels. DGGS found that the proposed development area is unlikely to be inundated by a channelized debris flow.

Debris Flood Modeling

Observations made during our site reconnaissance suggest that debris flood deposits are present within the proposed development area. Additionally, we understand that during a significant precipitation event in early December 2020, debris floods reached and inundated Wire Street and Mary

Ellen Way, to the southeast and northwest of the proposed Blackerby Subdivision, respectively. Debris floods form in similar environments to debris flows, but differ in their mechanism of initiation, and generally in their bulk density. While debris flows are a gravity-driven mass movement (i.e.: initiated by failure of slope/portion of a slope), debris floods are initiated by fluid flow driven mobilization of a streambed. Church and Jakob (2020) define a debris flood as, "floods during which the entire bed, barring the very largest clasts, becomes mobile for at least a few minutes and over a length scale of at least 10 times the channel width." Debris floods, especially those initiated by large precipitation events, are more fluid rich than debris flows and have a lower bulk density. Debris floods are common in steep, mountainous stream drainages. To estimate the runout extent of debris floods within the proposed Blackerby Subdivision, probabilistic runout modeling was performed using the software Flow-R (v2.1.0). For details on probabilistic runout modeling with Flow-R, refer to the paper by Horton, et. al. (2013), included in the references of this memo.

Debris Flood Modeling Methodology

Debris flood runout modeling with Flow-R used the following procedure:

1. A Digital Elevation Model (DEM) was obtained from publicly available DGGS LiDAR data (Zechmann, et. al., 2023) and was resampled on a 2-meter grid.
2. Debris flood source areas were determined by performing a terrain-based flow accumulation analysis. A flow accumulation analysis determines the number of upstream cells of a DEM that flow into a downstream cell. A lower cutoff of 1,500 was assigned to the flow accumulation model for selection of debris flood source areas (in other words, 1,500 upstream cells must flow into a downstream cell for it to be considered a debris flood source area). The lower cutoff of 1,500 upstream cells was selected through trial and error to only select source areas within the major upslope drainages/channels. Source areas were further refined by being limited to areas where slope angles are greater than 25-degrees.
3. Flow-R runout model parameters were calibrated by our understanding of the runout extent of the debris flood at Wire Street in December 2022. Flow-R *susceptibility sum* results were normalized by min-max normalization between a scale of 0 to 100, and values less than 1 removed. This method of processing and presenting the Flow-R model results was designed to remove areas with very low, model-determined, debris flood susceptibility. A map showing the Wire Street debris flood model is shown on Figure 8. The following parameters were determined to be the best fit for the Wire Street debris flood:
    - x (flow direction algorithm exponent) = 4
    - dh (flow direction algorithm central cell height modifier) = 0.25 meters
    - persistence function weights = gamma
    - minimum travel angle = 10 degrees
    - velocity limitation = 15 meters/second

4. Debris flood runout modeling was performed for all source areas that could impact the proposed Blackerby Subdivision using the Flow-R model parameters determined in step 3. Flow-R *susceptibility sum* results were normalized in the same manner described in step 3.

Debris Flood Modeling Results

Debris Flood modeling results for the Blackerby Subdivision are shown on Figure 9. Debris floods that impact the subdivision originate within the steep gullies and drainages upslope (to the northeast) of the subdivision boundary (shown by the green source areas on Figure 9). As the debris floods travel downslope, the areas that are susceptible to inundation from debris floods are generally constrained to the shallow channels that exist within the subdivision area. Large debris flood events have a minor potential to overload these shallow channels and fan out on the terrain adjacent to the channels, as shown by the areas designated *Very Low Susceptibility* in Figure 9, but this portion of the debris flood is anticipated to be primarily water with lesser debris that quickly loses height and energy as it spreads outside of the channel.

CONCLUSIONS AND RECOMMENDATIONS

This memorandum summarizes the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geotechnically-similar developments in the region, and a discussion of geologic hazards that may affect the site.

Based upon the analyses performed as part of this study, review of analyses by others, and observations made during our site reconnaissance, we have developed a revised Blackerby Subdivision boundary with our recommended extents, as shown on Figure 10. This recommended Blackerby Subdivision Area has been selected to:

- Avoid consistent slopes that are steeper than 17 degrees. This slope angle is consistent with DGGS's shallow landslide susceptibility slope angle threshold for a FS > 1.5 in the Gastineau Channel Formation.
- Avoid the majority of the original Blackerby Subdivision area where surficial geology is mapped as talus. The talus at the site is generally constrained to slopes steeper than 17 degrees. Talus can lead to difficult construction and is an indicator of historical mass wasting (likely rockfall) events.

The recommended Blackerby Subdivision Area is very similar to the area used by DGGS in the susceptibility mapping (see maps in Attachment 2). Figure 10 also shows the locations within the recommended Blackerby Subdivision area that are susceptible to debris floods. Many of these

locations can be managed with proper design of drainage structures within the subdivision. We recommend that a hydraulics analysis be performed to design proper drainage for the subdivision. The hydraulics analysis should consider current design precipitation events, and it is recommended that the analysis consider projected maximum (i.e.: 100 year event or similar) precipitation events for the anticipated design life of the subdivision's infrastructure. Locating residential plots where significant channels are present, such as the large channel present in the southeastern portion of the subdivision area, should be avoided.

Based upon our observations and understanding of the soils at the site (primarily the First facies of the Gastineau Channel Formation), we believe that this soil is generally suitable as foundation soils for residential structures typically founded on spread footings, and residential roadways. A geotechnical site investigation should be performed, and geotechnical engineering report should be prepared, prior to design of structures, roadways, or utilities within the Blackerby Subdivision.

We appreciate this opportunity to provide professional services on this important project. If you have any questions or require additional information regarding this memo, please contact Noah Kimmes at (315) 559-2722.

Sincerely,



Noah Kimmes, P.E., C.E.G., P.G.
Project Geological Engineer

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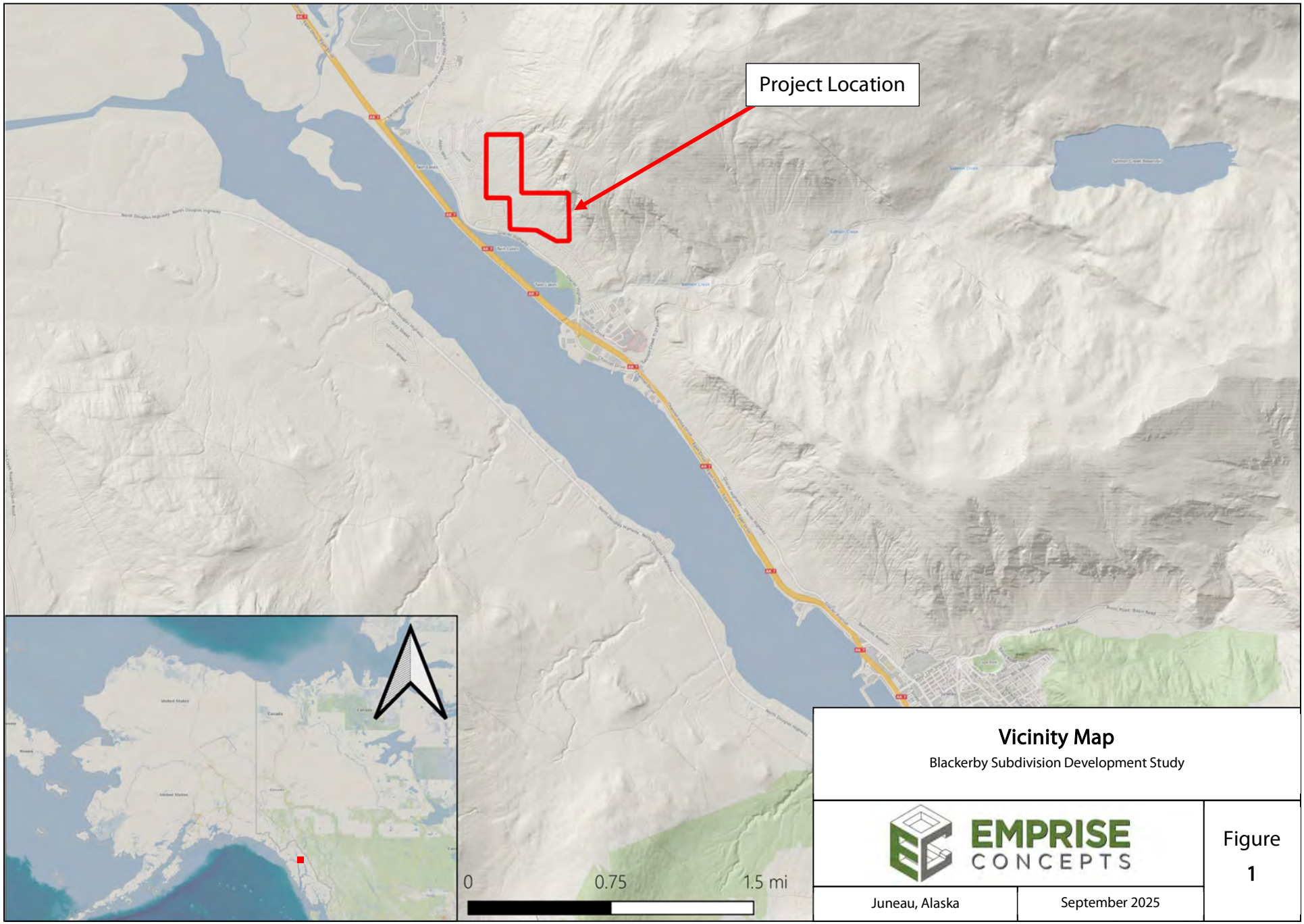
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FIGURES



Vicinity Map

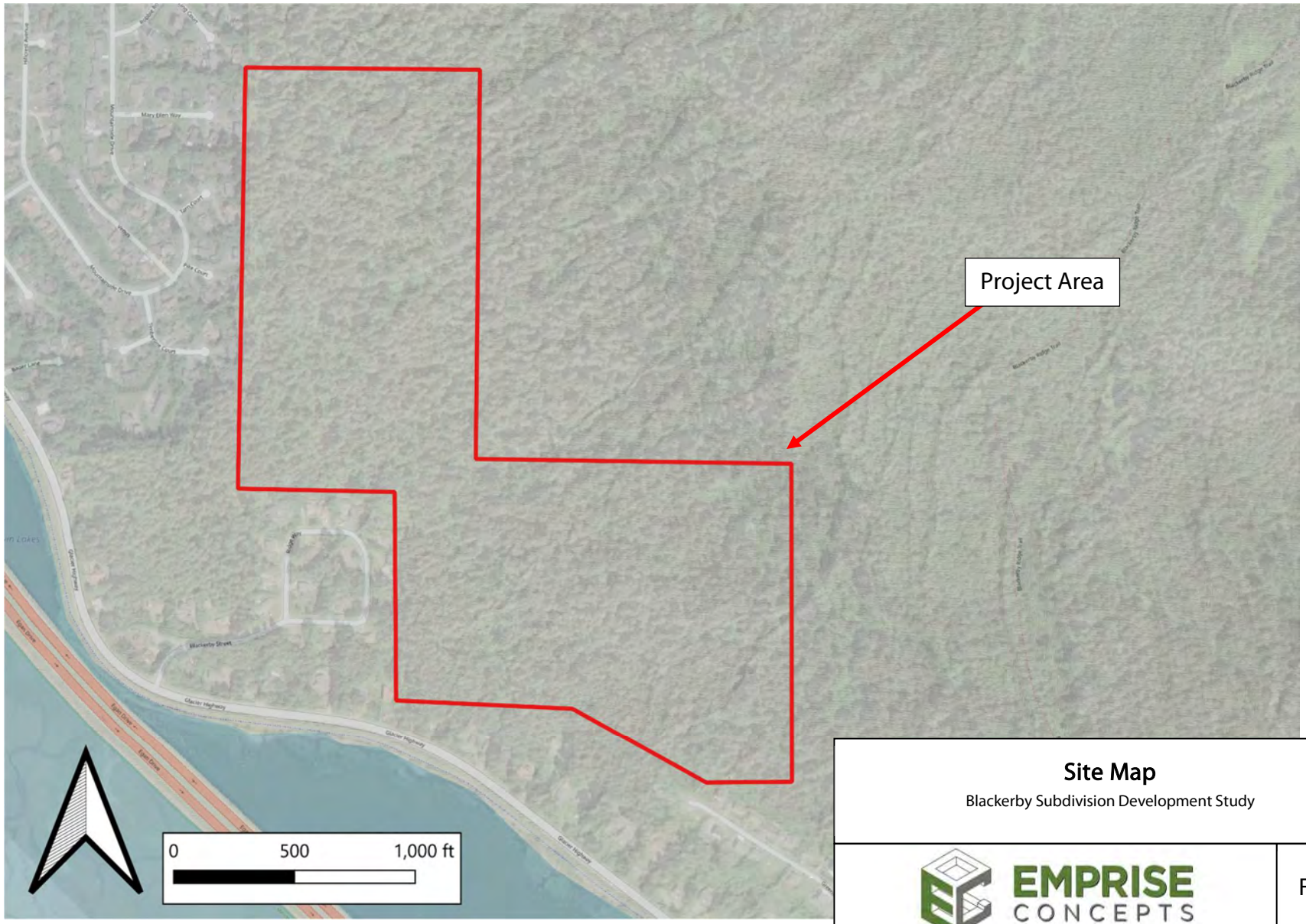
Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska

September 2025

Figure 1



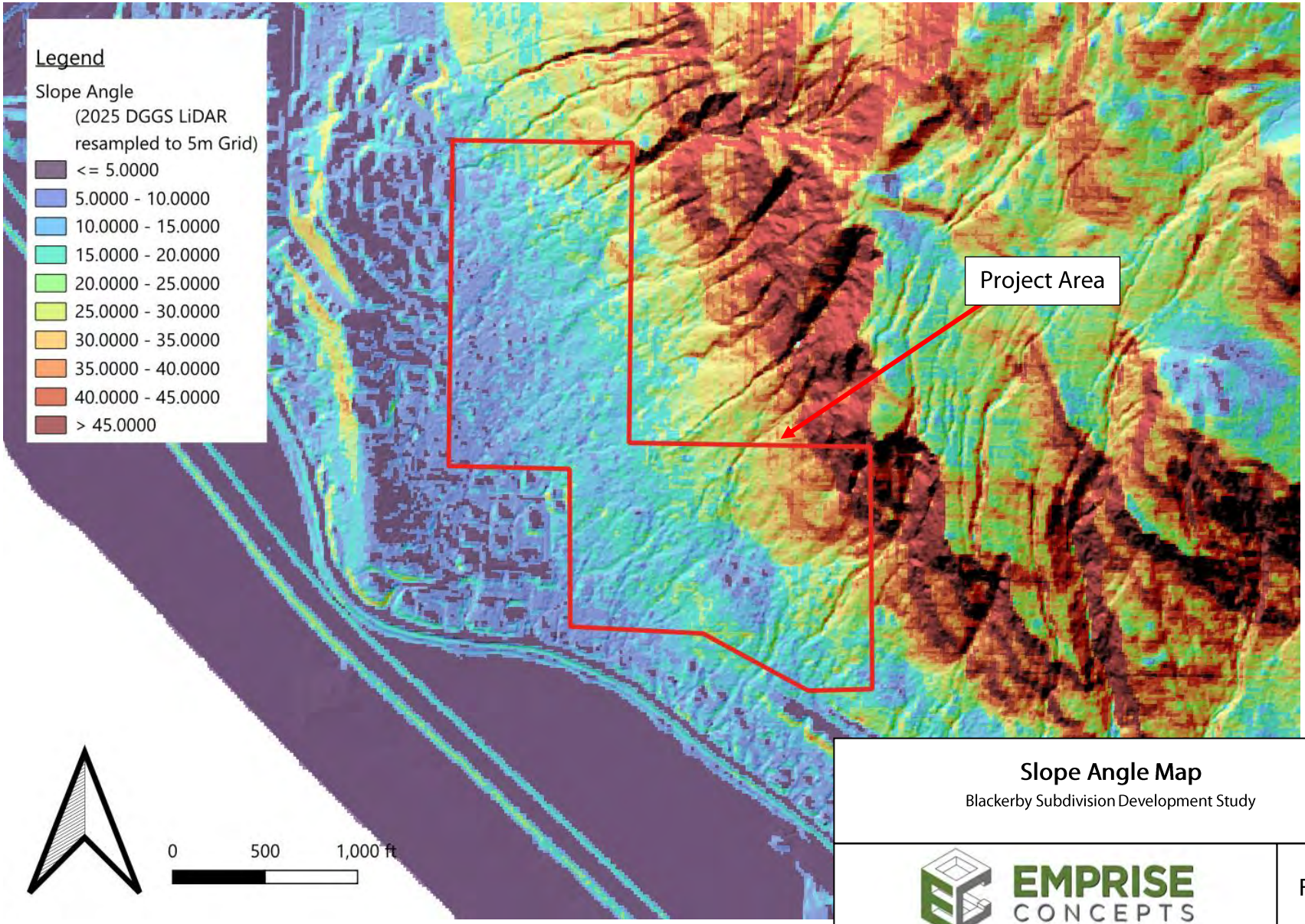
Site Map

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 2



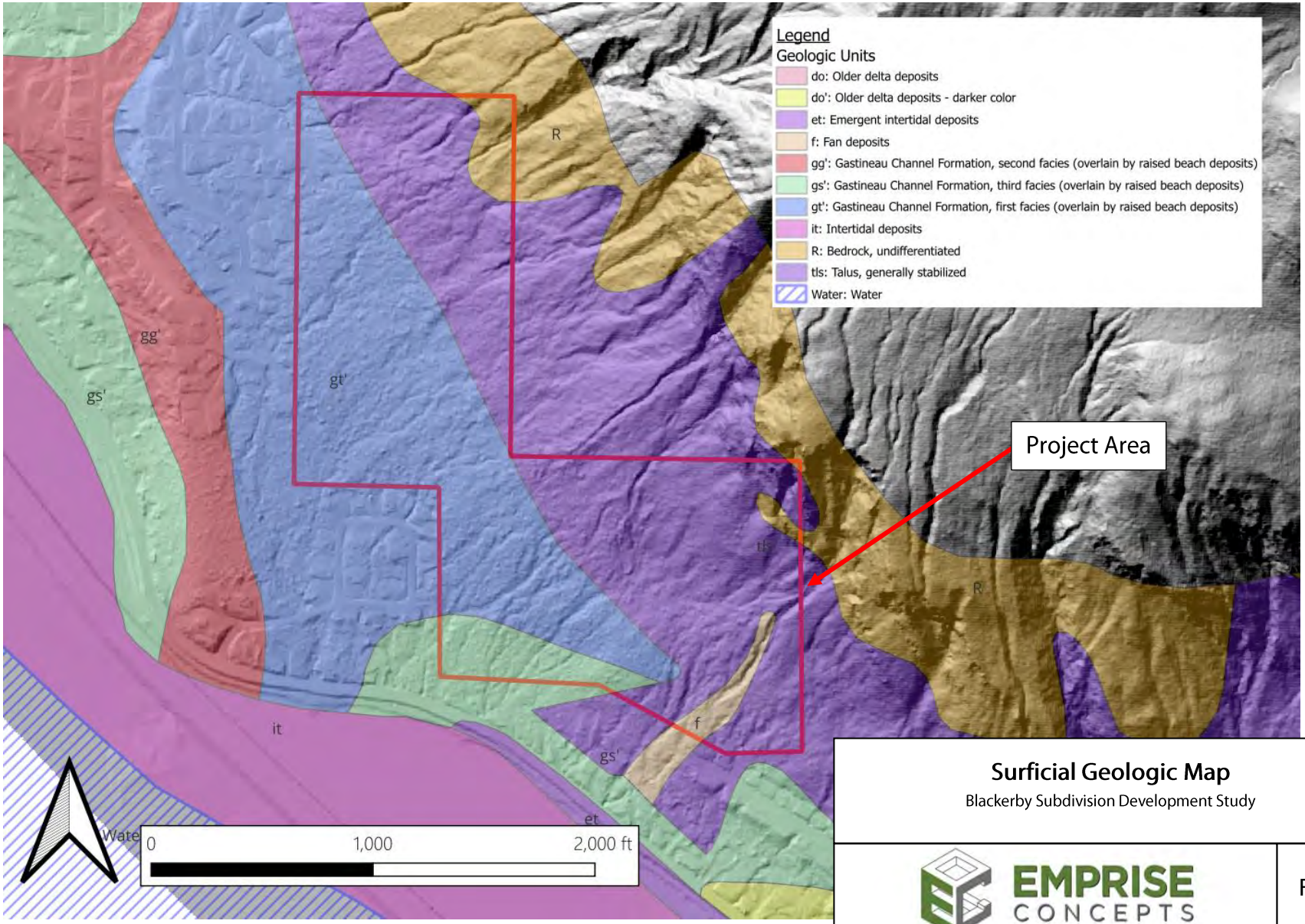
Slope Angle Map

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | August 2025

Figure 3



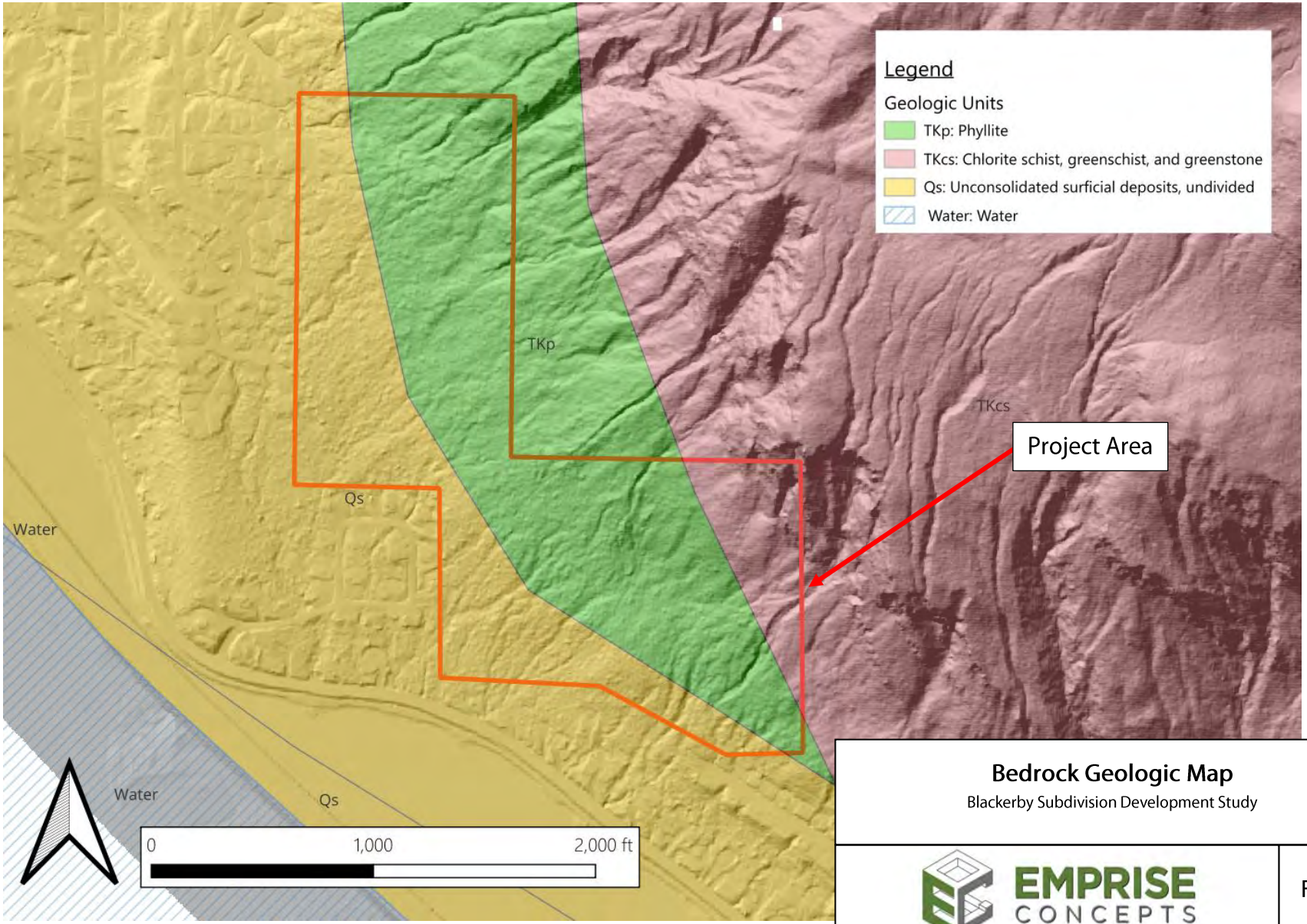
Surficial Geologic Map

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | August 2025

Figure 4



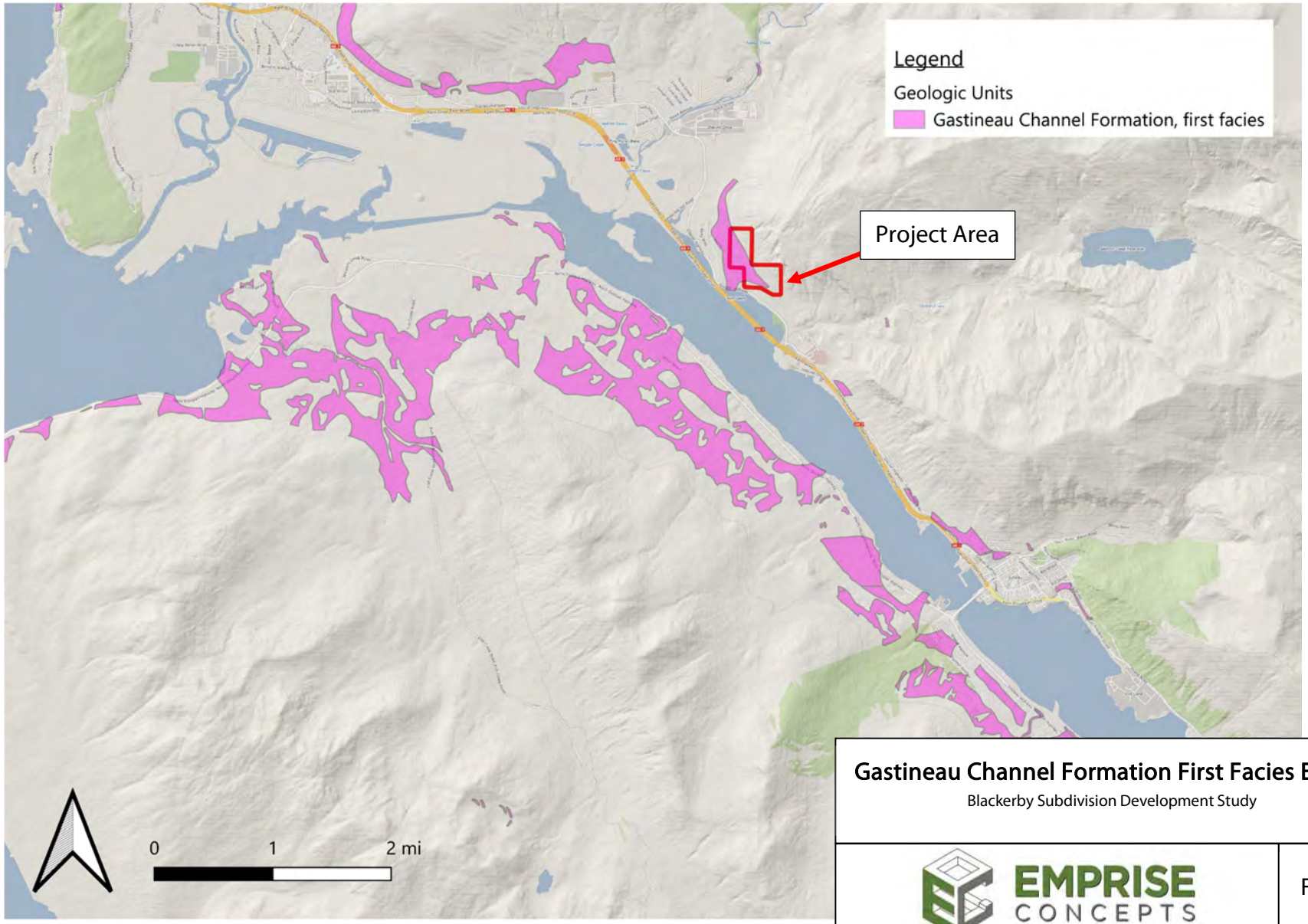
Bedrock Geologic Map

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | August 2025

Figure 5



Gastineau Channel Formation First Facies Extent

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 6

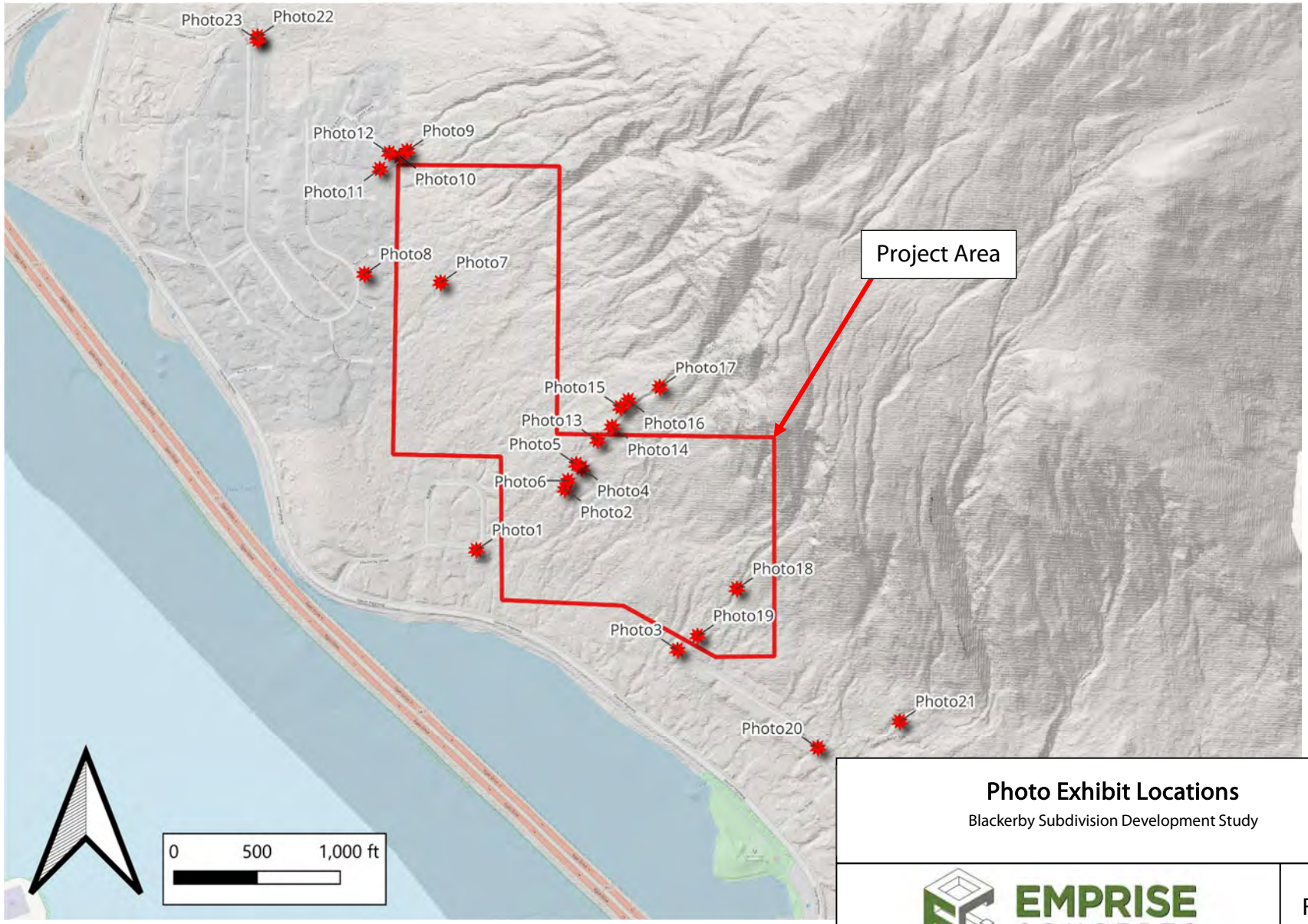


Photo Exhibit Locations

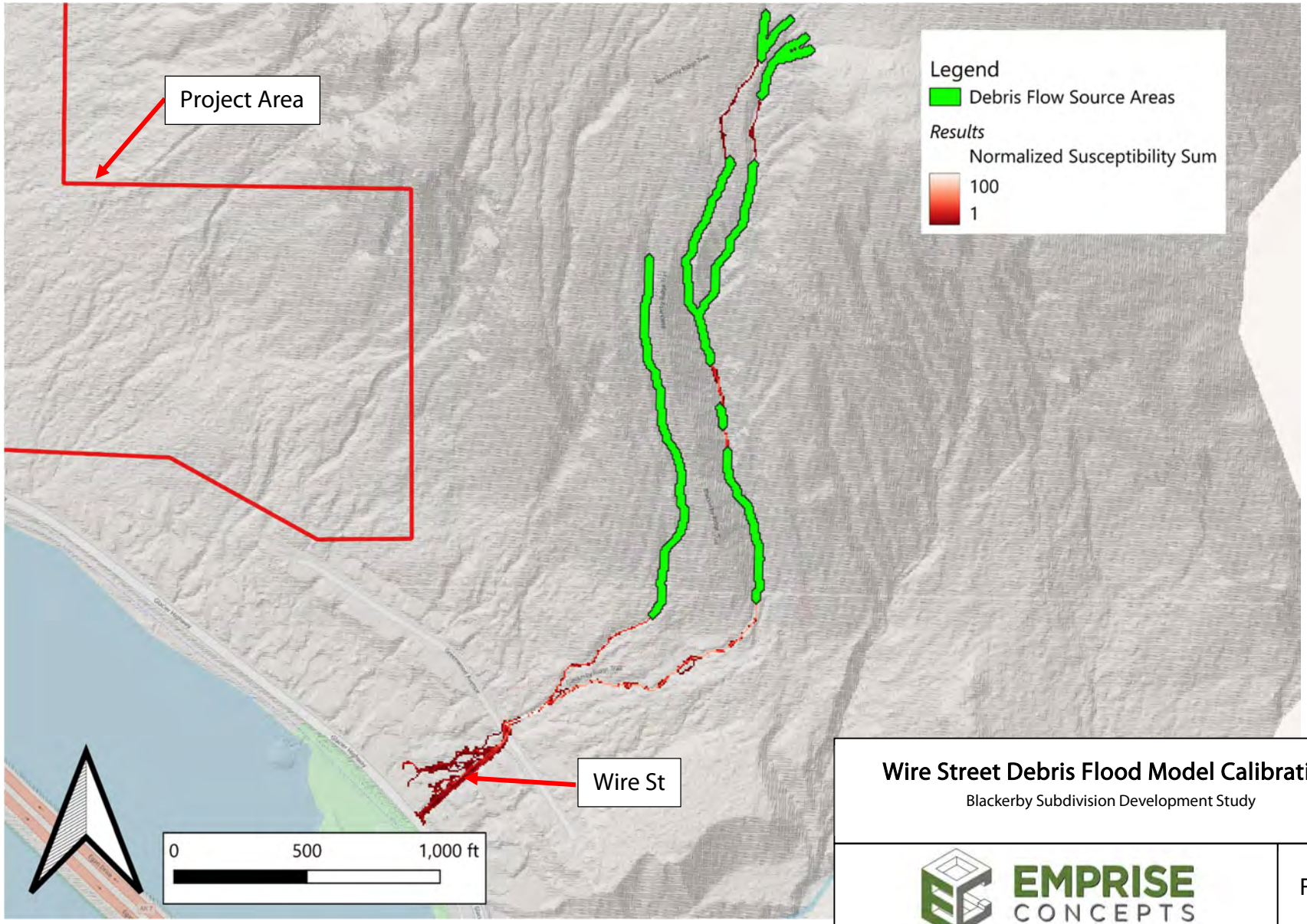
Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska

September 2025

Figure 7



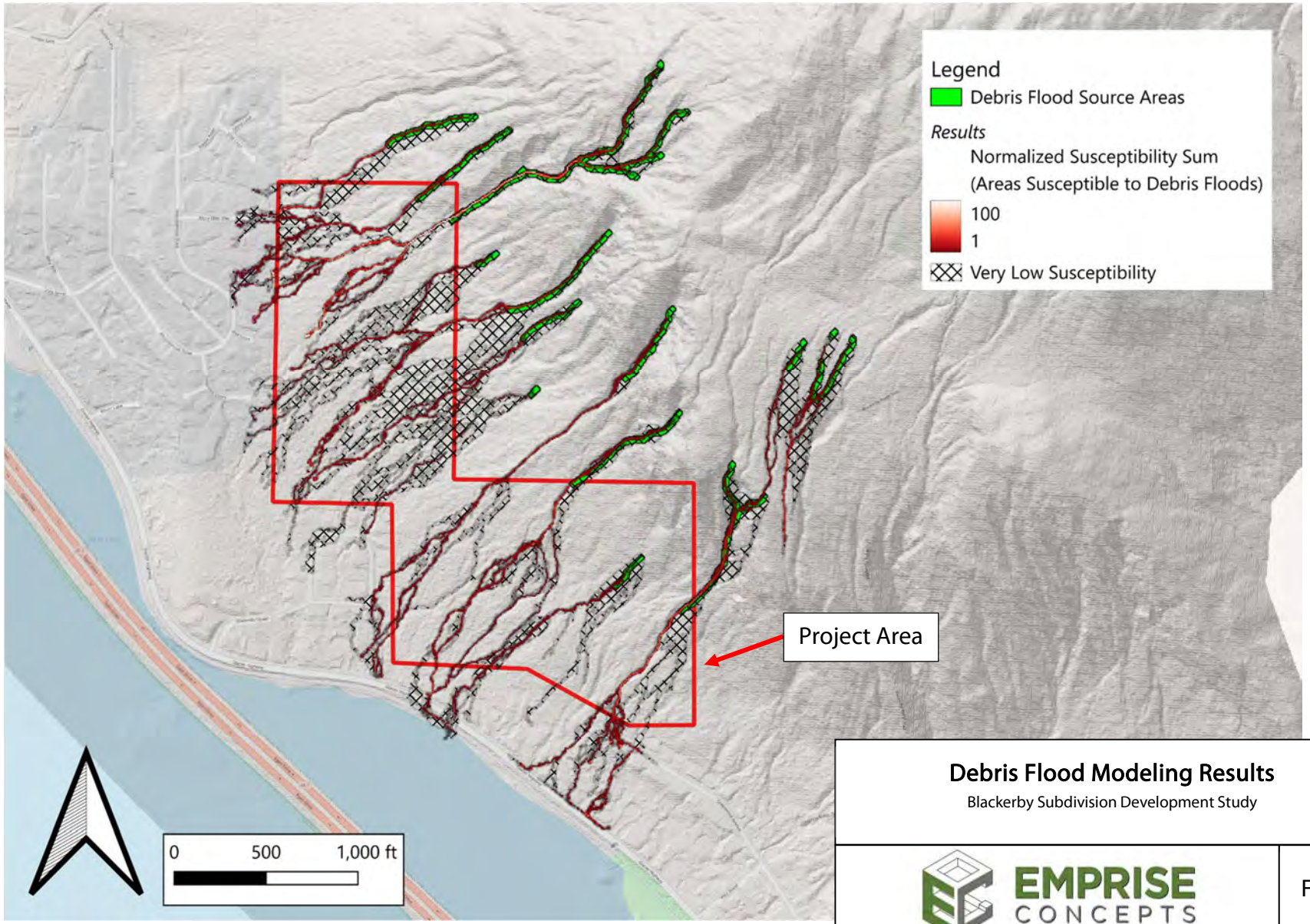
Wire Street Debris Flood Model Calibration

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 8



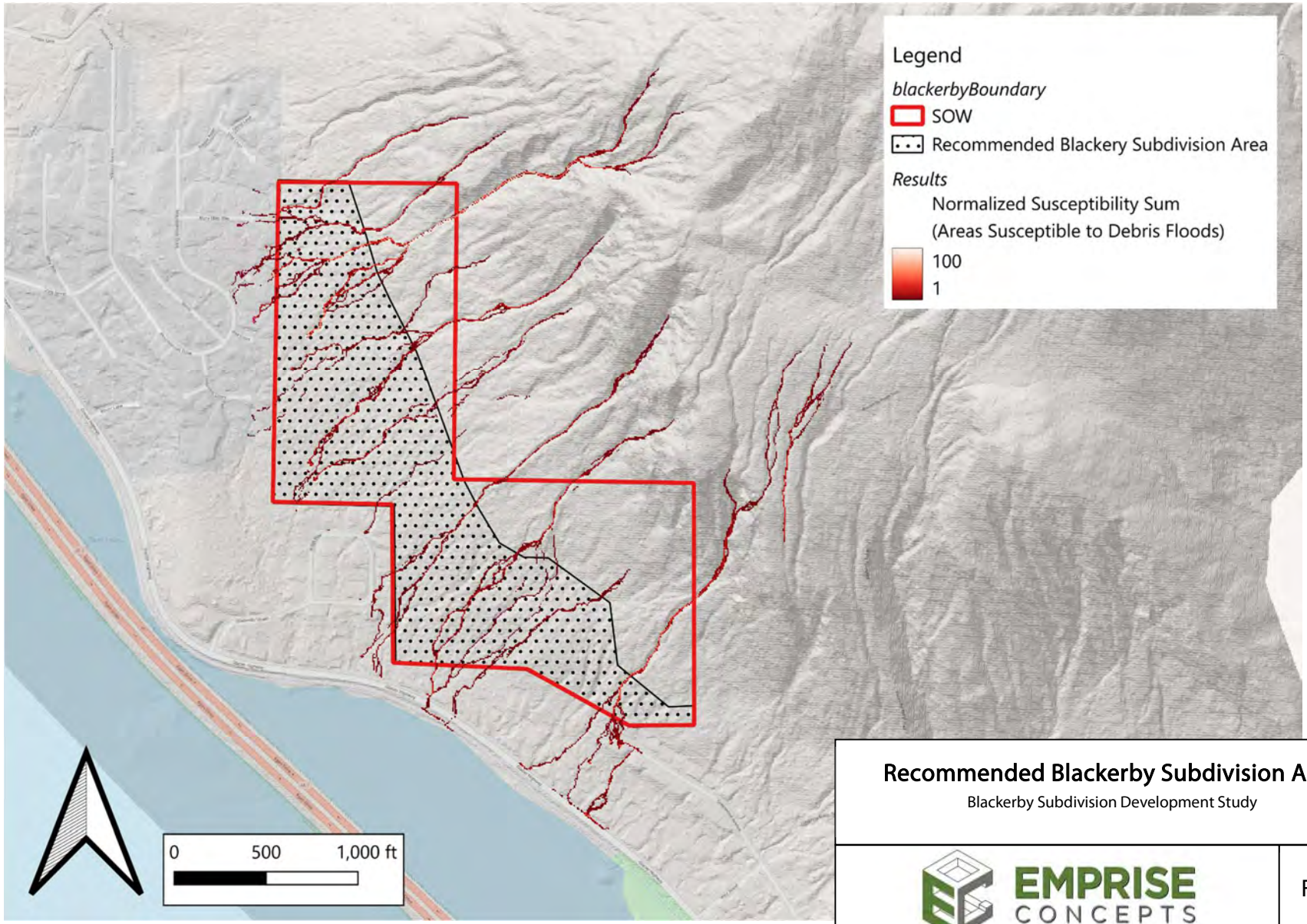
Debris Flood Modeling Results

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 9



Recommended Blackerby Subdivision Area

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 10

ATTACHMENT 1 – PHOTO EXHIBIT

EMPRISE CONCEPTS

Photo Exhibit

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 1 Date: 4/7/2025 Description: Trees growing on the lower elevation portion of the proposed development area. Trees are generally straight, large, and not pistol-butted (1 of 2).	
Photograph # 2 Date: 4/7/2025 Description: Trees growing on the lower elevation portion of the proposed development area. Trees are generally straight, large, and not pistol-butted (2 of 2).	

EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 3 Date: 4/7/2025 Description: Pistol-butted tree observed near the south-end of the site.	
Photograph # 4 Date: 4/7/2025 Description: Bottom of debris channel near middle of the proposed subdivision, looking down-channel (southwest).	

EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 5 Date: 4/7/2025 Description: Bottom of debris channel near middle of the proposed subdivision, looking up-channel (northeast).	
Photograph # 6 Date: 4/7/2025 Description: Small soil exposure near bottom of debris channel at middle of the proposed subdivision. Soil is: gray-tan, silty GRAVEL with sand to silty SAND with gravel, with cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM to SM).	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 7

Date: 4/7/2025

Description:

Soil exposure at bank of channel near northern portion of proposed subdivision. Soil is: brown, silty GRAVEL with sand and cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM)



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 8

Date: 4/7/2025

Description:

Close-up view of the soil exposure shown on Photograph #7. Soil is: brown, silty GRAVEL with sand and cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM)



EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 9 Date: 4/7/2025 Description: Bottom of the Mary Ellen Way debris flow/flood channel that inundated Mary Ellen Way in December 2020, looking down-channel (south to southwest).	
Photograph # 10 Date: 4/7/2025 Description: Bottom of the Mary Ellen Way debris flow/flood channel that inundated Mary Ellen Way in December 2020, looking up-channel (northeast). Note the numerous trees/woody debris present within the channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 11 Date: 4/7/2025 Description: Woody debris present within the bottom of the Mary Ellen Way debris flow/flood channel.	
Photograph # 12 Date: 4/7/2025 Description: Woody debris present within the bottom of the Mary Ellen Way debris flow/flood channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 13 Date: 4/7/2025 Description: Mid-slope portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Debris channel is full of platy bedrock fragments up to 2 feet in maximum dimension and woody debris.	
Photograph # 14 Date: 4/7/2025 Description: Mid-slope portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Note tree with semi-intact root wad stuck in channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 15

Date: 4/7/2025

Description:

Upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Channel becomes more incised further up slope. Boulders and cobbles line the bottom of the channel. Large woody debris is present within the sidewalls of the channel oriented with the direction of flow.



EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 16

Date: 4/7/2025

Description:

Upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Note undercut channel bank of left side of photo, large boulders within channel, and woody debris.



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 17

Date: 4/7/2025

Description:

Large boulder within upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Channel steepens and widens into large, funnel/wedge shaped feature just up-channel of this photo.



EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 18 Date: 4/7/2025 Description: Debris channel at the south end of the proposed subdivision, looking down-channel (southwest). This channel is mapped as an alluvial fan deposit on the surficial geologic map shown on Figure 4.	
Photograph # 19 Date: 4/7/2025 Description: Debris channel at the south end of the proposed subdivision, looking down-channel (southwest). This channel is mapped as an alluvial fan deposit on the surficial geologic map shown on Figure 4.	

EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 20 Date: 4/7/2025 Description: Bottom of one of the Wire Street debris flow/flood channel that inundated Wire Street and the Twin Lakes Playground in December 2020, looking up-channel (northeast). Note the numerous trees/woody debris present within the channel.	
Photograph # 21 Date: 4/7/2025 Description: Mid-slope portion of one of the Wire Street debris flow/flood channel that inundated Wire Street and the Twin Lakes Playground in December 2020, looking up-channel (northeast).	

EMPRISE CONCEPTS
Photographic Record

Client: AK Built Project Number: 225004

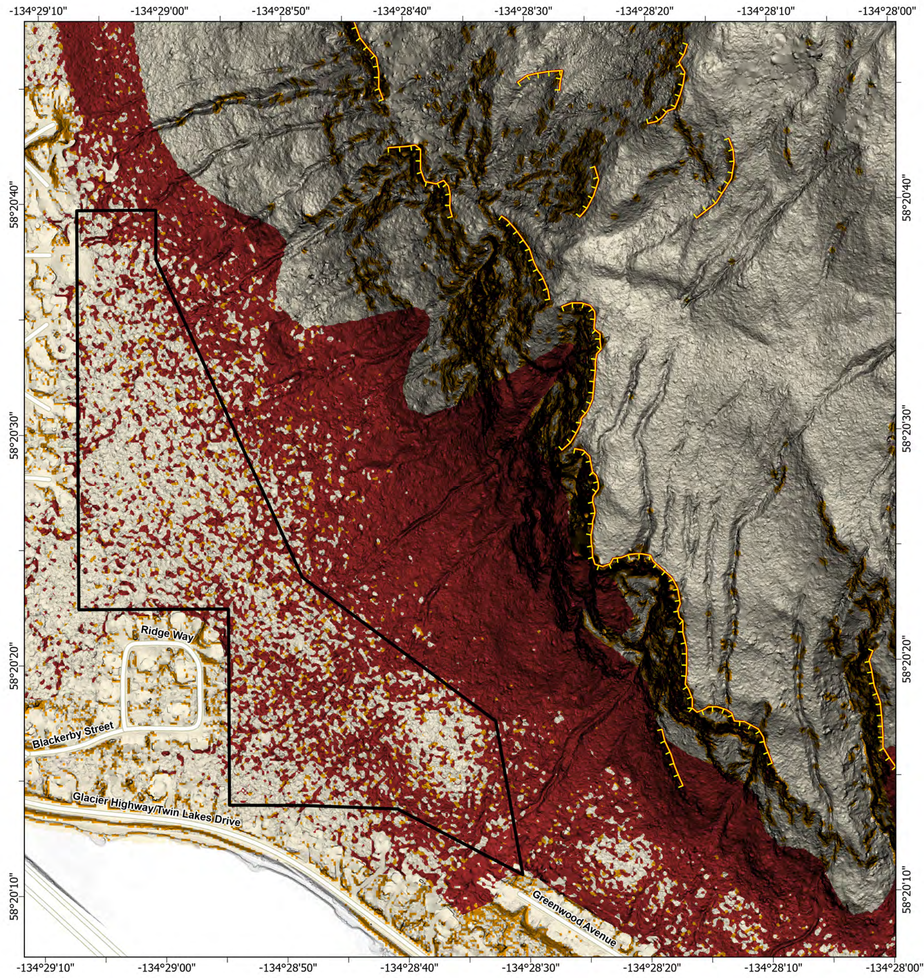
Site Name: AKDNR Blackerby Subdivision Development Study

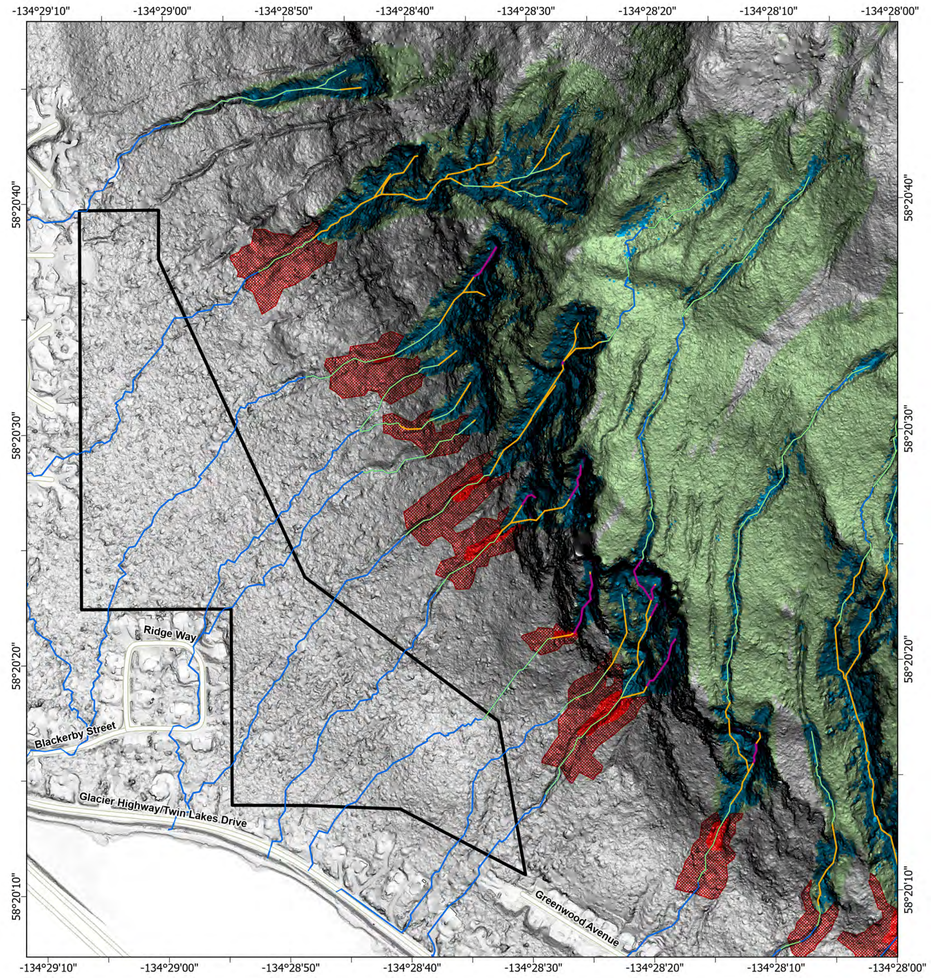
Photograph # 22 Date: 4/7/2025 Description: Soil cut slope/grading in the Vanderbilt Hill neighborhood at the north end of Hillcrest Avenue. The soil in this area is mapped as the First facies of the Gastineau Channel Formation.	
Photograph # 23 Date: 4/7/2025 Description: Soil cut slope/grading in the Vanderbilt Hill neighborhood at the north end of Hillcrest Avenue. The soil in this area is mapped as the First facies of the Gastineau Channel Formation.	

ATTACHMENT 2 – DGGS SHALLOW LANDSLIDE SUSCEPTIBILITY AND CHANNELIZED DEBRIS FLOW SUSCEPTIBILITY MAPS

ALASKA DIVISION OF GEOLOGICAL &
GEOPHYSICAL SURVEYS

Preliminary Interpretive Report 2024-7
Nicolazzo and Larsen, 2025
SHEET 1 OF 1
Explanatory report accompanies map
http://doi.org/10.14509/31275





Shallow Landslide Susceptibility



Thumbnail examples by Highland, 2004

Mass Movement Potential at Blackerby Land Parcel, Juneau, Alaska

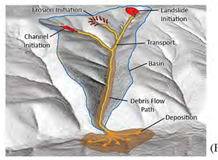
by
J.A. Nicolazzo[1] and M.C. Larsen[1]
2025

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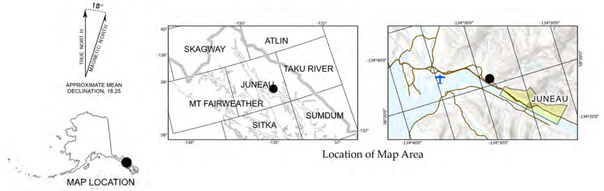
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DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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email: dggspubs@alaska.gov ♦ website: dggs.alaska.gov

Channelized Debris Flow Susceptibility



(Burns and others, 2022)



Location of Map Area

SCALE 1:4,000

0 40 80 160 240 320 400 Meters

0 200 400 800 1,200 1,600 2,000 Feet

Affiliations:

[1] Alaska Division of Geological & Geophysical Surveys, 3354 College Rd, Fairbanks, AK 99709

EXPLANATION

The Shallow Landslide Susceptibility map represents movement of a thin layer of slope materials (soils and bedrock mapped by Ford and Brew, 1973) that have a shallow failure plane. Movement types may include slumps, translational slides, earth flows, and complex combinations of these types. This map was prepared following protocols created by Burns and others (2012) and is based on the calculated factor of safety (FOS) for each soil type and slope angle. FOS calculations use assumed input values based on our best judgment and with a conservative approach.

The Channelized Debris Flow Susceptibility map depicts analyzed debris flow initiation catchments, transportation potential by streams, and the modeled extents of deposits. These zones were simulated following protocols created by Burns and others (2022) and are based on slope characteristics and the proximity to streams. Stabilization from vegetation is not included in the analyses. Because there are no mapped debris flows in the area, the map is based on an assumed "typical" event. The "extreme" event is scaled up from the assumed typical event.

The susceptibility maps are intended to provide users with relative hazard information regarding possible slope movement in the area, to guide regional and site-specific investigations for future development, and to assist in regional planning. They are not intended to replace site-specific engineering analyses.

The susceptibility maps are not regulatory. Revisions can happen when new data or other information regarding factors that affect landslide and debris flow susceptibility are acquired or when future (new) events occur. It is possible that areas susceptible to landslides or debris flows were not identified on these maps.

SHALLOW LANDSLIDE SUSCEPTIBILITY MAP

ROAD CENTERLINES
PARCEL
SCARP hachures point downslope

SUSCEPTIBILITY
HIGH: FOS less than 1.25
MODERATE: FOS 1.25 to < 1.5
LOW TO NONE: 1.5 and greater

CHANNELIZED DEBRIS FLOW SUSCEPTIBILITY MAP

INITIATION POTENTIAL
HIGH
MODERATE
LOW

TRANSPORT POTENTIAL
HIGH
MODERATE
LOW
VERY LOW TO NONE

INUNDATION
EXTREME EVENT
TYPICAL EVENT

LIMITATIONS

The Shallow Landslide Susceptibility and Channelized Debris Flow Susceptibility maps presented here were developed using input from many sources. Several limitations are worth noting and underscore that these hazard maps are designed for regional application and should not be used as an alternative to site-specific studies.

- The susceptibility maps presented here are heavily based on lidar data. Lidar-based mapping is a "snapshot" view of the landscape at the time the lidar dataset was collected and does not represent changes that may have occurred after it was collected. Limitations in lidar collection and processing also apply to these maps.
- Due to the obscuring vegetation cover in available aerial imagery, limited field verification, and reliance on lidar-based mapping, some landslides and debris flow deposits may have been misidentified or not mapped. Mapping may change as new information becomes available and as new landslides and debris flows occur.
- The Shallow Landslide Susceptibility Map was based on calculated factor of safety, which incorporates previously mapped soil types and limited field data. Depth to failure, depth to groundwater, and soil engineering properties were assumed based on our best judgment and with a conservative approach; however, local conditions may vary significantly from the values used to make this map.
- Because there are no mapped debris flows in the area, the Channelized Debris Flow Susceptibility map is based on an assumed "typical" event size that does not represent an actual, historical event that occurred in the area. The "extreme" event is scaled up from the assumed typical event.

REFERENCES CITED

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Zechmann, J.M, Larsen, M.C., and Wikstrom Jones, K.M., 2024, Lidar-derived elevation data for Blackerby parcel, Juneau, Southeast, Alaska, collected July 12, 2023: Alaska Division of Geological & Geophysical Surveys Raw Data File 2024-8, 8 p. https://doi.org/10.14509/31161

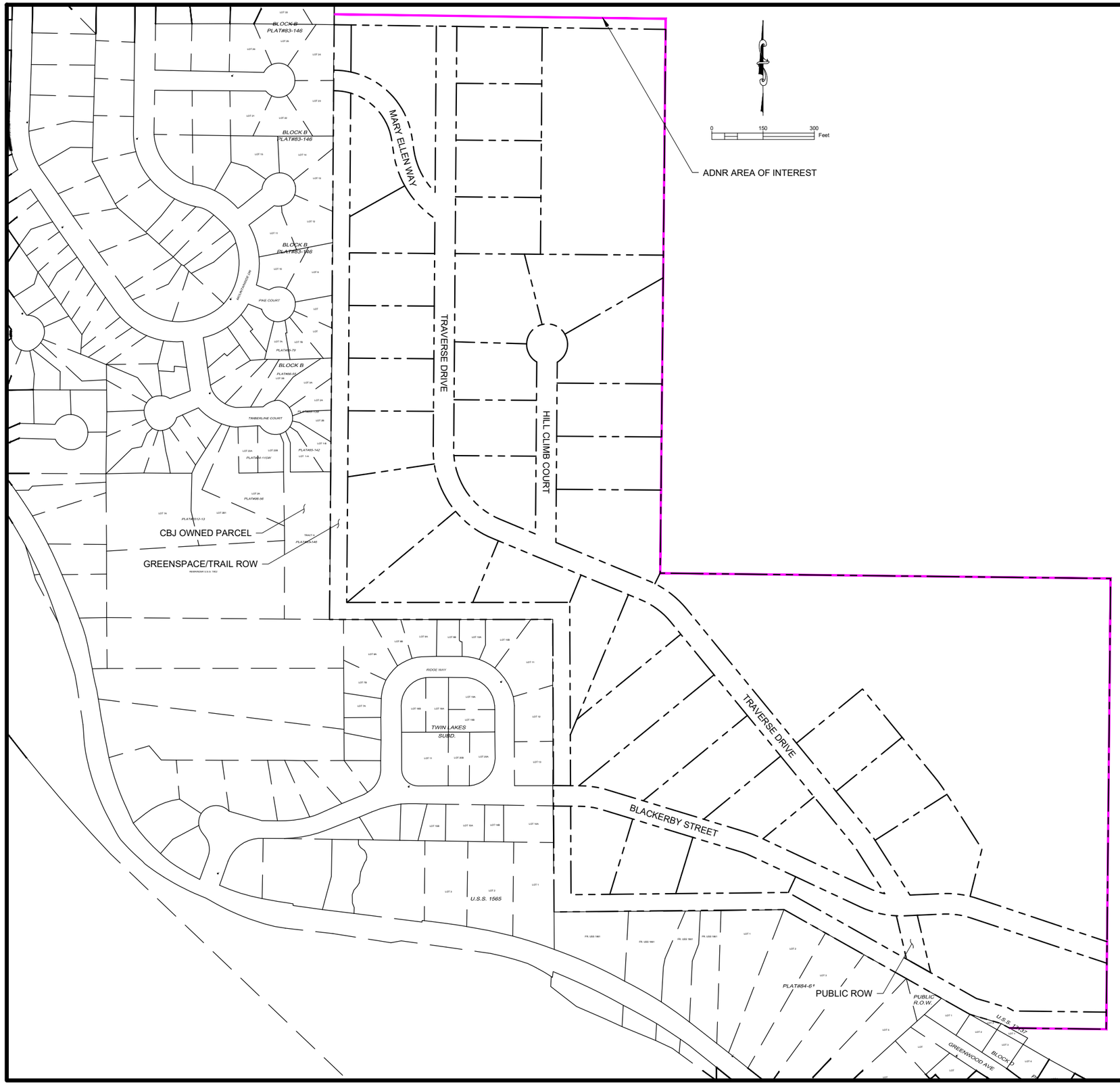
ACKNOWLEDGMENTS

Funding for this project was provided by the State of Alaska Division of Mining, Land and Water (RSA-IPO 230001027).

Basemap hillshade raster derived from:
Zechmann, J.M. and others (2024)
Projection:
Universal Transverse Mercator Zone 8N
Datum:
North American Datum of 1983

Field investigation by:
M.C. Larsen, J.A. Nicolazzo (2023)
GIS raster layers created by:
J.A. Nicolazzo, M.C. Larsen (2023)
Cartography by:
J.A. Nicolazzo (2024)
Cartographic review by:
A.E. Macpherson (2024)

Appendix B – Rural Reserve (RR) Subdivision Parcel Plans



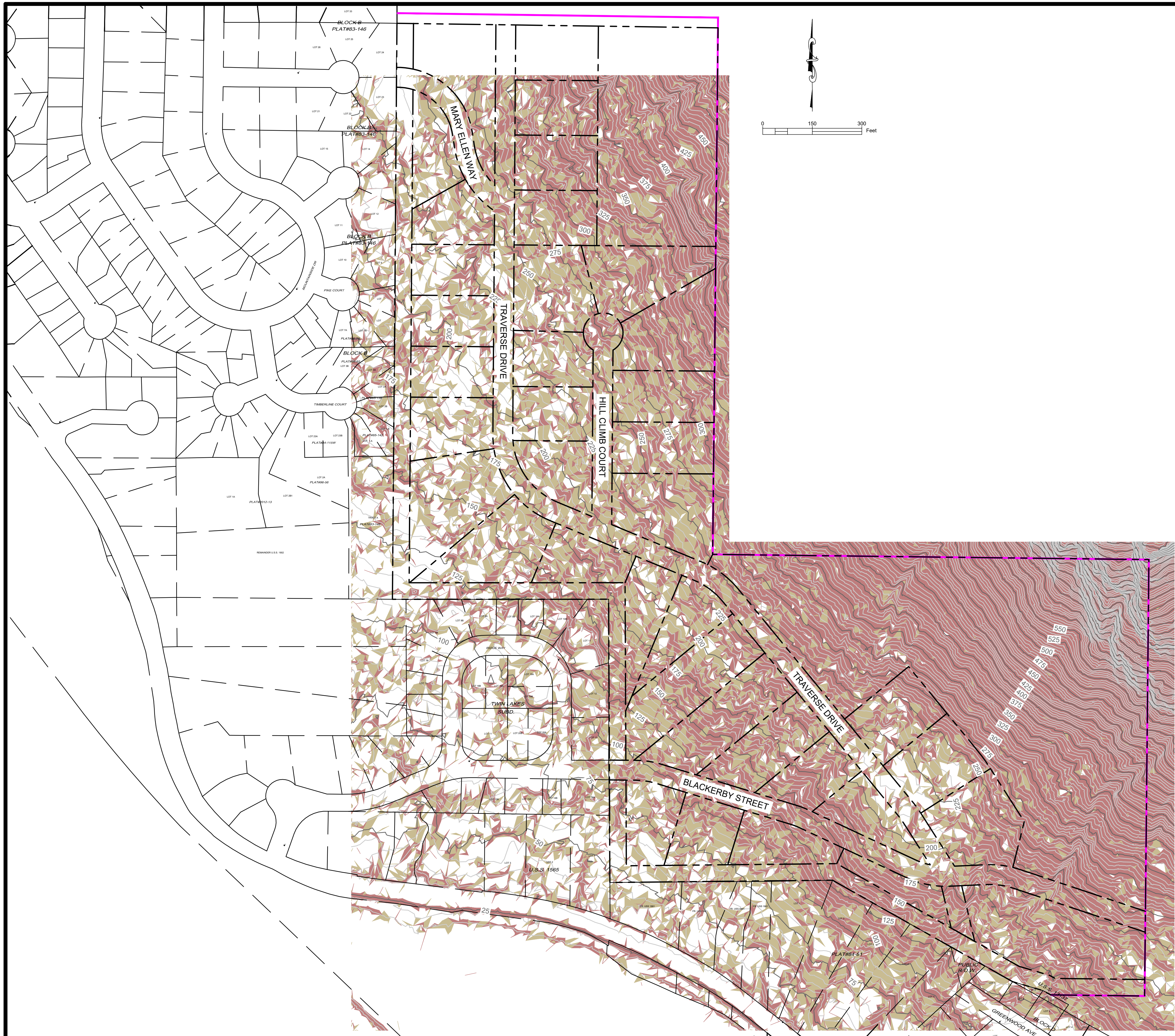
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	37,082.54	790.26	230.46 113.67 259.10 28.71 63.24 95.08	S16° 56' 19.47"W S89° 24' 45.60"W N0° 15' 20.27"W S89° 31' 54.89"E S81° 17' 47.71"E S73° 03' 40.53"E
102	37,082.54	780.01	230.46 184.14 172.31 193.10	N16° 56' 19.47"E S73° 03' 40.53"E S16° 56' 19.47"W S89° 24' 45.60"W
103	37,082.54	875.92	172.31 145.74 30.98 146.37 50.81 329.71	N16° 56' 19.47"E S73° 03' 40.53"E S69° 01' 39.04"E S64° 59' 37.55"E S25° 00' 22.45"W S89° 24' 45.60"W
200	36,776.54	937.62	193.83 174.86 26.07 150.85 49.00 343.01	N50° 39' 44.83"E S39° 20' 15.17"E S35° 56' 36.09"E S32° 32' 57.00"E N71° 22' 30.18"W N64° 59' 37.55"W
201	37,129.94	822.54	291.47 154.38 193.83 12.35 39.43 131.08	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N64° 59' 37.55"W N69° 01' 39.04"W N73° 03' 40.53"W
202	52,739.25	1,024.44	394.16 153.84 291.47 184.97	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N73° 03' 40.53"W
203	68,843.22	1,255.60	512.58 153.83 394.16 108.90 80.49 5.64	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N73° 03' 40.53"W N81° 17' 47.71"W N89° 31' 54.89"W
204	73,401.24	1,281.79	394.44 153.70 512.58 23.83 149.04 48.20	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N89° 31' 54.89"W N0° 15' 20.27"W N22° 29' 52.51"E
205	38,943.02	986.60	394.44 396.08 40.70 108.14 47.23	S50° 39' 44.83"W N22° 29' 52.51"E S67° 30' 07.49"E S53° 25' 11.33"E S39° 20' 15.17"E
206	39,817.78	1,068.73	86.63 150.00 396.08 48.20 387.83	N22° 29' 52.51"E S67° 30' 07.49"E S22° 29' 52.51"W S22° 29' 52.51"W N0° 15' 20.27"W
207	36,959.12	827.94	195.28 137.44 124.77 86.63 283.83	N22° 29' 52.51"E S67° 30' 07.49"E S67° 30' 07.49"E S22° 29' 52.51"W S89° 59' 25.54"W
208	62,611.98	1,132.47	414.91 134.45 19.38 195.28 368.45	N50° 00' 36.98"E S53° 44' 45.26"E S67° 30' 07.49"E S22° 29' 52.51"W S89° 59' 25.54"W
209	76,018.93	1,193.77	414.91 0.89 367.66 256.26 154.06	S50° 00' 36.98"W S89° 59' 25.54"W N0° 27' 00.08"E N81° 32' 06.92"E S24° 13' 38.05"E
210	43,514.96	853.68	256.26 193.56 249.73 110.69 43.44	S81° 32' 06.92"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S4° 01' 12.19"E
211	38,487.14	807.66	249.73 154.14 249.66 154.14	N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W
212	38,476.62	807.53	249.66 154.14 249.59 154.14	N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W
213	38,466.11	807.39	249.59 154.14 249.52 154.14	N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W
214	37,032.22	774.09	249.52 106.10 184.65 131.46 102.35	N89° 34' 31.29"W N0° 27' 00.08"E N60° 46' 23.09"E S42° 40' 37.98"E S0° 25' 28.71"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
215	37,032.22	879.34	184.65 361.69 192.81 39.18 101.00	S60° 46' 23.09"W N0° 27' 00.08"E S41° 03' 04.11"E S8° 33' 34.00"E S18° 53' 35.46"E
300	59,124.96	950.26	250.00 190.38 142.63 81.16 95.71 190.38	N57° 27' 03.00"E S32° 32' 57.00"E S14° 03' 32.64"W N84° 14' 42.18"W S87° 27' 03.00"W N32° 32' 57.00"W
301	49,445.47	895.56	250.00 146.27 62.79 3.53 250.00 3.53 33.17 146.27	N50° 39' 44.83"E S39° 20' 15.17"E S35° 56' 36.09"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W N35° 56' 36.09"W N39° 20' 15.17"W
302	45,742.98	865.94	250.00 182.97 250.00 182.97	S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E
400	66,405.42	1,054.12	306.72 243.10 34.58 18.92 295.26 155.54	S89° 34' 31.29"E S0° 35' 16.94"W S26° 22' 07.73"W N65° 33' 59.88"W N67° 30' 07.49"W N0° 25' 28.71"E
401	47,742.25	924.97	306.72 155.54 307.16 155.54	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
402	47,811.15	925.85	307.16 155.54 307.60 155.54	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
403	66,169.41	1,106.16	307.60 61.20 94.54 331.98 310.83	N89° 34' 31.29"W N0° 25' 28.71"E N15° 16' 58.92"E N60° 08' 29.13"E S0° 35' 16.94"W
404	62,511.79	1,095.41	212.46 47.10 360.06 66.05 331.98 77.78	N14° 07' 50.41"W S89° 34' 31.29"E S89° 34' 31.29"E S0° 35' 16.94"W S60° 08' 29.13"W N66° 59' 40.64"W
405	59,450.02	962.73	211.43 258.16 202.90 212.46 77.78	N88° 24' 09.96"W N0° 25' 28.71"E S89° 34' 31.29"E S14° 07' 50.41"E S38° 43' 59.82"W
406	39,260.31	798.99	241.38 169.82 211.43 64.06 112.30	N89° 34' 31.29"W N0° 25' 28.71"E S88° 24' 09.96"E S28° 59' 20.62"E S0° 25' 28.71"W
407	39,454.53	808.96	241.38 163.48 240.61 18.37 145.13	S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N1° 58' 00.81"W N0° 25' 28.71"E
408	39,248.04	823.07	240.61 227.72 112.28 242.45	S89° 34' 31.29"E S0° 25' 28.71"W N67° 30' 07.49"W N35° 55' 48.91"W
409	41,558.77	832.47	119.09 47.15 250.00 166.24 47.10 202.90	N0° 25' 28.71"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W
410	41,558.77	832.47	250.00 166.24 250.00 166.24	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
411	41,558.77	832.47	250.00 166.24 250.00 166.24	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
412	41,433.96	831.48	250.00 166.57 250.01 164.90	N89° 34' 31.29"W N0° 25' 28.71"E S89° 11' 38.33"E S0° 25' 28.71"W
500	64,459.86	1,330.61	137.77 249.23 0.20 486.28 140.03 39.18 277.91	N0° 27' 00.08"E S89° 11' 38.33"E N0° 27' 00.08"E S0° 25' 28.71"W S0° 25' 28.71"W N26° 47' 37.35"W N8° 33' 34.00"W N43° 10' 28.13"W

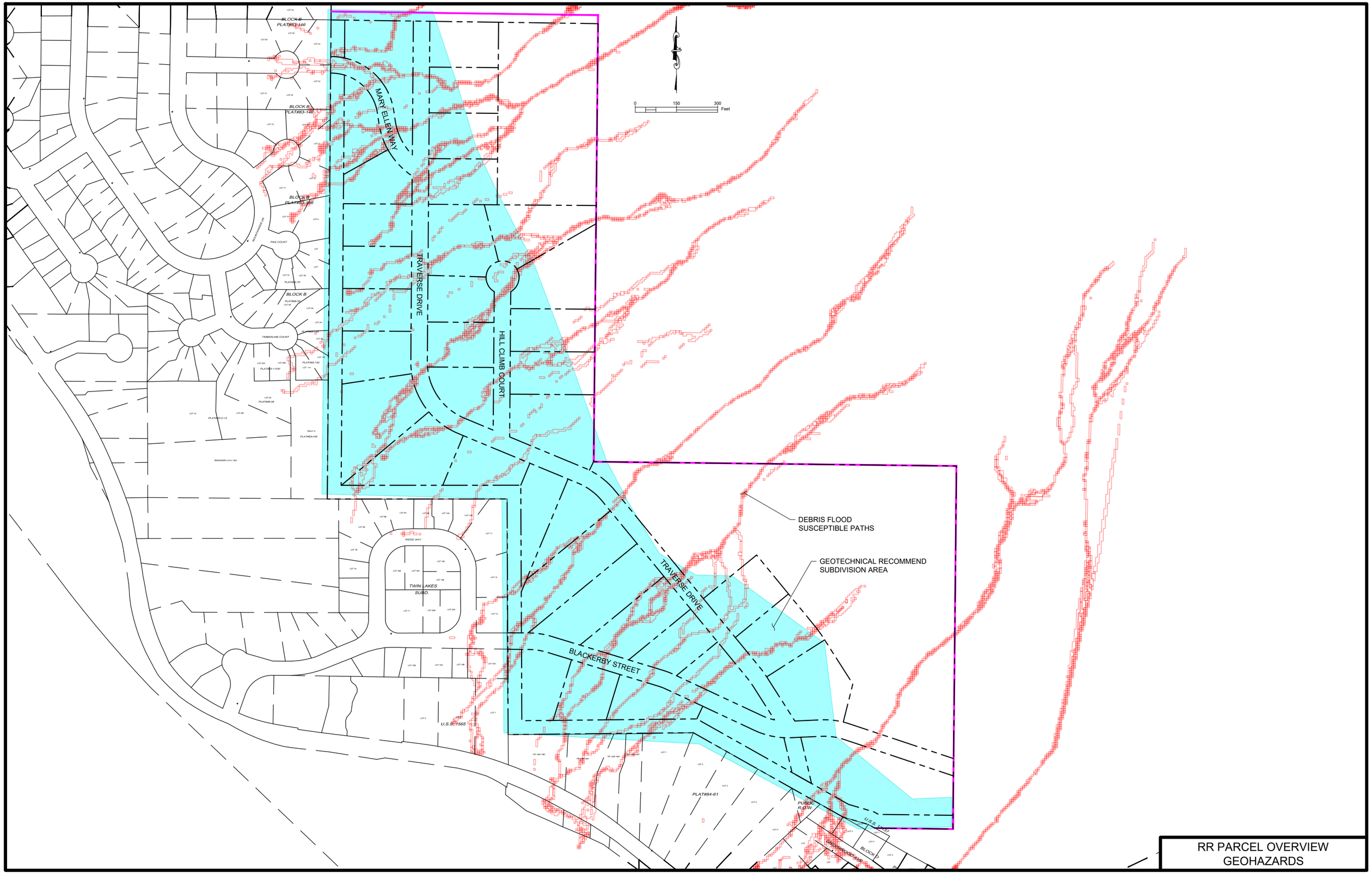
RR PARCEL OVERVIEW



Slopes Table

Number	Minimum Slope	Maximum Slope	Area	Color
1	18.00%	30.00%	1317059.61	
2	30.00%	3226.62%	2359060.66	

RR PARCEL OVERVIEW SLOPE MAP


BLOCK B
PLAT#83-146
MARY ELLEN WAY
TRAVERSE DRIVE
HILL CLIMB COURT
0
150
300
Feet
PINE COURT
TIMBERLINE COURT
RIDGE WAY
TWIN LAKES
SUBD.
BLACKERBY STREET
U.S.S. 1565
PLAT#84-61
PUBLIC
R.O.W.
U.S.S. 1272
GREENWOOD AVE.
BLOCK D
DEBRIS FLOOD
SUSCEPTIBLE PATHS
GEOTECHNICAL RECOMMEND
SUBDIVISION AREA
RR PARCEL OVERVIEW
GEOHAZARDS

0 50 100 Feet

HILL CLIMB COURT

TRAVERSE DRIVE

MARY ELLEN WAY

RR PARCEL PLAN 1 OF 3

HILL CLIMB COURT

403+00 402+00 401+00 400+00

TRAVERSE DRIVE

321+00 320+00 319+00 318+00 317+00 316+00 315+00 314+00 313+00

BLACKERBY STREET

105+00 104+00 103+00 102+00 101+00 100+00

RIDGE WAY

TWIN LAKES SUBD.

U.S.S. 1565

FR. USS 1861

FR. USS 1861

LOT 1 LOT 2 LOT 3

LOT 7A LOT 7B LOT 8A LOT 8B LOT 9A LOT 9B LOT 10A LOT 10B LOT 11 LOT 12 LOT 13 LOT 14A LOT 14B LOT 15A LOT 15B LOT 18A LOT 18B LOT 19A LOT 19B LOT 20A LOT 20B LOT 11

200 201 202 203 204 205 206 207 208 209 210 216 400 401 408 2

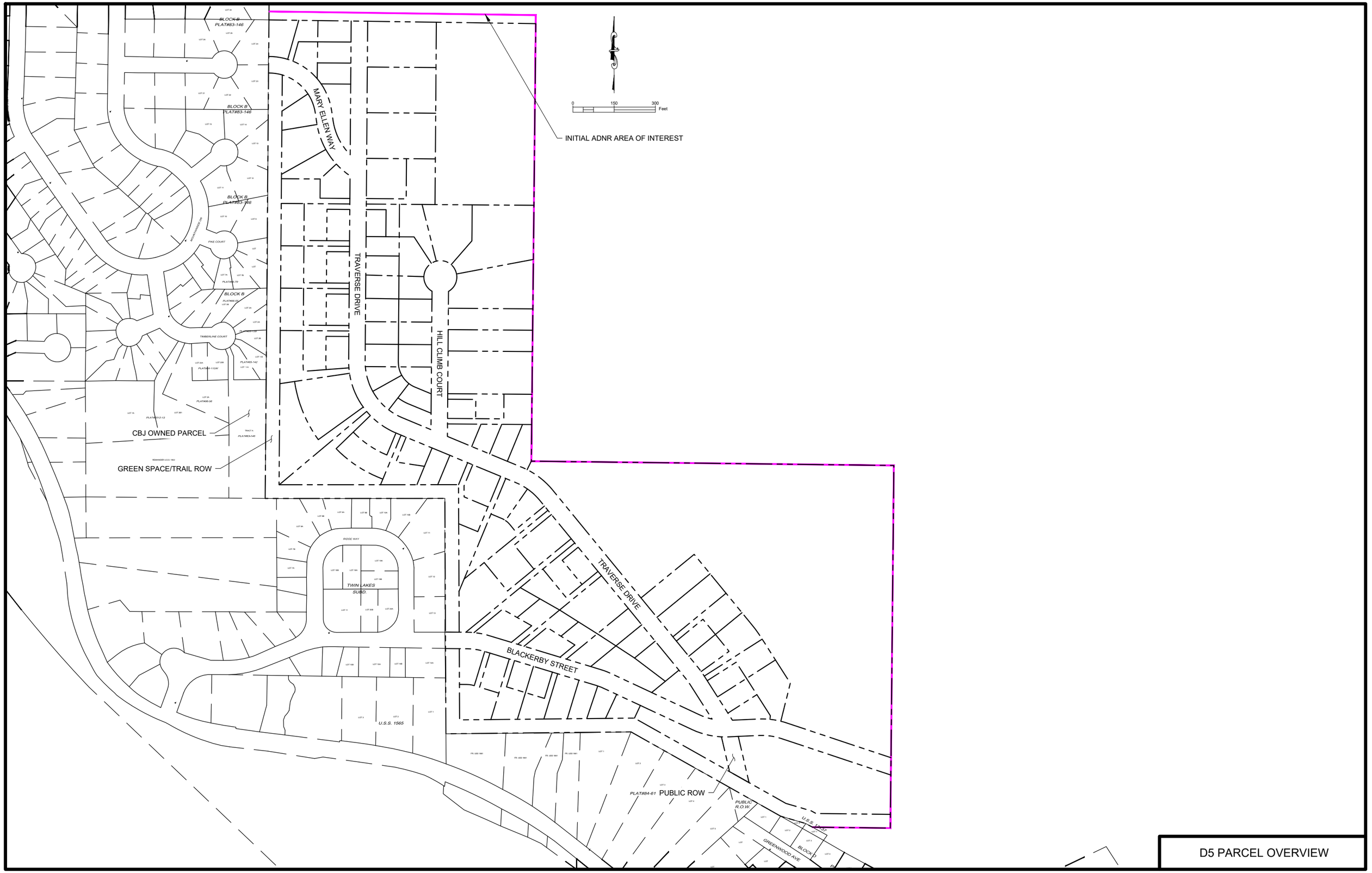
300 275 250 225 200 175 150 125 100 75 50 25

0 50 100 Feet

RR PARCEL PLAN 2 OF 3

RR PARCEL PLAN 3 OF 3

Appendix C – Residential District D-5 Subdivision Parcel Plans



D5 PARCEL OVERVIEW



Slopes Table				
Number	Minimum Slope	Maximum Slope	Area	Color
1	18.00%	30.00%	1317059.61	
2	30.00%	3226.62%	2359060.66	

D5 PARCEL OVERVIEW SLOPE MAP

0 150 300 Feet

DEBRIS FLOOD SUSCEPTIBLE PATHS

GEOTECHNICAL RECOMMEND SUBDIVISION AREA

MARY ELLEN WAY

TRAVERSE DRIVE

HILL CLIMB COURT

BLACKERBY STREET

PINE COURT

TIMBERLINE COURT

RIDGE WAY

TWIN LAKES SUBD.

BLOCK B PLAT#83-146

PLAT#83-79

PLAT#85-142

PLAT#64-61

U.S.S. 1565

U.S.S. 1747

PUBLIC R.O.W.

GREENWOOD AVE.

BLOCK D

D5 PARCEL OVERVIEW
GEOHAZARDS

0 50 100 Feet

HILL CLIMB COURT

TRAVERSE DRIVE

MARY ELLEN WAY

300+00 301+00 302+00 303+00 304+00 305+00 306+00 307+00 308+00 309+00 310+00 311+00 312+00 313+00 314+00 315+00 316+00

406+00 405+00 404+00 403+00 402+00 401+00

203+00 204+00 205+00 206+00 207+00 208+00

LOT 34 LOT 24 LOT 23 LOT 13 LOT 9 LOT LOT LOT 2A LOT 2B LOT 1-B

D5 PARCEL PLAN 1 OF 3

HILL CLIMB COURT

403+00 402+00 401+00 400+00

TRAVERSE DRIVE

BLACKERBY STREET

RIDGE WAY

TWIN LAKES SUBD.

U.S.S. 1565

FR. USS 1861

LOT 10B LOT 11 LOT 12 LOT 13 LOT 14A LOT 14B LOT 15A LOT 15B LOT 10A LOT 9B LOT 9A LOT 8B LOT 8A LOT 7B LOT 7A LOT 19A LOT 19B LOT 20A LOT 20B LOT 18A LOT 18B LOT 11 LOT 1 LOT 2 LOT 3

0 50 100 Feet

D5 PARCEL PLAN 2 OF 3

D5 PARCEL PLAN 3 OF 3

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	9,621.13	408.03	130.00 1.56 25.87 27.07 130.01 28.71 63.24 1.56	S16° 56' 19.47"W N73° 03' 40.53"W N81° 17' 47.71"W N89° 31' 54.89"W N0° 15' 20.27"W S89° 31' 54.89"E S81° 17' 47.71"E S73° 03' 40.53"E
102	17,904.45	751.24	130.00 20.00 130.00 73.52 100.46 113.67 129.09 27.07 25.87 1.56	N16° 56' 19.47"E S73° 03' 40.53"E S16° 56' 19.47"W S73° 03' 40.53"E S16° 56' 19.47"W S89° 24' 45.60"W N0° 15' 20.27"W S89° 31' 54.89"E S81° 17' 47.71"E S73° 03' 40.53"E
103	9,556.97	407.03	73.52 130.00 73.52 130.00	S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W N16° 56' 19.47"E
104	12,672.92	620.47	20.00 100.00 72.07 101.39 96.55 100.46 130.00	S73° 03' 40.53"E S16° 56' 19.47"W S73° 03' 40.53"E S16° 56' 19.47"W S89° 24' 45.60"W N16° 56' 19.47"E N16° 56' 19.47"E
105	7,206.78	344.14	72.07 100.00 72.07 100.00	S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W N16° 56' 19.47"E
106	7,206.78	344.14	72.07 100.00 72.07 100.00	S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W N16° 56' 19.47"E
107	9,996.05	562.32	20.00 172.31 96.55 101.39 72.07 100.00	S73° 03' 40.53"E S16° 56' 19.47"W S89° 24' 45.60"W N16° 56' 19.47"E S73° 03' 40.53"E N16° 56' 19.47"E
108	12,910.21	484.86	80.92 146.76 84.86 172.31	S73° 03' 40.53"E S16° 56' 19.47"W S89° 24' 45.60"W N16° 56' 19.47"E
109	9,451.53	414.61	6.71 125.33 71.00 146.76 64.82	S72° 11' 16.77"E S18° 41' 07.00"W S89° 24' 45.60"W N16° 56' 19.47"E S73° 03' 40.53"E
110	7,720.81	365.59	51.25 96.37 68.38 125.33 24.27	S64° 59' 37.55"E S25° 00' 22.45"W S89° 24' 45.60"W N18° 41' 07.00"E S68° 09' 15.28"E
111	7,000.00	347.77	95.12 50.81 105.47 96.37	S64° 59' 37.55"E S25° 00' 22.45"W S89° 24' 45.60"W N25° 00' 22.45"E
200	14,805.74	584.37	191.69 64.15 64.15 38.45 26.07 150.85 49.00	N64° 59' 37.55"W N50° 39' 44.83"E N50° 39' 44.83"E S39° 20' 15.17"E S35° 56' 36.09"E S32° 32' 57.00"E N71° 22' 30.18"W
201	10,985.40	437.76	96.91 136.41 64.15 140.28	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N52° 50' 31.66"W
202	8,423.05	376.39	80.96 121.32 77.19 96.91	N56° 53' 07.21"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W
203	10,307.22	425.21	121.32 80.96 145.73 77.19	S50° 39' 44.83"W N56° 53' 07.21"W N50° 39' 44.83"E S39° 20' 15.17"E
204	26,369.63	658.84	145.73 81.09 81.09 197.08 153.84	S50° 39' 44.83"W N57° 47' 39.73"W N57° 47' 39.73"W N50° 39' 44.83"E S39° 20' 15.17"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
205	14,796.53	772.04	20.00 197.08 82.42 82.42 106.29 133.83 75.00 75.00	S39° 20' 15.17"E S50° 39' 44.83"W N60° 23' 21.73"W N60° 23' 21.73"W N50° 39' 44.83"E S39° 20' 15.17"E N50° 39' 44.83"E N50° 39' 44.83"E
206	11,537.43	567.66	20.00 75.00 113.83 75.00 133.83 150.00	S39° 20' 15.17"E S50° 39' 44.83"W S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
207	8,537.43	377.66	113.83 75.00 113.83 75.00	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
208	19,182.37	645.39	140.28 64.15 163.68 39.43 38.27 118.62 80.96	S52° 50' 31.66"E S50° 39' 44.83"W N64° 59' 37.55"W N69° 01' 39.04"W N73° 03' 40.53"W N50° 39' 44.83"E S56° 53' 07.21"E
209	10,202.70	438.12	92.81 145.73 80.96 118.62	N73° 03' 40.53"W N50° 39' 44.83"E S56° 53' 07.21"E S50° 39' 44.83"W
210	7,662.05	463.29	82.23 81.09 145.73 24.05 70.18 60.01	N50° 39' 44.83"E S57° 47' 39.73"E S50° 39' 44.83"W N73° 03' 40.53"W N50° 39' 44.83"E N57° 47' 39.73"W
211	10,152.11	435.24	70.18 136.88 108.17 60.01 60.01	S50° 39' 44.83"W N73° 03' 40.53"W N50° 39' 44.83"E S57° 47' 39.73"E S57° 47' 39.73"E
212	8,555.47	552.63	24.05 197.08 81.09 82.23 60.01 108.17	N73° 03' 40.53"W N50° 39' 44.83"E S57° 47' 39.73"E S50° 39' 44.83"W N57° 47' 39.73"W S50° 39' 44.83"W
213	10,096.77	567.26	24.05 95.58 60.99 107.15 82.42 197.08	N73° 03' 40.53"W N50° 39' 44.83"E N60° 23' 21.73"W N50° 39' 44.83"E S60° 23' 21.73"E S50° 39' 44.83"W
214	12,804.35	493.02	56.13 134.49 60.99 60.99 95.58 84.85	N78° 48' 13.29"W N50° 39' 44.83"E S60° 23' 21.73"E S60° 23' 21.73"E S50° 39' 44.83"W N73° 03' 40.53"W
215	11,070.70	671.34	5.64 256.29 82.42 107.15 60.99 134.49 24.37	N89° 31' 54.89"W N50° 39' 44.83"E S60° 23' 21.73"E S50° 39' 44.83"W N60° 23' 21.73"W S50° 39' 44.83"W N87° 02' 20.47"W
216	19,897.19	577.40	113.70 175.00 113.70 175.00	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
217	20,212.28	867.40	20.00 175.00 113.70 125.00 133.70 300.00	S39° 20' 15.17"E S50° 39' 44.83"W S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
218	33,291.77	1,281.79	23.83 149.04 48.20 94.44 133.70 125.00 175.00 20.00 150.00 106.29 256.29	N89° 31' 54.89"W N0° 15' 20.27"W N22° 29' 52.51"E N50° 39' 44.83"E S39° 20' 15.17"E N50° 39' 44.83"E N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W S50° 39' 44.83"W S50° 39' 44.83"W
219	9,616.55	417.38	27.23 140.00 27.23 22.11 140.00 60.81	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N47° 15' 19.85"W N34° 49' 35.47"E S47° 15' 19.85"E
220	10,216.45	425.95	47.34 140.00 17.21 40.70 140.00 40.70	S61° 20' 16.01"E S34° 49' 35.47"W N61° 20' 16.01"W N67° 30' 07.49"W N22° 29' 52.51"E S67° 30' 07.49"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
221	19,110.02	917.78	20.00 300.00 94.44 256.08 40.70 17.21 22.11 27.23 140.00	S39° 20' 15.17"E S50° 39' 44.83"W S50° 39' 44.83"W N22° 29' 52.51"E S67° 30' 07.49"E S61° 20' 16.01"E S47° 15' 19.85"E S39° 20' 15.17"E N50° 39' 44.83"E
222	12,906.74	447.47	110.00 120.00 94.32 40.55 82.60	S67° 30' 07.49"E S22° 29' 52.51"W N67° 30' 07.49"W N0° 15' 20.27"W N22° 29' 52.51"E
223	11,791.19	638.95	20.00 82.60 40.55 94.32 97.69 75.03 142.13 86.63	S67° 30' 07.49"E S22° 29' 52.51"W S0° 15' 20.27"E S67° 30' 07.49"E S22° 29' 52.51"W N67° 30' 07.49"W N0° 15' 20.27"W N22° 29' 52.51"E
224	15,119.85	1,002.70	20.00 140.00 256.08 48.20 245.70 75.03 97.69 120.00	S67° 30' 07.49"E S22° 29' 52.51"W S22° 29' 52.51"W S22° 29' 52.51"W N0° 15' 20.27"W S67° 30' 07.49"E N22° 29' 52.51"E N22° 29' 52.51"E
225	7,079.17	348.03	70.00 86.63 75.77 115.63	S67° 30' 07.49"E S22° 29' 52.51"W S89° 59' 25.54"W N22° 29' 52.51"E
226	9,109.57	406.05	54.77 115.63 75.77 72.32 72.32 15.23	S67° 30' 07.49"E S22° 29' 52.51"W S89° 59' 25.54"W N22° 29' 52.51"E N22° 29' 52.51"E S67° 30' 07.49"E
227	8,685.60	377.46	102.21 72.32 105.30 97.64	S67° 30' 07.49"E S22° 29' 52.51"W N81° 24' 56.05"W N22° 29' 52.51"E
228	12,084.78	622.82	20.00 97.64 105.30 72.32 132.28 21.95 173.33	S67° 30' 07.49"E S22° 29' 52.51"W S81° 24' 56.05"E S22° 29' 52.51"W S89° 59' 25.54"W N22° 29' 52.51"E N22° 29' 52.51"E
229	11,392.13	436.23	113.83 86.67 149.06 86.67	S55° 43' 43.59"E S22° 37' 29.04"W N55° 43' 43.59"W N45° 55' 03.77"E
230	17,945.61	720.41	19.38 173.33 19.38 185.30 86.67 149.06 86.67 0.62	S67° 30' 07.49"E S22° 29' 52.51"W N67° 30' 07.49"W N55° 47' 31.86"W N45° 55' 03.77"E S55° 43' 43.59"E N22° 37' 29.04"E S67° 26' 19.22"E
231	33,274.24	1,203.32	20.00 86.67 86.67 185.30 19.38 21.95 368.45 414.91	S42° 02' 09.63"E S45° 55' 03.77"W S45° 55' 03.77"W S55° 47' 31.86"E S67° 30' 07.49"E S22° 29' 52.51"W S89° 59' 25.54"W N50° 00' 36.98"E
232	36,848.34	768.84	101.00 101.00 230.77 202.00 134.06	S54° 06' 10.18"W S54° 06' 10.18"W N22° 10' 51.45"W N81° 32' 06.92"E S22° 10' 51.45"E
233	39,170.59	1,290.49	101.00 20.00 414.91 0.89 367.66 54.26 230.77 101.00	N54° 06' 10.18"E S37° 56' 36.42"E S50° 00' 36.98"W S89° 59' 25.54"W N0° 27' 00.08"E N81° 32' 06.92"E S22° 10' 51.45"E N54° 06' 10.18"E
234	9,761.72	401.22	23.44 83.00 30.39 90.69 83.00 90.69	S1° 58' 25.59"E S85° 37' 40.12"W N1° 58' 25.59"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
235	13,658.47	621.12	20.00 83.00 90.69 30.39 83.00 37.34 110.69 166.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W S1° 58' 25.59"E S85° 37' 40.12"W N1° 58' 25.59"W N0° 25' 28.71"E S89° 34' 31.29"E
236	20,094.78	867.58	20.00 202.00 54.26 193.56 83.73 110.69 37.34 83.00	S6° 25' 06.48"E S81° 32' 06.92"W S81° 32' 06.92"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S1° 58' 25.59"E N85° 37' 40.12"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
237	9,473.34	394.27	114.14 83.00 114.14 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
238	12,793.34	600.27	20.00 83.00 114.14 83.00 134.14 166.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
239	16,220.45	807.66	20.00 166.00 83.73 154.14 83.66 134.14 83.00 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S89° 34' 31.29"E
240	9,473.35	394.27	114.14 83.00 114.14 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
241	12,793.35	600.27	20.00 83.00 114.14 83.00 134.14 166.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
242	16,209.93	807.53	20.00 166.00 83.66 154.14 83.59 134.14 83.00 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S89° 34' 31.29"E
243	9,473.35	394.27	83.00 114.14 83.00 114.14	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
244	12,793.35	600.27	83.00 134.14 166.00 20.00 83.00 114.14	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W
245	16,199.41	807.39	20.00 166.00 83.59 154.14 83.52 134.14 83.00 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S89° 34' 31.29"E
246	14,859.58	679.01	83.52 90.00 140.97 70.00 108.51 20.00 166.00	N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
247	10,786.29	406.58	108.51 70.00 79.99 65.73 82.35	N89° 34' 31.29"W N0° 25' 28.71"E N47° 19' 22.02"E S49° 24' 08.51"E S0° 25' 28.71"W
248	11,386.35	487.45	79.99 140.97 16.10 184.65 65.73	S47° 19' 22.02"W N89° 34' 31.29"W N0° 27' 00.08"E N60° 46' 23.09"E S35° 57' 07.45"E
249	18,715.53	571.14	96.84 184.65 159.89 129.76	S19° 19' 06.09"E S60° 46' 23.09"W N0° 27' 00.08"E N80° 35' 24.74"E
250	11,316.69	430.67	4.16 129.76 70.00 113.46 74.11 39.18	S8° 59' 04.63"E S80° 35' 24.74"W N0° 27' 00.08"E N56° 27' 45.60"E S21° 02' 54.20"E S8° 33' 34.00"E
251	7,000.00	363.96	118.70 113.46 131.80	S53° 32' 24.31"E S56° 27' 45.60"W N0° 27' 00.08"E
300	19,561.07	582.20	13.06 91.11 70.00 125.00 100.38 142.63 40.02	N5° 52' 13.68"E N32° 32' 57.00"W N32° 32' 57.00"W N57° 27' 03.00"E S32° 32' 57.00"E S14° 03' 32.64"W N80° 02' 06.84"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
301	8,313.90	396.40	30.38 125.00 91.11 13.06 41.15 95.71	N32° 32' 57.00"W N57° 27' 03.00"E S32° 32' 57.00"E S5° 52' 13.68"W N88° 20' 21.66"W S87° 27' 03.00"W
302	8,750.00	390.00	70.00 125.00 70.00 125.00	N32° 32' 57.00"W N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W
303	8,750.00	390.00	70.00 125.00 70.00 125.00	N32° 32' 57.00"W N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W
304	13,750.00	680.00	20.00 250.00 90.00 125.00 70.00 125.00	N32° 32' 57.00"W N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W S57° 27' 03.00"W
305	17,172.13	720.05	16.47 125.00 24.16 54.78 125.00 54.78 62.79 3.53 250.00 3.53	N34° 14' 03.12"W N54° 04' 50.77"E N37° 37' 42.20"W N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S35° 56' 36.09"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W
306	9,401.85	400.43	54.78 125.00 54.78 24.16 125.00 16.71	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S37° 37' 42.20"E S54° 04' 50.77"W N37° 37' 42.20"W
307	8,935.75	392.97	71.49 125.00 71.49 125.00	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W
308	13,935.75	682.97	20.00 250.00 91.49 125.00 71.49 125.00	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W S50° 39' 44.83"W
309	22,871.49	682.97	125.00 125.00 91.49 250.00 91.49	N50° 39' 44.83"E N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W
310	22,871.49	682.97	250.00 91.49 125.00 125.00 91.49	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W S50° 39' 44.83"W N39° 20' 15.17"W
400	9,383.81	424.11	59.34 144.81 33.36 133.10 34.58 18.92	N67° 30' 07.49"W N22° 29' 52.51"E S89° 34' 31.29"E S0° 35' 16.94"W S26° 22' 07.73"W N65° 33' 59.88"W
401	9,143.47	406.78	116.43 75.54 144.81 70.00	N22° 29' 52.51"E S89° 34' 31.29"E S22° 29' 52.51"W N67° 30' 07.49"W
402	7,156.45	350.01	88.04 75.54 116.43 70.00	N22° 29' 52.51"E S89° 34' 31.29"E S22° 29' 52.51"W N67° 30' 07.49"W
403	7,000.00	351.48	45.54 121.97 88.04 95.92	N0° 25' 28.71"E S89° 34' 31.29"E S22° 29' 52.51"W N67° 30' 07.49"W
404	7,163.33	344.67	70.00 102.33 70.00 102.33	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
405	11,256.67	589.33	20.00 204.67 90.00 102.33 70.00 102.33	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E N89° 34' 31.29"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
406	15,301.69	833.12	20.00 102.33 102.33 90.00 102.05 110.00 33.36 75.54 75.54 121.97	N0° 25' 28.71"E S89° 34' 31.29"E S89° 34' 31.29"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W N89° 34' 31.29"W N89° 34' 31.29"W N89° 34' 31.29"W N89° 34' 31.29"W
407	47,742.25	924.97	307.16 155.54 102.05 204.67 155.54	S89° 34' 31.29"E S0° 35' 16.94"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 25' 28.71"E
408	23,896.95	770.09	307.16 77.77 307.38 77.77	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
409	23,914.20	770.53	307.38 77.77 307.60 77.77	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
410	44,667.19	908.04	74.54 284.66 180.02 307.60 61.20	N24° 49' 56.39"E N79° 14' 24.07"E S0° 35' 16.94"W N89° 34' 31.29"W N0° 25' 28.71"E
411	54,253.35	992.21	41.58 89.40 224.84 196.86 284.66 40.00 114.86	N0° 25' 28.71"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W S79° 14' 24.07"W N29° 51' 30.87"W N41° 02' 34.20"E
412	29,760.66	698.39	212.46 47.10 135.21 89.40 41.58 114.86 57.78	N14° 07' 50.41"W S89° 34' 31.29"E S89° 34' 31.29"E S0° 25' 28.71"W S0° 25' 28.71"W S41° 02' 34.20"W N76° 32' 38.11"W
413	15,228.93	601.48	53.78 118.16 82.22 212.46 20.00 114.86	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S14° 07' 50.41"E S66° 19' 12.12"W N33° 13' 45.35"W
414	12,915.31	459.61	90.72 72.47 70.00 53.78 114.86 57.78	N88° 24' 09.96"W N0° 25' 28.71"E N0° 25' 28.71"E S89° 34' 31.29"E S33° 13' 45.35"E S29° 11' 02.35"W
415	8,816.14	387.77	28.63 120.69 83.67 90.72 64.06	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S88° 24' 09.96"E S28° 59' 20.62"E
416	10,098.37	408.72	83.67 120.69 83.67 120.69	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
417	9,871.20	404.96	81.79 120.69 81.79 120.69	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
418	9,848.00	403.14	81.68 118.98 18.45 63.34 120.69	S0° 25' 28.71"W N89° 34' 31.29"W N4° 53' 51.44"W N0° 25' 28.71"E S89° 34' 31.29"E
419	8,026.15	379.10	97.49 63.34 26.34 40.33 32.62 118.98	S0° 25' 28.71"W N67° 30' 07.49"W N59° 54' 12.05"W N40° 40' 15.54"W N19° 37' 43.02"W S89° 34' 31.29"E
420	7,292.25	359.05	70.51 89.84 43.67 65.34 26.34 63.34	S0° 25' 28.71"W N67° 30' 07.49"W N59° 54' 12.05"W N37° 41' 43.38"E S59° 54' 12.05"E S67° 30' 07.49"E
421	8,416.42	419.21	58.35 55.34 43.67 89.84 59.72 112.28	N59° 54' 12.05"W N37° 41' 43.38"E S59° 54' 12.05"E S67° 30' 07.49"E S0° 25' 28.71"W N67° 30' 07.49"W

D5 PARCEL TABLES 1

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
422	7,824.80	371.05	89.34 120.69 40.33 65.34 55.34	N40° 40' 15.54"W N60° 57' 45.55"E S40° 40' 15.54"E S37° 41' 43.38"W S37° 41' 43.38"W
423	7,688.41	369.70	94.76 121.63 32.62 120.69	N16° 41' 52.39"W S89° 34' 31.29"E S19° 37' 43.02"E S60° 57' 45.55"W
424	9,866.70	405.86	63.38 120.69 63.34 18.45 121.63 18.37	N0° 25' 28.71"E S89° 33' 18.98"E S0° 25' 28.71"W S4° 53' 51.44"E N89° 34' 31.29"W N1° 58' 00.81"W
425	9,868.64	404.92	81.75 120.69 81.79 120.69	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 33' 18.98"W
426	10,172.90	409.96	84.91 120.69 83.67 120.69	N0° 25' 28.71"E S88° 59' 20.40"E S0° 25' 28.71"W N89° 34' 31.29"W
427	10,172.90	409.99	84.91 120.71 83.67 120.69	N0° 25' 28.71"E S88° 24' 09.96"E S0° 25' 28.71"W N88° 59' 20.40"W
428	8,597.27	383.87	70.00 120.69 72.47 120.71	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N88° 24' 09.96"W
429	8,448.20	381.38	70.00 72.00 48.69 70.00 120.69	N0° 25' 28.71"E S89° 34' 31.29"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
430	7,067.36	340.32	98.16 72.00 98.16 72.00	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
431	7,192.94	477.69	20.00 120.69 118.16 48.69 98.16 72.00	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E N89° 34' 31.29"W
432	20,354.68	832.47	20.00 145.00 146.24 105.00 166.24 47.10 82.22 120.69	N0° 25' 28.71"E S89° 34' 31.29"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N89° 34' 31.29"W
433	21,204.08	582.47	47.15 145.00 146.24 145.00 99.09	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
434	41,558.77	832.47	250.00 166.24 105.00 145.00 166.24	S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 25' 28.71"E
435	41,558.77	832.47	250.00 166.24 250.00 166.24	S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
436	41,433.96	831.48	250.01 164.90 250.00 166.57	S89° 11' 38.33"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
500	15,487.21	647.89	104.12 107.68 256.88 140.03 39.18	N21° 31' 40.34"W S89° 34' 31.29"E S0° 25' 28.71"W N26° 47' 37.35"W N8° 33' 34.00"W

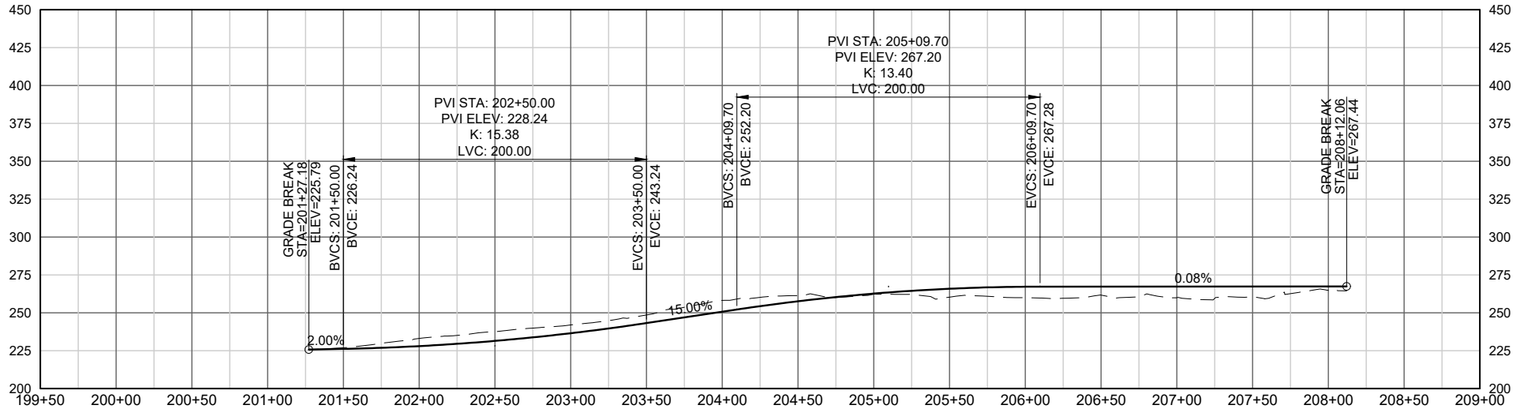
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
501	9,197.48	387.53	23.79 57.70 121.90 76.47 107.68	N37° 27' 34.21"W N0° 48' 21.67"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
502	9,301.92	396.23	76.47 121.90 76.47 121.39	S0° 25' 28.71"W N89° 34' 31.29"W N0° 48' 21.67"E S89° 34' 31.29"E
503	9,336.04	396.41	76.47 121.39 77.48 120.88 0.20	S0° 25' 28.71"W N89° 34' 31.29"W N0° 48' 21.67"E S89° 11' 38.33"E S0° 25' 28.71"W
504	7,987.52	387.76	109.95 73.65 70.00 76.47 57.70	N54° 07' 03.56"W N15° 51' 39.43"E S89° 34' 31.29"E S0° 48' 21.67"W S0° 48' 21.67"W
505	7,655.85	458.72	20.03 147.57 70.00 77.48 70.00 73.65	N70° 18' 24.76"W N15° 45' 18.77"E S89° 11' 38.33"E S0° 48' 21.67"W N89° 34' 31.29"W S15° 51' 39.43"W
506	12,224.04	459.56	0.36 133.28 50.00 58.36 147.57 70.00	S89° 45' 39.61"W N0° 27' 00.08"E S89° 11' 38.33"E S89° 11' 38.33"E S15° 45' 18.77"W N81° 31' 12.26"W

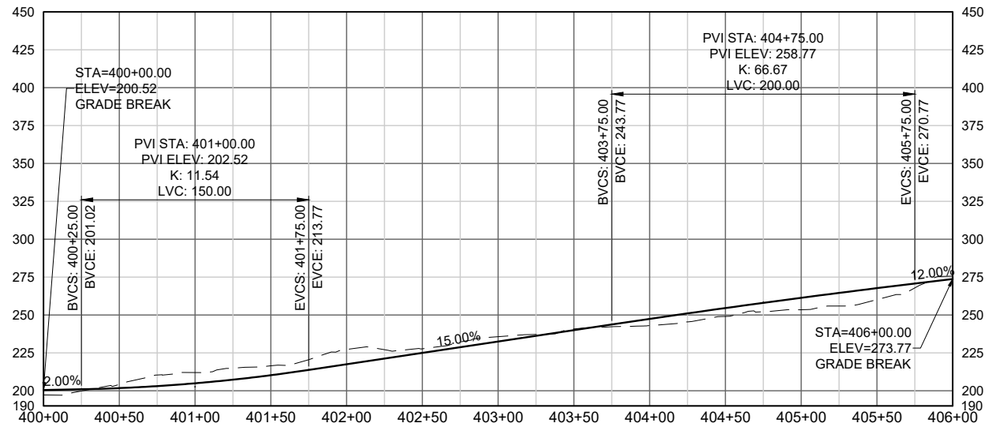
D5 PARCEL TABLES 2

Appendix D – Proposed RR to D-5 Subdivision Alignment Profiles

Profile View of AL-MARY ELLEN WAY

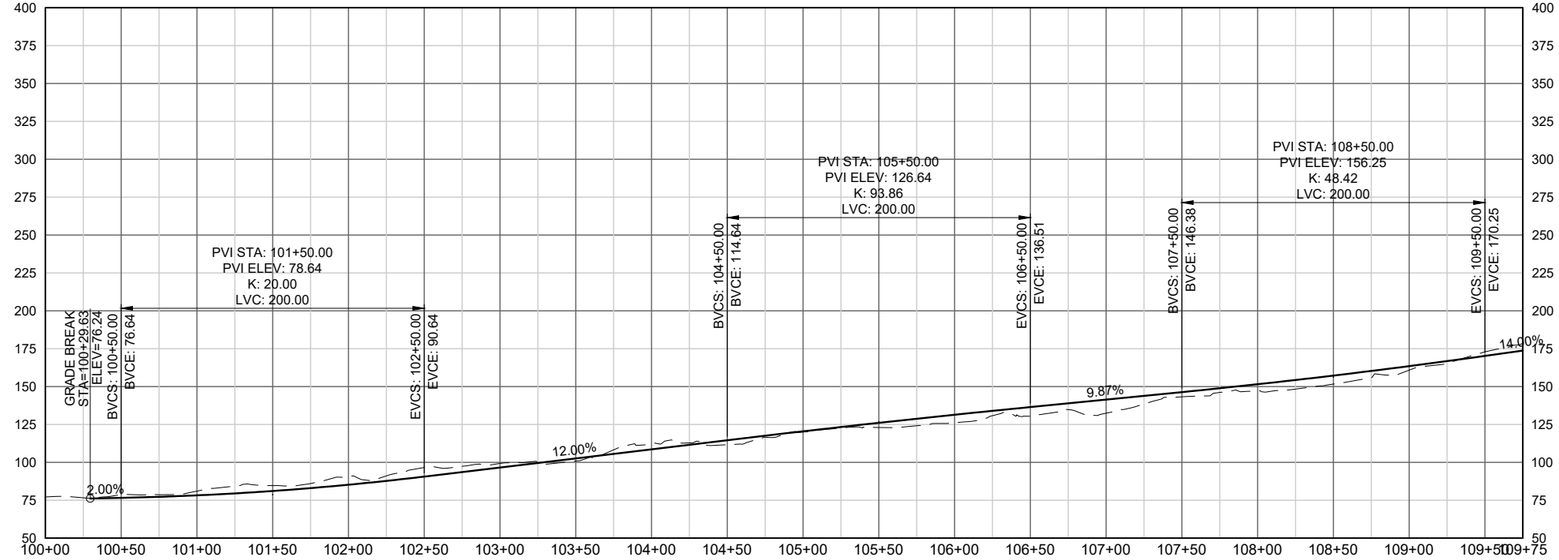


Profile View of AL-HILL CLIMB COURT

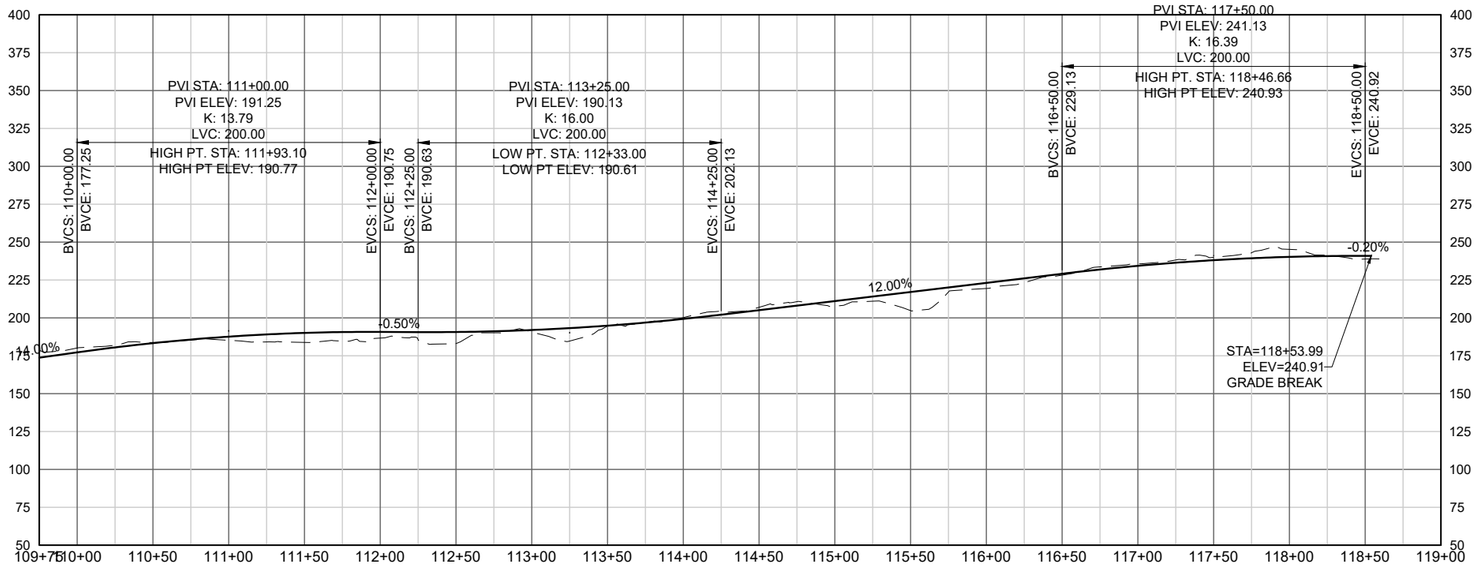


MARY ELLEN WAY & HILL CLIMB COURT PROFILES

Profile View of AL-BLACKERBY STREET

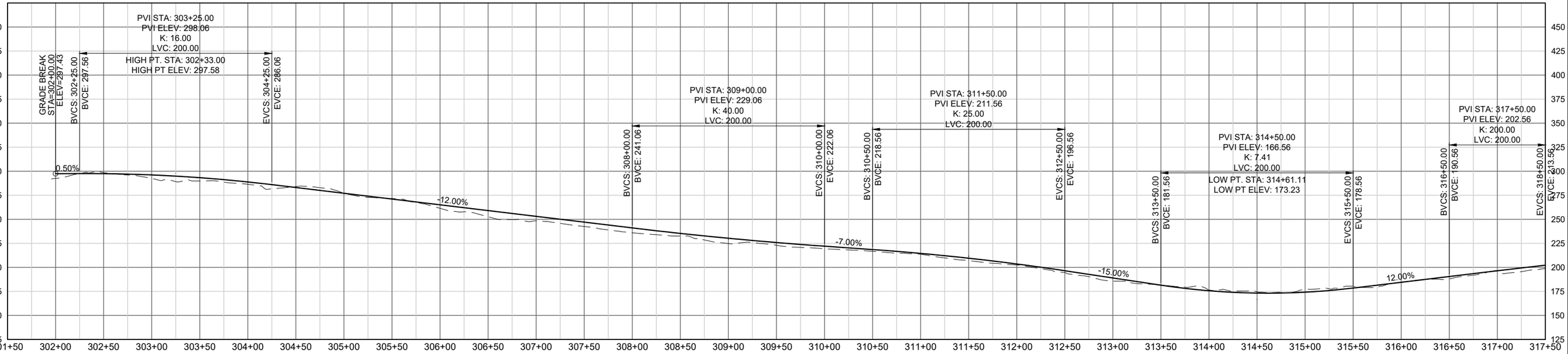


Profile View of AL-BLACKERBY STREET

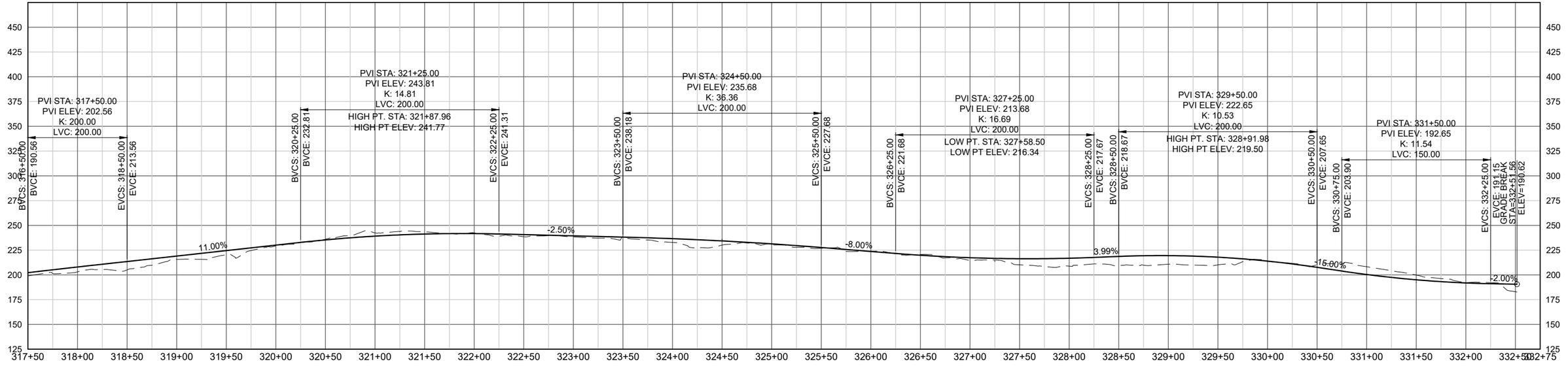


BLACKERBY STREET PROFILE

Profile View of AL-TRAVERSE DRIVE



Profile View of AL-TRAVERSE DRIVE



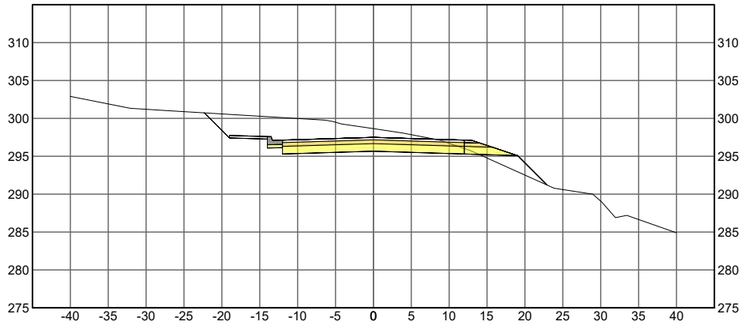
TRAVERSE DRIVE PROFILE

Appendix E – Proposed RR to D-5 Subdivision Alignment Cross Sections

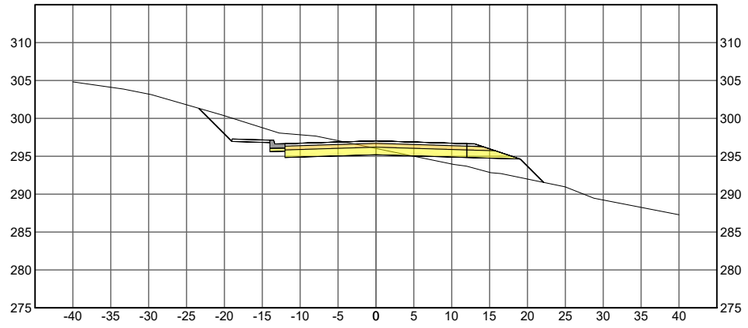
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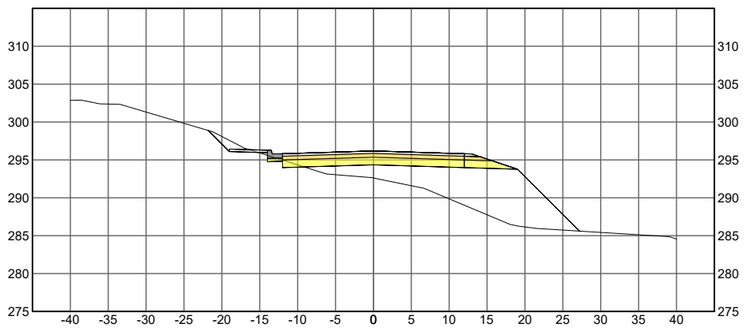
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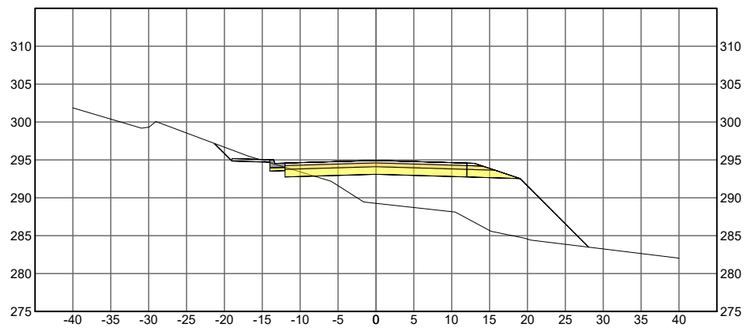
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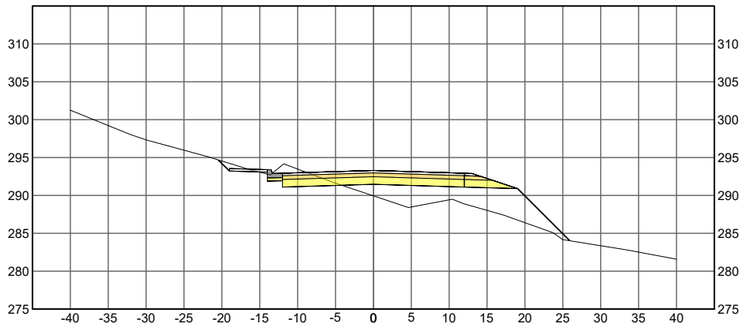
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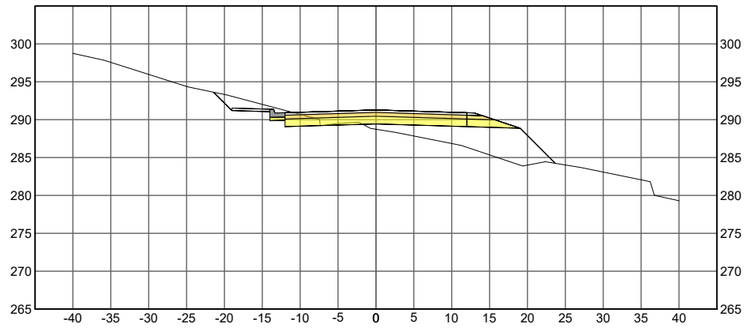
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303+50.00



303+75.00



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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

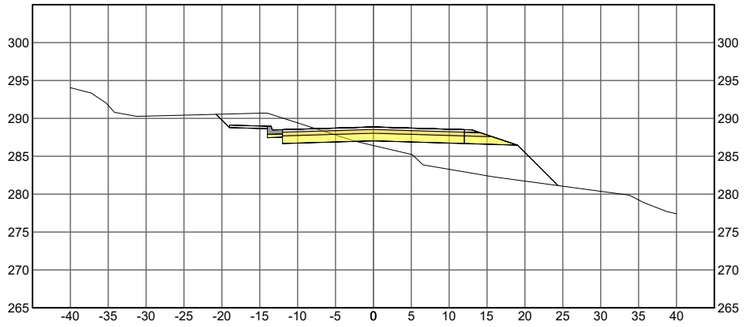
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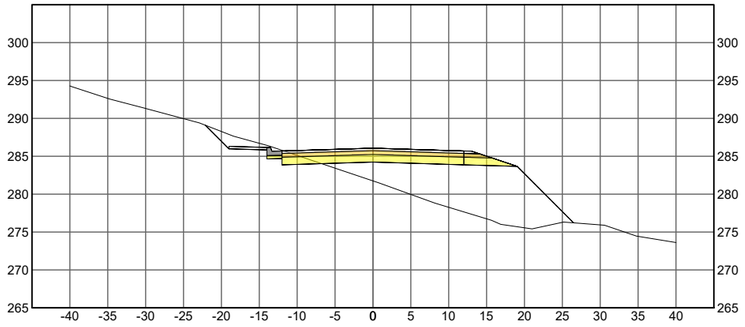
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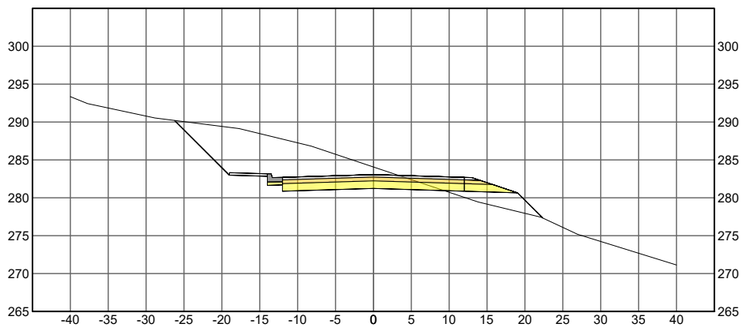
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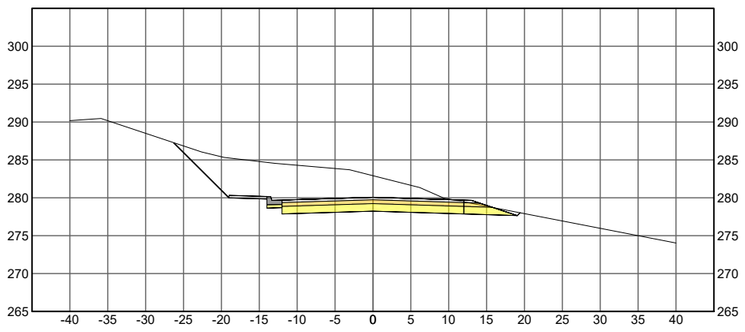
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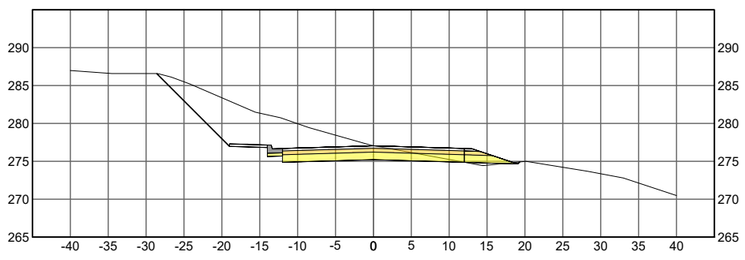
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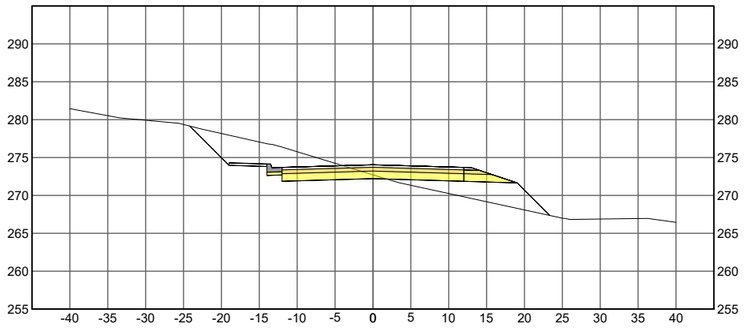
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305+00.00



305+25.00



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PROJECT NO: WO 02-25

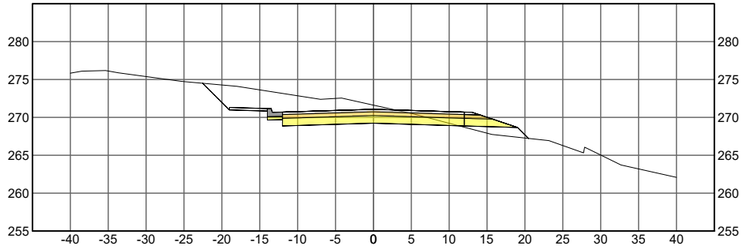
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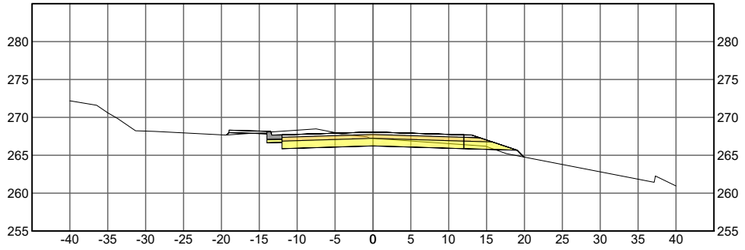
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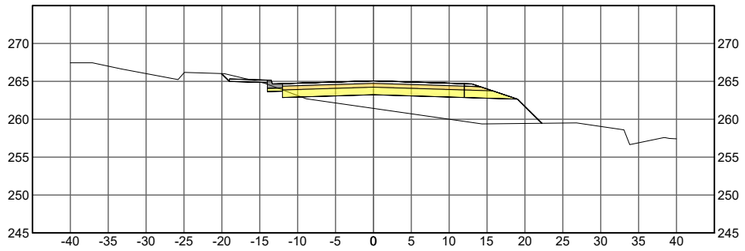
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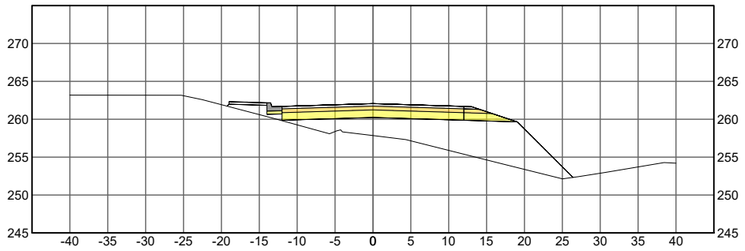
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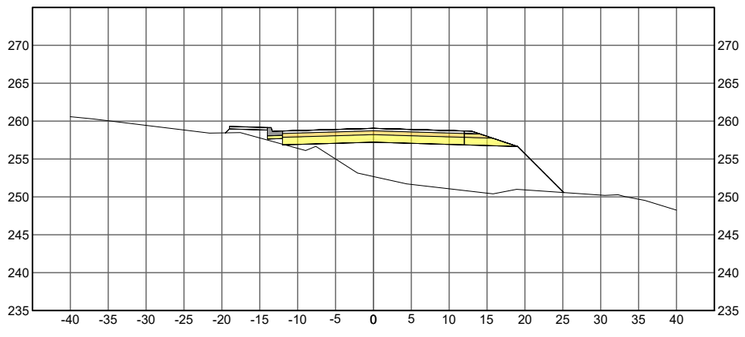
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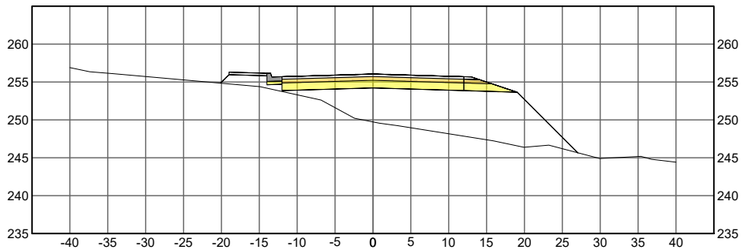
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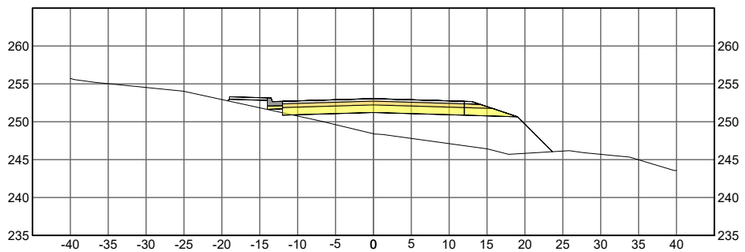
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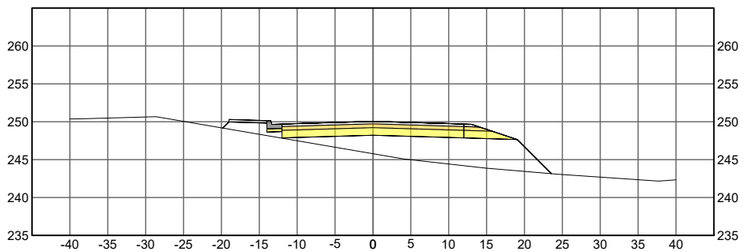
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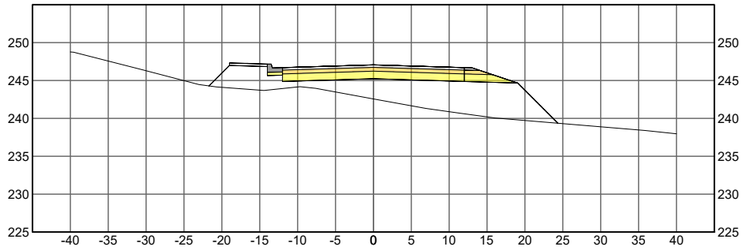
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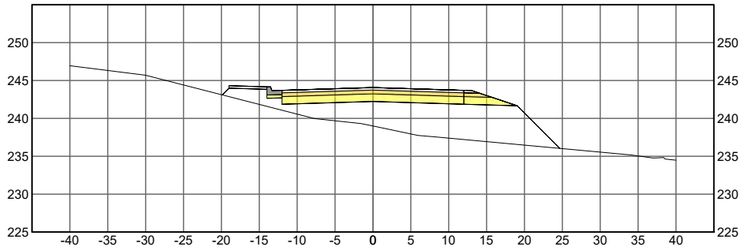
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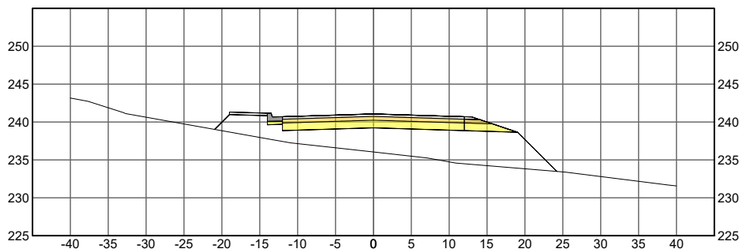
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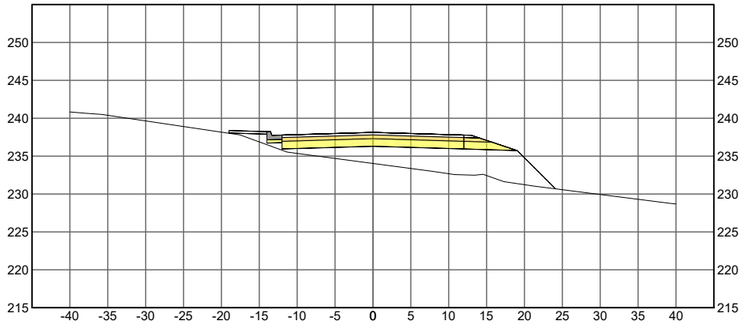
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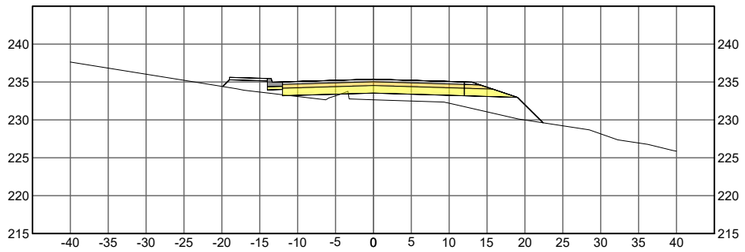
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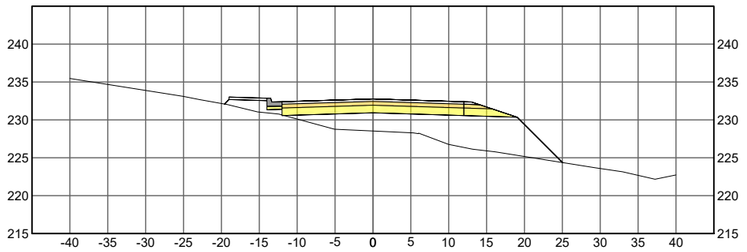
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CERTIFICATE OF AUTHORIZATION
#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

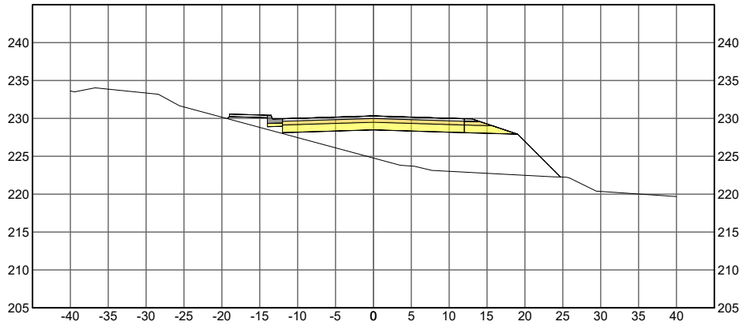
SHEET TITLE:
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DATE:
8/26/2025

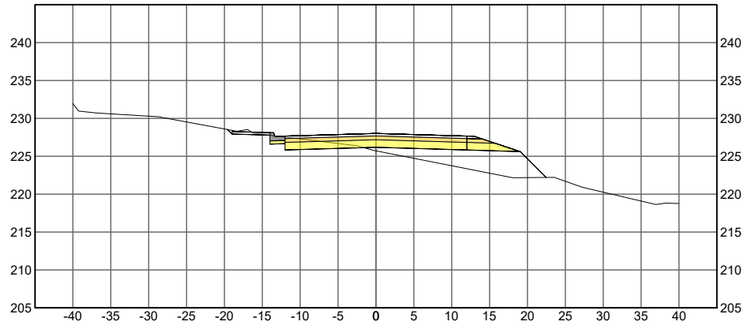
PLOT DATE: 8/26/2025

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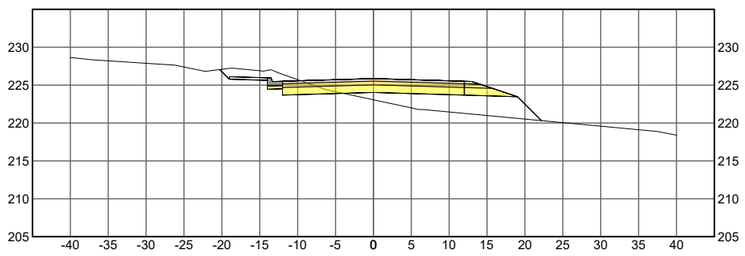
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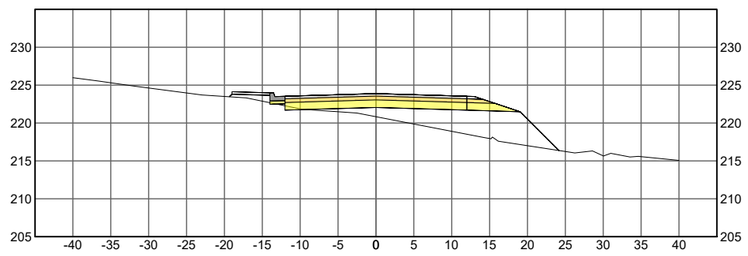
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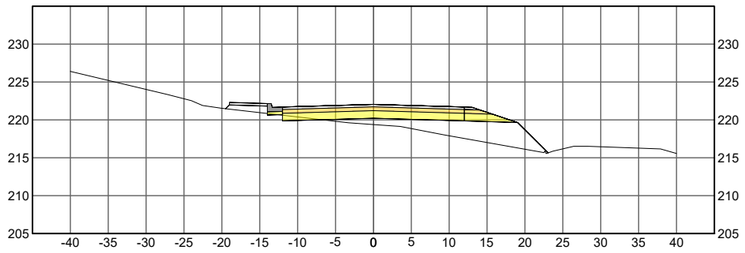
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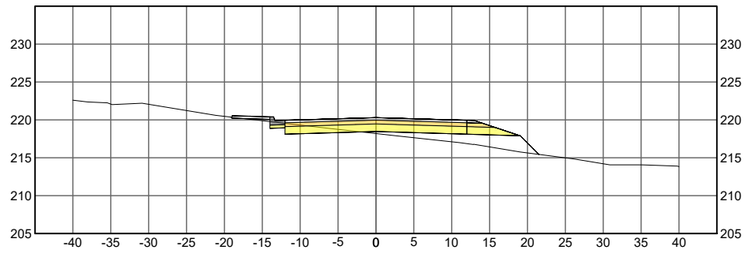
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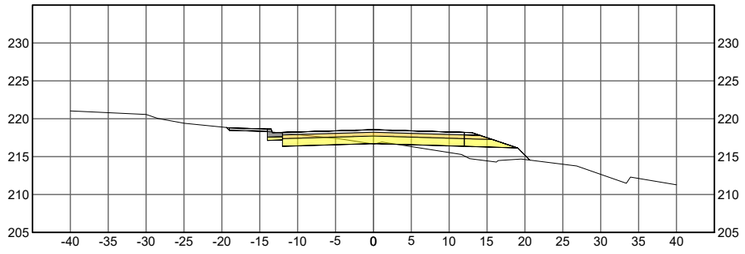
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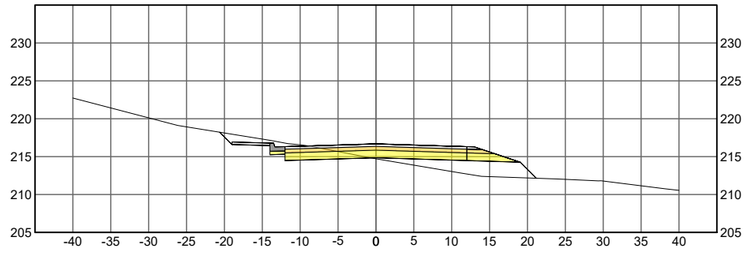
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

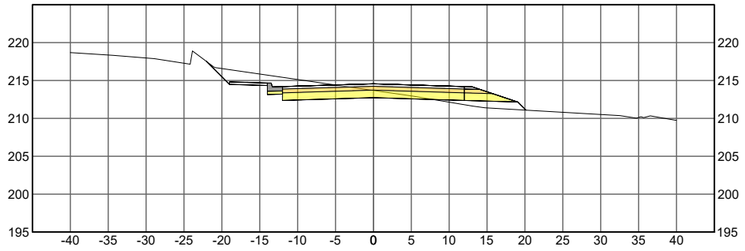
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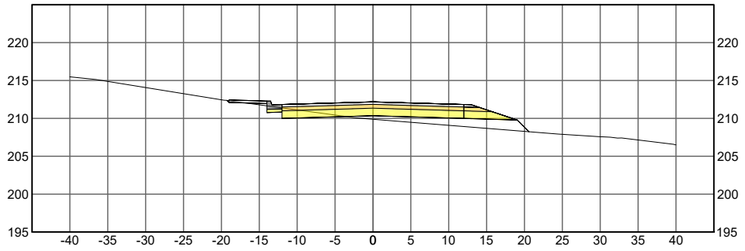
DATE:
8/26/2025

PLOT DATE: 8/26/2025
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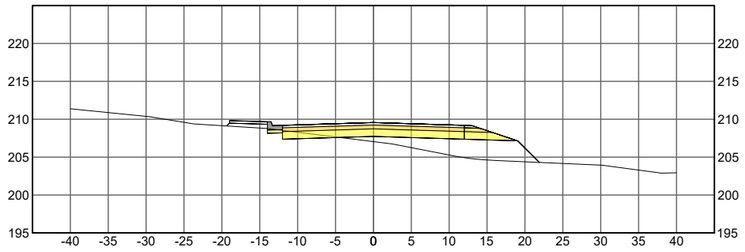
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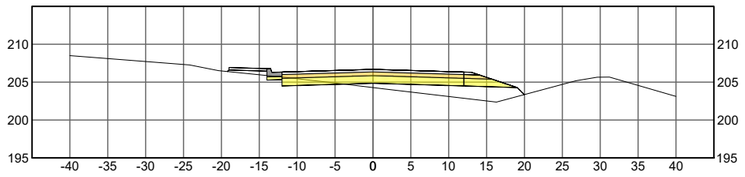
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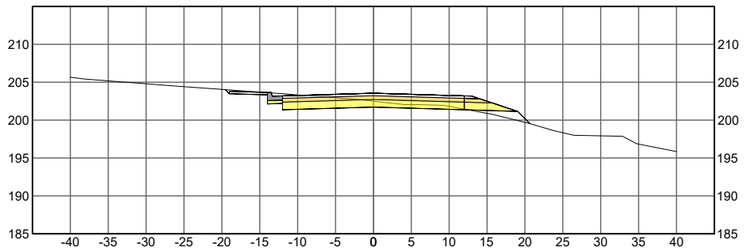
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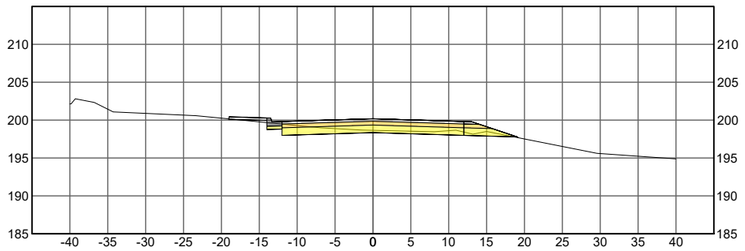
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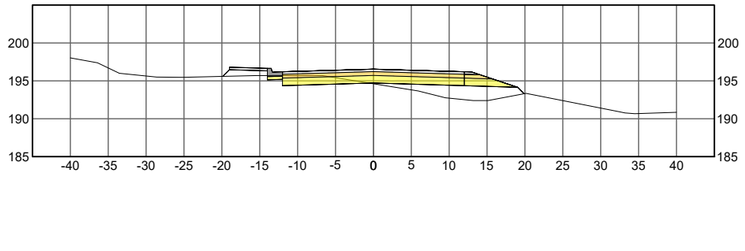
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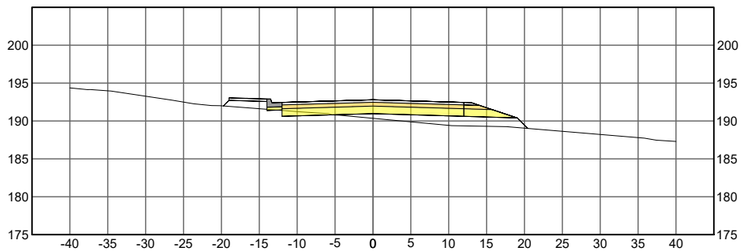
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

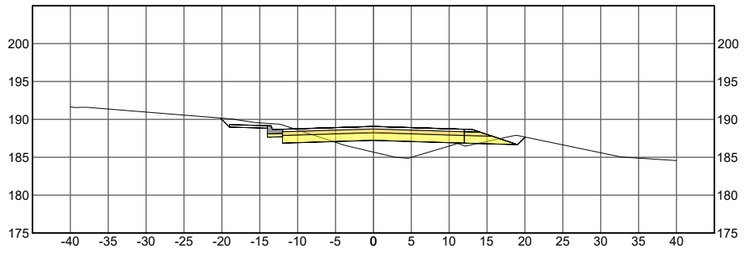
SHEET TITLE:
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DATE:
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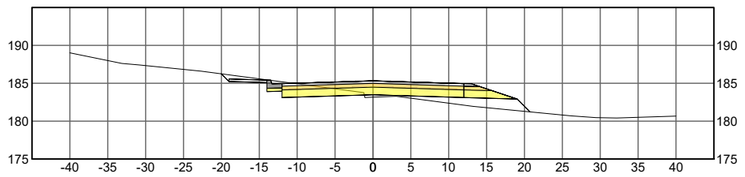
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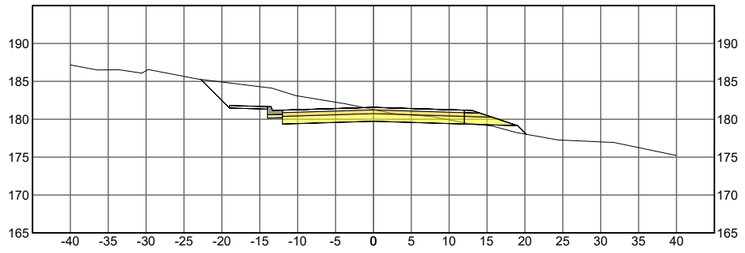
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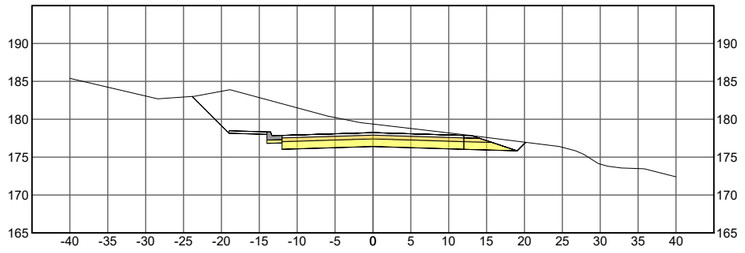
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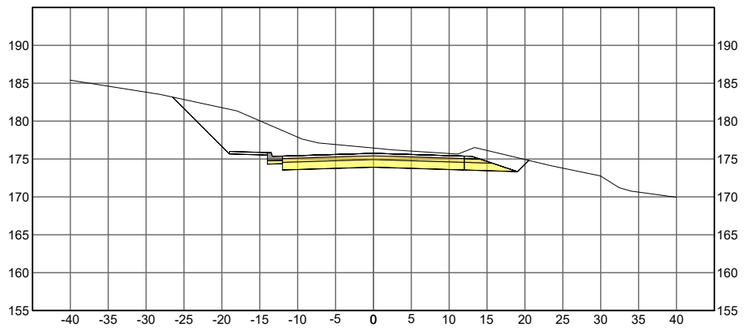
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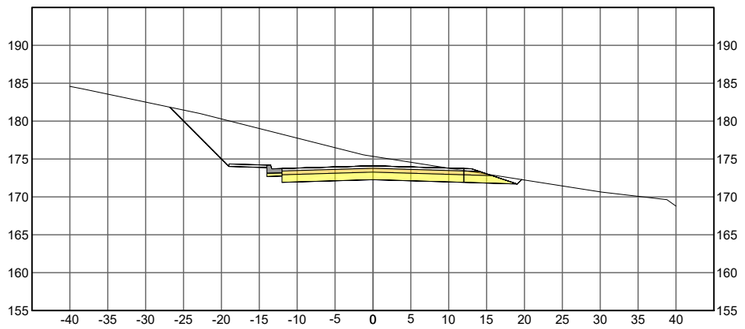
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

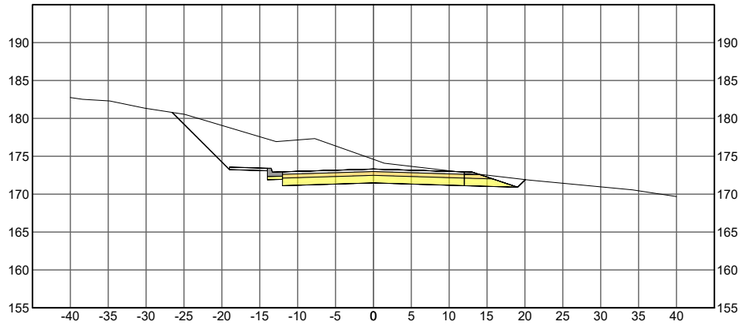
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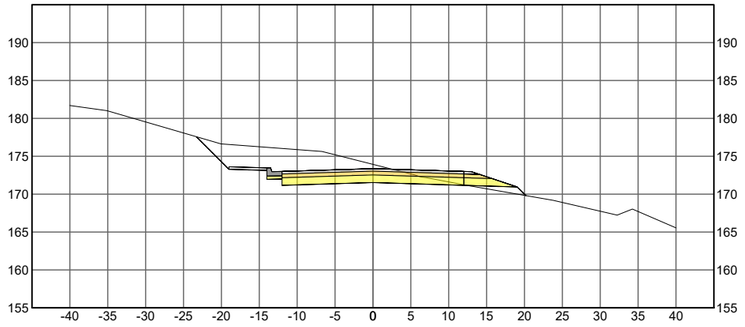
PLOT DATE: 8/26/2025

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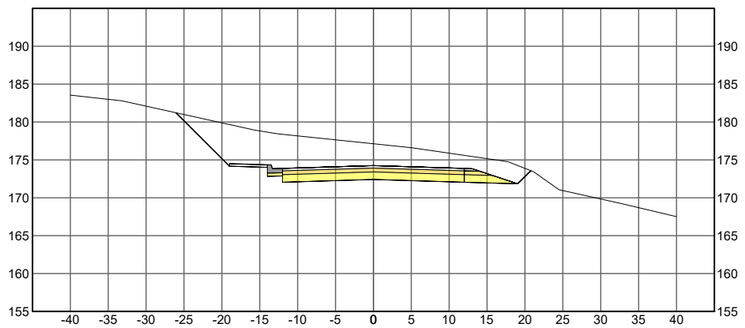
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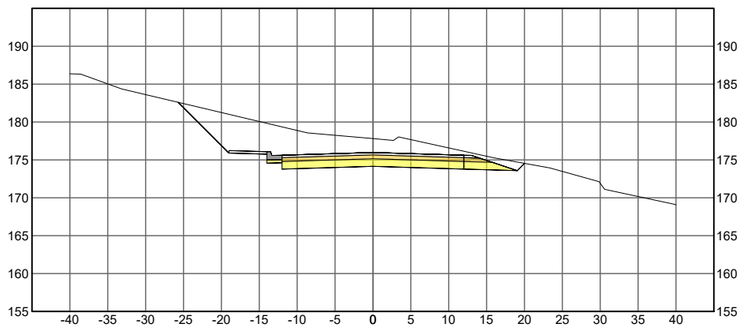
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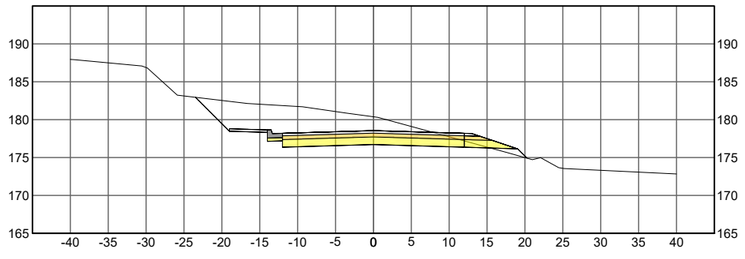
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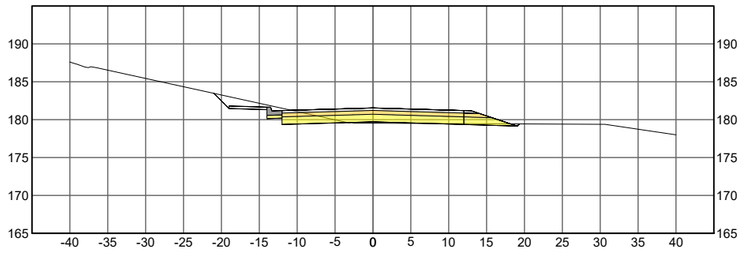
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

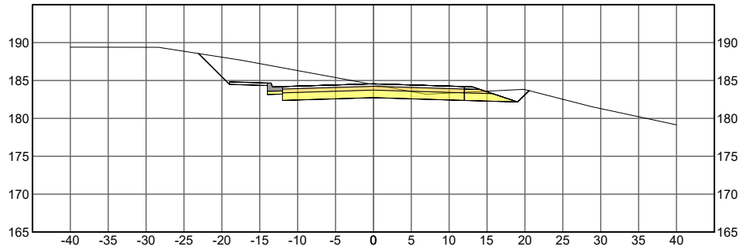
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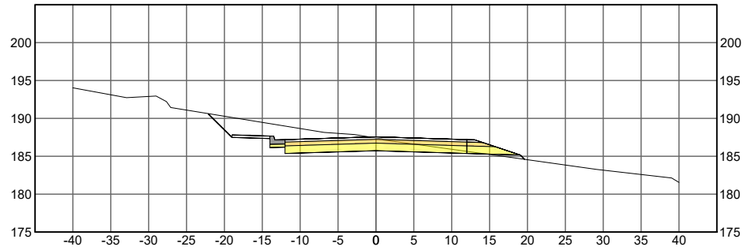
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8/26/2025

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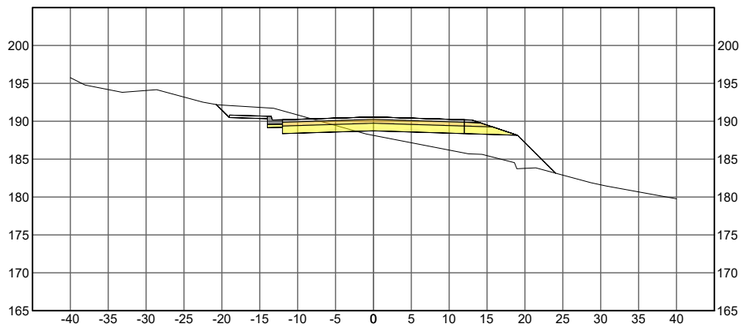
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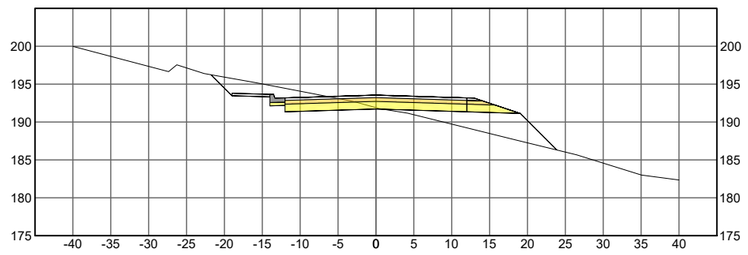
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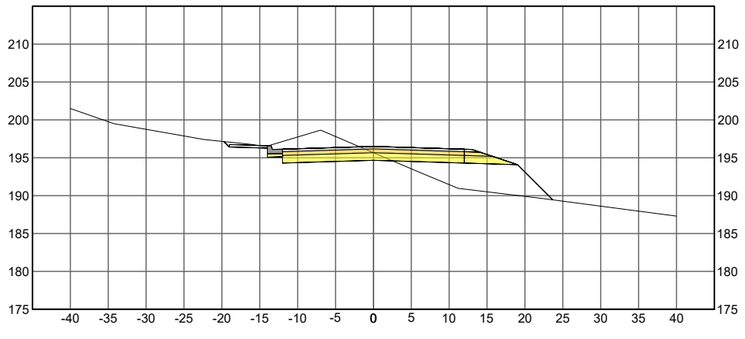
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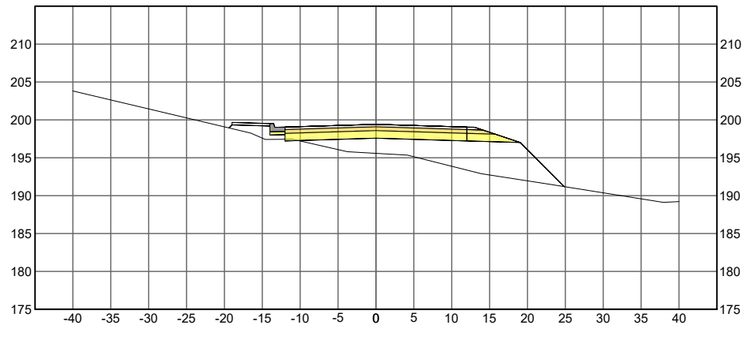
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317+25.00



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JUNEAU, ALASKA

PROJECT NO: WO 02-25

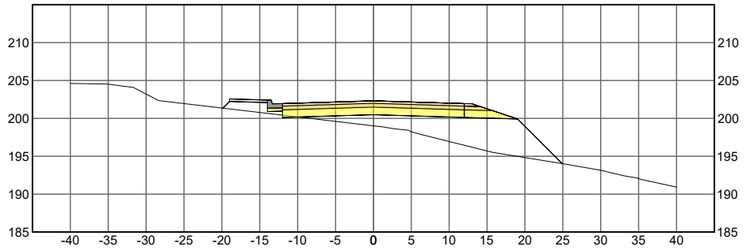
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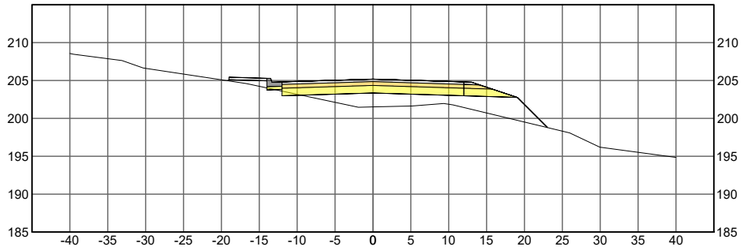
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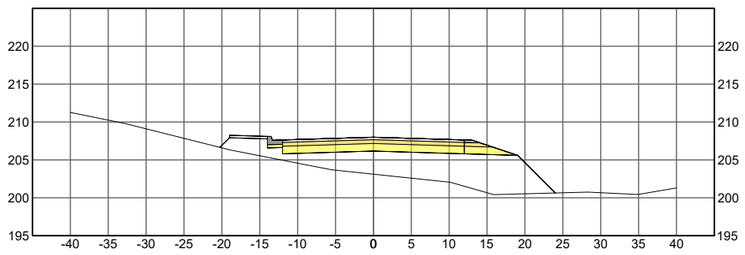
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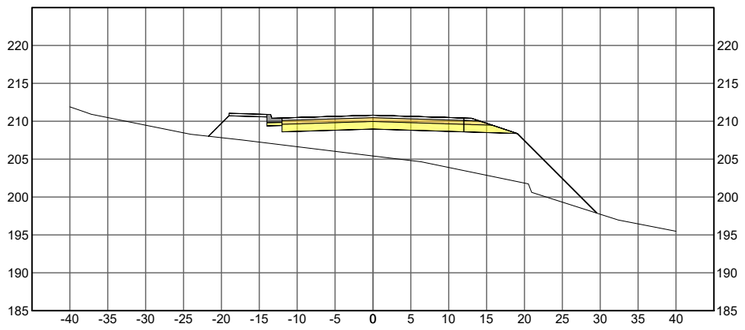
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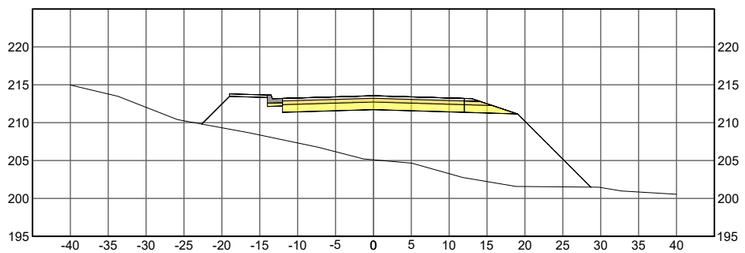
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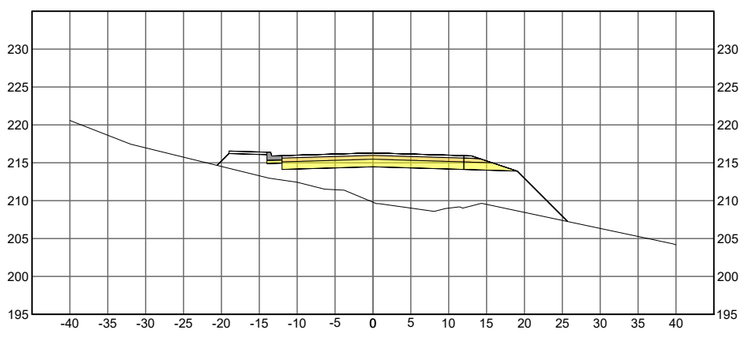
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318+75.00



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AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
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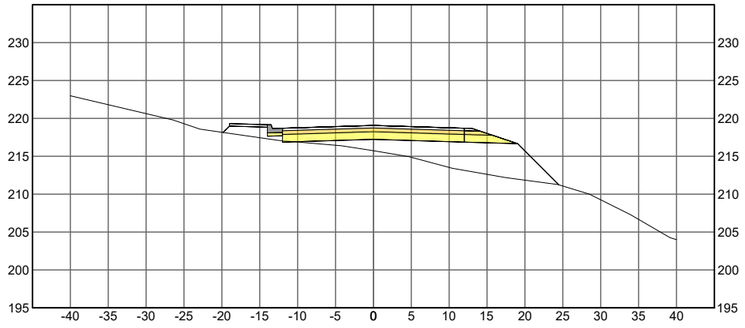
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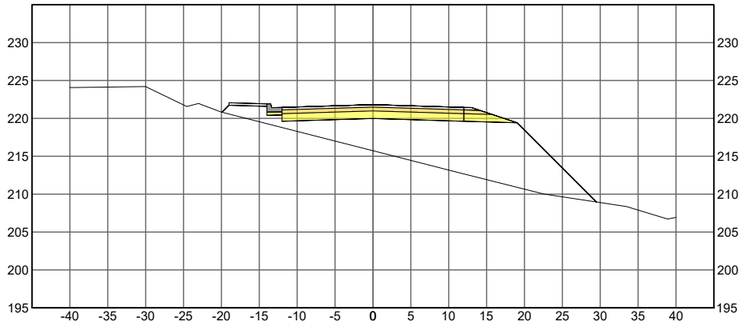
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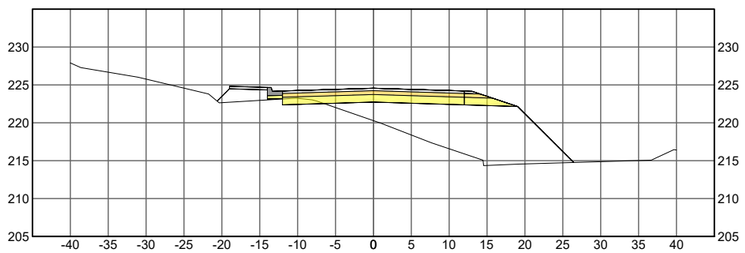
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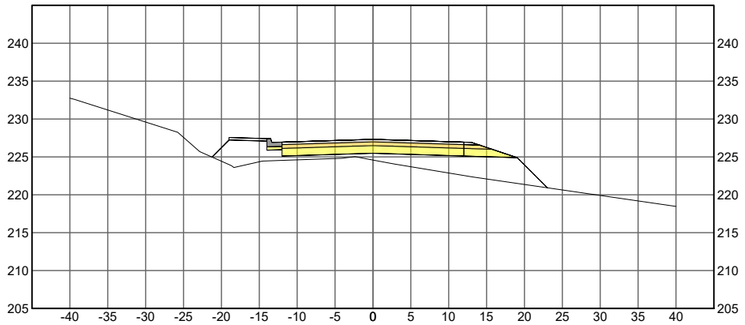
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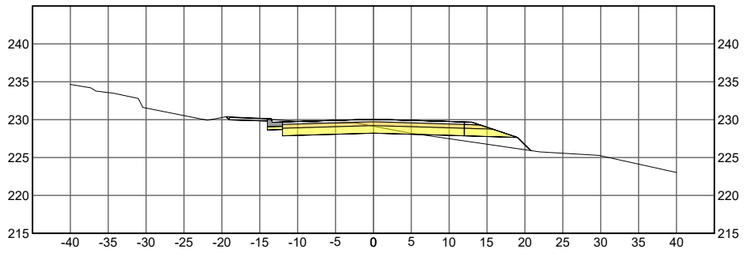
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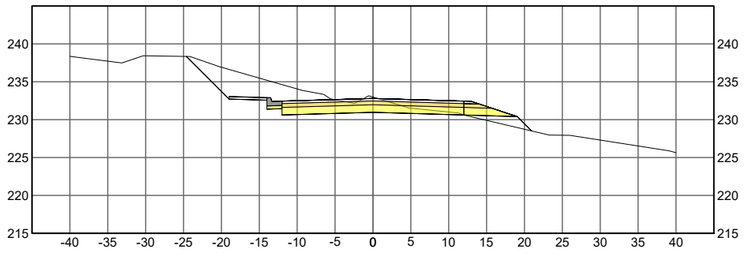
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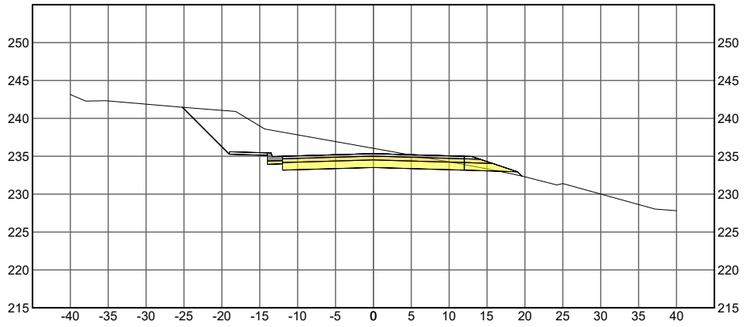
AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
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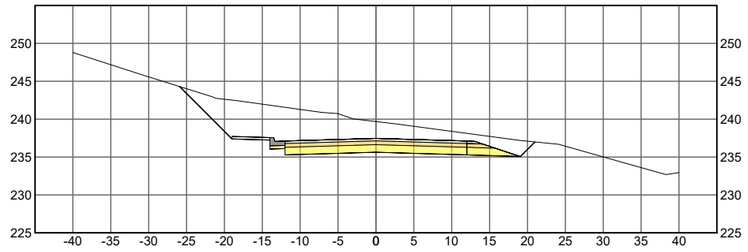
DATE:
8/26/2025

PLOT DATE: 8/26/2025
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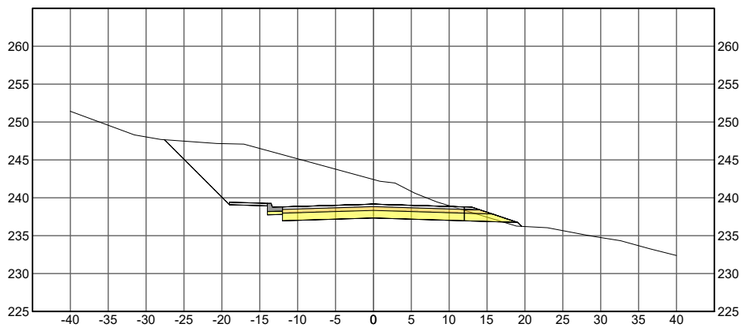
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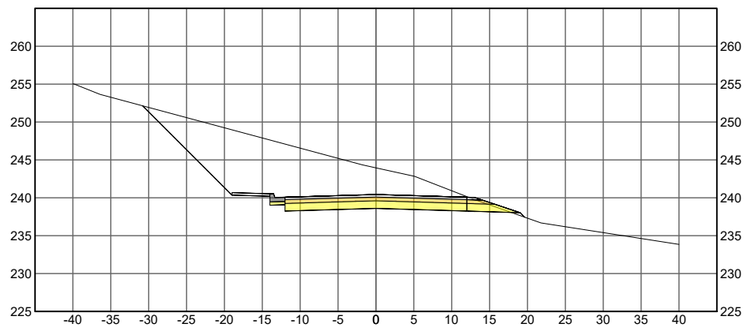
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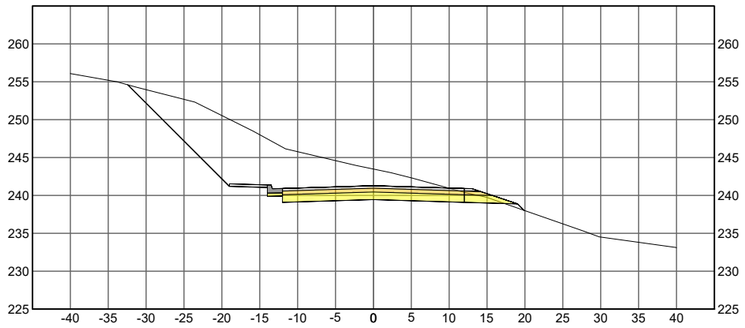
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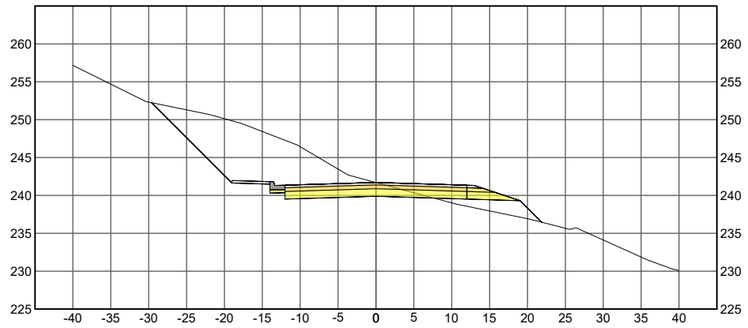
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321+50.00



321+75.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

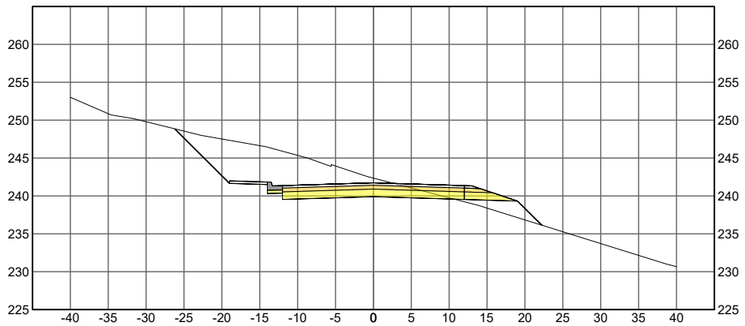
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DATE:
8/26/2025

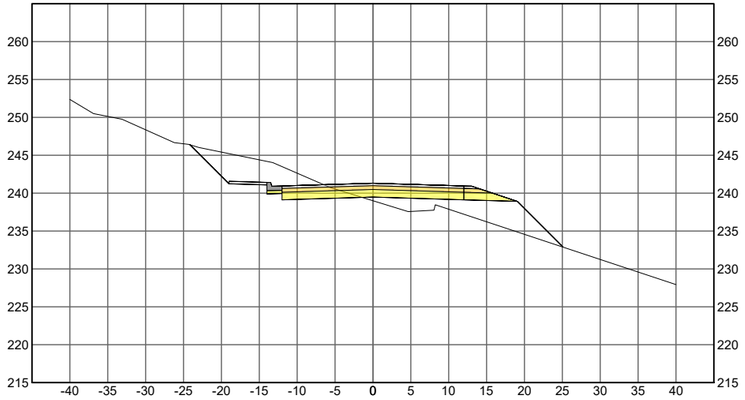
PLOT DATE: 8/26/2025

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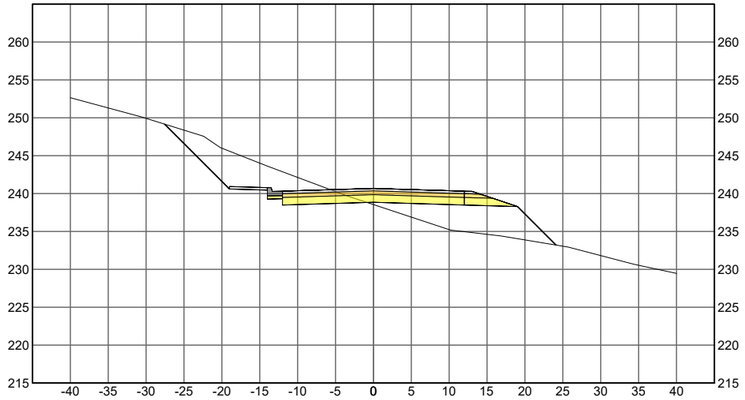
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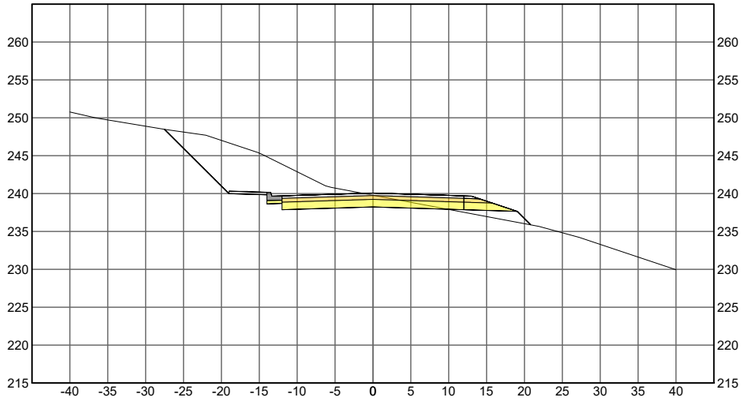
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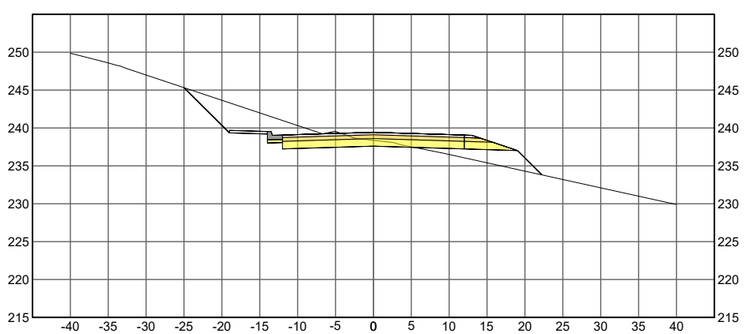
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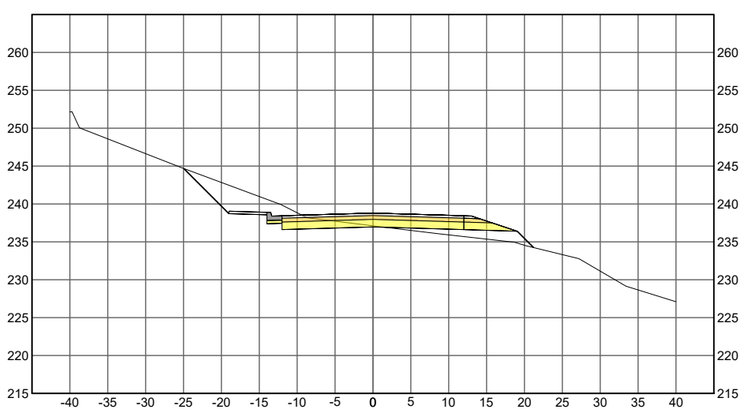
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323+00.00



323+25.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

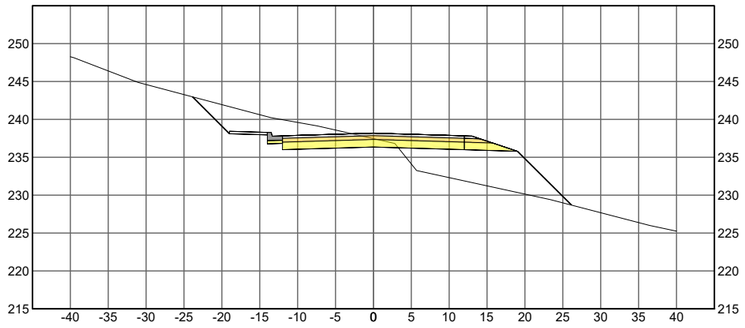
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DATE:
8/26/2025

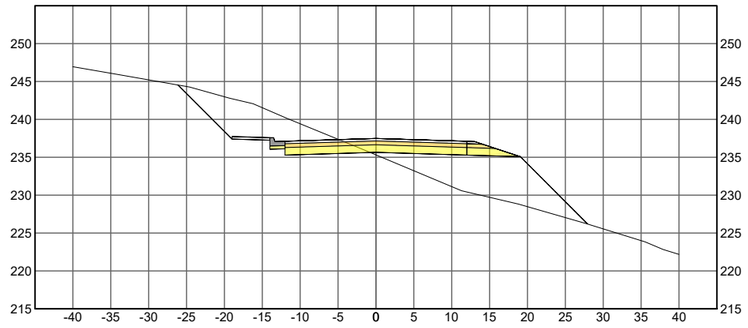
PLOT DATE: 8/26/2025

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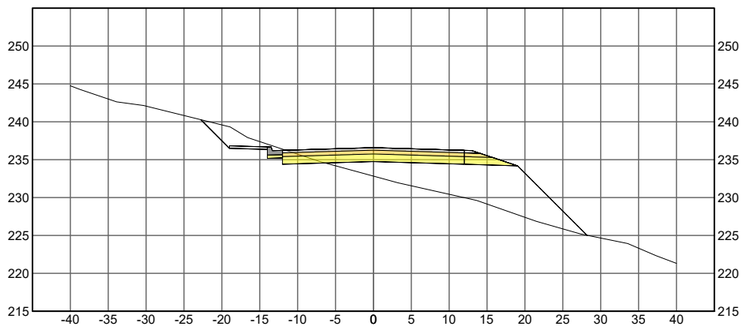
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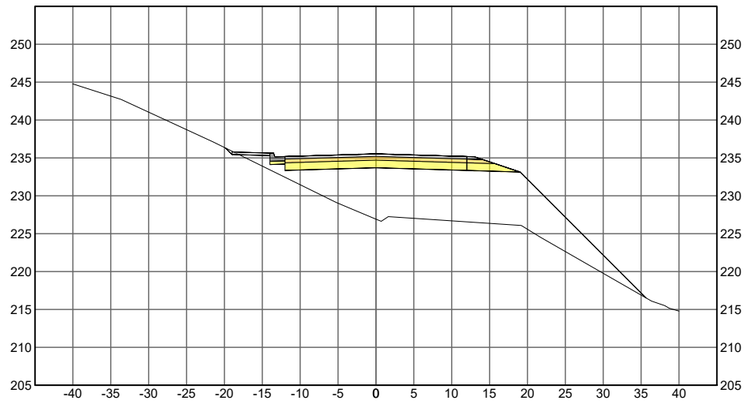
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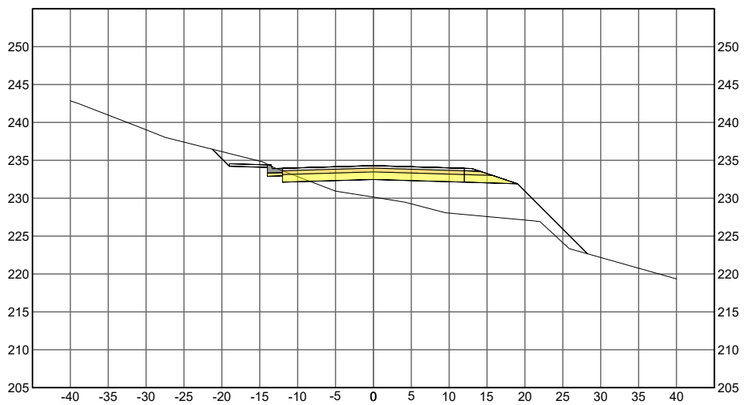
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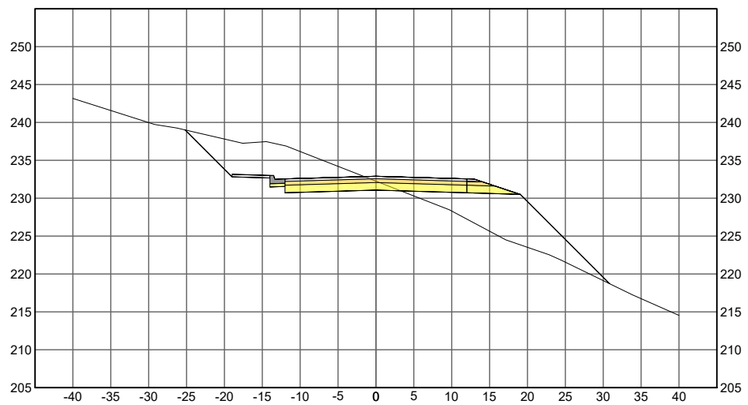
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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

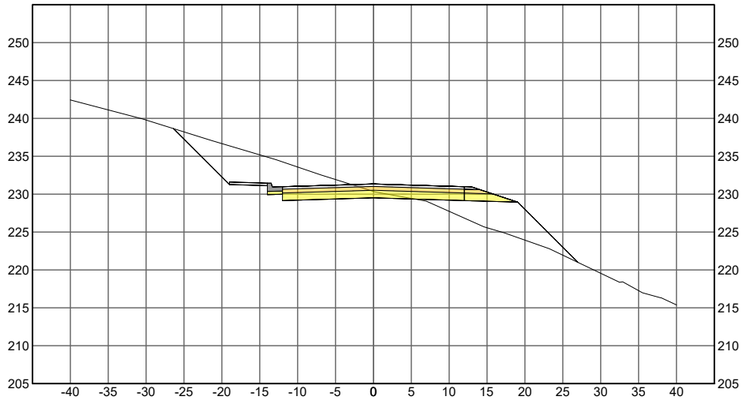
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DATE:
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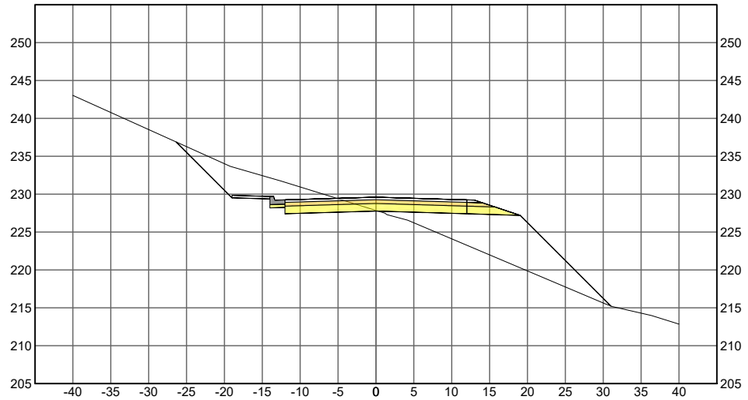
PLOT DATE: 8/26/2025

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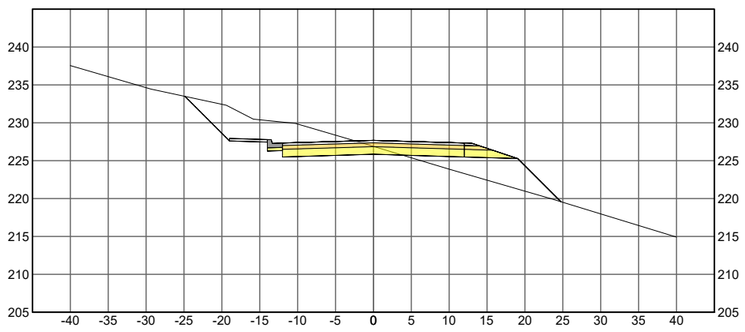
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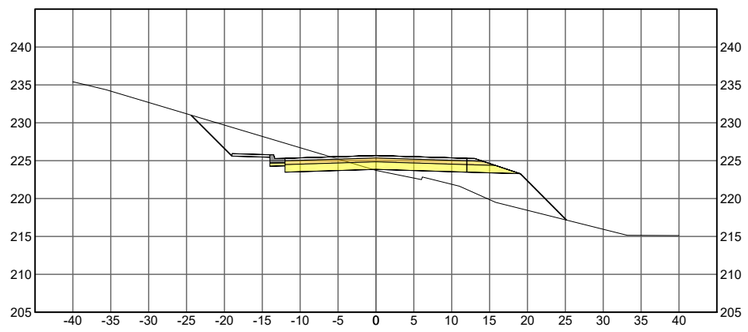
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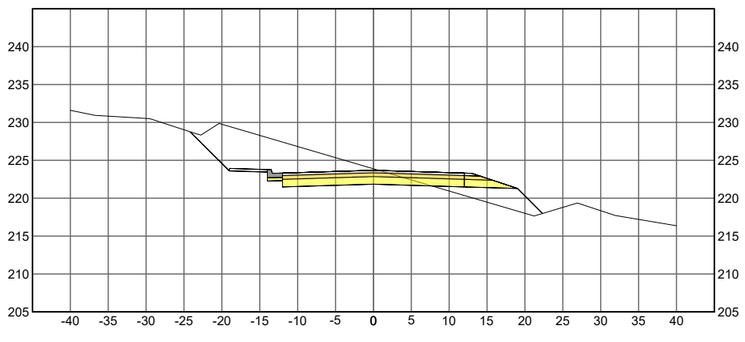
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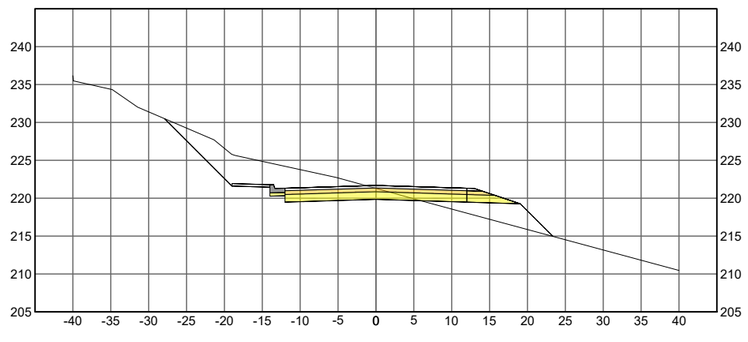
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326+00.00



326+25.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

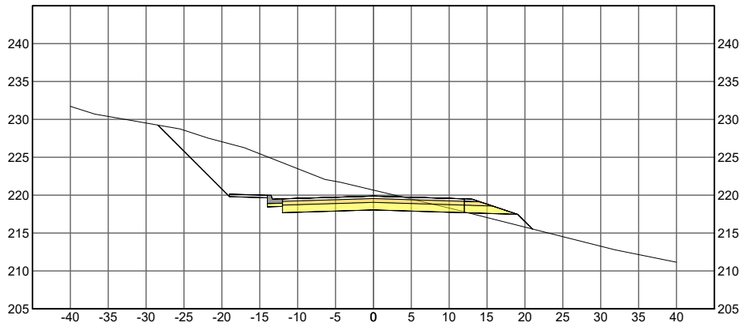
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DATE:
8/26/2025

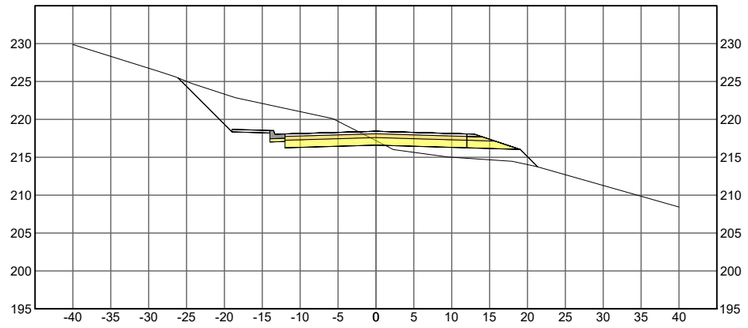
PLOT DATE: 8/26/2025

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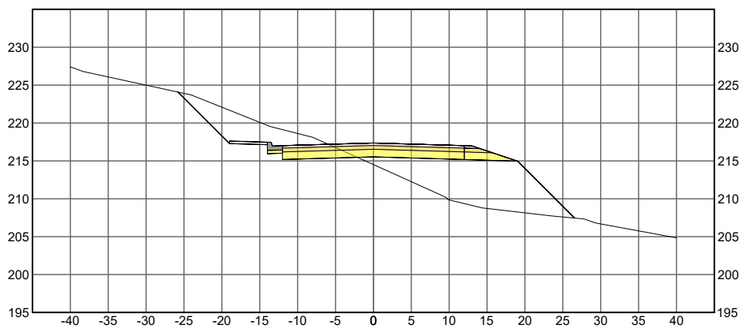
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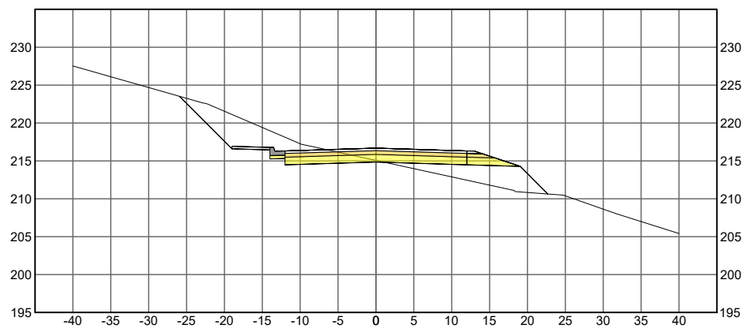
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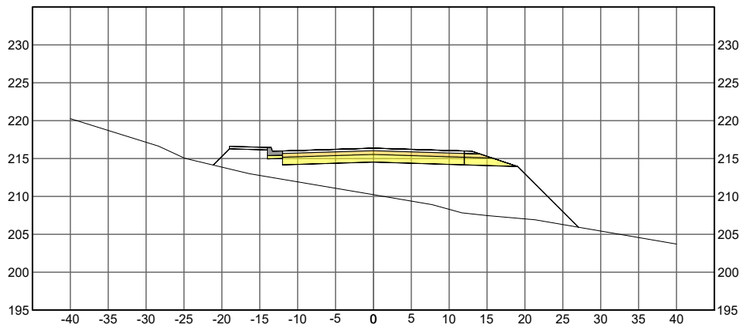
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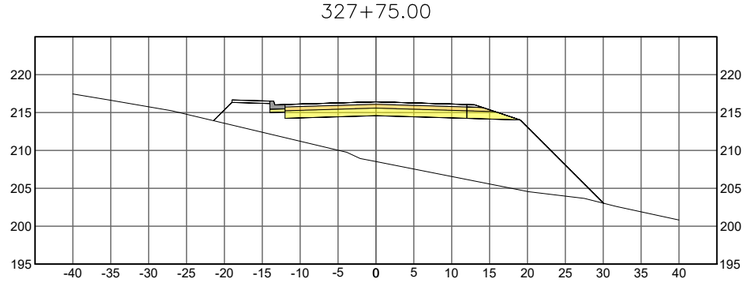
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327+50.00



327+75.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

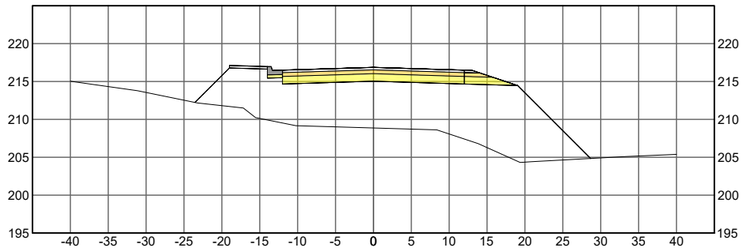
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8/26/2025

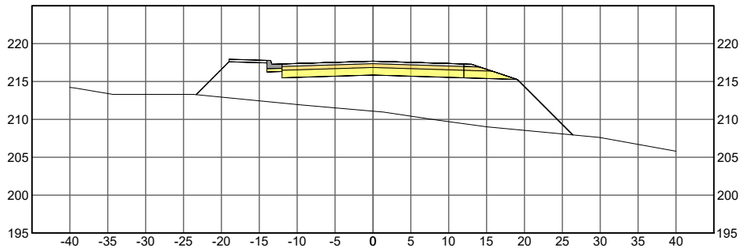
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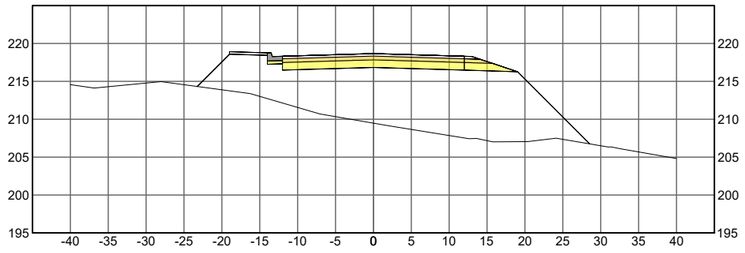
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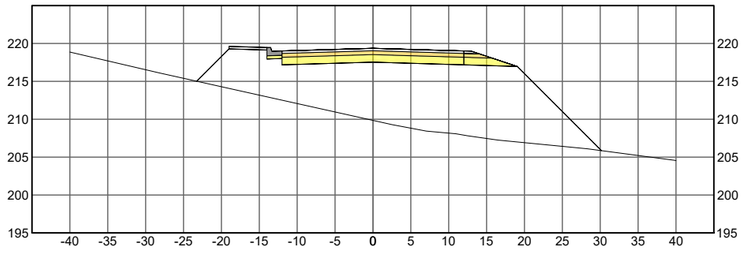
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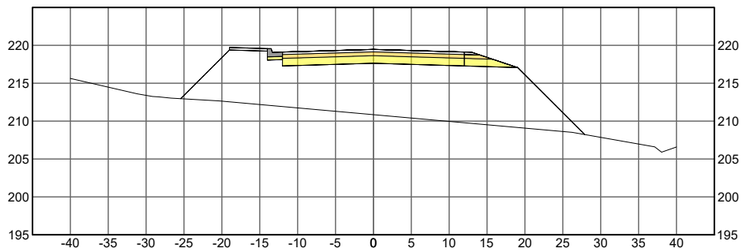
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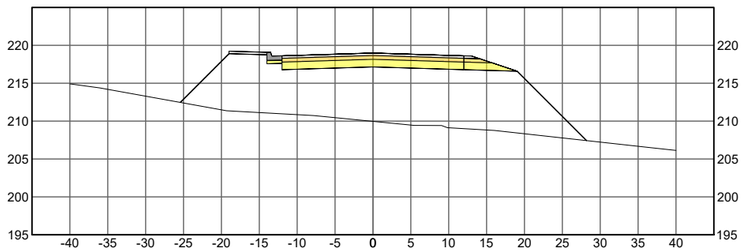
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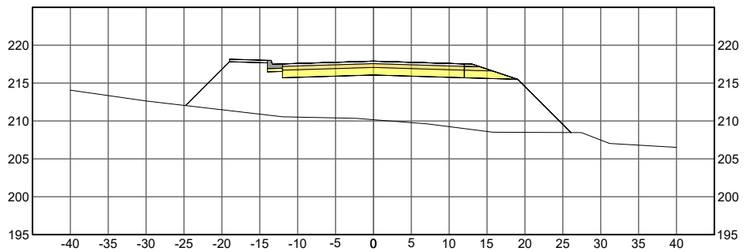
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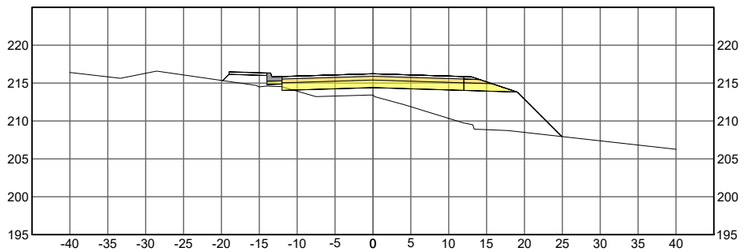
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329+75.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

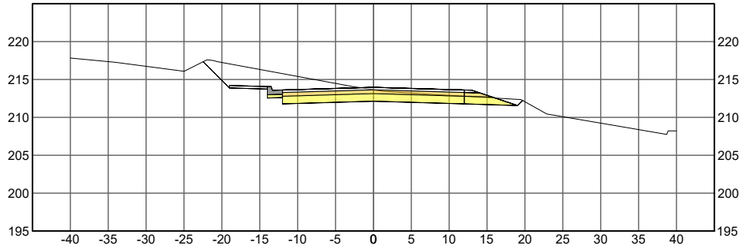
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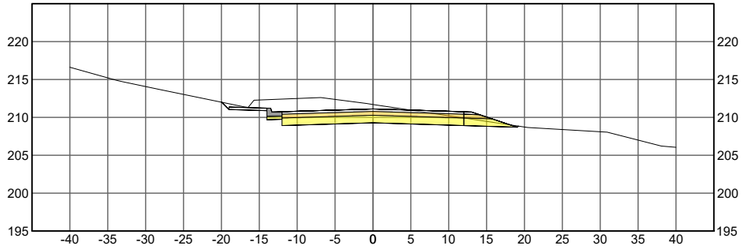
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8/26/2025

PLOT DATE: 8/26/2025
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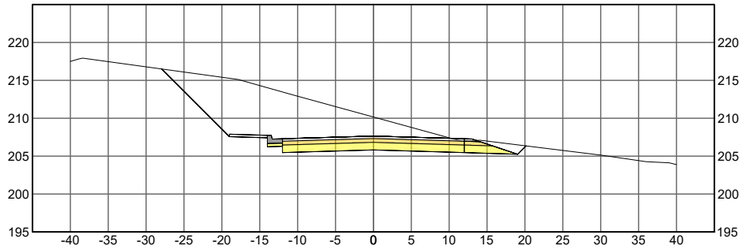
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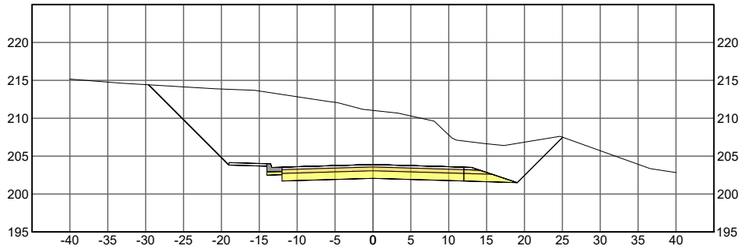
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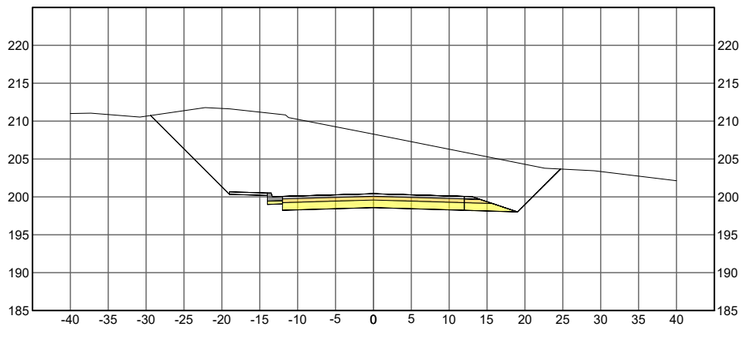
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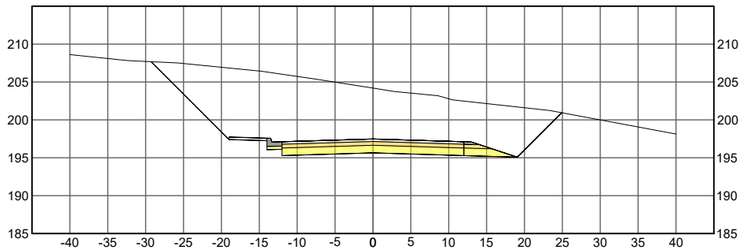
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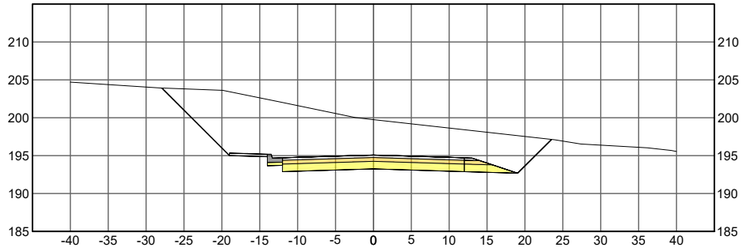
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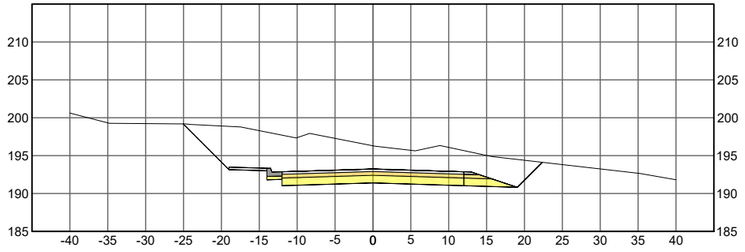
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BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

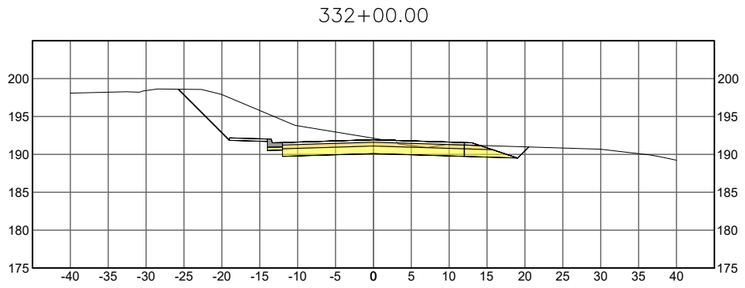
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-18 TRAVERSE DRIVE

DATE:
8/26/2025



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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
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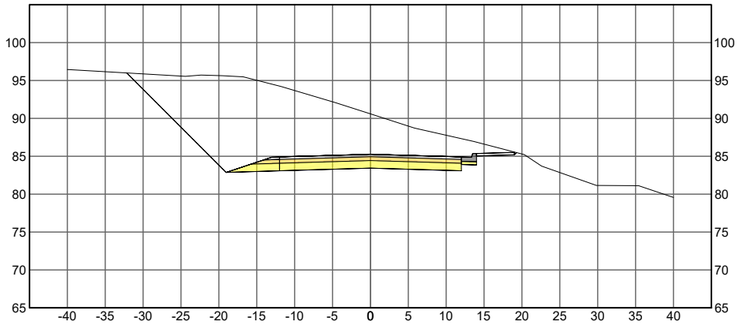
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8/26/2025

PLOT DATE: 8/26/2025
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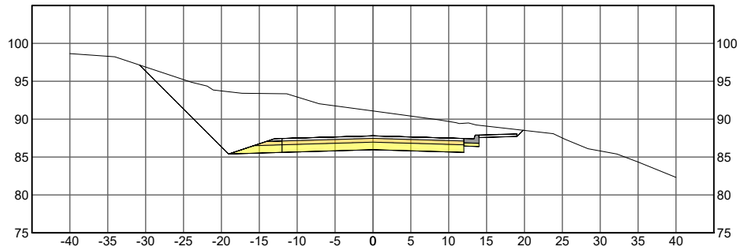
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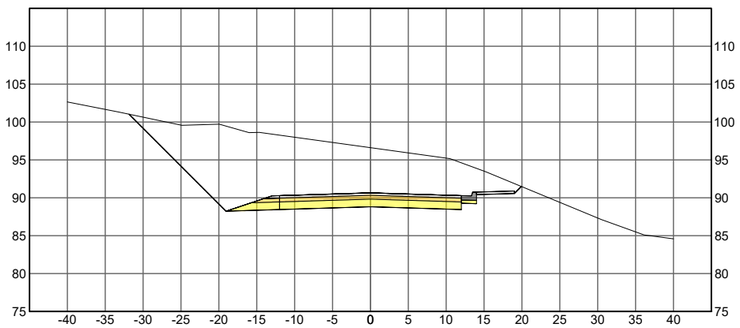
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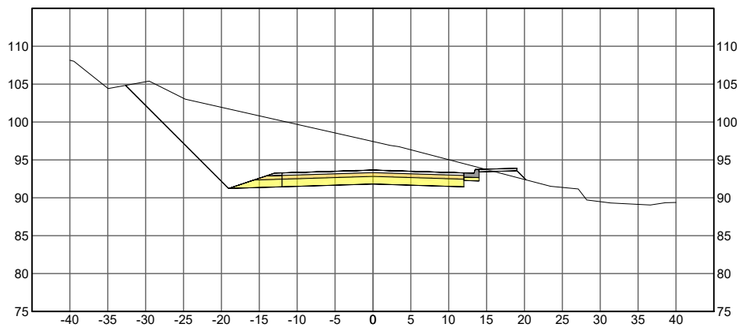
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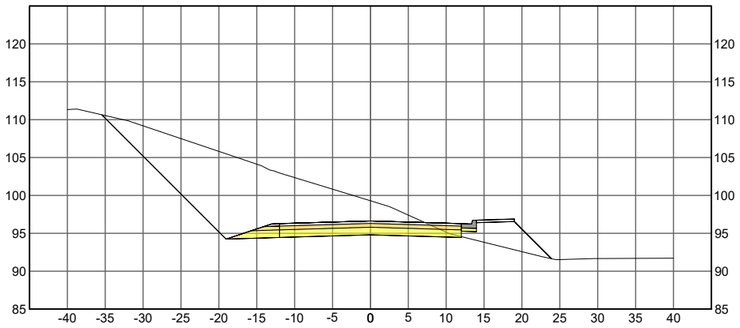
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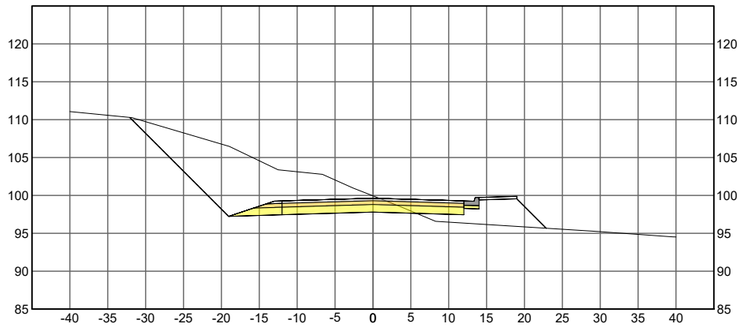
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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

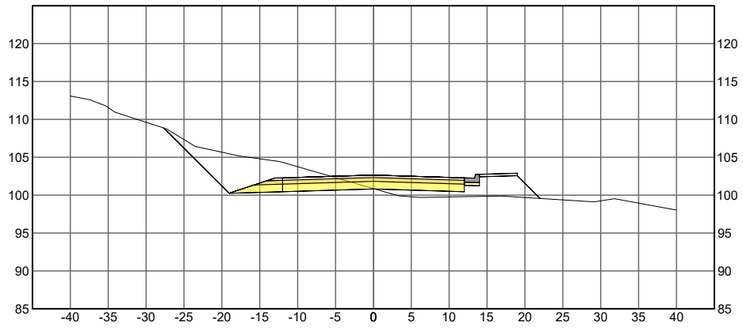
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DATE:
8/26/2025

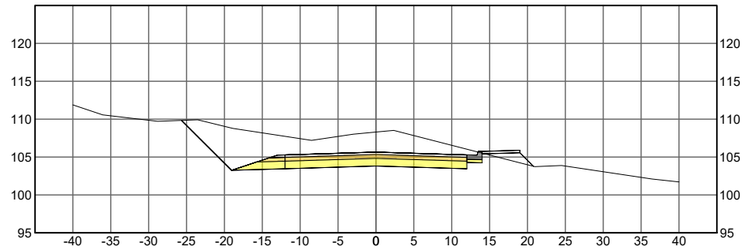
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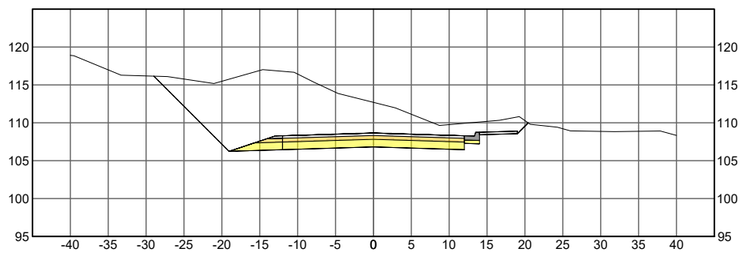
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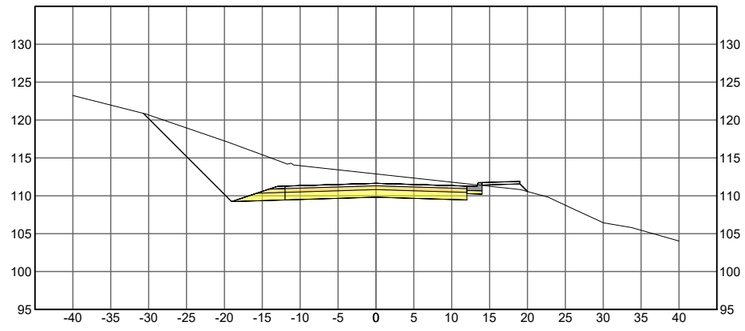
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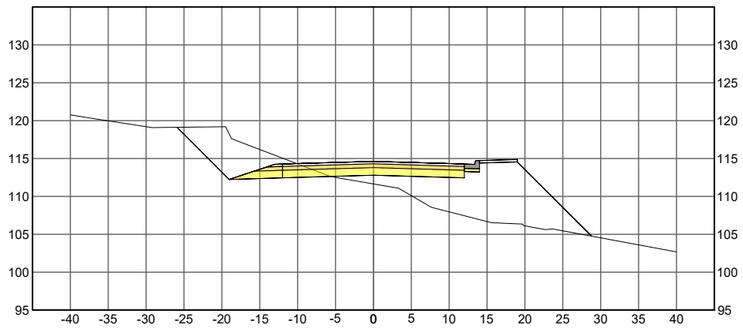
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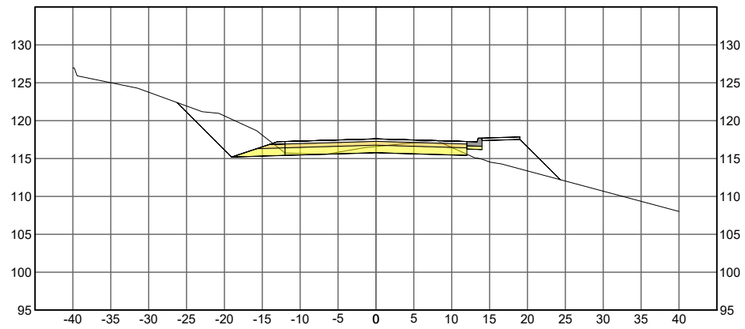
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

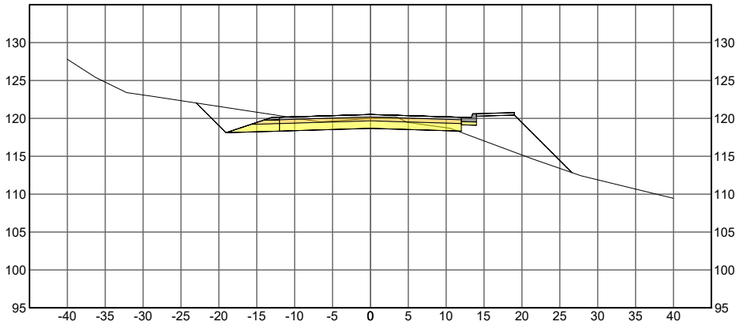
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XS-21 BLACKERBY STREET

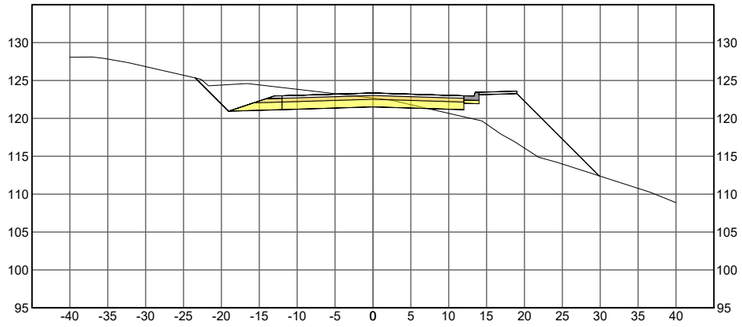
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PLOT DATE: 8/26/2025

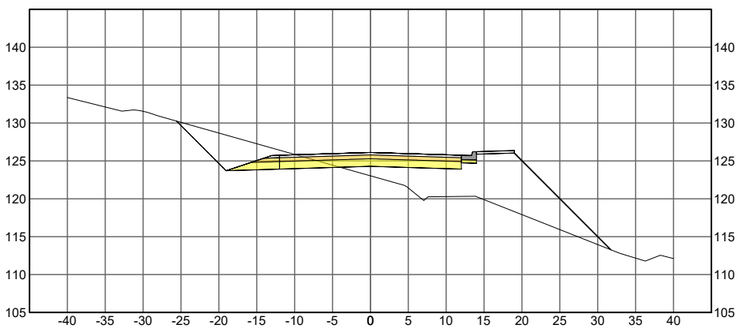
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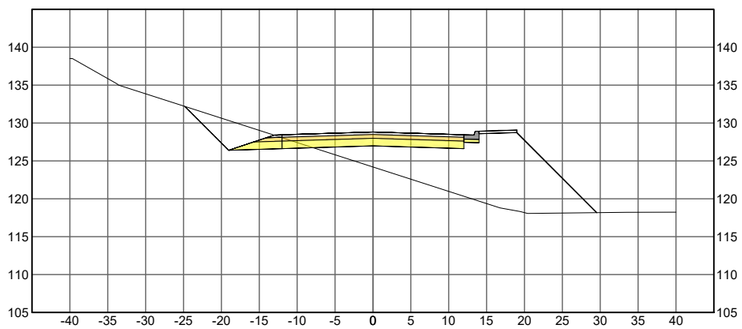
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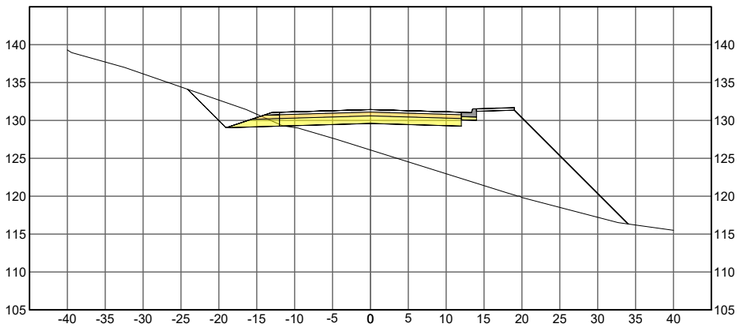
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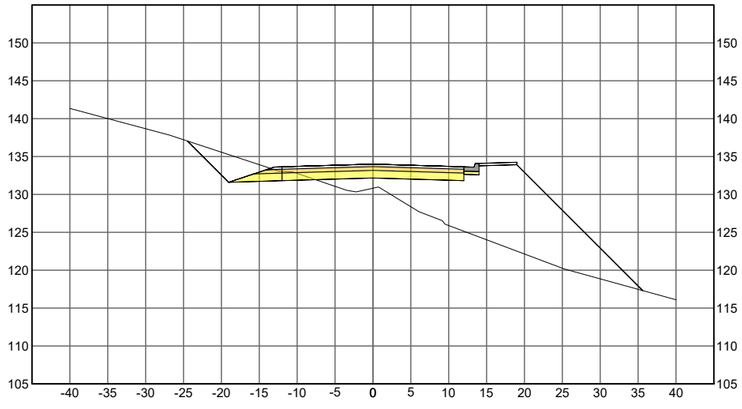
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106+00.00



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JUNEAU, ALASKA

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SHEET TITLE:
XS-22 BLACKERBY STREET

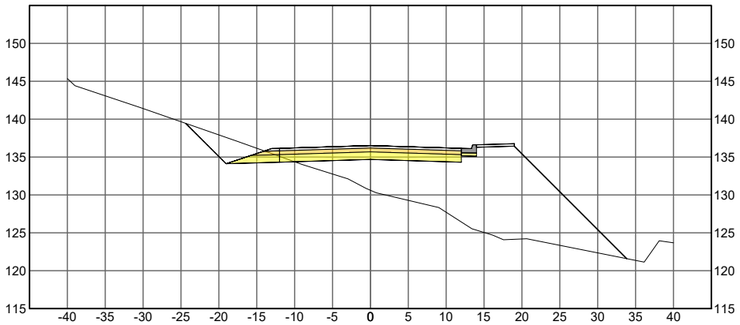
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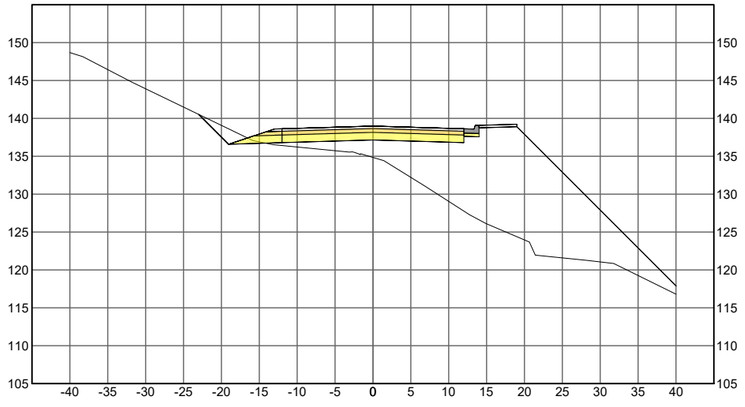
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106+50.00



106+75.00



107+00.00

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107+75.00

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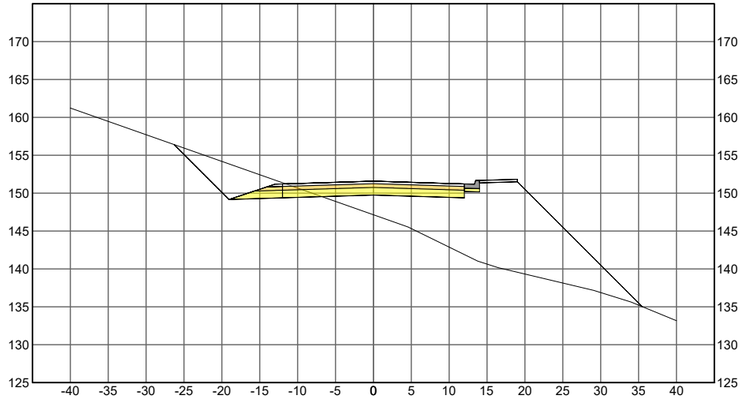
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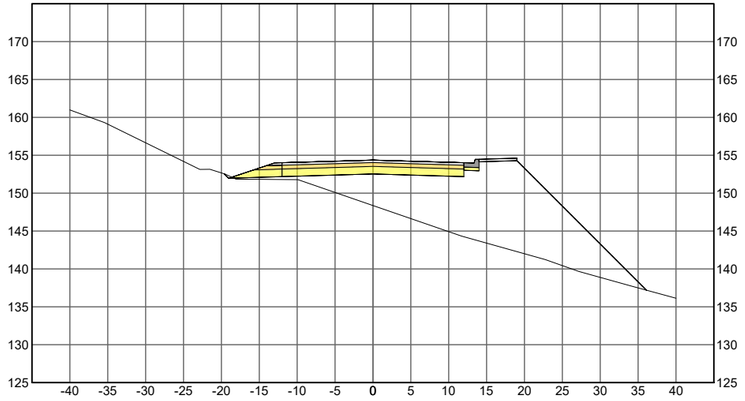
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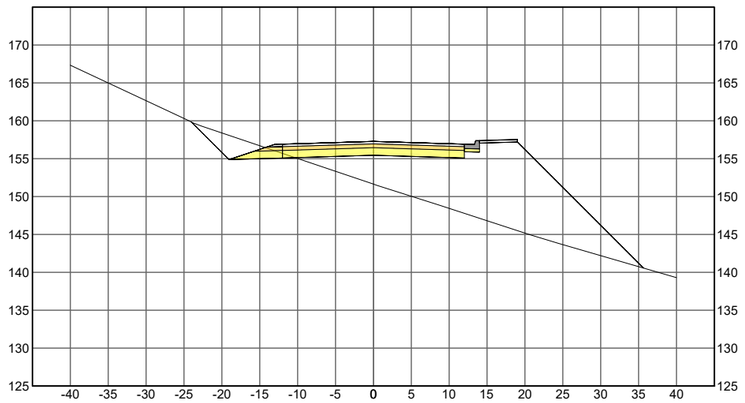
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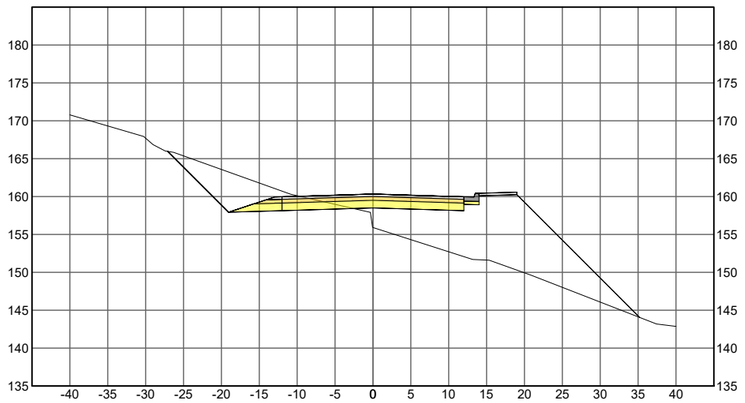
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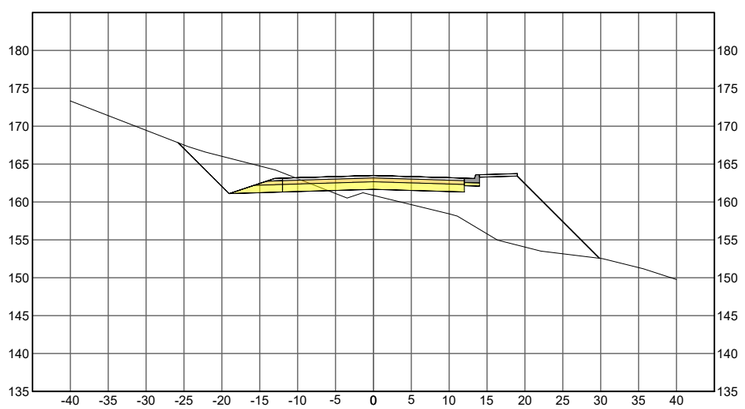
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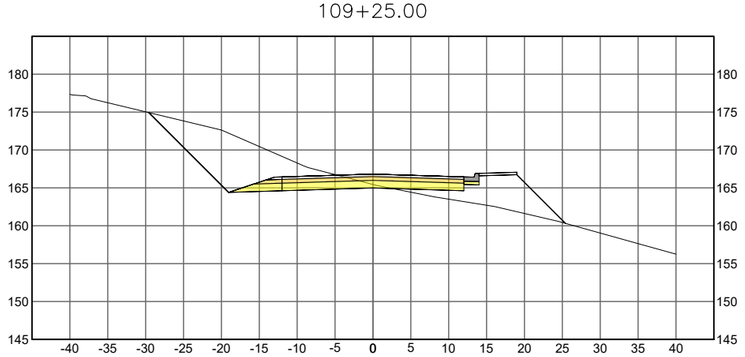
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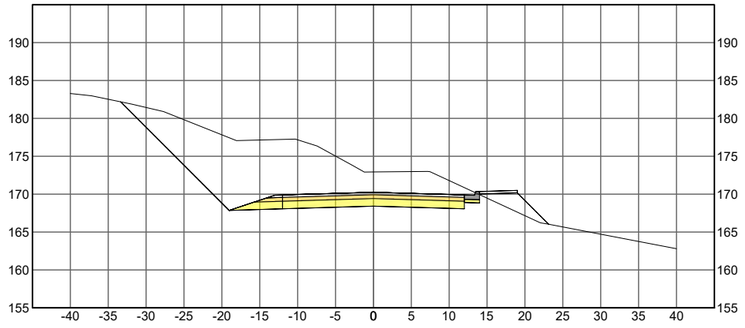
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8/26/2025

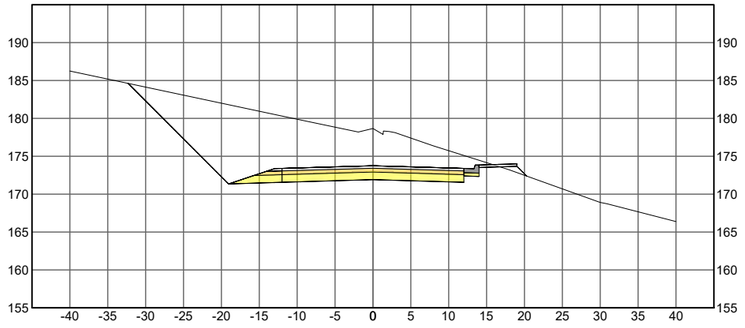
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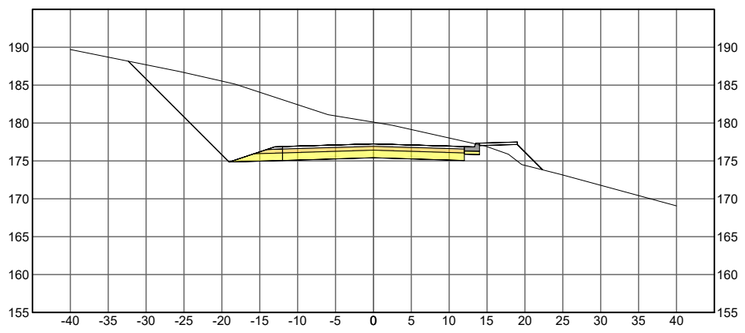
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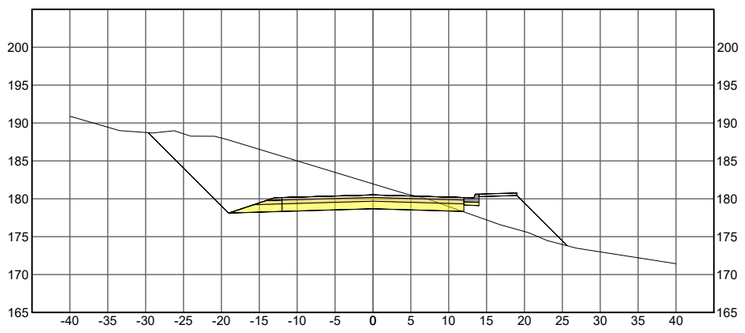
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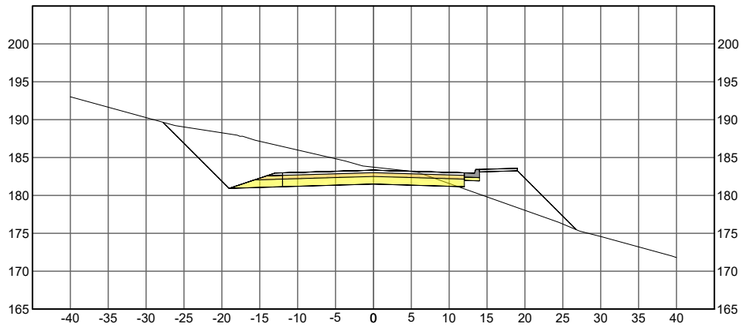
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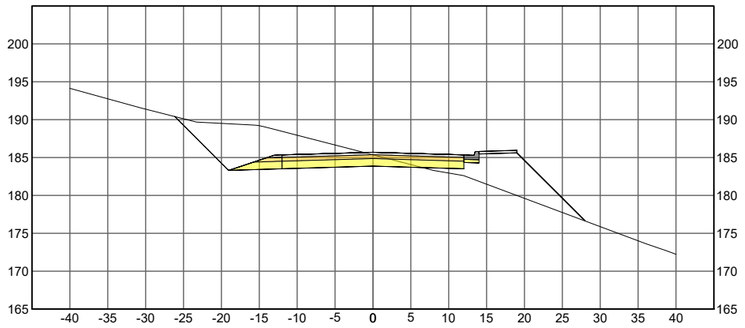
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BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

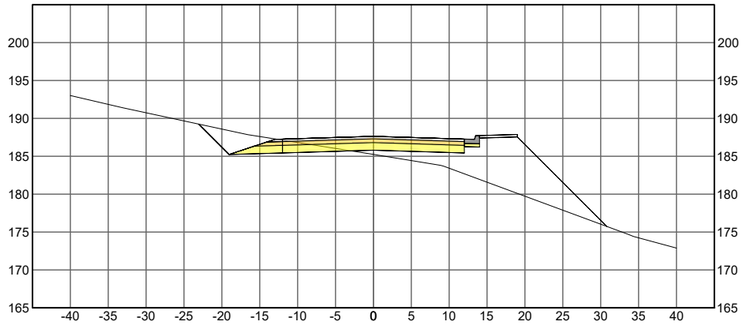
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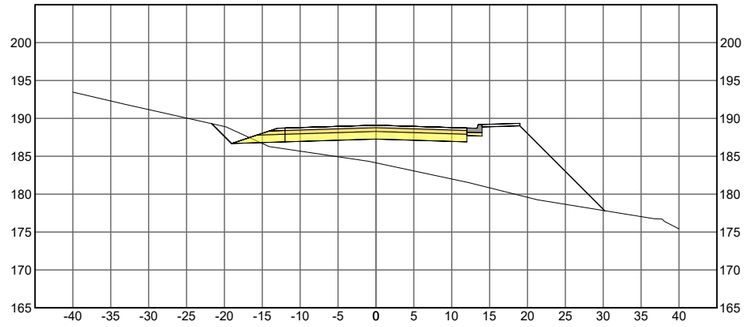
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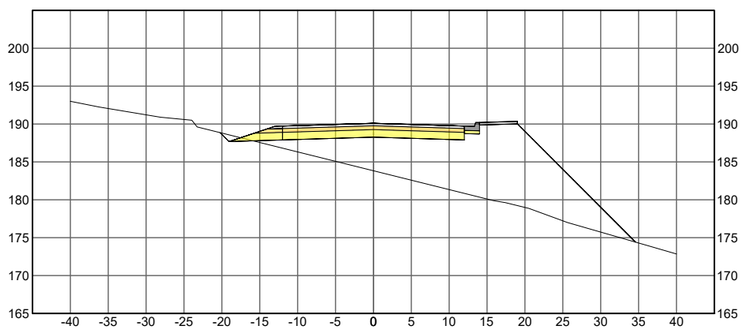
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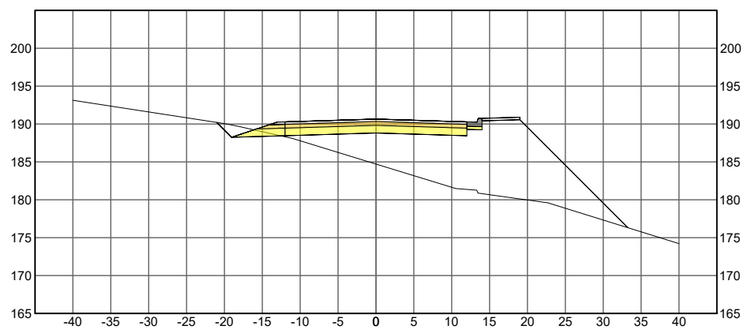
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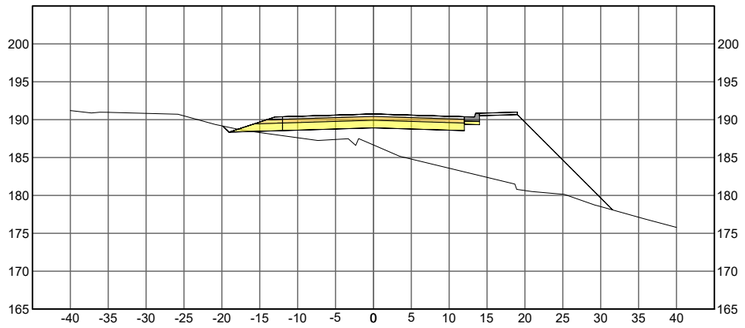
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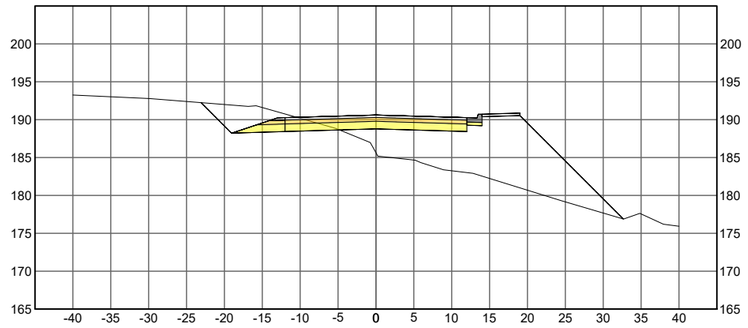
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JUNEAU, ALASKA

PROJECT NO: WO 02-25

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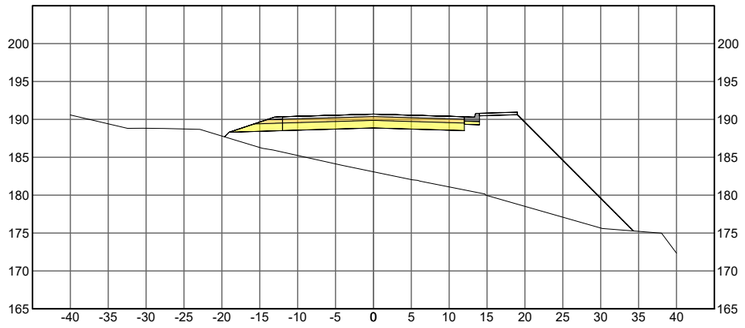
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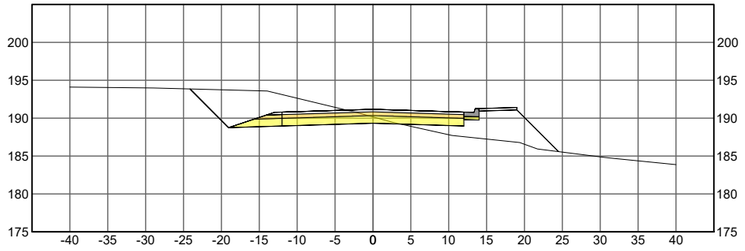
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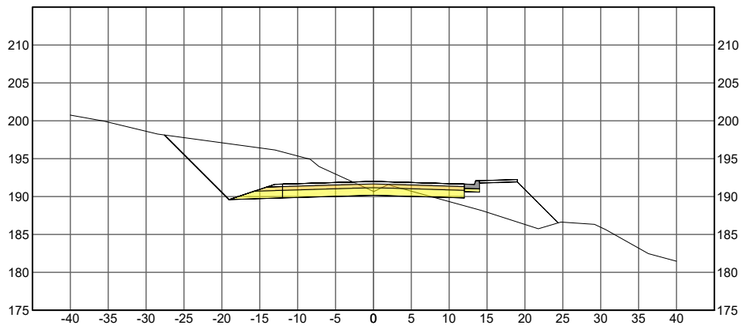
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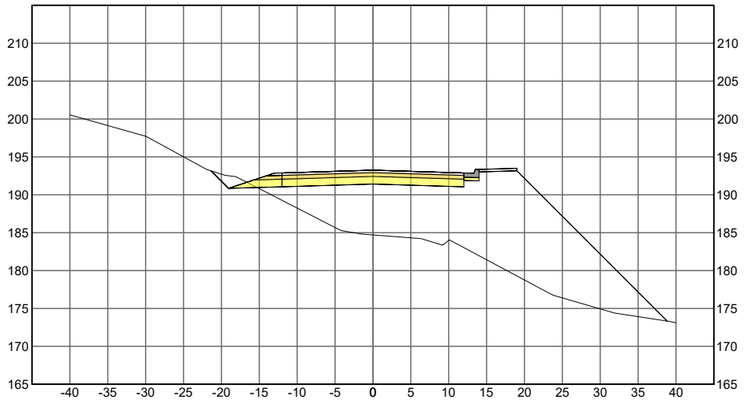
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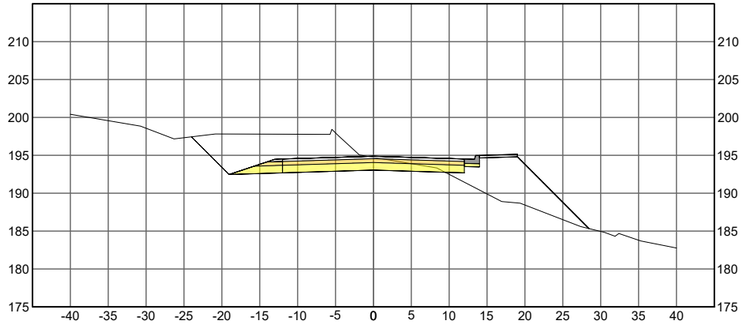
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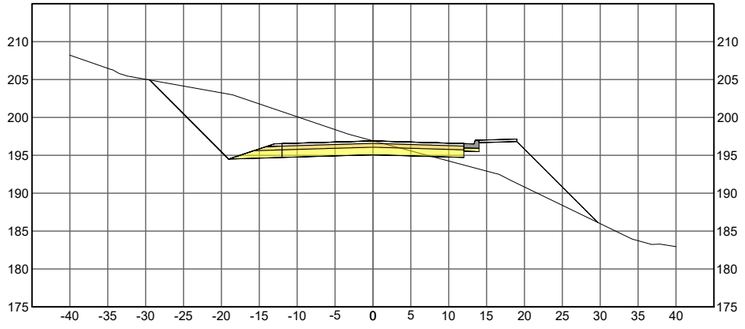
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PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

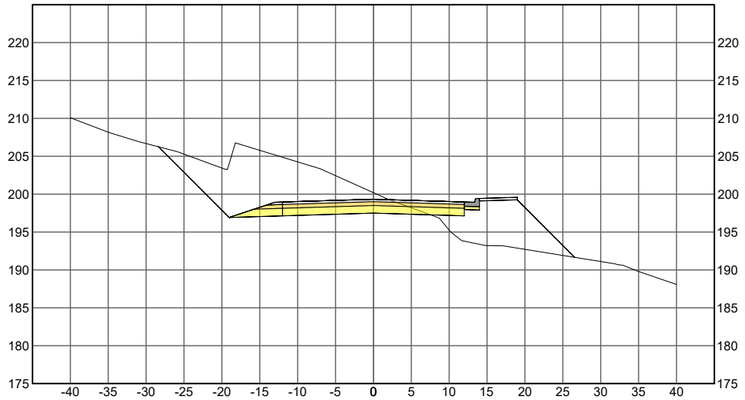
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XS-27 BLACKERBY STREET

DATE:
8/26/2025

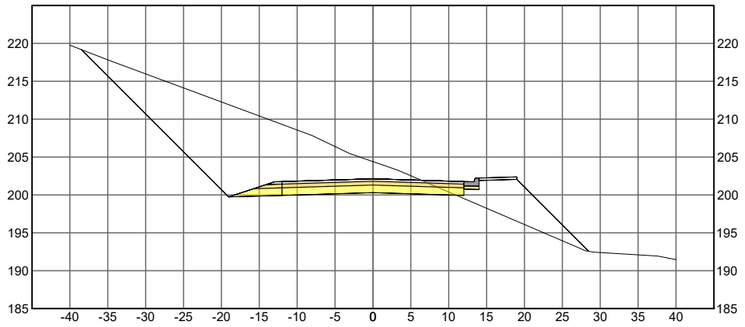
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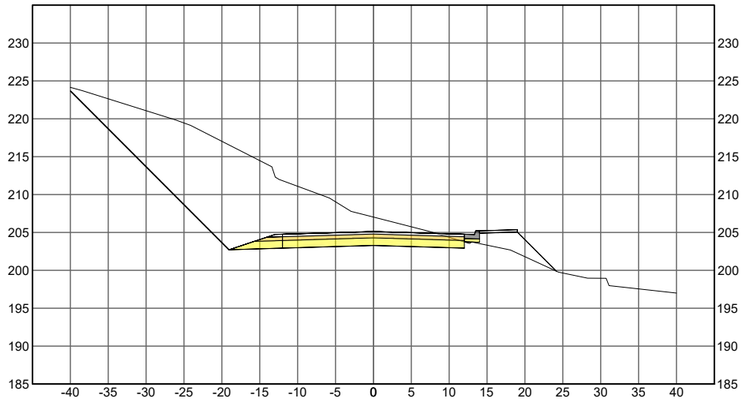
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114+25.00



114+50.00



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#204451

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BLACKERBY SUBDIVISION
DEVELOPMENT STUDY

JUNEAU, ALASKA

PROJECT NO: WO 02-25

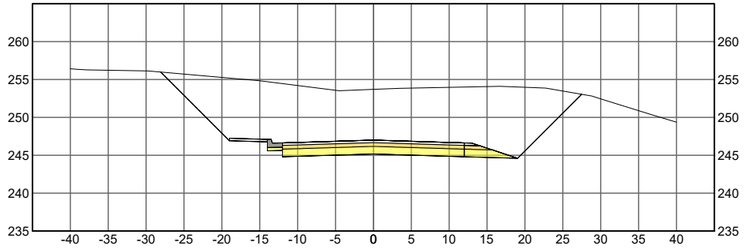
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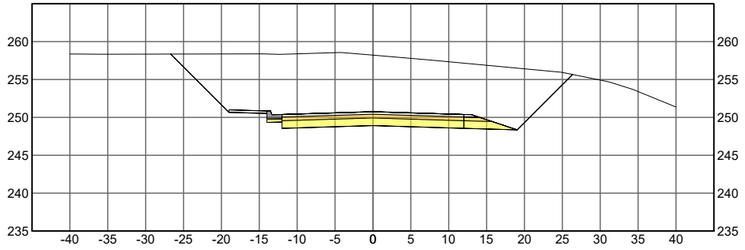
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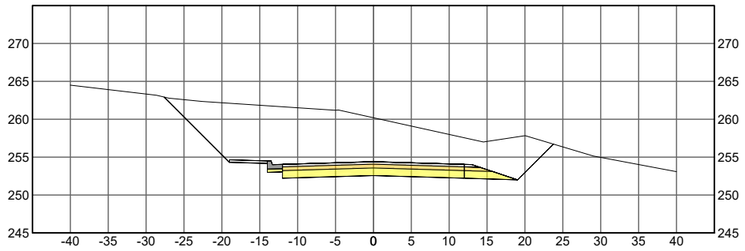
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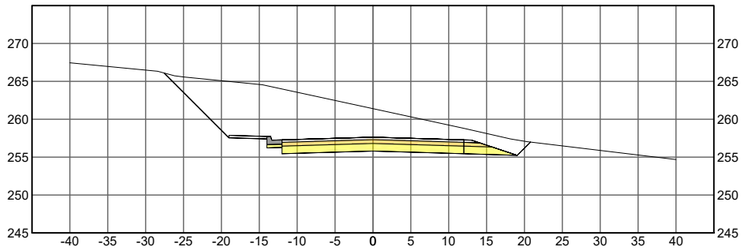
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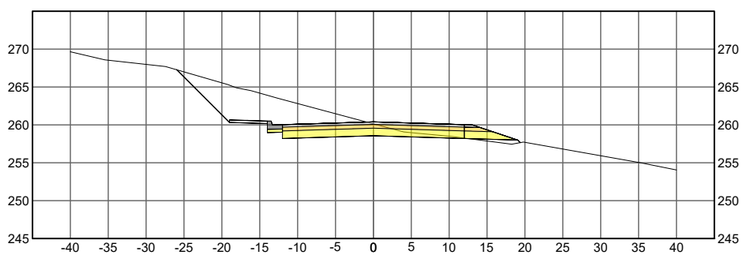
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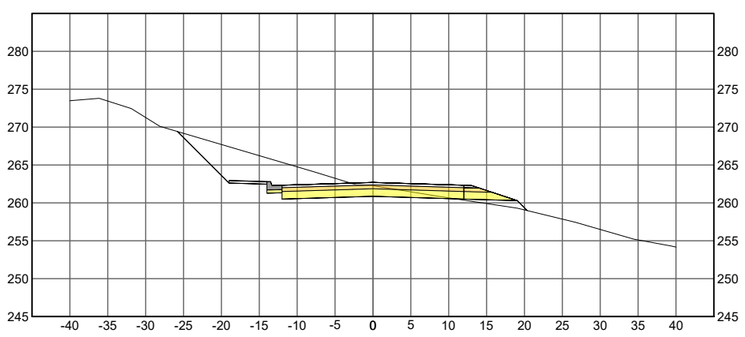
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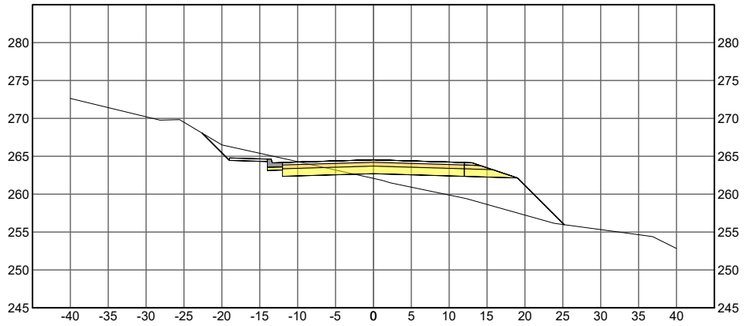
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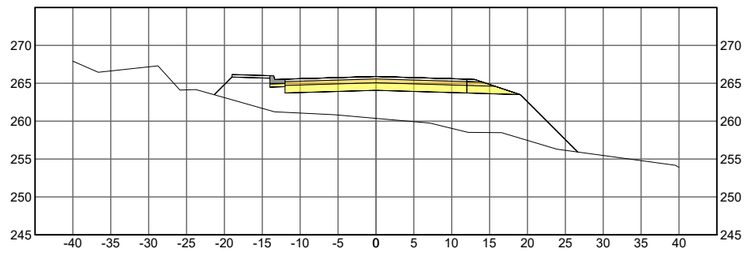
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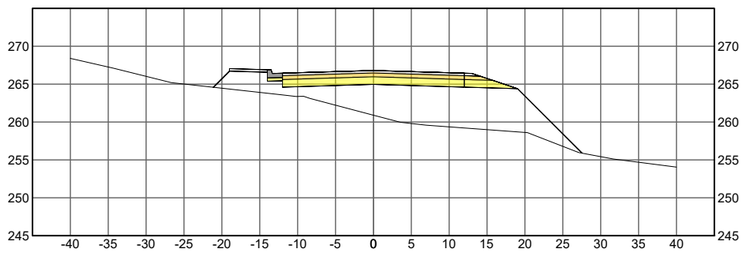
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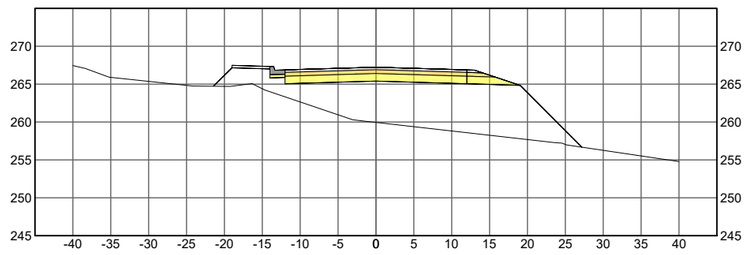
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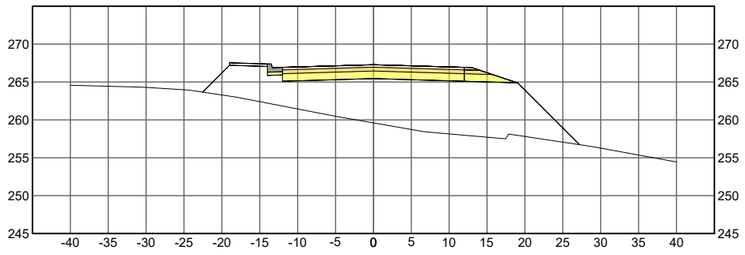
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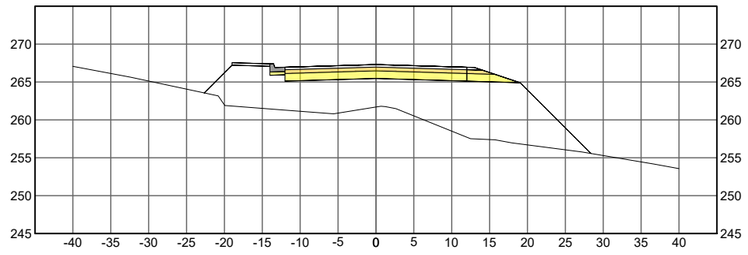
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206+25.00



206+50.00



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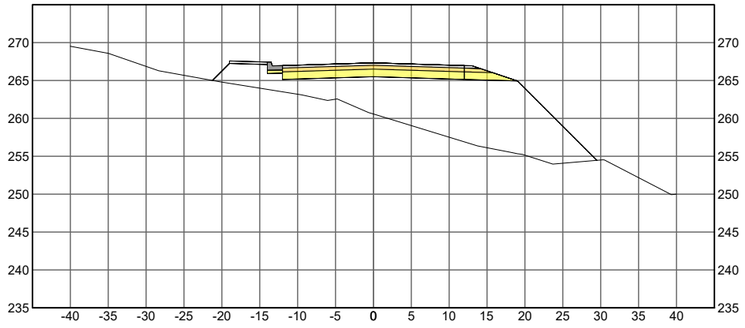
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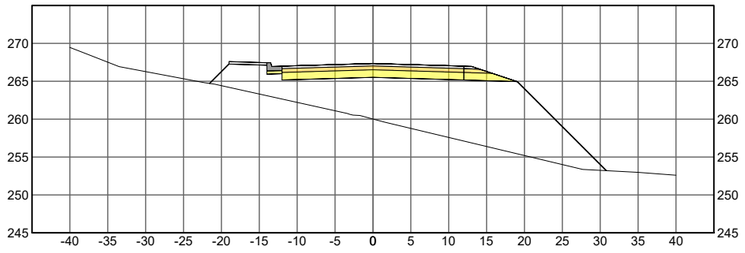
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8/26/2025

PLOT DATE: 8/26/2025

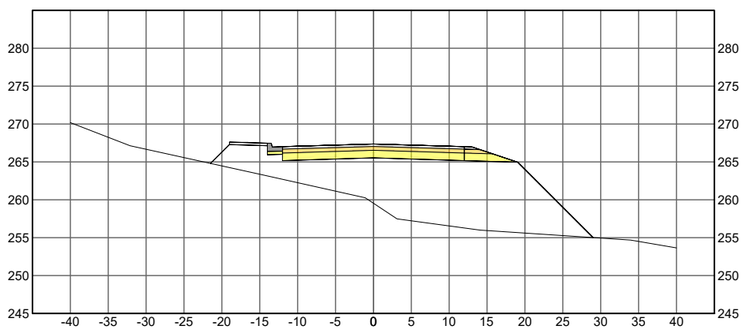
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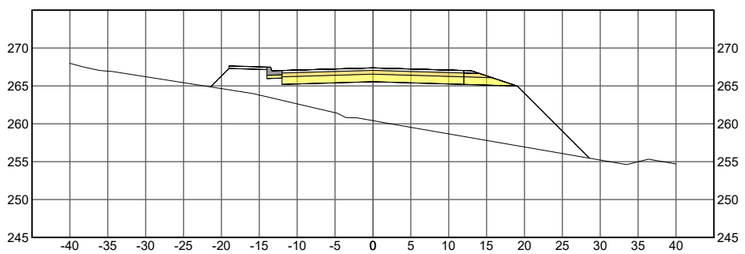
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207+25.00



207+50.00



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PROJECT NO: WO 02-25

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SHEET TITLE:
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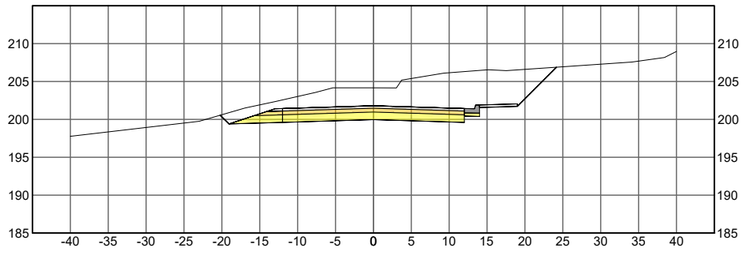
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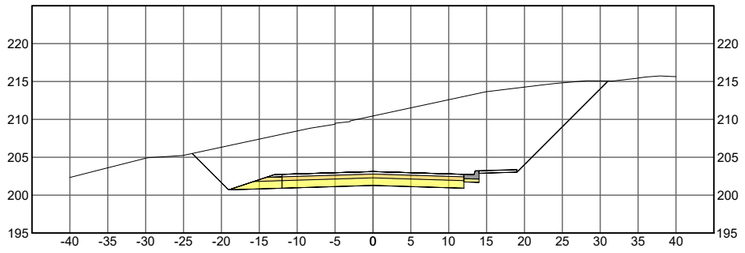
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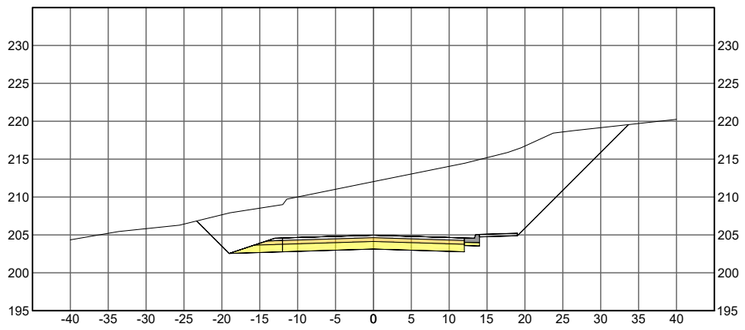
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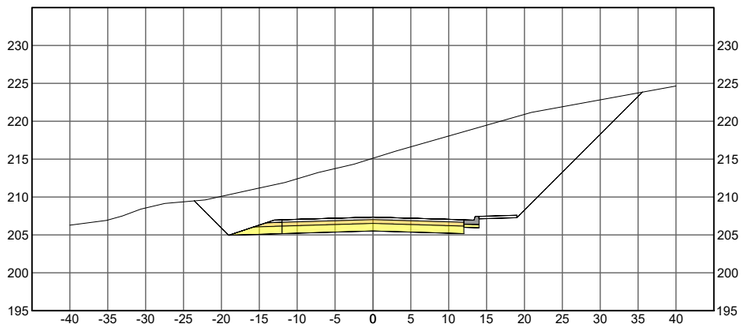
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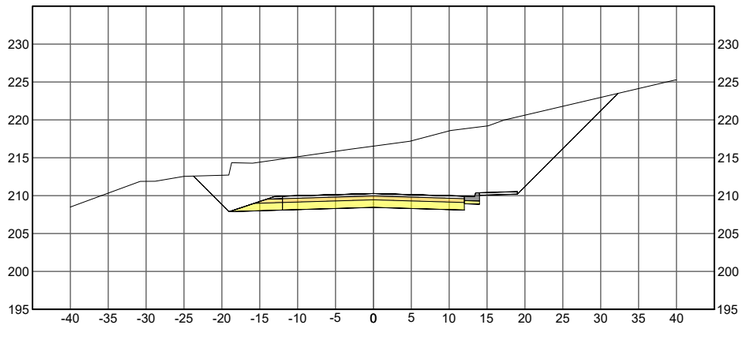
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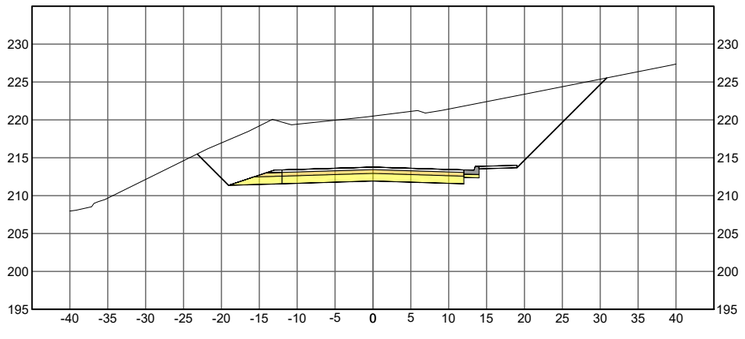
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401+75.00



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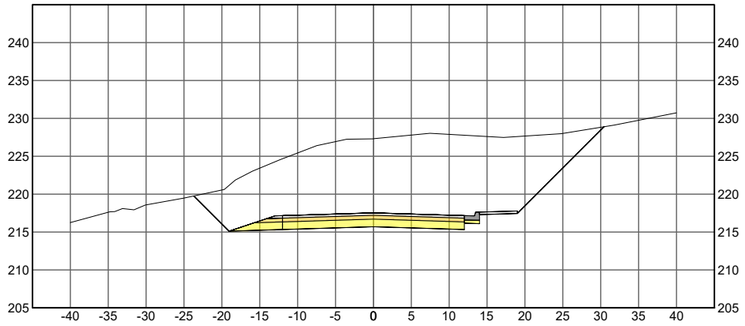
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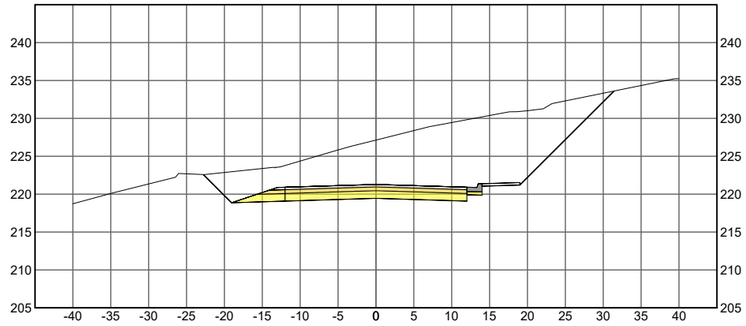
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8/26/2025

PLOT DATE: 8/26/2025
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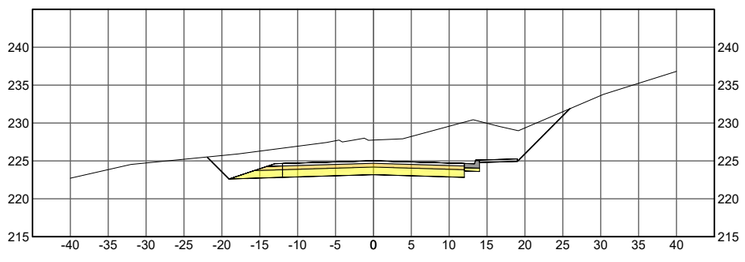
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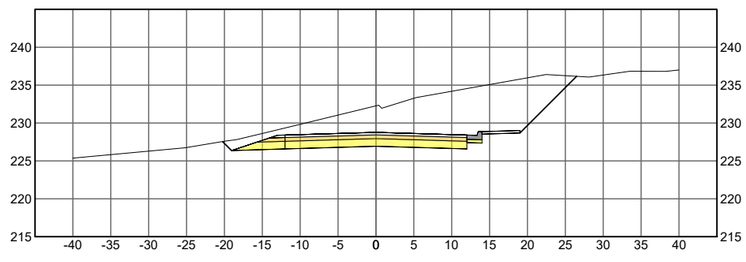
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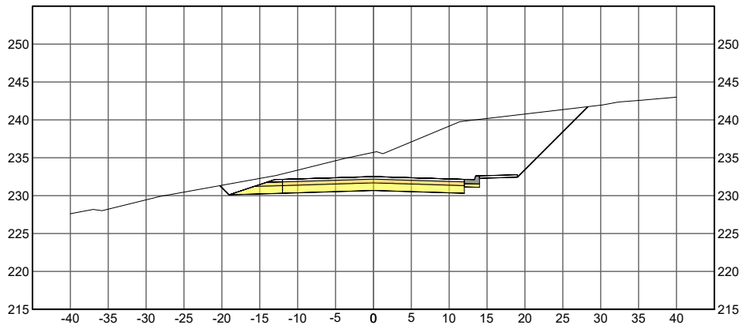
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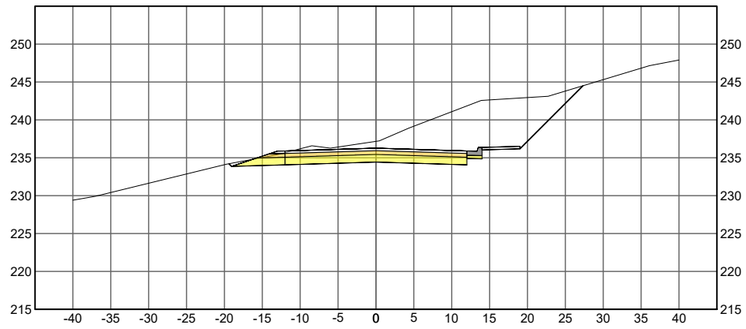
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403+00.00



403+25.00



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JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

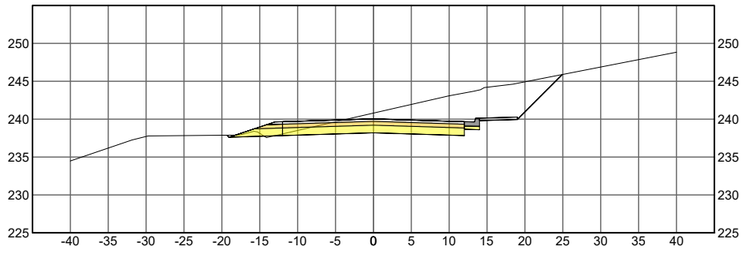
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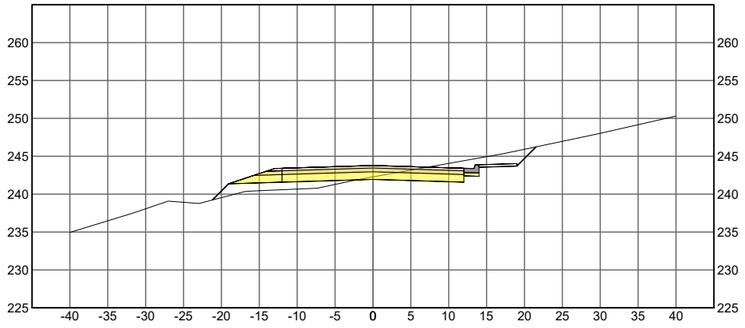
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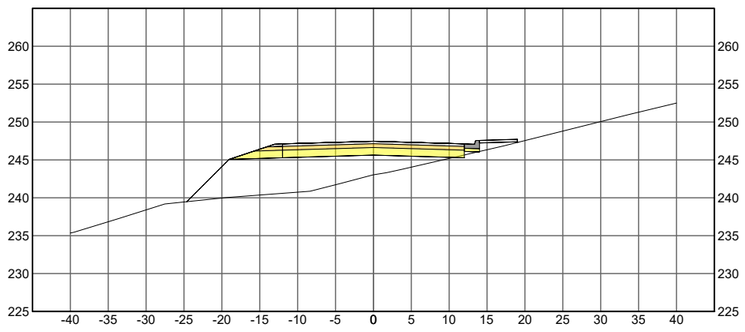
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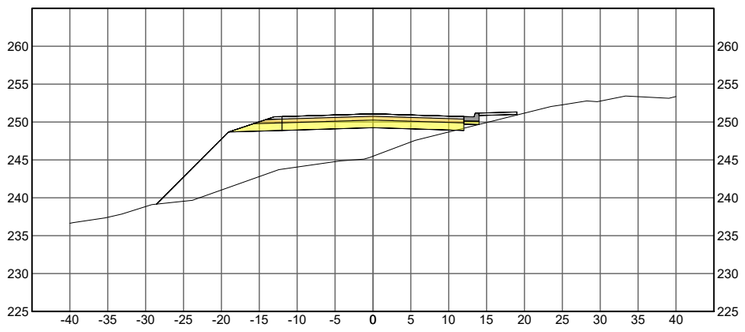
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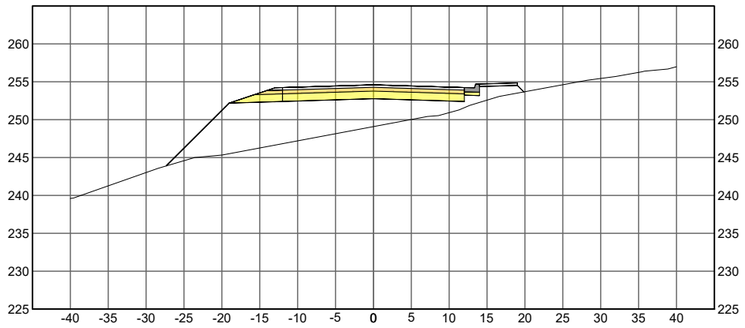
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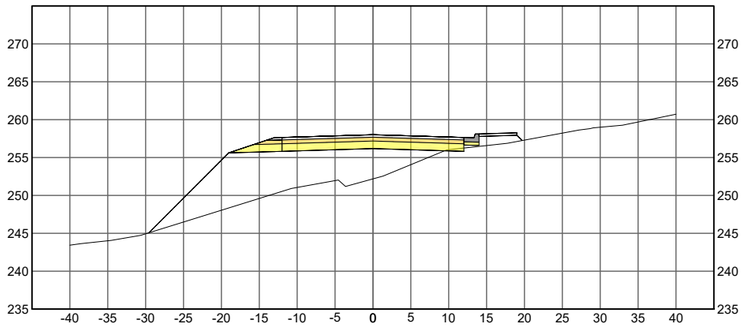
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404+75.00



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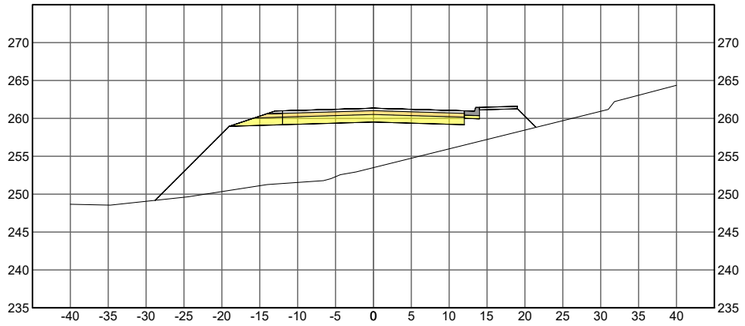
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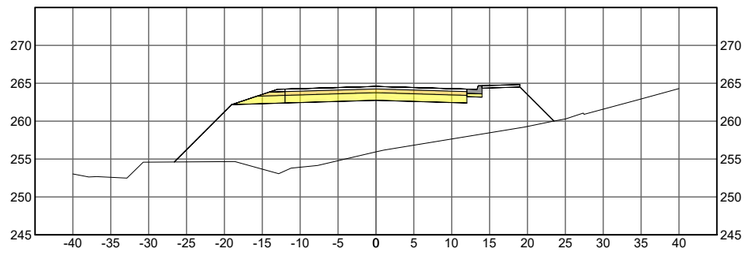
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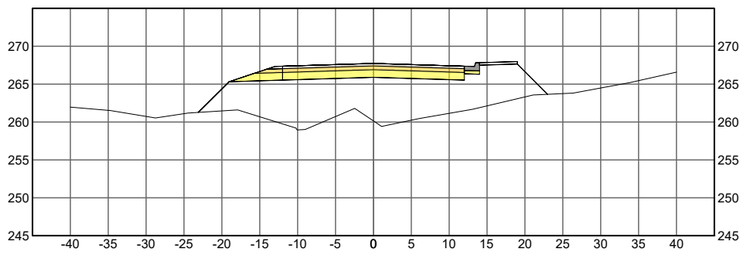
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405+50.00



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JUNEAU, ALASKA

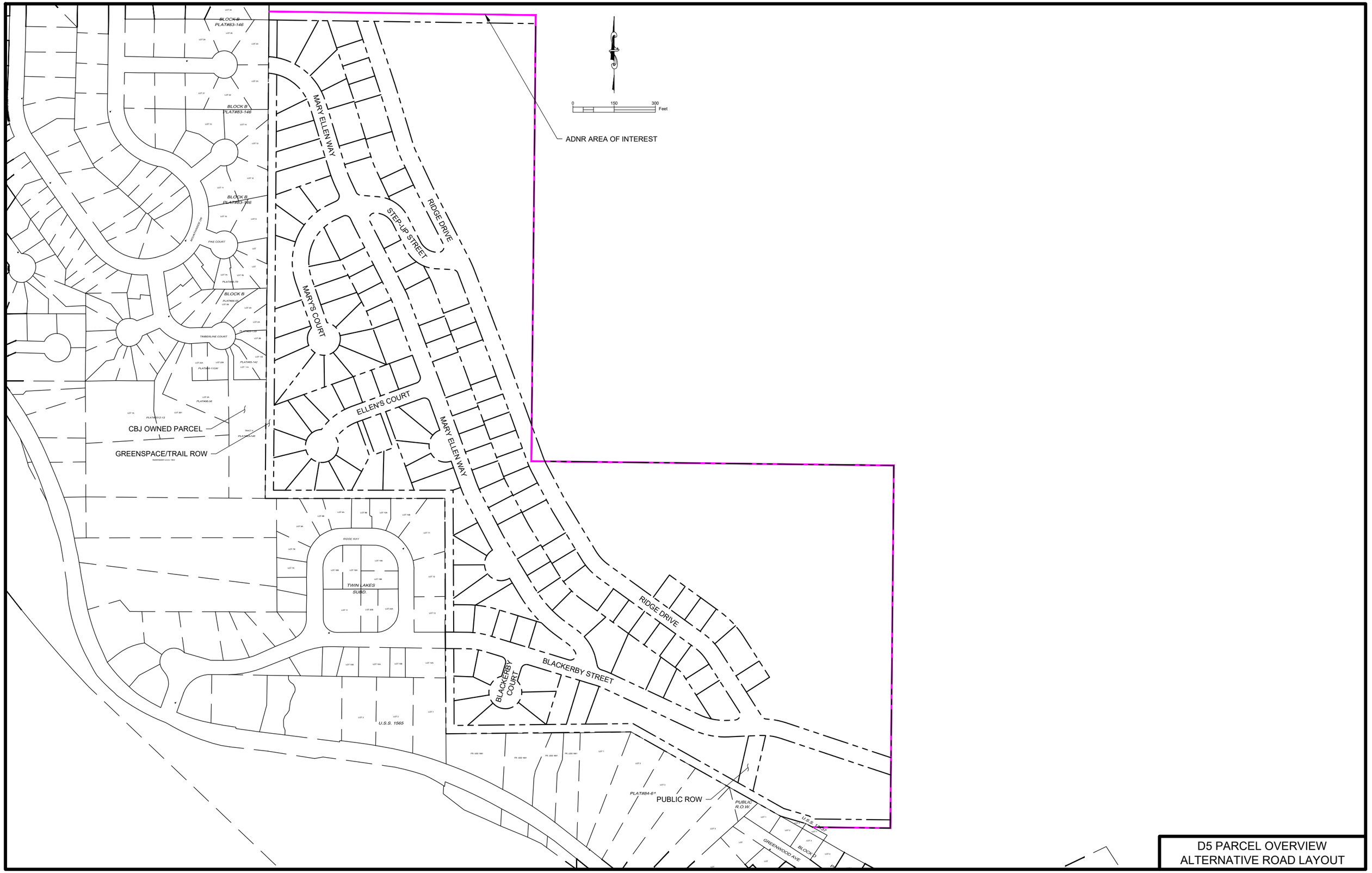
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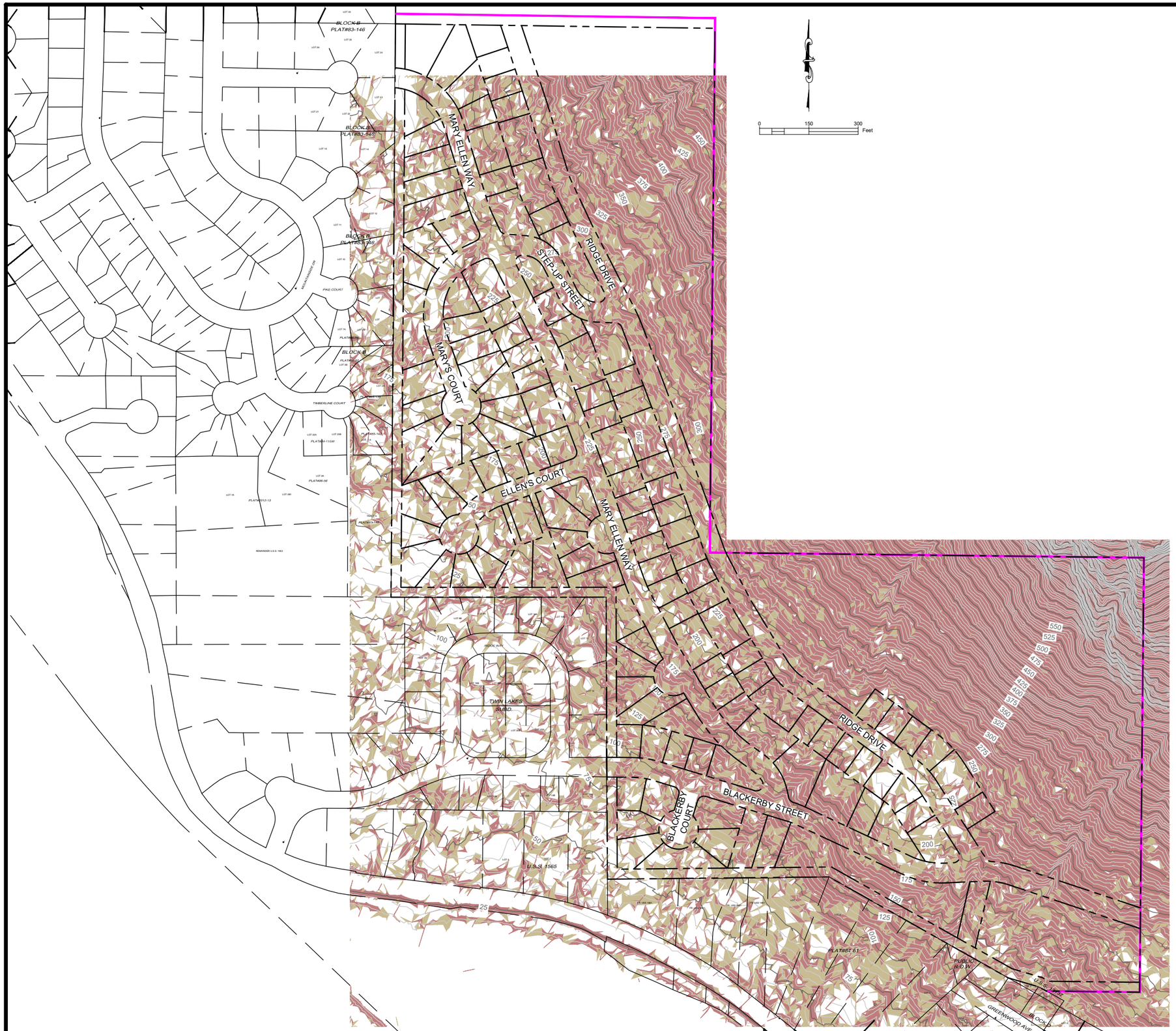
SHEET TITLE:
XS-35 HILL CLIMB COURT

DATE:
8/26/2025

Appendix F – Maximum Feasible D-5 Subdivision Parcel Plans



D5 PARCEL OVERVIEW
ALTERNATIVE ROAD LAYOUT



Slopes Table				
Number	Minimum Slope	Maximum Slope	Area	Color
1	18.00%	30.00%	1317059.61	
2	30.00%	3226.62%	2359060.66	

D5 PARCEL OVERVIEW SLOPE MAP
ALTERNATIVE ROAD LAYOUT

0 150 300 Feet

MARY ELLEN WAY
RIDGE DRIVE
STEP-UP STREET
MARY'S COURT
ELLEN'S COURT
MARY ELLEN WAY
RIDGE DRIVE
BLACKERBY COURT
BLACKERBY STREET
BLOCK B PLAT#83-146
BLOCK B PLAT#83-146
BLOCK B PLAT#83-146
BLOCK B
PINE COURT
TIMBERLINE COURT
MOUNTAINSIDE DR
PLAT#85-79
PLAT#86-06
PLAT#85-142
PLAT#84-119W
PLAT#86-56
PLAT#91-12
REMAINDER U.S.S. 1962
TRACT A PLAT#83-146
RIDGE WAY
TWIN LAKES SUBD.
U.S.S. 1565
PLAT#84-61
PUBLIC R.O.W.
U.S.S. 1565
BLOCK D
GOODWOOD AVE.

DEBRIS FLOOD SUSCEPTIBLE PATHS

GEOTECHNICAL RECOMMEND SUBDIVISION AREA

D5 PARCEL OVERVIEW GEOHAZARDS
ALTERNATIVE ROAD LAYOUT

0 50 100 Feet

RIDGE DRIVE

MARY ELLEN WAY

STEP-UP STREET

MARY'S COURT

ELLEN'S COURT

D5 PARCEL PLAN 1 OF 3
ALTERNATIVE ROAD LAYOUT

RIDGE DRIVE
MARY ELLEN WAY
BLACKERBY COURT
BLACKERBY STREET
ELLEN'S COURT
RIDGE WAY
TWIN LAKES SUBD.
U.S.S. 1565
FR. USS 1861
LOT 10B
LOT 11
LOT 12
LOT 13
LOT 14A
LOT 14B
LOT 15A
LOT 15B
LOT 1
LOT 2
LOT 3
LOT 10A
LOT 9B
LOT 9A
LOT 8B
LOT 8A
LOT 7B
LOT 7A
LOT 19A
LOT 19B
LOT 20A
LOT 20B
LOT 18A
LOT 18B
LOT 11
0
50
100
Feet

D5 PARCEL PLAN 2 OF 3
ALTERNATIVE ROAD LAYOUT

RIDGE DRIVE
MARY ELLEN WAY
BLACKERBY COURT
BLACKERBY STREET
PLAT#84-61
PUBLIC R.O.W.
U.S.S. 13137
GREENWOOD
BLOCK
FR. USS 1861
LOT 10B
LOT 11
LOT 12
LOT 13
LOT 14A
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
101+00
102+00
103+00
104+00
105+00
106+00
107+00
108+00
109+00
110+00
111+00
112+00
113+00
114+00
115+00
116+00
117+00
118+00
118+59
320+00
321+00
322+00
323+00
324+00
325+00
326+00
327+00
328+00
329+00
330+00
330+36
500+00
501+00
501+50
228+38
0
60
120
Feet
D5 PARCEL PLAN 3 OF 3
ALTERNATIVE ROAD LAYOUT

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	8,060.80	359.96	69.90 100.01 48.71 41.34 100.00	N87° 48' 00.29"W N0° 15' 20.27"W S89° 31' 54.89"E S84° 08' 54.87"E S11° 14' 05.14"W
102	10,156.90	391.88	70.03 100.00 21.90 66.65 31.42 48.04 53.84	N64° 28' 41.75"W N11° 14' 05.14"E S75° 54' 47.69"E S73° 03' 40.53"E S28° 03' 40.53"E S16° 56' 19.47"W S51° 13' 48.86"W
103	9,086.12	395.59	69.90 70.03 36.58 129.35 89.73	S87° 48' 00.29"E S64° 28' 41.75"E S8° 03' 26.46"W S80° 33' 31.95"W N0° 15' 20.27"W
104	10,335.20	424.24	129.35 33.42 122.11 49.63 89.73	N80° 33' 31.95"E S25° 21' 54.68"E S48° 40' 35.98"W S89° 24' 45.60"W N0° 15' 20.27"W
105	13,818.27	642.23	122.11 105.32 129.37 285.43	N48° 40' 35.98"E N88° 23' 16.67"E S51° 38' 01.28"E S89° 24' 45.60"W
106	9,855.74	421.71	125.54 126.47 129.37 40.33	N88° 31' 37.15"E S16° 56' 19.47"W N51° 38' 01.28"W N18° 50' 34.85"E
107	11,914.41	438.49	125.54 44.66 48.04 31.42 126.38 62.45	S88° 31' 37.15"W N21° 44' 14.10"W N16° 56' 19.47"E N61° 56' 19.47"E S73° 03' 40.53"E S16° 56' 19.47"W
108	12,450.80	499.14	166.82 73.41 126.47 62.45 70.00	S16° 56' 19.47"W S89° 24' 45.60"W N16° 56' 19.47"E N16° 56' 19.47"E S73° 03' 40.53"E
109	10,882.30	455.60	166.82 34.13 27.80 11.85 145.89 69.12	N16° 56' 19.47"E S73° 03' 40.53"E S73° 03' 40.53"E S71° 31' 07.30"E S20° 01' 25.92"W S89° 24' 45.60"W
201	7,429.74	348.60	100.00 20.53 49.47 100.01 50.73 27.86	S4° 40' 07.68"W N87° 25' 53.60"W N89° 31' 54.89"W N0° 15' 20.27"W S89° 31' 54.89"E S87° 25' 53.60"E
202	8,070.75	361.42	100.00 1.03 80.35 10.04 100.00 10.04 59.96	N4° 40' 07.68"E S85° 15' 12.18"E S79° 07' 06.29"E S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W N79° 11' 46.42"W
203	7,000.00	340.00	100.00 70.00 100.00 70.00	N16° 56' 19.47"E S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W
204	7,000.00	340.00	100.00 70.00 100.00 70.00	N16° 56' 19.47"E S73° 03' 40.53"E S16° 56' 19.47"W N73° 03' 40.53"W
205	12,146.23	482.08	100.00 18.22 73.12 46.03 42.52 0.00 49.10 153.08	N16° 56' 19.47"E S73° 03' 40.53"E S49° 45' 29.06"E S54° 01' 58.69"E S43° 52' 53.99"E S33° 43' 48.92"E S36° 36' 16.31"W N73° 03' 40.53"W
206	12,444.38	585.52	156.69 57.80 122.43 18.22 70.00 70.00 10.04 80.35	N58° 49' 58.18"E S31° 10' 01.82"E S38° 19' 30.62"E N73° 03' 40.53"W N73° 03' 40.53"W N73° 03' 40.53"W N73° 03' 40.53"W N79° 07' 06.29"W
207	11,540.10	521.17	152.62 89.48 19.51 156.69 1.03 27.86 50.73 23.24	N54° 16' 38.47"E S78° 26' 41.68"E S31° 10' 01.82"E S58° 49' 58.18"W N85° 15' 12.18"W N87° 25' 53.60"W N89° 31' 54.89"W N0° 15' 20.27"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
208	9,325.07	422.05	113.20 35.00 152.62 121.23	N89° 44' 39.73"E S19° 00' 40.97"E S54° 16' 38.47"W N0° 15' 20.27"W
209	8,400.53	398.78	142.83 35.00 113.20 107.75	S58° 52' 39.26"E S14° 24' 40.17"W S89° 44' 39.73"W N0° 15' 20.27"W
210	7,594.53	385.67	100.17 78.52 29.75 5.38 29.02 142.83	N62° 18' 41.93"E S27° 41' 18.07"E S29° 25' 39.95"E S31° 10' 01.82"E S44° 58' 39.46"W N58° 52' 39.26"W
211	9,156.05	436.16	29.29 0.88 66.52 74.83 100.17 164.47	N70° 05' 21.75"E S19° 54' 38.25"E S23° 47' 58.16"E S27° 41' 18.07"E S62° 18' 41.93"W N0° 15' 20.27"W
301	9,221.84	438.41	162.60 76.50 29.29 141.78 28.24	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W S89° 59' 25.54"W N19° 54' 38.25"W
302	9,533.53	442.22	103.98 86.47 25.18 162.60 63.99	N62° 39' 47.12"E S68° 37' 25.57"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
303	7,119.72	360.37	120.91 35.00 103.98 100.49	S83° 54' 51.75"E S10° 37' 32.31"E S62° 39' 47.12"W N19° 54' 38.25"W
304	12,758.34	478.49	161.33 35.00 120.91 111.25 50.00	S50° 29' 30.61"E S22° 47' 48.82"W N83° 54' 51.75"W N19° 54' 38.25"W N70° 05' 21.75"E
305	9,681.44	427.92	161.33 93.12 30.90 110.54 32.02	N50° 29' 30.61"W N70° 05' 21.75"E S64° 09' 55.01"E S19° 54' 38.25"E S54° 47' 55.57"W
306	15,437.45	747.76	142.09 35.00 133.00 20.00 111.25 100.49 63.99 28.24 113.72	N1° 31' 31.88"E N70° 05' 21.75"E N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S19° 54' 38.25"E S19° 54' 38.25"E S89° 59' 25.54"W
307	9,309.84	406.00	133.00 35.00 35.00 133.00 70.00	S19° 54' 38.25"E S70° 05' 21.75"W S70° 05' 21.75"W N19° 54' 38.25"W N70° 05' 21.75"E
308	13,308.44	716.57	133.00 20.00 133.00 35.00 142.09 113.72 77.30 62.47	N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E N70° 05' 21.75"E S1° 31' 31.88"W S89° 59' 25.54"W N28° 04' 41.59"E N28° 04' 41.59"E
309	13,544.99	470.83	111.61 66.71 97.05 133.00 62.47	N57° 20' 48.94"W N0° 48' 08.17"E N53° 44' 06.47"E S19° 54' 38.25"E S28° 04' 41.59"W
310	7,962.56	370.74	120.54 35.00 111.61 77.30 26.29	N28° 28' 49.02"W N49° 21' 51.63"E S57° 20' 48.94"E S28° 04' 41.59"W S89° 59' 25.54"W
311	7,404.62	367.32	103.05 35.00 120.54 108.72	N9° 29' 53.33"E N82° 47' 12.76"E S28° 28' 49.02"E S89° 59' 25.54"W
312	7,643.97	390.84	149.21 31.69 103.05 106.89	N39° 45' 21.44"E S65° 22' 22.62"E S9° 29' 53.33"W S89° 59' 25.54"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
313	12,593.59	468.40	120.29 38.31 149.21 42.31 118.28	N76° 20' 35.61"E S31° 57' 01.48"E S39° 45' 21.44"W S89° 59' 25.54"W N0° 26' 40.91"E
314	8,149.82	385.80	120.29 105.23 125.29 35.00	S76° 20' 35.61"W N0° 26' 40.91"E S70° 14' 03.26"E S3° 03' 16.17"W
315	11,645.96	445.90	125.29 85.59 52.51 147.51 35.00	N70° 14' 03.26"W N0° 26' 40.91"E N70° 05' 21.75"E S36° 48' 42.12"E S36° 28' 37.31"W
316	9,649.03	421.24	147.51 61.90 132.15 42.83 36.85	N36° 48' 42.12"W N70° 05' 21.75"E S44° 14' 02.67"E S40° 25' 52.02"W S70° 47' 06.44"W
317	9,986.66	413.86	132.15 80.22 29.09 102.40 70.00	N44° 14' 02.67"W N70° 05' 21.75"E N70° 05' 21.75"E S26° 47' 46.43"E S54° 29' 05.45"W
318	7,632.53	354.61	102.40 82.21 100.00 42.36 27.64	N26° 47' 46.43"W N70° 05' 21.75"E S19° 54' 39.55"E S70° 05' 20.45"W S66° 38' 47.66"W
319	7,000.00	340.00	100.00 70.00 100.00 70.00	N19° 54' 39.55"W N70° 05' 21.75"E S19° 54' 39.55"E S70° 05' 20.45"W
320	7,000.00	340.00	100.00 58.37 0.47 11.16 100.00 70.00	N19° 54' 39.55"W N70° 05' 21.75"E N70° 05' 21.75"E N70° 05' 21.75"E S19° 54' 39.55"E S70° 05' 20.45"W
321	8,852.98	370.02	100.00 88.85 79.78 0.00 31.39 70.00	N19° 54' 39.55"W N70° 05' 21.75"E S20° 33' 21.76"E S20° 33' 21.76"E S24° 24' 23.06"W S70° 05' 20.45"W
401	14,022.53	480.46	100.00 140.79 88.85 11.16 139.66	N69° 26' 38.24"E S20° 33' 21.76"E S70° 05' 21.75"W S70° 05' 21.75"W N20° 33' 21.76"W
402	7,147.51	342.91	99.95 12.56 62.61 100.00 66.58 1.21	N65° 12' 39.77"E S22° 40' 21.00"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N27° 03' 02.15"W
403	7,078.90	341.53	100.00 66.05 6.71 99.95 38.47 30.35	N62° 56' 57.85"E S27° 03' 02.15"E S25° 55' 11.19"E S65° 12' 39.77"W N27° 03' 02.15"W N27° 03' 02.15"W
404	7,000.00	340.00	100.00 70.00 100.00 8.14 61.86	N62° 56' 57.85"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W N27° 03' 02.15"W
405	7,000.00	340.00	100.00 70.00 100.00 8.82 61.18	N62° 56' 57.85"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W N27° 03' 02.15"W
406	13,704.84	462.96	19.62 35.65 50.58 30.17 31.42 23.12 16.30 78.05 100.00 78.05	N26° 05' 51.69"W N25° 08' 41.23"W N56° 19' 55.58"E N64° 51' 18.77"E S70° 08' 41.23"E S25° 08' 41.23"E S26° 05' 51.69"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W
407	9,322.24	408.62	116.63 158.65 35.65 19.62 78.05	S78° 28' 04.99"W N21° 04' 23.69"E S25° 08' 41.23"E S26° 05' 51.69"E S27° 03' 02.15"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
408	8,437.48	382.80	116.63 61.18 128.75 36.47 39.77	N78° 28' 04.99"E S27° 03' 02.15"E S70° 55' 59.73"W N19° 04' 00.27"W N12° 21' 52.63"W
409	9,356.26	408.01	128.75 8.82 61.86 138.57 70.00	N70° 55' 59.73"E S27° 03' 02.15"E S27° 03' 02.15"E S70° 55' 59.73"W N19° 04' 00.27"W
410	9,761.21	414.23	138.57 8.14 30.35 132.41 36.31 68.46	N70° 55' 59.73"E S27° 03' 02.15"E S27° 03' 02.15"E S45° 36' 19.48"W N61° 43' 50.39"W N19° 04' 00.27"W
411	8,668.36	396.36	132.41 38.47 1.21 66.58 122.69 35.00	N45° 36' 19.48"E S27° 03' 02.15"E S27° 03' 02.15"E S20° 33' 21.76"E S78° 00' 00.75"W N27° 40' 59.95"W
412	11,526.65	483.98	122.69 139.66 0.47 186.16 35.00	N78° 00' 00.75"E S20° 33' 21.76"E S70° 05' 21.75"W N67° 32' 58.25"W N5° 44' 21.18"E
413	9,930.19	464.00	114.47 35.00 186.16 58.37 70.00	N39° 42' 56.34"W N39° 09' 42.32"E S67° 32' 58.25"E S70° 05' 21.75"W S70° 05' 21.75"W
414	7,845.64	376.41	114.47 82.21 29.09 115.64 35.00	S39° 42' 56.34"E S70° 05' 21.75"W S70° 05' 21.75"W N0° 42' 15.97"W N72° 35' 03.46"E
415	14,448.85	587.48	242.21 35.00 115.64 80.22 61.90 52.51	N37° 47' 06.28"E S73° 59' 35.40"E S0° 42' 15.97"E S70° 05' 21.75"W S70° 05' 21.75"W S70° 05' 21.75"W
416	14,130.38	576.05	162.49 136.35 35.00 242.21	N0° 26' 40.91"E N66° 08' 26.30"E S40° 34' 14.27"E S37° 47' 06.28"W
417	9,223.64	431.52	136.35 80.82 138.67 7.81 67.85	S66° 08' 26.30"W N0° 26' 40.91"E N70° 55' 59.73"E S19° 04' 00.27"E S8° 32' 13.02"W
418	12,174.13	449.30	138.67 106.92 102.96 100.75	S70° 55' 59.73"W N0° 26' 40.91"E N70° 57' 04.75"E S19° 04' 00.27"E
419	17,623.62	664.87	102.96 268.38 76.66 150.49 66.37	S70° 57' 04.75"W N0° 26' 40.91"E S71° 34' 39.09"E S0° 19' 19.68"E S19° 04' 00.27"E
420	8,395.38	387.33	76.66 112.76 127.91 70.00	N71° 34' 39.09"W N0° 26' 40.91"E S54° 08' 22.84"E S27° 08' 29.03"W
421	11,782.83	435.31	127.91 34.82 90.36 112.22 70.00	N54° 08' 22.84"W N0° 26' 40.91"E N70° 41' 08.19"E S36° 42' 06.60"E S44° 34' 45.28"W
422	10,676.44	415.06	112.22 121.89 49.86 23.12 31.42 30.17 46.39	N36° 42' 06.60"W N70° 41' 08.19"E S22° 13' 46.52"E S25° 08' 41.23"E S19° 51' 18.77"W S64° 51' 18.77"W S59° 04' 36.09"W
501	14,810.92	552.12	82.91 186.96 48.82 21.18 121.89 90.36	N0° 26' 40.91"E N73° 09' 45.10"E S16° 50' 14.90"E S18° 04' 33.36"E S70° 41' 08.19"W S70° 41' 08.19"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
502	12,325.10	495.46	186.96 73.31 165.18 70.00	S73° 09' 45.10"W N0° 26' 40.91"E N73° 09' 45.10"E S16° 50' 14.90"E
503	10,800.59	451.90	165.18 73.31 143.40 70.00	S73° 09' 45.10"W N0° 26' 40.91"E N73° 09' 45.10"E S16° 50' 14.90"E
504	9,429.97	412.05	143.40 64.19 123.07 23.23 24.50 4.46 29.19	S73° 09' 45.10"W N0° 26' 40.91"E N63° 49' 55.15"E S22° 15' 14.30"E S18° 20' 23.75"E S17° 35' 19.33"E S16° 50' 14.90"E
505	9,367.75	412.47	123.07 143.72 145.68	S63° 49' 55.15"W N0° 26' 40.91"E S50° 43' 02.77"E
601	16,385.61	537.51	180.14 70.00 137.11 150.27	S28° 23' 35.87"W N70° 19' 32.26"W N0° 26' 40.91"E S89° 11' 38.33"E
602	16,212.25	530.44	180.14 33.19 104.72 5.77 136.63 70.00	N28° 23' 35.87"E S89° 11' 38.33"E S18° 20' 23.75"E S18° 20' 23.75"E S45° 49' 52.11"W N52° 53' 16.01"W
603	10,274.27	421.25	136.63 64.23 46.83 103.57 70.00	N45° 49' 52.11"E S18° 20' 23.75"E S18° 20' 23.75"E S63° 16' 08.36"W N35° 26' 59.77"W
604	7,920.96	361.19	103.57 23.17 53.41 1.84 9.19 100.00 5.78 6.03 24.50 33.68	N63° 16' 08.36"E S18° 20' 23.75"E S18° 20' 23.75"E S17° 35' 19.33"E S16° 50' 14.90"E S73° 09' 45.10"W N16° 50' 14.90"W N17° 35' 19.33"W N18° 20' 23.75"W N22° 32' 07.70"W
605	14,000.00	480.00	100.00 4.77 135.23 100.00 140.00	N73° 09' 45.10"E S16° 50' 14.90"E S16° 50' 14.90"E S73° 09' 45.10"W N16° 50' 14.90"W
606	7,000.00	340.00	100.00 4.77 65.23 100.00 70.00	N73° 09' 45.10"E S16° 50' 14.90"E S16° 50' 14.90"E S73° 09' 45.10"W N16° 50' 14.90"W
607	14,261.82	510.36	100.00 2.23 47.85 39.20 70.00 12.52 43.13 65.67 0.00 20.94 44.25 62.35 2.23	N73° 09' 45.10"E S16° 50' 14.90"E S20° 59' 28.06"E S25° 08' 41.23"E S25° 08' 41.23"E S25° 08' 41.23"E N75° 38' 26.86"W N85° 08' 41.23"W N85° 08' 40.39"W N55° 08' 40.72"W N25° 08' 41.23"W N20° 59' 28.06"W N16° 50' 14.90"W
608	18,624.78	669.19	100.00 37.04 7.65 197.50 41.89 0.00 5.74 73.34 104.74 88.76 12.52	N64° 51' 18.77"E S25° 08' 41.23"E S26° 05' 51.69"E S27° 03' 02.15"E S32° 56' 56.88"W N87° 03' 02.51"W N87° 03' 02.15"W N57° 02' 03.63"W N27° 01' 05.11"W N46° 34' 38.81"W N25° 08' 41.23"W
609	7,000.00	340.00	100.00 70.00 100.00 70.00	N64° 51' 18.77"E S25° 08' 41.23"E S64° 51' 18.77"W N25° 08' 41.23"W
610	14,724.95	494.50	39.20 100.00 39.20 47.85 2.23 65.23 100.00 67.46 33.35	S25° 08' 41.23"E S64° 51' 18.77"W N25° 08' 41.23"W N20° 59' 28.06"W N16° 50' 14.90"W N16° 50' 14.90"W N73° 09' 45.10"E S16° 50' 14.90"E S20° 59' 28.06"E
611	14,000.00	480.00	100.00 4.77 135.23 100.00 140.00	S73° 09' 45.10"W N16° 50' 14.90"W N16° 50' 14.90"W N73° 09' 45.10"E S16° 50' 14.90"E
612	7,052.45	341.05	100.00 53.41 4.46 13.96 100.00 4.77 9.19 1.84 53.41	N71° 39' 36.25"E S18° 20' 23.75"E S17° 35' 19.33"E S16° 50' 14.90"E S73° 09' 45.10"W N16° 50' 14.90"W N16° 50' 14.90"W N17° 35' 19.33"W N18° 20' 23.75"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
613	7,000.00	340.00	100.00 70.00 100.00 23.17 46.83	N71° 39' 36.25"E S18° 20' 23.75"E S71° 39' 36.25"W N18° 20' 23.75"W N18° 20' 23.75"W
614	7,000.00	340.00	100.00 70.00 100.00 64.23 5.77	N71° 39' 36.25"E S18° 20' 23.75"E S71° 39' 36.25"W N18° 20' 23.75"W N18° 20' 23.75"W
615	8,735.90	380.57	100.00 104.72 105.86 10.42 59.58	S71° 39' 36.25"W N18° 20' 23.75"W S89° 11' 38.33"E S18° 20' 23.75"E S18° 20' 23.75"E
701	8,375.82	370.58	70.05 112.91 42.55 7.68 71.02 66.37	S62° 56' 57.85"W N27° 03' 02.15"W N33° 54' 08.31"E S85° 08' 41.23"E S56° 04' 53.17"E S27° 01' 05.11"E
702	7,000.00	348.35	70.05 38.37 60.02 83.61 96.29	N62° 56' 57.85"E S27° 01' 05.11"E S40° 14' 41.23"E S62° 56' 57.85"W N27° 03' 02.15"W
703	7,000.00	333.02	83.61 30.11 47.06 100.00 72.24	N62° 56' 57.85"E S60° 06' 26.31"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W
704	14,567.07	491.34	10.99 100.00 124.26 15.74 100.00 17.44 7.93 114.97	S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N27° 03' 02.15"W N62° 56' 57.85"E S27° 03' 02.15"E S23° 48' 11.96"E S20° 33' 21.76"E
705	7,000.00	340.00	100.00 59.01 10.99 100.00 70.00	N69° 26' 38.24"E S20° 33' 21.76"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W
706	7,000.00	340.00	100.00 59.01 10.99 100.00 70.00	N69° 26' 38.24"E S20° 33' 21.76"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W
707	14,056.32	481.13	100.00 76.38 0.79 51.50 12.45 100.00 63.79 76.21	N69° 26' 38.24"E S20° 33' 21.76"E S20° 01' 00.01"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N20° 33' 21.76"W
708	7,000.00	340.00	100.00 57.55 12.45 100.00 70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
709	7,000.00	340.00	100.00 57.55 12.45 100.00 70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
710	7,000.00	340.00	100.00 57.55 12.45 100.00 70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
711	7,000.00	340.00	100.00 57.55 12.45 100.00 70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
712	7,133.44	342.67	100.00 45.98 15.27 6.75 100.00 28.69 45.98	N70° 05' 21.75"E S19° 54' 38.25"E S21° 14' 09.04"E S23° 08' 50.15"E S66° 15' 59.53"W N21° 49' 19.36"W N19° 54' 38.25"W
713	7,138.05	342.76	100.00 22.78 45.15 100.00 45.15 29.68	N66° 15' 59.53"E S25° 42' 39.27"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N25° 42' 39.27"W

D5 SUBDIVISION PARCEL TABLES 1
ALTERNATIVE ROAD LAYOUT

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
714	7,000.00	340.00	100.00 2.48 67.52 100.00 70.00	N62° 18' 41.93"E S27° 41' 18.07"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W
715	14,121.43	482.43	100.00 79.95 26.11 38.19 100.00 2.48 35.72 20.04 79.95	S58° 49' 58.18"W N31° 10' 01.82"W N29° 25' 39.95"W N27° 41' 18.07"W N62° 18' 41.93"E S27° 41' 18.07"E S27° 41' 18.07"E S29° 25' 39.95"E S31° 10' 01.82"E
716	7,000.00	340.00	100.00 9.16 60.84 100.00 70.00	N58° 49' 58.18"E S31° 10' 01.82"E S31° 10' 01.82"E S58° 49' 58.18"W N31° 10' 01.82"W
717	7,095.85	341.92	100.00 9.16 43.59 15.82 100.00 20.61 52.75	N58° 49' 58.18"E S31° 10' 01.82"E S31° 10' 01.82"E S32° 32' 24.67"E S56° 05' 12.47"W N32° 32' 24.67"W N31° 10' 01.82"W
718	7,365.74	347.31	100.00 19.05 44.92 100.00 83.35	N56° 05' 12.47"E S35° 33' 59.56"E S41° 07' 10.25"E S44° 58' 51.08"W N39° 27' 58.22"W
719	15,456.42	513.71	38.15 106.10 37.23 46.03 67.65 100.00 51.92 66.64	S54° 01' 58.69"E S47° 49' 05.55"W N48° 06' 26.57"W N54° 01' 58.69"W N49° 31' 33.80"W N44° 58' 51.08"E S49° 31' 33.80"E S54° 01' 58.69"E
720	18,109.71	543.74	106.10 31.85 70.00 158.85 38.42 20.87 26.16 91.48	N47° 49' 05.55"E S54° 01' 58.69"E S54° 01' 58.69"E S23° 40' 05.62"W N68° 55' 30.44"W N42° 57' 31.93"W N13° 03' 40.53"W N27° 37' 17.49"W
721	20,527.93	576.21	158.85 70.00 70.00 6.38 130.98 140.00	N23° 40' 05.62"E S54° 01' 58.69"E S54° 01' 58.69"E S54° 01' 58.69"E S25° 00' 22.45"W N64° 59' 37.55"W
722	8,693.89	389.70	130.98 63.62 7.68 117.42 70.00	N25° 00' 22.45"E S54° 01' 58.69"E S54° 01' 58.69"E S25° 00' 22.45"W N64° 59' 37.55"W
723	12,344.15	531.53	117.42 7.04 26.25 16.88 70.00 102.58 46.00 145.37	N25° 00' 22.45"E S54° 01' 58.69"E S43° 17' 27.85"E S32° 32' 57.00"E S32° 32' 57.00"E S32° 32' 57.00"E N70° 59' 03.41"W N64° 59' 37.55"W
724	13,664.03	465.69	100.00 135.00 41.89 26.43 59.80 102.58	N57° 27' 03.00"E S32° 32' 57.00"E S27° 27' 03.00"W S87° 27' 03.00"W N84° 45' 43.14"W N32° 32' 57.00"W
725	7,000.00	340.00	100.00 70.00 100.00 70.00	N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W
726	7,659.34	353.19	100.00 14.72 63.74 16.88 100.00 16.88 26.25 7.04 7.68	N35° 58' 01.31"E S54° 01' 58.69"E S43° 17' 27.85"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W N43° 17' 27.85"W N54° 01' 58.69"W N54° 01' 58.69"W
727	7,000.00	340.00	100.00 70.00 100.00 63.62 6.38	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W N54° 01' 58.69"W
728	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
729	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
730	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
731	7,000.00	340.00	100.00 70.00 100.00 31.85 38.15	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W N54° 01' 58.69"W
732	14,880.33	497.61	66.64 100.00 66.64 51.92 44.92 100.00 67.49	S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W N49° 31' 33.80"W N41° 07' 10.25"W N52° 46' 48.41"E S45° 37' 35.14"E
733	7,316.92	346.34	100.00 43.59 24.30 100.00 19.05 15.82 43.59	N58° 49' 58.18"E S31° 10' 01.82"E S34° 11' 36.71"E S52° 46' 48.41"W N35° 33' 59.56"W N32° 32' 24.67"W N31° 10' 01.82"W
734	7,000.00	340.00	100.00 70.00 100.00 9.16 60.84	N58° 49' 58.18"E S31° 10' 01.82"E S58° 49' 58.18"W N31° 10' 01.82"W N31° 10' 01.82"W
735	14,182.15	483.64	100.00 9.16 79.95 20.04 35.72 100.00 35.72 13.96 89.10	S58° 49' 58.18"W N31° 10' 01.82"W N31° 10' 01.82"W N29° 25' 39.95"W N27° 41' 18.07"W N62° 18' 41.93"E S27° 41' 18.07"E S29° 25' 39.95"E S31° 10' 01.82"E
736	7,000.00	340.00	100.00 70.00 100.00 2.48 67.52	N62° 18' 41.93"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N27° 41' 18.07"W
737	7,268.46	345.37	100.00 20.58 47.63 100.00 2.48 45.15 22.78 6.75	N67° 26' 20.17"E S25° 07' 28.95"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N27° 41' 18.07"W N25° 42' 39.27"W N23° 08' 50.15"W
738	7,138.78	342.78	100.00 58.44 10.64 100.00 15.27 45.98 12.45	N70° 05' 21.75"E S19° 54' 38.25"E S21° 14' 09.04"E S67° 26' 20.17"W N21° 14' 09.04"W N19° 54' 38.25"W N19° 54' 38.25"W
739	7,000.00	340.00	100.00 70.00 100.00 57.55 12.45	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
740	7,000.00	340.00	100.00 70.00 100.00 57.55 12.45	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
741	7,000.00	340.00	100.00 70.00 100.00 57.55 12.45	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
742	7,000.00	340.00	100.00 70.00 100.00 57.55 12.45	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
743	14,022.53	480.45	1.91 51.50 100.00 51.50 0.79 76.38 10.99 100.00 87.37	S20° 14' 00.01"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N20° 14' 00.01"W N20° 33' 21.76"W N20° 33' 21.76"W N69° 26' 38.24"E S20° 33' 21.76"E
744	7,000.00	340.00	100.00 70.00 100.00 59.01 10.99	N69° 26' 38.24"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N20° 33' 21.76"W
745	7,000.00	340.00	100.00 70.00 100.00 59.01 10.99	N69° 26' 38.24"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N20° 33' 21.76"W

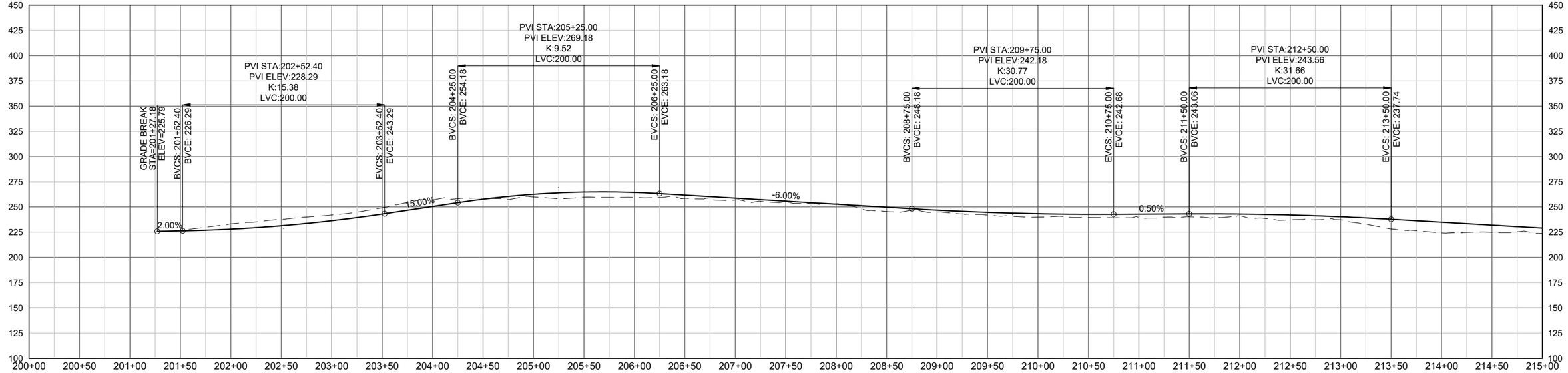
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
746	15,562.38	537.64	100.00 114.97 7.93 17.44 47.06 46.08 62.74 22.78 3.66 114.97	S69° 26' 38.24"W N20° 33' 21.76"W N23° 48' 11.96"W N27° 03' 02.15"W N27° 03' 02.15"W S76° 53' 48.71"E S87° 03' 02.15"E S54° 25' 14.12"E S21° 10' 23.93"E S20° 33' 21.76"E
801	7,089.68	341.79	100.00 70.90 100.00 70.90	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
802	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
803	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
804	8,128.95	362.58	100.00 18.07 74.51 100.00 51.93 18.07	N35° 58' 01.31"E S54° 01' 58.69"E S47° 33' 52.40"E S48° 54' 13.90"W N47° 33' 52.40"W N54° 01' 58.69"W
805	14,745.86	494.92	100.00 105.69 34.31 100.00 49.23 105.69	S57° 27' 03.00"W N32° 32' 57.00"W N36° 49' 21.55"W N48° 54' 13.90"E S36° 49' 21.55"E S32° 32' 57.00"E
806	7,000.00	340.00	100.00 70.00 100.00 70.00	N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W

D5 SUBDIVISION PARCEL TABLES 2
ALTERNATIVE ROAD LAYOUT

Appendix G – Maximum Feasible D-5 Subdivision Alignment Profiles

Profile View of AL-MARY ELLEN WAY

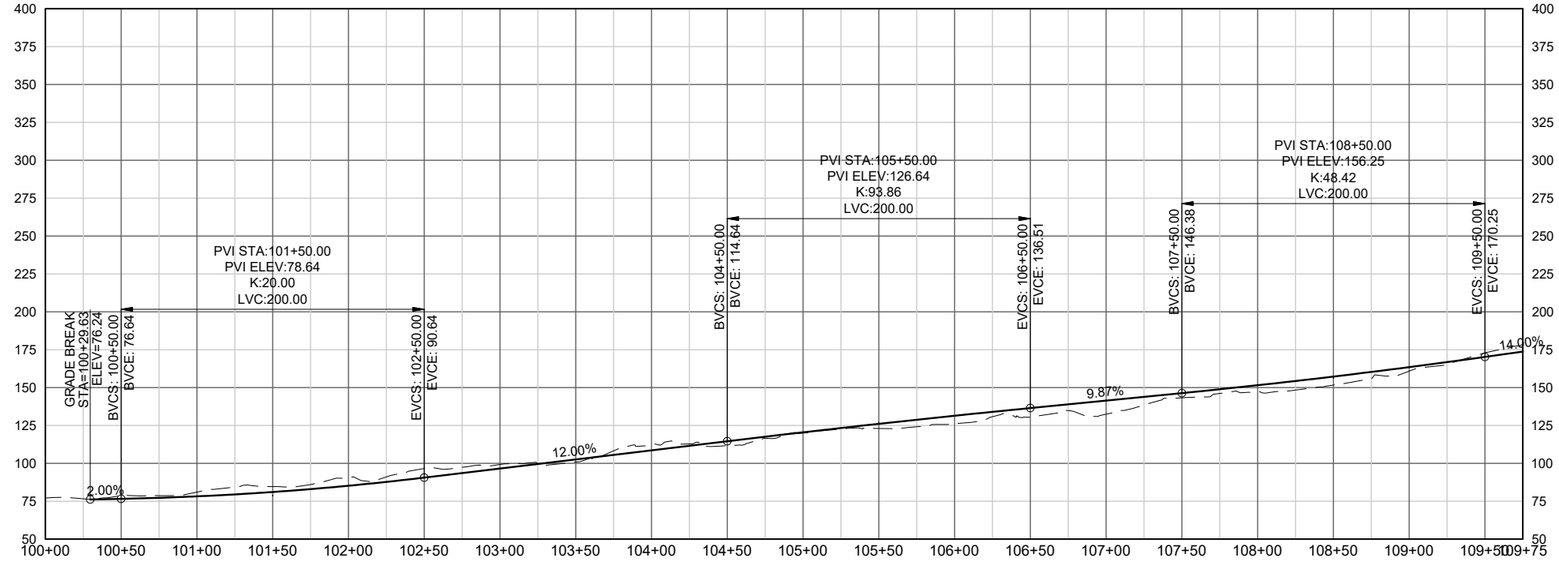


Profile View of AL-MARY ELLEN WAY

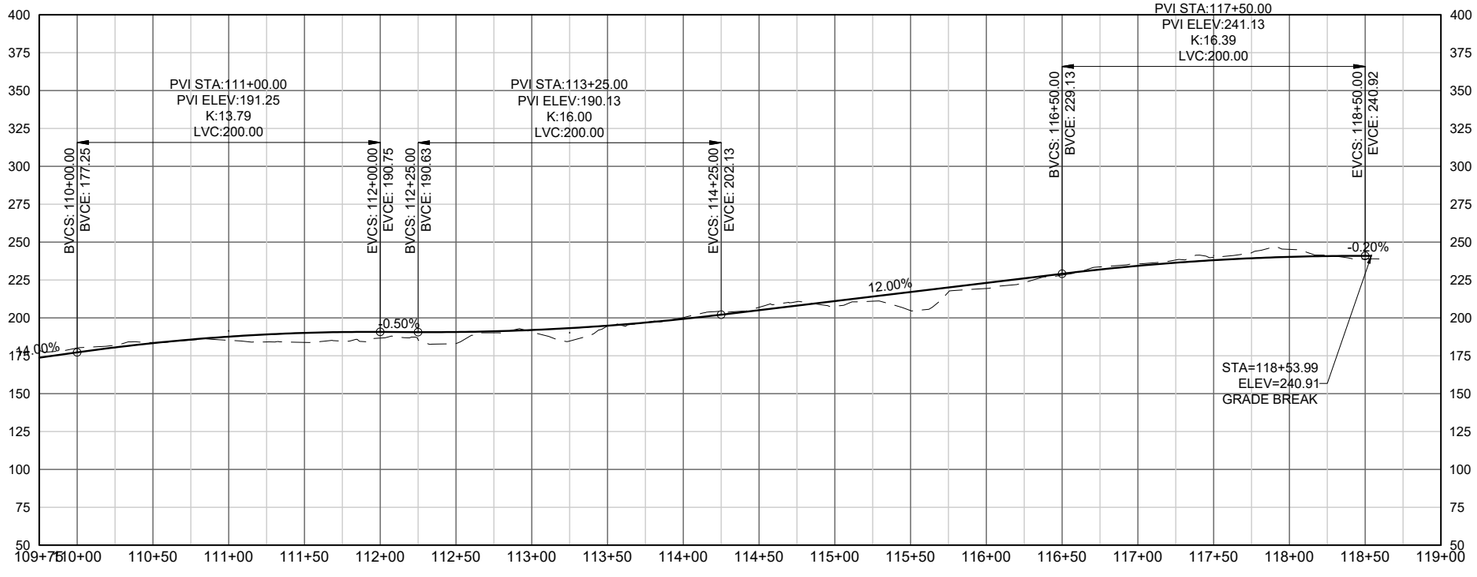


MARY ELLEN WAY PROFILE
ALTERNATIVE ROAD LAYOUT

Profile View of AL-BLACKERBY STREET

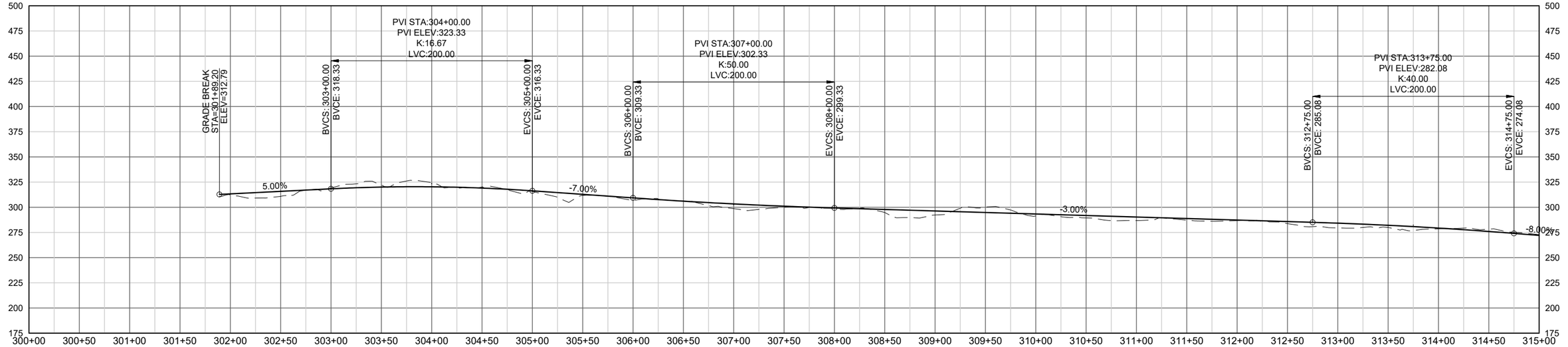


Profile View of AL-BLACKERBY STREET

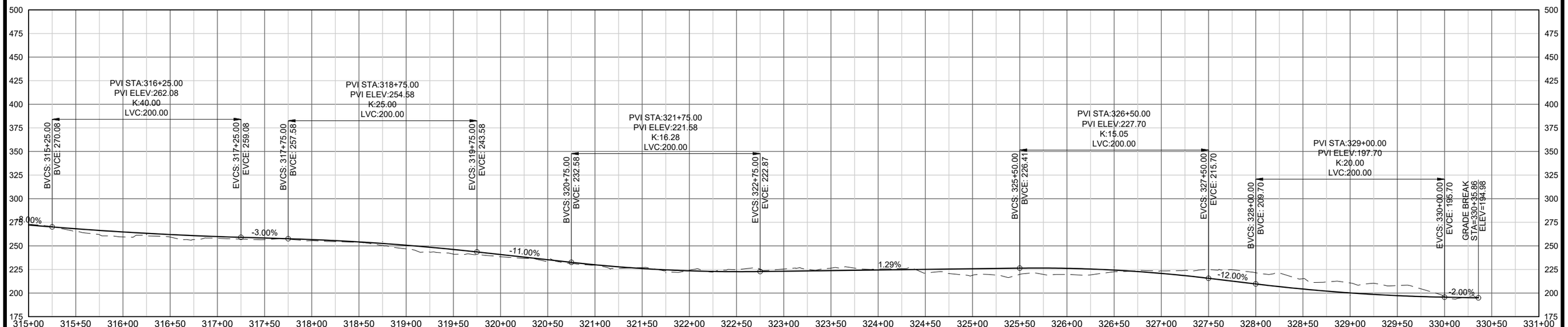


BLACKERBY STREET PROFILE
ALTERNATIVE ROAD LAYOUT

Profile View of AL-RIDGE DRIVE

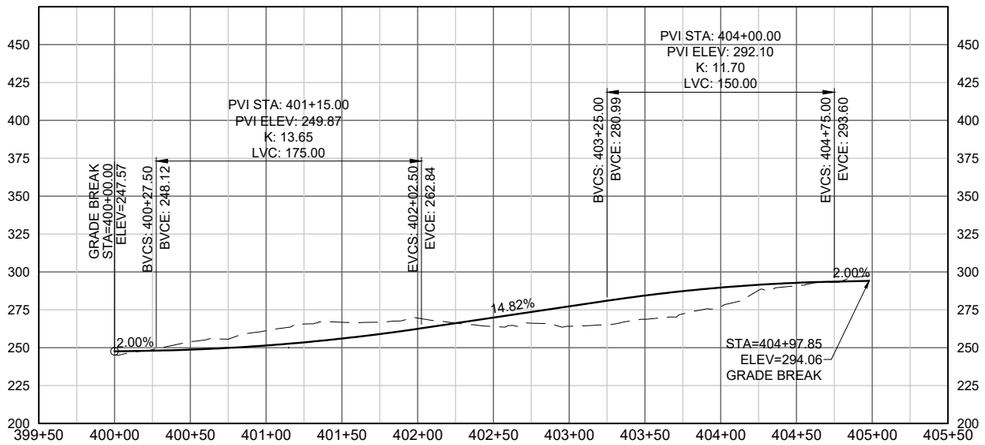


Profile View of AL-RIDGE DRIVE

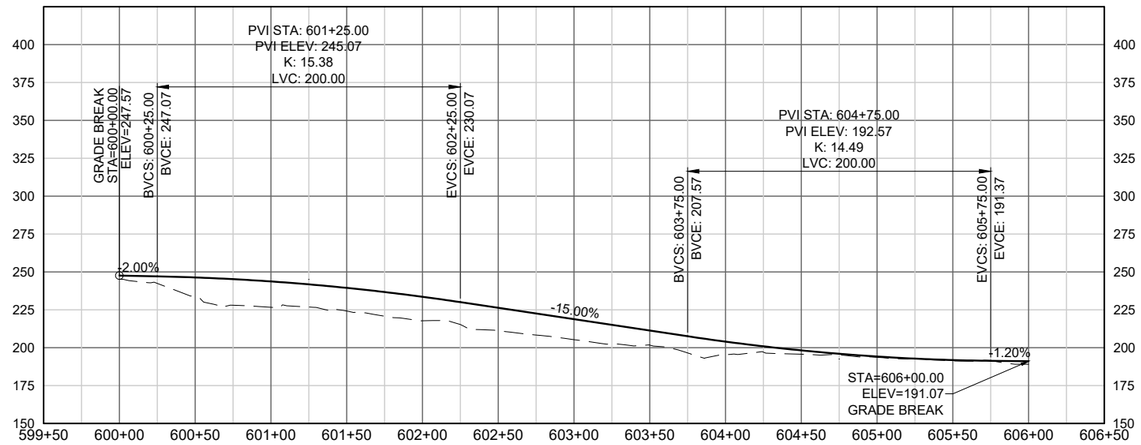


RIDGE DRIVE PROFILE
ALTERNATIVE ROAD LAYOUT

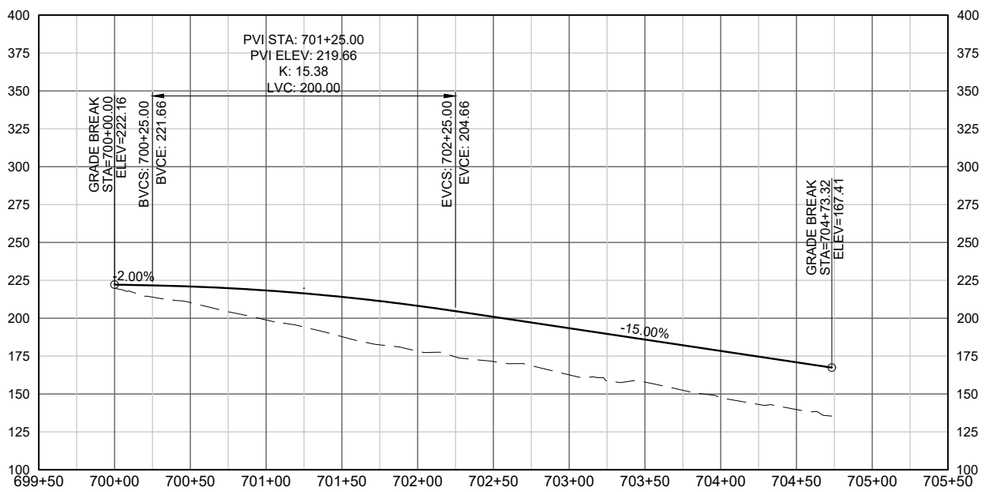
Profile View of AL-STEP UP STREET



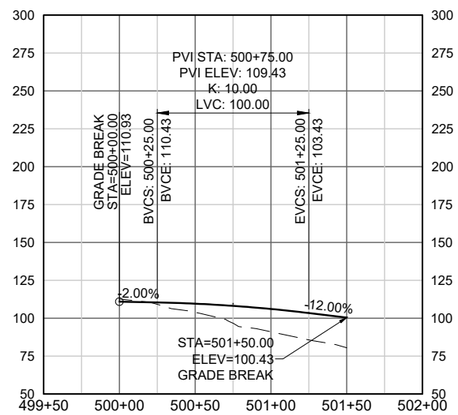
Profile View of AL-MARY'S COURT



Profile View of AL-ELLEN'S COURT



Profile View of AL-BLACKERBY COURT



STEP-UP ST & CULDESAC PROFILES
ALTERNATIVE ROAD LAYOUT

Appendix H – Rough Order of Magnitude Engineer's Estimates

Engineer's Rough Order of Magnitude Estimate - Blackerby Street					
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Extended Price**
201.0003.0000	Clearing and Grubbing	1.8	Acre	$ 30,000.00	$ 54,000.00
203.0003.0000	Unclassified Excavation	5,190	Cubic Yard	$ 25.00	$ 129,750.00
203.0006.000A	Borrow, Type A	3,467	Ton	$ 50.00	$ 173,350.00
301.0001.00D1	Aggregate Base Course, Grading D-1	1,214	Ton	$ 90.00	$ 109,260.00
401.0001.002B	HMA, Type II; Class B	963	Ton	$ 250.00	$ 240,750.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	55.9	Ton	$ 1,500.00	$ 83,850.00
603.0001.0036	CSP 36 Inch	585	Linear Foot	$ 200.00	$ 117,000.00
609.0002.0001	Curb and Gutter, Type 1	1,300	Linear Foot	$ 115.00	$ 149,500.00
615.0001.0000	Standard Sign	36.5	Square Foot	$ 200.00	$ 7,300.00
618.0002.0000	Seeding	55	Pounds	$ 80.00	$ 4,368.00
620.0001.0000	Topsoil	4,045	Square Yard	$ 5.00	$ 20,225.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	1,300	Linear Foot	$ 300.00	$ 390,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	1,300	Linear Foot	$ 400.00	$ 520,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 150,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 7,500.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 10,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 2,169,353.00
				Contingency @ 10%:	$ 216,935.30
				Construction Engineering @ 15%:	$ 325,402.95
				Total:	$ 2,711,691.25

Engineer's Rough Order of Magnitude Estimate - Hill Climb Court					
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Extended Price**
201.0003.0000	Clearing and Grubbing	0.8	Acre	$ 30,000.00	$ 24,000.00
203.0003.0000	Unclassified Excavation	3,802	Cubic Yard	$ 25.00	$ 95,050.00
203.0006.000A	Borrow, Type A	1,091	Ton	$ 50.00	$ 54,550.00
301.0001.00D1	Aggregate Base Course, Grading D-1	486	Ton	$ 90.00	$ 43,740.00
401.0001.002B	HMA, Type II; Class B	386	Ton	$ 250.00	$ 96,500.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	22.4	Ton	$ 1,500.00	$ 33,600.00
603.0001.0036	CSP 36 Inch	0	Linear Foot	$ 200.00	$ -
609.0002.0001	Curb and Gutter, Type 1	550	Linear Foot	$ 115.00	$ 63,250.00
615.0001.0000	Standard Sign	12.5	Square Foot	$ 200.00	$ 2,500.00
618.0002.0000	Seeding	23	Pounds	$ 80.00	$ 1,848.00
620.0001.0000	Topsoil	1,712	Square Yard	$ 5.00	$ 8,560.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	550	Linear Foot	$ 300.00	$ 165,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	550	Linear Foot	$ 400.00	$ 220,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 80,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 5,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 5,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 901,098.00
				Contingency @ 10%:	$ 90,109.80
				Construction Engineering @ 15%:	$ 135,164.70
				Total:	$ 1,126,372.50

Engineer's Rough Order of Magnitude Estimate - Mary Ellen Way					
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Extended Price**
201.0003.0000	Clearing and Grubbing	0.7	Acre	$ 30,000.00	$ 21,000.00
203.0003.0000	Unclassified Excavation	1,325	Cubic Yard	$ 25.00	$ 33,125.00
203.0006.000A	Borrow, Type A	1,954	Ton	$ 50.00	$ 97,700.00
301.0001.00D1	Aggregate Base Course, Grading D-1	364	Ton	$ 90.00	$ 32,760.00
401.0001.002B	HMA, Type II; Class B	292	Ton	$ 250.00	$ 73,000.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	17.0	Ton	$ 1,500.00	$ 25,500.00
603.0001.0036	CSP 36 Inch	203	Linear Foot	$ 200.00	$ 40,500.00
609.0002.0001	Curb and Gutter, Type 1	450	Linear Foot	$ 115.00	$ 51,750.00
615.0001.0000	Standard Sign	12.5	Square Foot	$ 200.00	$ 2,500.00
618.0002.0000	Seeding	19	Pounds	$ 80.00	$ 1,512.00
620.0001.0000	Topsoil	1,400	Square Yard	$ 5.00	$ 7,000.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	450	Linear Foot	$ 300.00	$ 135,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	450	Linear Foot	$ 400.00	$ 180,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 70,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 5,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 5,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 783,847.00
				Contingency @ 10%:	$ 78,384.70
				Construction Engineering @ 15%:	$ 117,577.05
				Total:	$ 979,808.75

Engineer's Rough Order of Magnitude Estimate - Traverse Way					
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Extended Price**
201.0003.0000	Clearing and Grubbing	4.2	Acre	$ 30,000.00	$ 126,000.00
203.0003.0000	Unclassified Excavation	7,339	Cubic Yard	$ 25.00	$ 183,475.00
203.0006.000A	Borrow, Type A	7,184	Ton	$ 50.00	$ 359,200.00
301.0001.00D1	Aggregate Base Course, Grading D-1	2,862	Ton	$ 90.00	$ 257,580.00
401.0001.002B	HMA, Type II; Class B	2,269	Ton	$ 250.00	$ 567,250.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	131.7	Ton	$ 1,500.00	$ 197,550.00
603.0001.0036	CSP 36 Inch	1,350	Linear Foot	$ 200.00	$ 270,000.00
609.0002.0001	Curb and Gutter, Type 1	3,000	Linear Foot	$ 115.00	$ 345,000.00
615.0001.0000	Standard Sign	36.5	Square Foot	$ 200.00	$ 7,300.00
618.0002.0000	Seeding	126	Pounds	$ 80.00	$ 10,080.00
620.0001.0000	Topsoil	9,334	Square Yard	$ 5.00	$ 46,670.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	3,000	Linear Foot	$ 300.00	$ 900,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	3,000	Linear Foot	$ 400.00	$ 1,200,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 300,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 10,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 20,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 4,802,605.00
				Contingency @ 10%:	$ 480,260.50
				Construction Engineering @ 15%:	$ 720,390.75
				Total:	$ 6,003,256.25

Appendix I – ITE TripGen 12 Web App Results

Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15 out of 155
Avg. Num. of Dwelling Units: 197
Directional Distribution: 50% entering , 50% exiting

Vehicle Trip Generation per Dwelling Unit

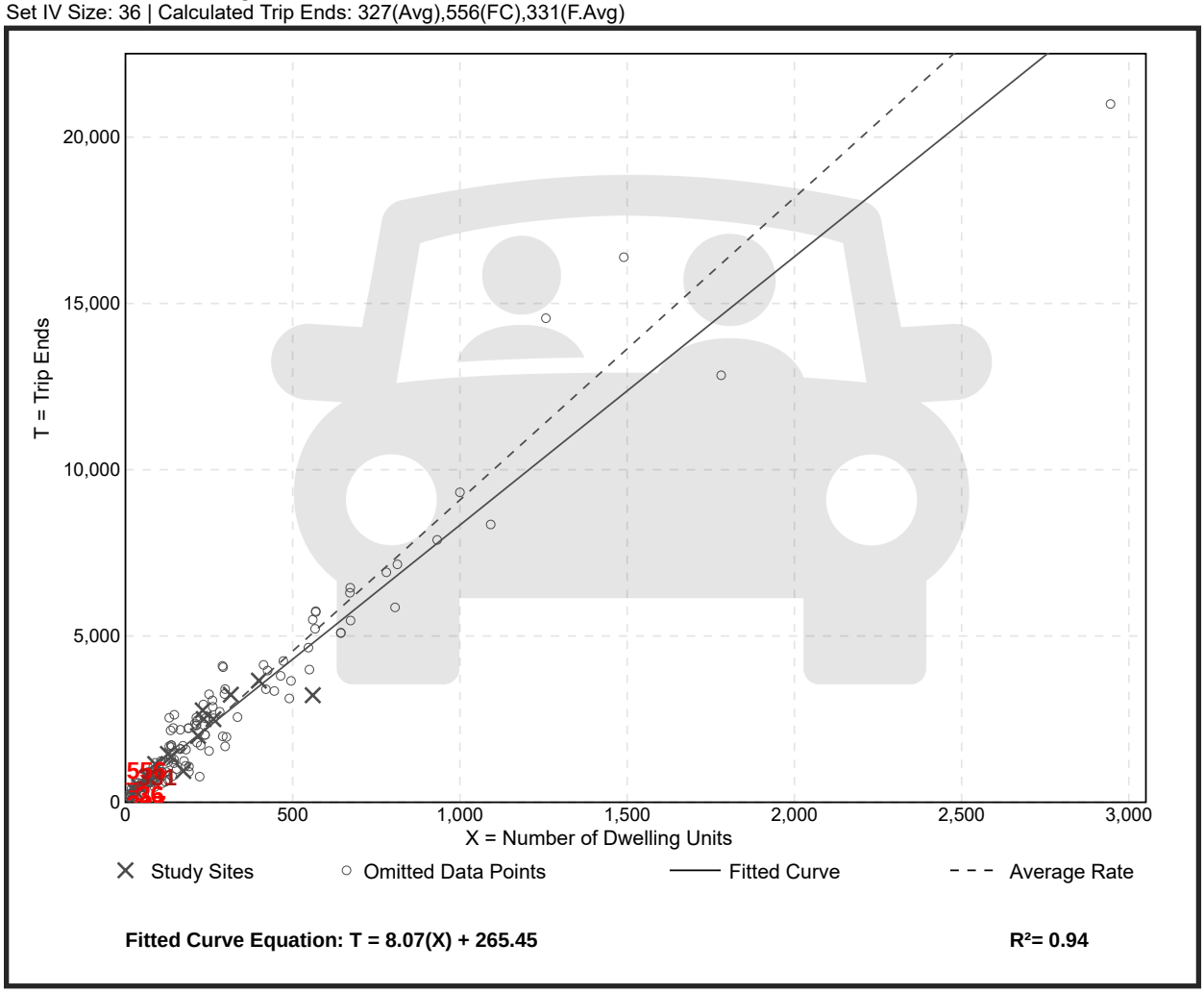
Average Rate	Range of Rates	Standard Deviation
9.19	5.44 - 12.92	2.31

Data Filtered By: [Region: Pacific Coast]

Data Plot and Equation

Caution – Filtered Data Set

Set IV Size: 36 | Calculated Trip Ends: 327(Avg),556(FC),331(F.Avg)



Fitted Curve Equation: T = 8.07(X) + 265.45

R^2= 0.94

Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15 out of 155
Avg. Num. of Dwelling Units: 197
Directional Distribution: 50% entering , 50% exiting

Vehicle Trip Generation per Dwelling Unit

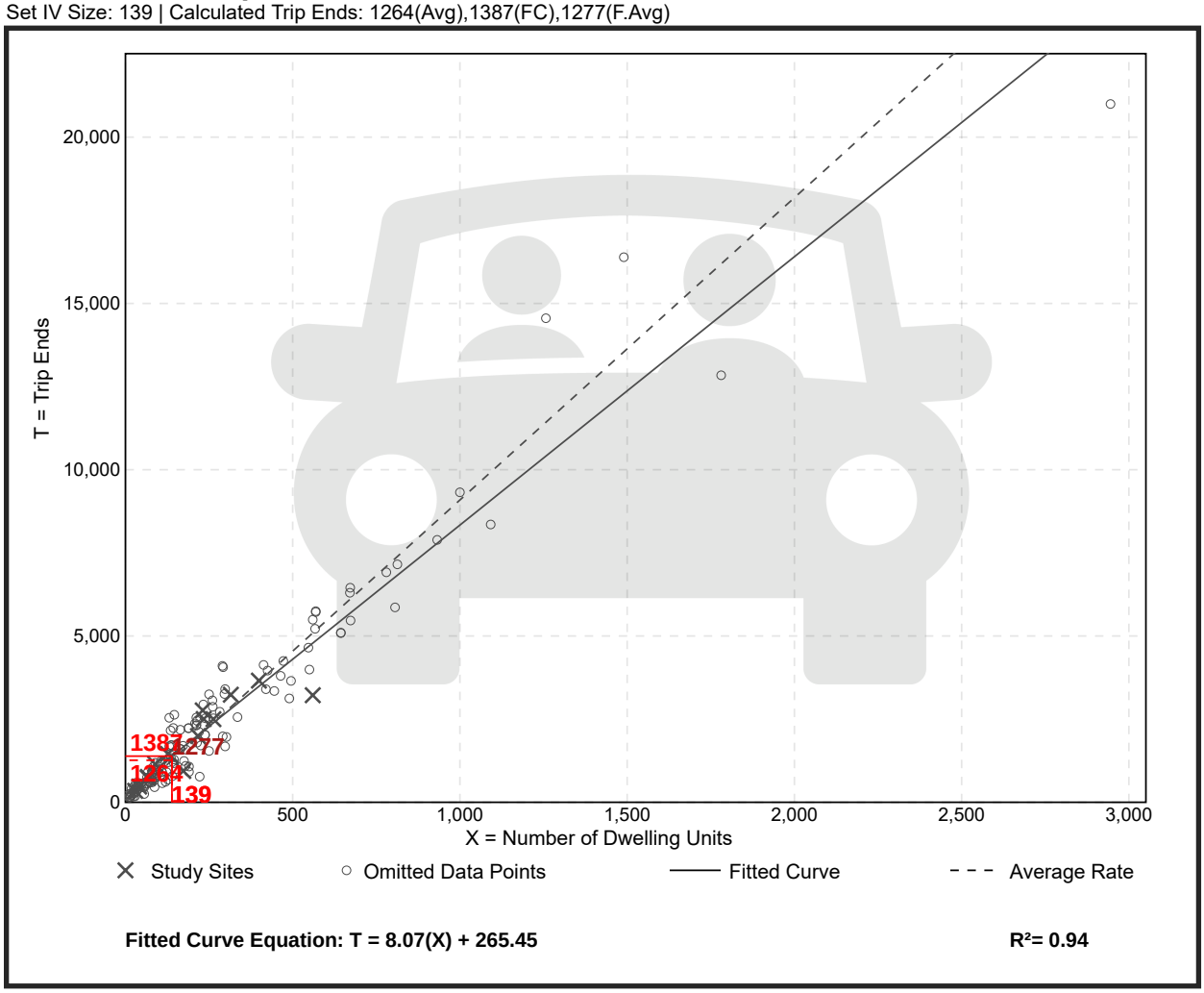
Average Rate	Range of Rates	Standard Deviation
9.19	5.44 - 12.92	2.31

Data Filtered By: [Region: Pacific Coast]

Data Plot and Equation

Caution – Filtered Data Set

Set IV Size: 139 | Calculated Trip Ends: 1264(Avg),1387(FC),1277(F.Avg)



Fitted Curve Equation: T = 8.07(X) + 265.45

R^2= 0.94

Proposal

Zone change and concurrent Land Use Designation Map Amendment and Urban Service Area Boundary (USAB) amendment from REC to UDLR, RR to D5; within the USAB.

Property Owner: State of Alaska, Department of Natural Resources

Applicant: R&M Consultants, Inc.

Property Address: None

Legal Description: meets and bounds provided – see map C

Parcel Number: Not assigned

Site Size: 51.7 acres (for map amendments/zone change) 82 total

Existing Land Use: Vacant

Access: Blackerby Street/Mary Ellen Way

Table 1: Amendment Requests

	Current	Proposed
Zoning	Rural Reserve (RR)	D5
Land Use Designation (Subarea 5)	Recreational Resource (REC)	Urban Low Density Residential (UDLR)
USAB	Outside	Inside
Water/Sewer	None	To be extended with USAB amendment

Introduction

The State of Alaska Department of Natural Resources (DNR) owns the parcel shown in Map A. It does not have a parcel identification number. The site is 82 acres. It is currently zoned Rural Reserve (RR) and is located just outside the Urban Service Area Boundary (USAB), accessed by Blackerby Street and Mary Ellen Way via undeveloped stub streets as shown in Plat 82-6 and Plat 83-146. DNR wishes to develop this site as a residential subdivision to provide much needed housing.

The 82-acre site is zoned Rural Reserve (RR). In anticipation of subdivision DNR completed a subdivision feasibility study (Attachment 2). This study demonstrates that the Blackerby parcel is physically and technically feasible for residential subdivision. Based on the result

of the study DNR would only consider development of approximately 51.7 acres. This preserves the most sensitive areas from development. The remaining area can safely be developed in conformance with CBJ regulations. Steep slopes, geohazards, and environmental considerations require careful design and mitigation.

The land could be subdivided if lots were to remain Rural Reserve, provided each new lot meets RR dimensional standards, including a minimum lot size of 36,000 square feet and minimum lot width and depth of 150 feet (CBJ 49.25.400). Subdivision at this scale would require internal access and other public/private improvements to be constructed, with the developer responsible for the cost of right-of-way and street improvements and for providing access that can be improved to meet emergency service access requirements (CBJ 49.35.210–.272, including 49.35.240 and 49.35.260–.263; CBJ 19.10). However, CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities. This parcel is within 500 feet of existing utilities, but outside the USAB, which appears to preclude subdivision, effectively rendering the property unusable for anything other than passive recreation and inhibits economically viable use.

The Blackerby parcel presents a unique opportunity to expand housing supply in Juneau; however, its current land use designation and location outside the USAB create a fundamental misalignment between regulatory requirements and adopted policy. While CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities, the CBJ Comprehensive Plan discourages such extensions outside the USAB and for lower-density development. This conflict limits the ability to develop land that is otherwise adjacent to existing infrastructure and established neighborhoods.

DNR wants to work with CBJ to amend the comprehensive plan maps to create harmony between Title regulation and policy guidance. The first step is to amend the USAB to facilitate future development of the site, consistent with CBJ requirements. Concurrently, an amendment to the Comprehensive Plan Land Use Maps to change the parcel's designation from REC to ULDR. These amendments acknowledge the parcel's proximity to existing development and infrastructure and its suitability for residential use.

Because the parcel contains extensive slopes >18% (some >30%), triggering CBJ hillside provisions and limiting buildable area; careful siting, grading, drainage, and mass-wasting hazard avoidance are required. Therefore, ADNR only seeks to include approximately 51.7 acres as shown on Map B in the requested USAB and Land Use Designation amendments and subsequent zone change. This ensures the areas least suited for development remain as Rural Reserve.

The ADNR Area Plan, Juneau Region 5 Land Use Map, calls out the land use designation for the land in which the Blackerby parcel is located to be general land. Blackerby is located on the Lemon Creek 5a31G – General Land.

Therefore, ADNR requests an amendment of the future land use map and the USAB to facilitate the requested zone change.

Unlike the land use code (Title 49) the Comprehensive Plan is a guiding document. Chapter 1, Introduction and Background contains the following guidance:

> "To be a meaningful and effective document the Comprehensive Plan must be considered regularly and used by residents, the Planning Commission, and the governing body to guide its decisions and resource allocations and must be kept current to reflect community values, resources, constraints and opportunities. Discussions related to community growth, redevelopment, capital and social improvements, or budget, must occur in consultation with the Plan. This is not to say that the Plan will be infallible or that it is cast in concrete. It should, however, bring into focus sufficient information and data so that the best possible considered and objective judgements can be made, using the most current data available when the date (data?) in the Plan is out of date."

DNR's interest in developing this site, and willingness to work collaboratively with the CBJ presents a unique opportunity to use current information and circumstances to update the plan.

Urban Service Area Boundary (USAB)

As noted above, CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 feet of existing utilities. This parcel is within 500 feet of existing utilities, but outside the USAB, which appears to preclude subdivision -even under the current zoning of Rural Reserve.

> CBJ 49.80.120 Definitions
>
> *Urban service area* means the urban service area established in the comprehensive plan.
>
> *Urban service boundary* means the boundary of the urban service established in the comprehensive plan.

The CBJ Comprehensive Plan received its last substantial rewrite in 1995. Since then, there have been updates to this plan, in 2003, 2005 and 2013. The plan has a 20-year planning

horizon. We have been unable to determine a clear history but believe the USAB was established in 1995. It was last amended in 2003 with ordinance 2003-06 (Attachment 1)

The Comprehensive Plan definition (pg. 242):

> URBAN SERVICE AREA OR URBAN SERVICE AREA BOUNDARY (USAB): In the CBJ, an area within the municipality that represents a legal, orderly expansion of urban development patterns where municipal services, particularly water and sewer service, is provided. Lands located within the CBJ Urban Service Area boundary designated on the Land Use Maps 2013 CBJ Comprehensive Plan Update 242 Appendix A of the Comprehensive Plan are deemed suitable for urban and suburban-scale development, for which municipal and private utilities, roads, water systems, sewer systems, schools, police, fire, emergency medical care and other similar services are provided or are to be provided in the near future.

The purpose of the USAB is to facilitate compact, cost-effective urban services and to deter sprawl. The Comprehensive Plan has many policies in place to only provide public services and facilities within the USAB. **Implementing Action 12.2 (pg. 201) states that extensions should only be considered after a decision has been made to expand the USAB as a Comprehensive Plan Land Use Map Amendment.**

The Plan further states in Policy 18.2 (pg. 229) that the Planning Commission should initiate a general review of the plan two years after adoption of the last update, and to make recommendations to the Assembly to amend as necessary to reflect changing conditions and needs and to **consider and enact amendments to the Plan, Land Use Maps, including amendments to the USAB** at any time the Planning Commission and Assembly determine that amendments are needed.

For a variety of reasons regular review of the plan and maps have not taken place. However, conditions and needs have changed since the last update in 2013. The plan clearly acknowledges amendments should be considered and may be appropriate.

The Implementing Actions for this policy include adopting procedures for considering amendments initiated by property owners or residents between major updates. While we acknowledge CBJ is currently undergoing a major update, this process is not intended, and does not provide, an opportunity for a site-by-site consideration of the maps. DNR does not wish to have its request for amending the Comprehensive Plan and USAB to be seen as statement of preferences or opinion. Instead DNR as a landowner intends to seek specific changes based on a plan to rezone, subdivide, develop and/or sell land within the Blackerby parcel, which is consistent with numerous goals and policies of the Plan.

The Plan identifies three factors to be considered for amendments and suggests that an amendment be considered if one or more can be demonstrated. The factors are (pg. 229):

A. The original decision was in error because important information available at the time was not adequately considered.

   Response: The Plan is silent in regard to state owned land. Many recommendations and policies address the disposal and development of CBJ owned parcels, including reference to a 2006 study that explored buildable lands that have city water/sewer service and road extensions that are possible. The study focused on lands within or near the USAB where services could be extended within a 20-year planning horizon. This area under consideration meets all this criterion -except it is owned by the State and not CBJ. This oversight constitutes an error. DNR wishes to develop its property and contribute much needed housing to the community. DNR is a willing partner and wants to work with CBJ to amend the comprehensive plan maps to create harmony between Title regulation and policy guidance.

B. Changing conditions and/or new information renders the original decision inappropriate.

   Response: The Comprehensive Plan (pg. 15) states one of the primary responsibilities of the CBJ government is to facilitate future growth by ensuring that adequate land is available when needed and in providing a level of public services and facilities sufficient to promote public health, safety, and convenience.

   The Plan also states it is advisable to have more than a 15-year supply of vacant land to facilitate choice in location, price and size of development and the CBJ government is no longer in a position to provide this inventory of land zoned for those uses, as most of the undeveloped land in the borough is dominated by wetlands, forests, steep slopes, variable terrain and/or is inaccessible by roads.

   The changing conditions since the establishment of the USAB are the passage of time, and continued development of what little developable land is available within the USAB. Juneau is land constrained – we have a limited supply of land, and an even more limited supply of land well suited for development. Less developable land is available now than when the plan was last updated in 2013, and even less than when the USAB was updated in 2003.

   DNR has done due diligence through the procurement of the Blackerby Subdivision Development Study. The study includes geotechnical engineering and geohazards assessment which is why this request does not include the

entire 82-acre site. This study has determined that approximately 51.7 acres can safely be developed in compliance with CBJ's development regulations and provide more than 100 lots for residential development with the provision of city water and sewer at a D5 density.

C. The proposed change is consistent with other applicable policies of the Comprehensive Plan, other CBJ adopted Plans, and any specific subarea plans that apply to the site/area.

Response: The zone change from RR to D5 is consistent with many policies of the Plan. A few examples are cited below.

POLICY 10.3. TO FACILITATE RESIDENTIAL DEVELOPMENTS OF VARIOUS TYPES AND DENSITIES THAT ARE APPROPRIATELY LOCATED IN RELATION TO SITE CONDITIONS, SURROUNDING LAND USES, AND CAPACITY OF PUBLIC FACILITIES AND TRANSPORTATION SYSTEMS

POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

POLICY 4.3. TO DESIGNATE ON LAND USE MAPS AN ADEQUATE SUPPLY OF BUILDABLE LAND WITHIN THE URBAN SERVICE AREA, AND PARTICULARLY ALONG TRANSIT CORRIDORS, FOR RESIDENTIAL USE AT DENSITIES THAT CAN PRODUCE HOUSING AFFORDABLE TO ALL ECONOMIC GROUPS.

The Comprehensive Plan defines Rural Areas:

RURAL AREAS: Land located outside the Urban Service Area boundary accessible by a public road and which contain natural resources in need of protection from development, or areas unsuitable or not needed for urban development. In the CBJ, the Comprehensive Plan provides that urban services are not to be planned or extended to these areas.

We believe the site was not included in the USAB and was considered rural primarily because it is owned by the State of Alaska. The site does not contain natural resources in need of protection. DNR's proposal will retain sensitive areas not suited for development outside the USAB and zoned Rural Reserve. The site is immediately adjacent to the USAB, city water and sewer service and well suited for residential development. The site is within approximately one-half mile of transit.

However, subdivision is prevented (even without the zone change) because CBJ Title 49 requires the extension of public water and sewer infrastructure to subdivisions located within 500 ft of existing utilities. This parcel is within 500 feet of existing utilities. Extension of utilities beyond the USAB is strongly discouraged by the Comprehensive Plan.

Future Land Use Designation Map

To facilitate the zone change request DNR requests a concurrent amendment to the Maps of the Comprehensive Plan to change the future land use designation of approximately 51.7 acres from Recreational Resource (REC) to Urban Low Density Residential (ULDR). Together, with the amendment to the USAB, this amendment would allow development to proceed in a manner consistent with both regulatory requirements and long-term planning objectives.

The amendment of the land use designation from REC to ULDR will facilitate rezoning of the site to D5 zoning. This higher density zoning (on city utilities) provides more flexibility in site layout/design. This flexibility means the site could be developed in a way that protects and preserves the sensitive areas, and still provides additional housing. A completed subdivision feasibility study demonstrates that the Blackerby parcel is physically and technically feasible for residential subdivision.

Access to the future subdivision would be via Mary Ellen Way and Blackerby Street. In the planning phase AK Built adhered to CBJ hillside plan development standards. If the project moves forward additional coordination will be conducted with EMS and Fire Safety to determine appropriate roadway grade. Blackerby Street exceeds the currently recommended 10% slope as specified in 2024 International Fire Code Appendix D but adheres to CBJ hillside development standards for street construction. It should be noted that the Fire Service Area automatically expands to encompass a new subdivision when the subdivision is complete and recorded.

The Plan states (pg. 227) that proper implementation and administration of the Plan depends on a number of other activities, not the least of which is to be aware of where the Plan is inadequate to address an issue or where the Plan has unintended consequences. In these cases, the CBJ must consider amending the Plan in the face of new information or unexpected or changed circumstances. For both assuring that actions are consistent with the Plan, and for **assuring the Plan is responsive to public needs and changing conditions**, the CBJ must:

- Monitor changes in land use, social, economic and environmental conditions and periodically review and update the Plan to reflect these factors.

- Maintain and use procedures to amend the Plan to address needs of individual property owners.
- Provide for ongoing resident involvement in the land use decision making process.
- Coordinate municipal activities with state and federal agencies with regard to decisions of mutual concern.

As stated above, we believe this area was designated as REC because it is owned by the State of Alaska. Also stated above is the State's Land Management Plan - Juneau Region 5 Land Use Map, calls out the land use designation for the land in which the Blackerby parcel is located to be general land. This State's Land Management Plan was adopted in 1993.

The Plan defines Recreational Resources as "Land primarily under federal or state management for a range of resources, such as timber, minerals, fish and wildlife and recreation uses, including recreation cabins. Uses may include small-scale, visitor-oriented, and/or seasonal recreational facilities. These lands should be zoned to prevent residential, commercial, and industrial development."

The site will not be developed for resources such as timber or minerals. It is used for passive recreation and the State has no plans to develop it further for recreational uses, including cabins. DNR wishes to make this site available for much needed housing. The REC land use designation does not facilitate that development. The unintended consequence of the USAB boundary, land use designation and requirements for connections to city water and sewer makes the site undevelopable. Ultimately eliminating any economic value as well as removing the opportunity for more housing.

The Plan identifies three factors to be considered for amendments and suggests that an amendment be considered if one or more can be demonstrated. The factors are (pg. 229):

A. The original decision was in error because important information available at the time was not adequately considered.

   Response: The Plan is largely silent in regard to State owned land. While the original decision may not have been in error, it may not have been a fully informed decision and based on misinformation. DNR does not want to use the property for recreation or resource development. They want to develop the site for much needed housing.

B. Changing conditions and/or new information renders the original decision inappropriate.

   Response: As stated above (USAB) the changing conditions since the establishment of the Land Use Designation is the passage of time, and continued

development of what little developable land is available within the USAB. Juneau is land constrained – we have a limited supply of land, and an even more limited supply of land well suited for development. Less developable land is available now than when the plan was last updated in 2013.

Additionally, DNR is a willing partner interested in developing this centrally located site for housing. The Plan encourages coordination of municipal activities with state and federal agencies concerning decision of mutual concern – such as the development of this State owned parcel for housing.

C. The proposed change is consistent with other applicable policies of the Comprehensive Plan, other CBJ adopted Plans, and any specific subarea plans that apply to the site/area.

Response: The site is located in Subarea 5 – Map H.

Guidelines and considerations:

2. Provide for additional medium- to high density residential development in areas with access to arterial roadways from collector streets. Encourage the efficient use of land by allowing non-family housing, such as for students, single-adults or seniors, in mixed use districts within shopping centers or malls. Increase building height limits and decease or eliminate parking requirements for such residential developments where adequately served by public transit.

The site has access to arterial roadways from collector streets. The site is immediately adjacent to city water and sewer services. The site is within approximately one-half mile of transit. It is centrally located, midway between downtown Juneau and the Mendenhall Valley and airport.

Changing the Land Use Designation from REC to UDLR will allow for additional residential development, with city services, and access to transit in a centrally located area, consistent with multiple policies of the Comprehensive Plan – a few are cited below:

Policy 4.2 TO FACILITATE THE PROVISION OF AN ADEQUATE SUPPLY OF VARIOUS HOUSING TYPES AND SIZES TO ACCOMMODATE PRESENT AND FUTURE HOUSING NEEDS FOR ALL ECONOMIC GROUPS.

Policy 4.3 TO DESIGNATE ON LAND USE MAPS AN ADEQUATE SUPPLY OF BUILDABLE LAND WITHIN THE URBAN SERVICE AREA, AND PARTICULARLY ALONG TRANSIT CORRIDORS, FOR RESIDENTIAL USE AT DENSITIES THAT CAN PRODUCE HOUSING AFFORDABLE TO ALL ECONOMIC GROUPS. (noting need to concurrently amend the USAB)

Policy 4.8 TO BALANCE THE PROTECTION AND PRESERVATION OF THE CHARACTER AND QUALITY OF LIFE OF EXISTING NEIGHBORHOODS WITHIN THE URBAN SERVICE AREA WHILE PROVIDING OPPORTUNTIIES FOR A MIXTURE OF NEW HOUSING TYPES. (noting the need to concurrently amend the USAB)

Policy 10.3 TO FACILITATE RESIDENTAIL DEVELOPMENT OF VARIOUS TYPES AND DENSITIES THAT ARE APPROPRIATELY LOCATED IN RELATION TO SITE CONDITIONS, SURROUNDING LAND USES, AND COMPACITY OF PUBLIC FACILITIES AND TRANSPORATATION SYSTEMS AFFORDABLE TO ALL ECONOMIC GROUPS.

The above listed policies of the Comprehensive Plan acknowledge the need for additional housing in Juneau, while balancing the need for adequate public infrastructure, including roads, water, and sewer. Additionally, the Plan identifies a need to facilitate varying densities while resolving conflicts between single-family neighborhoods and other types of development. The Plan recognizes that amendments maybe necessary and conditions change over time.

The 2016 Housing Action Plan states that "publicly owned land and assets can be one of the most powerful tools a local government has to address housing availability and affordability issues." (pg. 42) and that "public land should be thought of not only as a means by which Juneau can encourage beneficial private economic activity and guide a rational growth pattern, but also, importantly, as a means by which Juneau can achieve key policy goals. These goals include filling key housing gaps" (p. 43).

This plan speaks to CBJ owned lands – but the philosophy applies to State owned land as well. As previously stated, DNR seeks to contribute its publicly owned land to address housing availability to help achieve key goals.

It is important to note that a failure to comply with one policy in the CBJ Comprehensive Plan does not automatically mean that a development is inappropriate if conformance is shown with other policies identified in the Plan. A decision on land-use conformance requires balancing the many relevant policies and holistically looking at each proposed development.

Zone Change (RR to D5)

The amendment of the USAB and the land use designation from REC to ULDR will facilitate the rezoning of the site to D5 zoning. This higher density zoning (on city utilities) provides the applicant with more flexibility in site layout/design. This flexibility means the site could be developed in a way that protects and preserves the sensitive areas, and still provides

additional housing. Housing development is prioritized as land use by the Assembly. Additionally, the higher density economizes the extension of city services -which is consistent with guidance from the Comprehensive Plan.

The subdivision feasibility study demonstrates that the Blackerby parcel is physically and technically viable for a residential subdivision. Careful site design and mitigation will be required, even for the 51.7 acres proposed for a zone change. Yet, the site can safely be developed in compliance with all CBJ requirements.

Access to the proposed subdivision would be via Mary Ellen Way and Blackerby Street. In the planning phase AK Built adhered to CBJ hillside plan development standards. If the project moves forward additional coordination will be conducted with EMS and Fire Safety to determine appropriate roadway grade. Blackerby Street exceeds the currently recommended 10% slope as specified in 2024 Internation Fire Code Appendix D but adheres to CBJ hillside development standards for street construction. Based on estimated average daily trips, the roadway width will need to be a minimum of 24-feet wide and at least one sidewalk provided. Do note, the existing roadways for Mary Ellen Way and Blackerby street currently do not have sidewalks. DNR proposes access be allowed off the existing streets of Blackerby Street and Mary Ellen Way utilizing a 24-foot wide street with one sidewalk.

The site is within close proximity to transit on Old Glacier Highway. From the Blackerby Drive access point it is 0.21 miles to Old Glacier Highway. From the Mary Ellen Way access point it is 0.57 miles. City water and sewer service are immediately adjacent in the Twin Lakes subdivision (accessed via Blackerby Street) and Mountainside Estates, including Mary Ellen Way.

A Traffic Impact Analysis may be required through the subdivision process to assess impacts to the transportation system and determine any needed mitigation. As noted previously, the Blackerby Drive access point is less than ¼ mile from transit and the Mary Ellen Way access point is just over ½ mile from transit. Interestingly, the Plan (pg. 14) states that buildable lands should be developed as medium to high density affordable housing wherever possible and practical. Noting this is particularly true for lands within walking distance (1/4 mile) of public transit. Because of this site's proximity to existing D5 zoning, and site constraints, medium to high density housing is not appropriate. But its proximity to transit is notable and supports its inclusion in the USAB and higher density zoning.

Should the CBJ approve the requested USAB and land use designation map amendments, this zone change request meets all of Title 49 restrictions on rezoning:

- Rezoning of less than 2 acres will not be considered unless the zone change constitutes the expansion of an existing zoning district. **This requested zone change is larger than 2 acres and is an expansion of an existing D5 zoning district.**

- Rezone requests that are substantially the same as a rezone request rejected within the previous 12 months shall not be considered. **This requested zone change is a new request.**

- The proposed zoning district and the uses allowed are in substantial conformance with the land use maps of the comprehensive plan. **This requested zone change is in conformance with the land use maps of the comprehensive plan IF the USAB and Land Use Designation maps are amended.**

As previously discussed, the Comprehensive Plan and Housing Action Plan include numerous policies supporting more and various housing types. This zone change minimizes impacts to existing neighborhoods by providing for similar development. The feasibility study shows the site can safely be developed in conformance with all CBJ requirements. The rezone will facilitate future growth by ensuring that adequate land is available when needed and in providing a level of public services and facilities sufficient to promote public health, safety, and convenience.

The City and Borough of Juneau lacks affordable housing. Choices are limited by location, size, cost; a large proportion of homeowners are spending more than 30% of their income on housing. The American Community Survey reports the ownership vacancy rate in the CBJ has ranged from 1.2 percent in 2020 down to 0.6 percent in 2022. A vacancy rate of five percent or lower indicates that housing supply is limited, and demand is outpacing available units. Five percent and above is considered a "normal" vacancy rate allowing households to move in and out of units due to normal relocation patterns. Thus, a lower than 5 percent vacancy rate in Juneau indicates that meeting future demand for new housing will require additional housing construction. Currently, there is no extra supply within the existing housing market to absorb this demand.

The proposed Blackerby subdivision would open land for housing in a centrally located area, with access to city services. The requested zone change is intended to facilitate development at densities that more effectively meet local housing needs. Coordination between CBJ and the State of Alaska will be essential to ensure that infrastructure planning, permitting, and development phasing are aligned with community goals and available resources. DNR is a willing partner seeking to collaborate with the CBJ in this endeavor.

A few Comprehensive Plan policies that support this rezone request:

POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

POLICY 10.2. TO ALLOW FLEXIBILITY AND A WIDE RANGE OF CREATIVE SOLUTIONS IN RESIDENTIAL AND MIXED-USE LAND DEVELOPMENT WITHIN THE URBAN SERVICE AREA.

POLICY 10.5. THAT RESIDENTIAL DEVELOPMENT PROPOSALS, OTHER THAN SINGLE-FAMILY RESIDENCES, MUST BE LOCATED WITHIN THE URBAN SERVICE AREA BOUNDARY OR WITHIN A DESIGNATED NEW GROWTH AREA. APPROVAL OF NEW RESIDENTIAL DEVELOPMENT PERMITS DEPENDS ON THE PROVISION OR AVAILABILITY OF NECESSARY PUBLIC AMENITIES AND FACILITIES, SUCH AS ACCESS, SEWER, AND WATER.

POLICY 10.6. TO REQUIRE NEW RESIDENTIAL DEVELOPMENTS TO MEET MINIMUM CRITERIA FOR OVERALL SITE DESIGN INCLUDING PROVISION OF LIGHT, AIR AND PRIVACY.

Conclusion

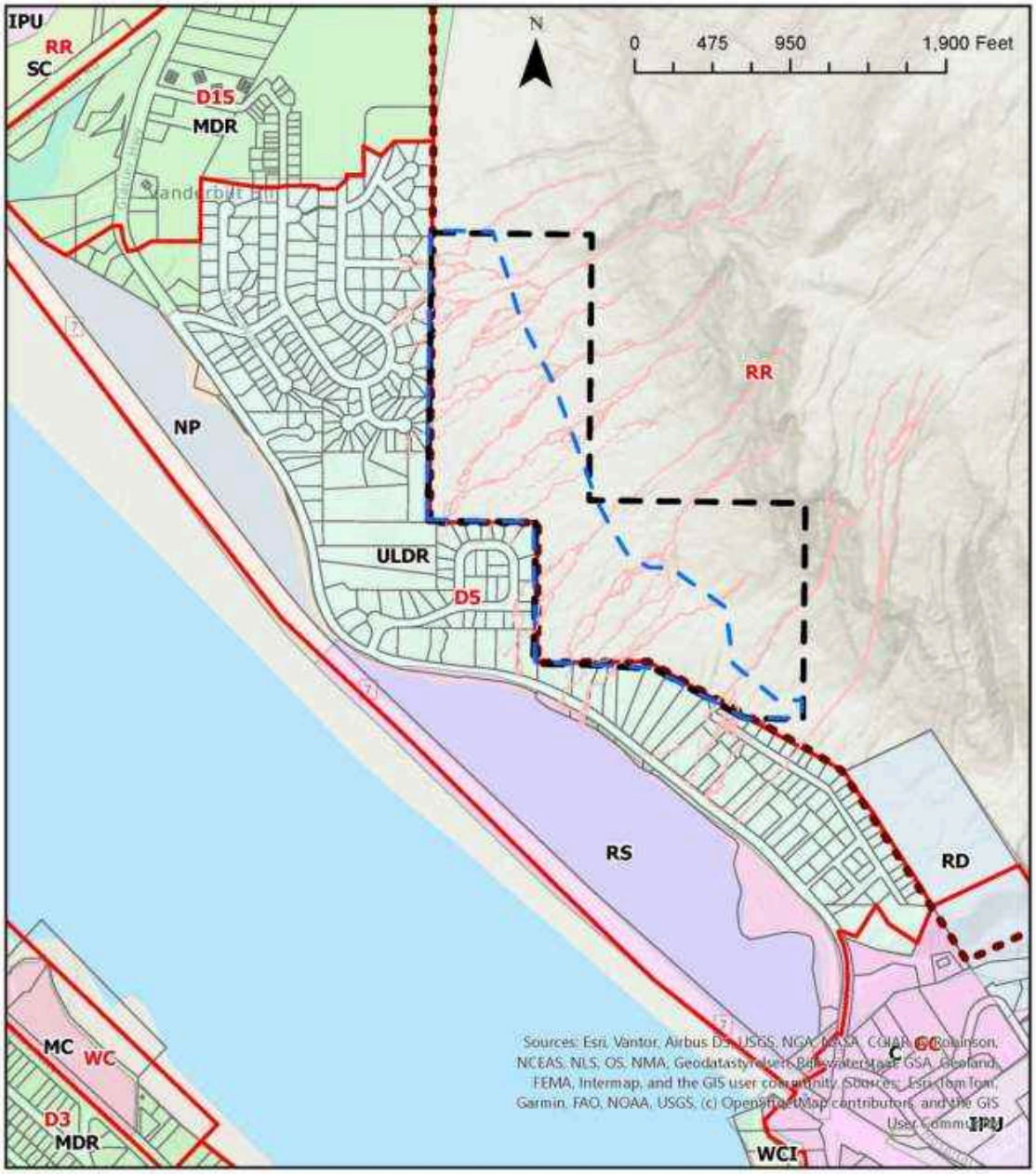
DNR wants to work with CBJ to amend the Comprehensive Plan USAB and land use maps to create harmony between Title regulation and policy guidance to facilitate a zone change from RR to D5. These amendments acknowledge the parcel's proximity to existing development and its suitability for residential use.

The Comprehensive Plan recognizes the need for change to the plan and its maps. Conditions have changed since these maps were adopted and their amendment is consistent with the Plan's policies and will facilitate a zone change that will in turn facilitate the development of more housing – the Assembly's top priority for our community.

The requested map amendments (USAB and Land Use Designation) and zone change aim to support future development ensuring that sufficient land is available when needed and by providing public services and facilities that promote public health, safety, and convenience.

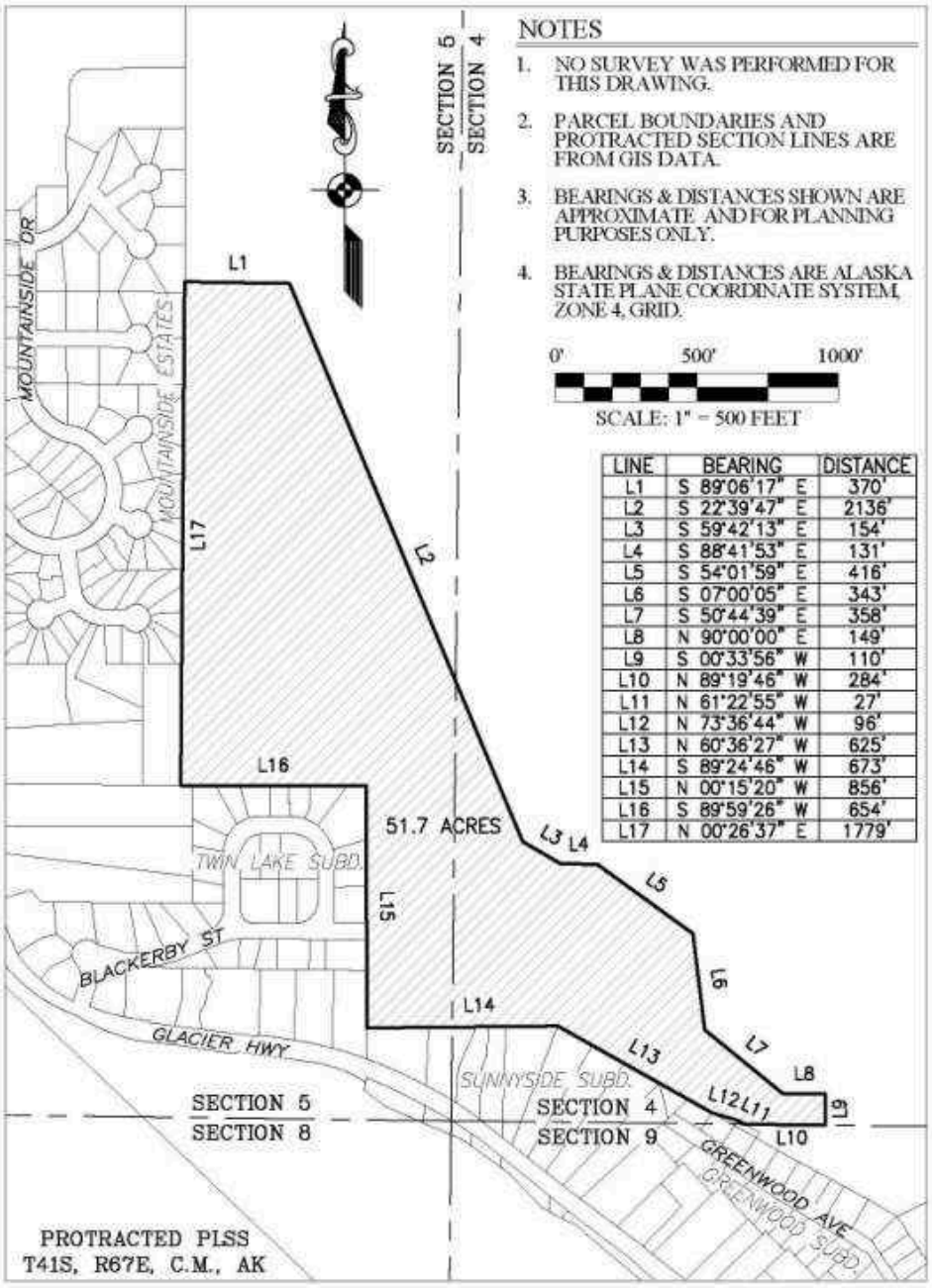

Coogan Dr
Tongass National Forest
Hooter Ln
Egan Dr
Vanderbilt Hill Rd
Glacier Hwy
Vanderbilt Hill
Robbie Rd
Patricia Ave
Mountainside Dr
Venus Ln
Craig St
Abby Way
SALMON CREEK
PROJECT AREA
ADL 109276
APLN
Badger Way
Blackerby St
Glacier Hwy
Egan Dr
Twin Lakes Park Pathway
Greenwood Ave
Greenwood Ave
Egan Dr
Egan Dr
7
7
5
4

Map A


IPU
RR
SC
D15
MDR
N
0
475
950
1,900 Feet
RR
NP
ULDR
D5
RS
RD
MC
WC
D3
MDR
WCI
IPU
Urban Service Area Boundary
Zoning
SOA Blackerby Parcel
Debris Flood Susceptibility
Geotechnical Recommended Development Area & Rezone Request

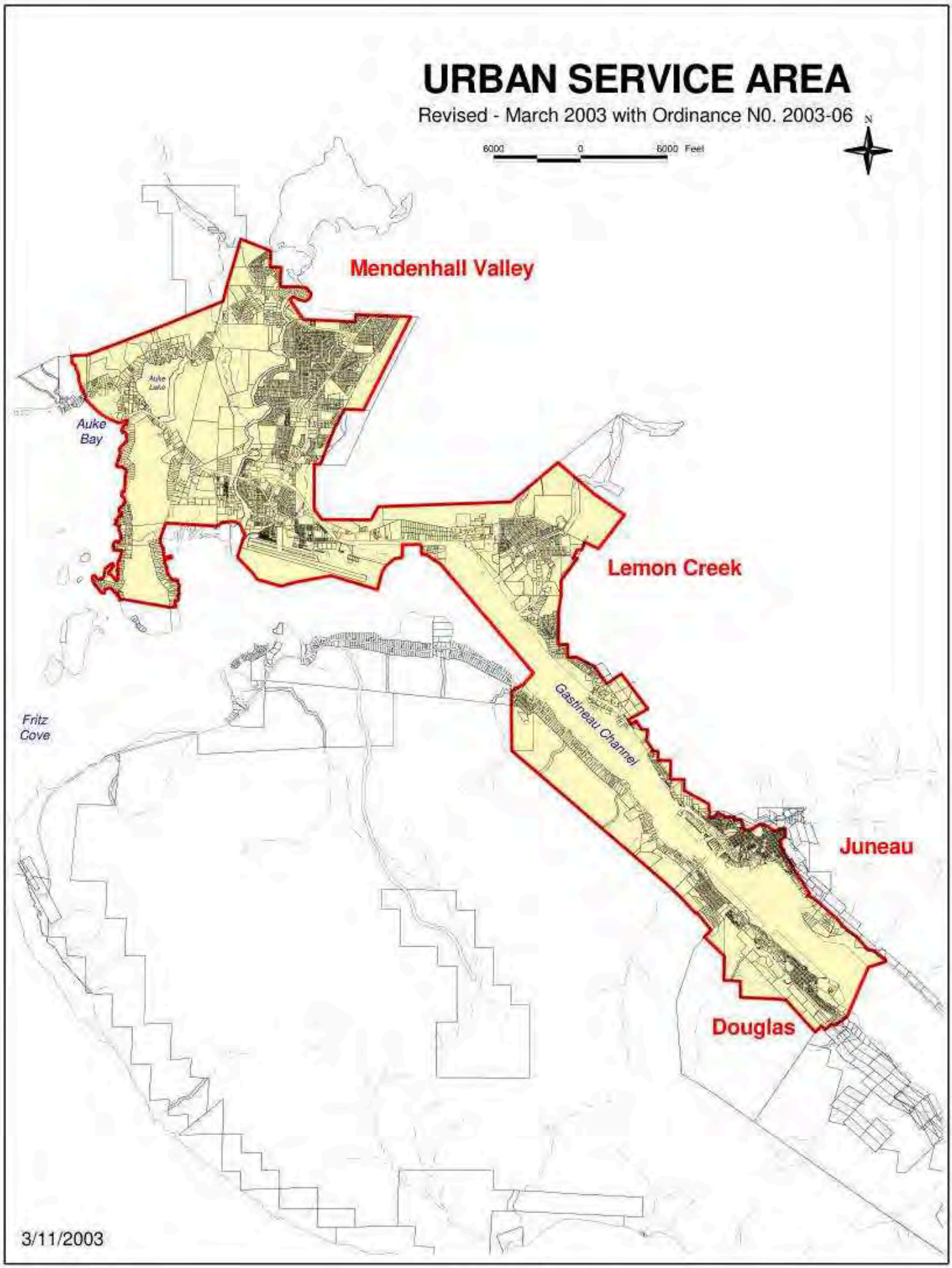
Map B

PROPOSED DEVELOPABLE AREA



LINE	BEARING	DISTANCE
L1	S 89°06'17" E	370'
L2	S 22°39'47" E	2136'
L3	S 59°42'13" E	154'
L4	S 88°41'53" E	131'
L5	S 54°01'59" E	416'
L6	S 07°00'05" E	343'
L7	S 50°44'39" E	358'
L8	N 90°00'00" E	149'
L9	S 00°33'56" W	110'
L10	N 89°19'46" W	284'
L11	N 61°22'55" W	27'
L12	N 73°36'44" W	96'
L13	N 60°36'27" W	625'
L14	S 89°24'46" W	673'
L15	N 00°15'20" W	856'
L16	S 89°59'26" W	654'
L17	N 00°26'37" E	1779'

Map C



Attachment 1

Blackerby Subdivision Development Study

Work Order # 02-25

Prepared For:

State of Alaska

Department of Natural Resources

Division of Mining, Land and Water

Prepare By:

AK Built Construction & Design, LLC

PO Box 771203

Eagle River, AK 99577

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General Developmental Constraints Identification

The development of the Blackerby parcel is subject to physical, regulatory, and procedural constraints that will influence subdivision design and implementation. These constraints include topography, zoning, access, utilities, and conflicts between the CBJ (City and Borough of Juneau) Comprehensive Plan and CBJ Title 49.

The parcel of interest for this study contains substantial areas with slopes exceeding 18 percent, with some portions steeper than 30 percent. Pursuant to CBJ definitions, slopes greater than 18 percent invoke the hillside development provisions of Title 49, while slopes greater than 30 percent are considered very steep slopes. These conditions limit the extent of buildable land and will require careful sitting of parcels to avoid mass wasting hazards and to minimize grading and drainage concerns.

The subject parcel is located outside of the CBJ Urban Service Area Boundary, although adjacent subdivisions are within the boundary. CBJ Title 49 requires extension of public water and sewer services for subdivisions that create more than five lots within 500 feet of existing utilities. The utility requirement creates a conflict with the CBJ Comprehensive Plan, which discourages extension of utilities into areas of less than ten units per acre. Development of the parcel will therefore require coordination with CBJ to determine whether the Urban Service Area Boundary can be expanded, or whether on-site water and sewer systems will be required.

The existing land use classification of the parcel is Recreational Resource (REC), with a zoning designation of Rural Reserve (RR). These classifications are not intended to accommodate residential development at the densities needed to address Juneau's housing needs. Rezoning to a residential district, such as D-3 or D-5, would be required to allow for economical subdivision development. Rezoning procedures under CBJ Title 49 will require a Subarea Land Use Map amendment, public hearings, and approval through the CBJ planning process.

While no avalanche zones are present in the project area, steep slopes present a risk of landslides and debris flows, particularly during high precipitation events. The potential for eagle nesting sites, stream corridors, and wetlands must also be considered. A preliminary Geohazards Assessment was conducted as part of the Blackerby feasibility study to identify geological hazards. To mitigate the identified hazards green space buffers and drainage systems will be required.

Access to the parcel is limited to extensions from existing subdivisions. The most feasible access points are from Blackerby Street and Mary Ellen Way, though the latter is complicated by the presence of existing residential improvements. CBJ Title 49 roadway standards will govern alignment, profile, and right-of-way (ROW) dimensions.

As the Blackerby parcel subdivision would generate more than 14 lots, it qualifies as a major subdivision under CBJ Title 49. Major subdivision procedures require a pre-application conference, sketch plat, preliminary plat, construction plan review, survey and monumentation, final plat approval, and recording. Additional requirements include hillside development endorsement under Chapter 49.70, drainage planning under Chapter 49.35, and a traffic impact analysis, as average daily trips are projected to exceed 500 under both RR and D-5 scenarios.

It has been discussed pursuing a minor subdivision process, by producing larger tracts of parcels, but CBJ would likely qualify the application to fall under the major subdivision process per Title 49.15.401(a)(1).

Conformance with CBJ Comprehensive Plan & Title – 49

Comprehensive Plan of the City & Borough of Juneau, 2013

CBJ manages land within the city and borough boundaries in accordance with Title 49. Title 49 aims to achieve the goals and objectives, and implement the policies of the CBJ Comprehensive Plan, 2013 Update and Coastal Management Plan. The CBJ Comprehensive Plan will have influence over the development of the proposed subdivision in this study. Compliance with the CBJ Comprehensive Plan ensures future growth is of the appropriate type, design and location, and is served by a proper range of public services and facilities to promote public health, safety and general welfare.

The parcel contemplated in this study is in Subarea 5: Switzer Creek, Lemon Creek, & Salmon Creek (Maps G, H, & K). The community form for this area is suburban/urban. Urban areas are typically comprised of residential, commercial, mixed use and/or public facilities that share land and utilities in a compact area. Urban area neighborhoods are characterized by 2 to 3-story structures separated by parking lots, roads, sidewalks and landscaping or small yards. Suburban areas have some commercial and industrial development clusters. Residential zones are typically single-family, detached homes at a density of 3 to 5 units per acre with 1 to 2-story home construction with attached garages on parcels smaller than 1/3 acre. The neighborhoods are separated with modest yards, streets, sidewalks, and landscaping. When possible, vacant parcels within suburban neighborhoods served by water and sewer should be developed at higher residential densities. The CBJ Comprehensive Plan defined a buildable site as: one that is at least a quarter acre or more in size, located within the Urban Service Area Boundary that is vacant or has an improvement, such as a structure, that is valued at less than $50,000 by the CBJ Assessor and upon which large portions of the land do not contain slopes greater than 18 percent or class A or B wetlands and are located near municipal water and sewer service, roads, utilities and other public services. The Blackerby parcel contemplated in this study does not meet this definition of a buildable site because of the presence of slopes greater than 18 percent and it is located outside the Urban Service Area.

New development opportunities identified in the CBJ Comprehensive Plan are largely focused on in-fill developments on vacant lots or underutilized parcels within the Urban Service Area. New growth developments are identified in the Echo Cove and West Douglas New Growth Areas. The parcel of focus in this study is not identified in the CBJ Comprehensive Plan, but the CBJ primarily identified lands under CBJ ownership and not State ownership. The Plan's discussion on new growth areas provides strategies for growth, but the concept of partnering with other land-owning entities is not addressed. The Blackerby parcel, the focus of this study, provides an opportunity for CBJ to allow for residential growth that was not previously identified. The CBJ Comprehensive Plan recommends development focus to be inside the Urban Service Area before expanding the Urban Service Area. The State owned parcel contemplated for subdivision is currently outside of the

Urban Service Area, but the adjacent existing subdivisions are within the Urban Service Area. Title 49 does require the extension of public utilities into a new subdivision that is developed adjacent to the existing subdivisions. This is based solely on language within 49.35.310 – Water Systems and 49.35.410 – Sewer Systems. An extension of the Urban Service Area Boundary is in the best interest of CBJ if a new subdivision is progressed in this study's area of interest. This will require an amendment to the Subarea Land Use Map. It is unknown the timeline the CBJ would need to be able to accommodate a higher density residential use if a Subarea Land Use Map amendment is successful.

Housing availability is identified in the CBJ Comprehensive Plan as an obstacle to growth for the community of Juneau. The 2010 Juneau Housing Needs Inventory estimates Juneau needs 343 more housing units. The CBJ Comprehensive Plan identifies the need for small unit sizes and high-density developments located in areas served by sewers are needed to improve housing affordability. It will be a challenge to provide high density housing units in the proposed Blackerby parcel because of the presence of steep slopes. Nevertheless, increasing the supply of residential parcels near urban areas has a positive impact on housing demand and affordability. The CBJ Comprehensive Plan has policies and procedures identified to support the development of land. This study section identifies CBJ policies that may be applicable to the development of the proposed subdivision.

POLICY 4.2. TO FACILITATE THE PROVISION OF AN ADEQUATE SUPPLY OF VARIOUS HOUSING TYPES AND SIZES TO ACCOMMODATE PRESENT AND FUTURE HOUSING NEEDS FOR ALL ECONOMIC GROUPS.

POLICY 7.1. TO PROTECT THE REGION'S SCENIC, ENVIRONMENTAL, AND ECONOMICALLY VALUABLE NATURAL RESOURCES FROM THE ADVERSE IMPACTS OF URBAN DEVELOPMENT. DEVELOPMENT SHALL BE CONTROLLED CAREFULLY AND, IF NECESSARY, PROHIBITED IN NATURALLY HAZARDOUS AND ECOLOGICALLY-PRODUCTIVE OR SENSITIVE AREAS.

POLICY 7.7. TO PROTECT, MAINTAIN AND IMPROVE SURFACE WATER, GROUNDWATER AND MARINE WATER QUALITY IN ITS JURISDICTION SO THAT ALL WATERS ARE IN COMPLIANCE WITH FEDERAL AND STATE WATER QUALITY STANDARDS AND CONTINUE TO ALLOW AQUATIC LIFE TO THRIVE.

POLICY 7.14. TO PROTECT AREAS SURROUNDING IDENTIFIED EAGLE NESTS FROM CONFLICTION LAND USES.

POLICY 7.17. TO MINIMIZE THE THREAT TO HUMAN SAFETY AND DEVELOPMENT POSED BY LANDSLIDES (MASS WASTING) AND AVALANCHES

Policies in chapter 4 relate to housing affordability and supply. Chapter 7 policies are in place to guide CBJ decision making as it relates to natural resources and hazards. Table 1 is an excerpt from the CBJ Comprehensive Plan and identifies known natural resources and hazards in the vicinity. In general, this study's project area is free of most previously identified hazards and negative natural resource impacts. Eagle nests may be in the project area, but none have been observed at the time of this writing. Flooding is unlikely to occur given the steep terrain of the topography, but flash flooding may move material or promote landslide activities. A geohazards analysis was conducted

as a part of this study. There are no avalanche hazard areas identified in the proposed parcel, but mass wasting events may be of greater concern and requires careful consideration.

Table 1 - Natural Resources and Hazards

Type	General Location
Wildlife (Eagle nests)	Vanderbilt Hill, Lemon Creek, and Switzer Creek
Stream and Lakeshore Corridors	Lemon, Switzer, Vanderbilt, Salmon, and unnamed Creeks
Wetlands/Tidelands	Mendenhall Flats, Lower Lemon Creek, Switzer Creek, Vanderbilt Creek
Gravel and Mineral Resource	Lemon Creek, Hidden Valley
Impaired Water Bodies	Jordan Creek, Lemon Creek, Vanderbilt Creek
Flooding	Lower Lemon Creek/Switzer Creek, all coastal areas
Hazards	Flooding: Salmon Creek Dam Inundation Area. Landslide and Avalanche: Thunder Mountain, Upper Lemon Creek Valley
Watershed	Upper Salmon Creek
Cultural and Historic Resources	Subarea-wide

The CBJ stives to maintain a robust multi-modal system. New subdivisions are required to take into consideration the transportation needs of multiple modes of transportation.

POLICY 8.5. TO PROMOTE A BALANCED, WELL-INTEGRATED LOCAL MULTI-MODAL SURFACE TRANSPORTATION SYSTEM THAT PROVIDES SAFE, CONVENIENT AND ENERGY-EFFICIENT ACCESS AND TRANSPORT FOR PEOPLE AND COMMODITIES.

POLICY 8.6. TO PROMOTE AND FACILITATE TRANSPORTATION ALTERNATIVES TO PRIVATE VEHICLES AS A MEANS OF REDUCING TRAFFIC CONGESTION, AIR POLLUTION AND THE CONSUMPTION OF FOSSIL FUELS, AND TO PROVIDE SAFE AND HEALTHY MEANS OF TRANSPORTATION TO ALL PEOPLE.

POLICY 8.8. TO RESPOND TO THE SPECIAL TRANSPORTATION NEEDS OF EACH SUBAREA OF THE CBJ AND TO INTEGRATE THEM INTO A BOROUGH-WIDE COMPREHENSIVE TRANSPORTATION PLAN. THIS SYSTEM SHOULD SEEK TO REDUCE THE CONSUMPTION OF FOSSIL FUELS BY FACILITATING EFFICIENT ROUTES OF TRAVEL, CONVENIENT AND RAPID TRANSIT, AND SAFE MOTORIZED- AND NON-MOTORIZE TRAVELWAYS.

Subarea 5 is home to adults and children who use public transportation. Subarea 5 has discontinuous segments of sidewalks which create conflict points between various transportation modes. An implementing action is to require sidewalks and bicycle paths or lanes along newly constructed roads, as appropriate. The proposed subdivision should plan to utilize a roadway section that includes a sidewalk.

CBJ has adopted a Juneau Parks and Recreation Comprehensive Plan to provide recommendations on parks and natural area improvements and development standards. The Blackerby parcel contemplates a 30' to 50' buffer zone along the southwest perimeter of the parcel that could serve as walking trail corridor to add to the area's recreation opportunities. A new trail would expand non-

motorized access options that would provide current and future CBJ citizens with the ability to connect to the Blackerby Ridge Trail or Salmon Creek Trail. The Blackerby parcel is not fully developable with the presence of very steep slopes. This natural hazard creates the opportunity for the identification of parcels that can be designated as open space and incorporate the natural features into the proposed subdivision aesthetic.

POLICY 9.1. TO PROVIDE QUALITY DISPERSED OUTDOOR RECREATIONAL OPPORTUNITIES AND TO ACQUIRE AND DEVELOP SUFFICIENT LOCAL PARKS AND RECREATIONAL FACILITIES IN LOCATIONS CONVENIENT TO ALL AREAS OF THE CBJ. PLACES GIVEN PRIORITY FOR NEW FACILITIES INCLUDE RAPIDLY DEVELOPING AREAS AND CURRENTLY DEVELOPED AREAS THAT LACK ADEQUATE PARKS AND RECREATION FACILITIES.

POLICY 9.2. TO DEVELOP AND MAINTAIN AN INTERCONNECTED NON-MOTORIZED TRAIL SYSTEM THAT IS COMPLEMENTARY WITH, AND MAY BE CONTIGUOUS WITH, UN-FRAGMENTED FISH AND WILDLIFE CORRIDORS ALONG ANADROMOUS FISH STREAMS WITHIN THE ROADED AREA THAT PROVIDES FISH AND WILDLIFE AND HUMAN ACCESS TO THE SEA FROM THE UPLANDS.

POLICY 9.3. TO PRESERVE AS PUBLIC NATURAL AREAS THOSE PUBLICLY-OWNED LANDS AND SHORELINE AREAS THAT POSSESS IMPORTANT RECREATIONAL, SCENIC, FISH AND WILDLIFE, AND OTHER ENVIRONMENTAL QUALITIES OR ARE SUBJECT TO NATURAL HAZARDS.

Residential use of lands is encouraged to be at the highest density feasible for the lands characteristics to effectively utilize the limited amount of buildable land and provide public services efficiently. This study's focus is on a parcel abutting the Urban Service Area and provides a partnership opportunity to work with CBJ to extend the Urban Service Area Boundary and provide public services that accommodate higher density residential dwellings. The proposed subdivision is adjacent to a CBJ owned parcel located in the Mountainside Estates Subdivision Phase I, at the end of Timberline Court. This CBJ owned parcel would abut the proposed green space buffer and could provide an opportunity to develop a park or serve as a trail access point for a recreational trail traversing the proposed subdivision's green space buffer.

POLICY 10.1. TO FACILITATE AVAILABILITY OF SUFFICIENT LAND WITH ADEQUATE PUBLIC FACILITIES AND SERVICES FOR A RANGE OF HOUSING TYPES AND DENSITIES TO ENABLE THE PUBLIC AND PRIVATE SECTORS TO PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FOR ALL JUNEAU RESIDENTS.

POLICY 10.2. TO ALLOW FLEXIBILITY AND A WIDE RANGE OF CREATIVE SOLUTIONS IN RESIDENTIAL AND MIXED USE LAND DEVELOPMENT WITHIN THE URBAN SERVICE AREA.

POLICY 10.5. THAT RESIDENTIAL DEVELOPMENT PROPOSALS, OTHER THAN SINGLE-FAMILY RESIDENCES, MUST BE LOCATED WITHIN THE URBAN SERVICE AREA BOUNDARY OR WITHIN A DESIGNATED NEW GROWTH AREA. APPROVAL OF NEW RESIDENTIAL DEVELOPMENT PERMITS DEPENDS ON THE PROVISION OR AVAILABILITY OF NECESSARY PUBLIC AMENITIES AND FACILITIES, SUCH AS ACCESS, SEWER, AND WATER.

POLICY 10.6. TO REQUIRE NEW RESIDENTIAL DEVELOPMENTS TO MEET MINIMUM CRITERIA FOR OVERALL SITE DESIGN INCLUDING PROVISION OF LIGHT, AIR AND PRIVACY.

The existing Land Use classification of the Blackerby parcel is Recreational Resource (REC). The existing, adjacent subdivisions are Urban/Low Density Residential (ULDR). The development of the Blackerby parcel is counter to the recommendation of CBJ to prevent residential development but a common theme throughout the CBJ Comprehensive Plan is the idea of flexibility in land use decision making to allow for creative solutions that would benefit the citizens of Juneau. The existing subdivisions abutting the proposed subdivision area are generally comprised of single-family, duplex, and zero-lot-line residences with public services. A Subarea Land Use Plan Amendment should be pursued to expand the ULDR limits to include the proposed parcel area.

REC – Land primarily under federal or state management for a range of resources, such as timber, minerals, fish and wildlife and recreation uses, including recreation cabins. Uses may include small-scale, visitor-oriented, and/or seasonal recreational facilities. These lands should be zoned to prevent residential, commercial, and industrial development.

ULDR – These lands are characterized by urban or suburban residential lands with detached single-family units, duplex, cottage or bungalow housing, zero-lot-line dwelling units and manufactured homes on permanent foundations at densities of one to six units per acre. Any commercial development should be of a scale consistent with a single-family residential neighborhood, as regulated in the Table of Permissible Uses (CBJ 49.25.300).

Chapter 11 of the CBJ Comprehensive Plan has published guidelines and considerations for Subarea 5. Guidelines and considerations that provide support for this study's proposed subdivision are listed. The Blackerby parcel was not included in the scope of CBJ's land use recommendations because the parcel was not under CBJ or private ownership at the time of the last CBJ Comprehensive Plan update.

2. Provide for additional medium- to high density residential development in areas with access to arterial roadways from collector streets. Encourage the efficient use of land by allowing non-family housing, such as for students, single adults or seniors, in mixed use districts within shopping centers or malls. Increase building height limits and decrease or eliminate parking requirements for such residential developments where adequately served by public transit.

13. The Parks and Recreation Comprehensive Plan, Chapter 8, recommends a number of parks, trail, community garden and stream corridor improvements. Those recommendations include: (a) construction of a coastal trail along Egan Drive or along the "inside" or north side of Egan Drive, connecting Sunny Point to neighborhoods to the east and west; (b) Upgrade the Dzantik'i Heeni Middle School and the Switzer Creek/Richard Marriott trail; (c) construct a covered basketball court/play area at Dzantik'i Heeni Middle School; (d) reserve a stream corridor on Switzer Creek; (e) resolve Lemon Creek Trail issues; (f) develop an All-Terrain-Vehicle (ATV) or Off-Highway Vehicle (OHV) course in the Upper Lemon Creek area; (g) develop a trail from the Sunny Point intersection to the Pioneer's Home intersection and along the Pioneer's Home marsh with an accessible viewing platform for bird watchers; (h) protect access to the Heintzleman Ridge trail; ***(i) review the area for suitability for mini-parks; (k) establish a community garden area; (l) study the Lemon Creek area for suitable park sites****; and, (m) continue ADA improvements at Twin Lakes.*

14. Identify historic and cultural resources within the subarea. Project that may impact historic resources identified within this subarea are to be reviewed by the Historic Resources Advisory

Committee (HRAC) prior to issuance of a permit. Where new historic or cultural resources are discovered or identified, the Juneau-Douglas City Museum should be contacted immediately for documentation and technical assistance toward preservation and/or curating of the resource. The demolition or removal of historic resources should be avoided and should only occur when no other option for its preservation or relocation to a suitable site exists.

The Blackerby parcel subdivision is greatly influenced by the availability of public and private utilities and facilities. As the existing parcel is not currently included in the Urban Service Area, there is no future planning or investment provided by the CBJ. The development of the proposed parcel will require close coordination with CBJ to determine if the preferred action is to expand the Urban Service Area Boundary with the development of the proposed subdivision or if the proposed subdivision would need to be self-sufficient parcels that provide private on-site water and sewer systems.

POLICY 12.1 TO PLAN FOR THE TIMELY AND EFFICIENT PROVISION OF AN APPROPRIATE LEVEL OF PUBLIC FACILITIES AND SERVICES IN ALL DEVELOPED AND DEVELOPING AREAS WITHIN THE URBAN SERVICE AREA.

The current zoning of the parcel would not support CBJ action to invest in water or sewer service expansion. If a re-zone were pursued to achieve a higher residential density, then CBJ may invest in expanding water and sewer services. This is a point of conflict between the CBJ Comprehensive Plan and Title 49 zoning requirements. The CBJ Comprehensive Plan guides against public utility expansion for low or medium residential densities, but Title 49 zoning requirements require new subdivisions within 500' of existing public utilities to extend the utility services. This is a point of conflict that will require coordination and interpretation by CBJ for the acceptable path forward. A revision to the Urban Service Area Boundary to encompass the Blackerby parcel will need to occur to allow higher density residential development.

POLICY 12.2. TO EXTEND PUBLIC WATER, SEWER, STORM DRAINAGE, AND EARTH RETENTION FACILITIES TO ALL AREAS WITHIN THE URBAN SERVICE AREA.

The CBJ Comprehensive Plan serves as a tool to guide the decision-making process in regard to land use compliance. Not all policies published are relevant to every development project. The CBJ Comprehensive Plan also acknowledges that not all development projects can be predicted and there may be instances not fully addressed for how development should proceed. The development of the Blackerby parcel is one such instance. The development of state-owned lands is not discussed in the CBJ Comprehensive Plan. It is also important to note that a failure to comply with one policy in the CBJ Comprehensive Plan does not automatically mean that a development is inappropriate if conformance is shown with other policies identified in the CBJ Comprehensive Plan. A decision on land-use conformance requires balancing the many relevant policies and holistically looking at each particular proposed development.

POLICY 18.1. TO ESTABLISH THIS COMPREHENSIVE PLAN AS THE PRIMARY POLICY DOCUMENT WITH WHICH TO GUIDE RESOURCE CONSERVATION AND FUTURE GROWTH AND DEVELOPMENT AND TO MANAGE THE PHYSICAL ENVIRONMENT.

POLICY 18.5. TO FACILITATE INTER-GOVERNMENTAL COORDINATION SO THAT DECISIONS AFFECTING LOCAL PLANNING AND DEVELOPMENT ARE RENDERED IN AN EFFICIENT AND CONSISTENT MANNER.

CBJ Title 49

A subdivision in the project area will require obtaining a permit as stipulated in Chapter 49.15 – Permits. Article IV of Chapter 49.15 specifically addresses land subdivisions and permit requirements. Land subdivisions should be for the betterment of CBJ citizens by positively impacting public health, safety, and general welfare. The objectives of a subdivision are to facilitate the fair and predictable division of land, encourage the efficient and cost-effective provision of public services, address traffic and circulation to reduce congestion, provide flexibility in the division and establishment of lots, and accomplish uniform monumentation for land subdivision to facilitate accurate legal descriptions for land conveyance.

The parcel area of interest would generate more than 14 lots and therefore a subdivision of the parcel would classify as a major subdivision and need to adhere to 49.15.402 – Major subdivisions. Minor subdivisions are for when the subdivision generates 13 or fewer lots. No minor subdivision application may be filed if it is a part of or is made in connection with a present or projected major subdivision development as determined by the CBJ Planning director. This study's parcel will fall under the major subdivision requirements. A key distinction between major and minor subdivisions is that minor subdivisions are reviewed by the planning director whereas major subdivisions are reviewed by the planning commission. The application requirements are the same between a minor and major subdivision. The major subdivision process requires the following sequence application requirements,

1. A major subdivision permit,
2. Pre-application conference (49.15.310(c)) and sketch plat (49.15.410),
3. Preliminary plat (49.15.411),
4. Construction plans (49.35.140),
5. Survey and monumentation (49.15, Arcticle IV, Division 6),
6. Final plat (49.15.412), and
7. Plat recording (49.15.412(f))

The requirements of sketch plats, preliminary plats, and final plats are detailed in Division 2 of 49.15.

Division 3 of 49.15 provides subdivision design standards for proposed lots, culdesac lots, panhandle lots, and public use lots. In general, lots should have one practical building site, lot lines should be perpendicular to frontages.

Article V of 49.15 applies additional project review requirements on State of Alaska capital improvement projects. 49.15.580(b) calls for the commission to review state projects for consistency with Title 49 pursuant to AS 35.30.010.

Chapter 49.25 establishes the various zoning districts of the CBJ. The current zoning map adopted is "Zoning Maps of the City and Borough of Juneau, Alaska" dated June 5, 2006. Any unmapped property within the CBJ jurisdiction is in the Rural Reserve (RR) zoning district. The Blackerby parcel

explored in this study is currently zoned RR. The adjacent subdivisions to the west and south are currently zoned D5.

49.25.200 – The RR, rural reserve zoning district, is intended for lands primarily in public ownership managed for the conservation and development of natural resources and for future community growth. In addition, recreation cabins, lodges and small seasonal recreational facilities may be allowed.

49.25.210(c) – The D-5, residential district, is intended to accommodate primarily single-family and duplex residential development at a density of five dwelling units per acre. D-5 zoned lands are located in the urban service boundary and are served or can be served by public water and sewer.

Residential development is a permissible use for RR zoned parcels as identified in 49.252.300 Table of Permissible Uses. RR zoned lands can be utilized to support future community growth. The Blackerby parcel, if conveyed to private ownership, may be re-zoned to a D-1 or D-3 residential district. D-1 and D-3 residential districts are located outside the Urban Service Area. If public sewer and water are extended into the proposed subdivision, the parcels would be zoned for a D-5 residential district.

49.25.210(a) – The D-1, residential district, is intended to accommodate primarily single-family and duplex residential development in areas outside the urban service boundary at a density of one dwelling unit per acre. Certain D-1 zoned lands, however, may exist within the urban service boundary in transition areas if public sewer or water are absent but planned for. The D-1 classification will be changed to a higher density upon provision of services.

49.25.210(b) – The D-3, residential district, is intended to accommodate primarily single-family and duplex residential development at a density of three dwelling units per acre. D-3 zoned lands are primarily located outside the urban service boundary where public utilities are not provided. The density reflects the existing pattern of development of properties in the district. There is a limited amount of D-3 zoned lands located within the urban service boundary. These are lands for which a lower density is deemed appropriate or, in the case of transition zones, where the zoning will be changed to a higher density when sewer and water are provided.

49.25.400 provides minimum dimensional standards for all zoning districts. The minimum dimensional standards for RR, single-family dwellings and D5, single-family dwellings were used to develop conceptual subdivision layouts in the Blackerby parcel. Table 2 provides a summary of the CBJ Title 49 land use and zoning dimensional standards of the Blackerby parcel and adjoining subdivisions.

Table 2 - Land Use and Zoning Dimension Summary

CBJ TITLE 49 - LAND USE			
49.05.200 - Comprehensive Plan			
Subarea 5 - Switzer Creek, Lemon Creek, Salmon Creek (Map H)			
	Existing	Adjacent Subdivisions	
Land Use Classification	REC	ULDR	
49.25 - ZONING DISTRICTS			
	Existing	Adjacent Subdivisions	Additionally Considered
Zoning	RR	D-5	D-3
Minimum Lot Size – Single-family	36,000 Sq Ft	7,000 Sq Ft	12,000 Sq Ft
Minimum Lot Size - Duplex	54,000 Sq Ft	10,500 Sq Ft	18,000 Sq Ft
Minimum Lot Size – Zero-lot-line	-	7,000 Sq Ft	-
Minimum Lot Width	150	70	100
Maximum Lot Coverage	10%	50%	30%
Maximum Height	45'	25'	25'
Minimum Front Yard Setback	25'	20'	25'
Maximum Front Yard Setback	N/A	N/A	N/A
Minimum Street Side Yard Setback	17'	13'	17'
Maximum Street Side Yard Setback	N/A	N/A	N/A
Minimum Rear Yard Setback	25'	20'	25'
Minimum Side Yard Setback	15'	5'	10'

Chapter 49.35 establishes design and development criteria for public and private improvements. 49.35.120 stipulates it is the developer's responsibility to install all of the required improvements within the boundaries of the development as well as beyond the development to ensure properly functioning improvements. The development of the Blackerby parcel also requires any improvements made to be designed and constructed to provide for future extensions to adjoining land. If a subdivision includes an extension of publicly maintained streets, then the roaded service area boundary, and fire service area boundary, shall be extended to the newly created subdivision. Design and construction of new subdivisions shall adhere to the latest revision of the City and Borough subdivision standard specifications and details on file in the engineering and public works department as required by 49.35.130. The developer is responsible for constructing required improvements regardless of subdivision type pursued, minor subdivision or major subdivision.

Construction plans are the responsibility of the developer. 49.35.140 requires construction plans to detail all proposed public improvements and associated private improvements and utilities. Steets within subdivisions shall be designed for the most advantageous development of the entire parcel to include connecting streets into adjoining unsubdivided lands, maximize the number of

connecting streets, facilitate safer bicycle and pedestrian travel, and consider traffic calming design.

49.35.240 – Improvement standards require right-of-way widths for streets other than arterials and collectors to be 60', cul-de-sacs, either temporary or permanent, shall have a right-of-way diameter of 120', street grades must not exceed 12 percent, except as allowed under Chapter 49.70, street grades must have a minimum grade of one-half percent, and street cross slopes is a minimum of three percent. Other elements of roadway design shall be in accordance with "A Policy on Geometric Design of Highways and Streets". Cul-de-sacs shall not be longer than 600'. Streets should have the physical characteristics given in Table 3.

Table 3 - Table 49.35.240 Roadway Construction Standards

Avg. Daily Trips (ADT)	Adopted Traffic Impact Analysis Required	Sidewalks	Travel Way Width	Street Lights	Width	Paved Roadway Required	Publicly Maintained
≥500	Yes	Both sides	26 ft	At all intersections	60 ft Public ROW[ii]	Yes	Yes
212 to 499	Maybe	One side	24 ft	At all intersections	60 ft Public ROW[ii]	Yes	Yes
0 to 211	No	Not required	22 ft	At intersection of subdivision streets and external street system	60 ft Public ROW[ii]	Yes	Yes
0 to 211	No	Not required	20 ft[i]	At intersection of subdivision streets and external street systems	60 ft Public ROW[ii]	No, if outside the urban service area	No
0 to 70	No	Not required	20 ft[i]	No	50 ft Private easement	No[iii]	No

[i] Or as required by the Fire Code at CBJ 19.10.

[ii] ROW width may be reduced as prescribed at CBJ 49.35.240.

[iii] Except as provided by CBJ 49.35.262(b)(9).

49.35.310 – Water Systems requires new development to construct a public water system if the proposed development is for more than five lots and the new development is within 500' of an existing public water system. 49.35.410 – Sewer Systems requires new development to construct a public sewer system if the proposed development is for more than five lots and the new development is within 500' of an existing sewer system. The Blackerby parcel can produce more than five lots and will be within 500' of existing public water and public sewer systems. This is an

area of conflict between Title 49 requirements for zones and land use classification. The CBJ Comprehensive plan guides against the extension of public water and sewer utilities for residential densities less than ten units per acre, but Chapter 49.35 requires the development of these utilities if a proposed subdivision is developed on the Blackerby parcel.

49.35.510 – Drainage plan requires the developer to produce a total surface drainage plan. This is to ensure the calculated increase in stormwater runoff is adequately accounted for and does not negatively impact existing drainage systems downstream of the proposed development. Drainage systems are to be constructed at the same time as street construction. The drainage systems for the Blackerby parcel will also need to consider the potential for debris flow events such as oversizing culverts and enlarging ditches to accommodate the passage of debris while protecting infrastructure. A drainage plan will aid in the siting of drainage easements across various parcels that make sense to discourage development in areas critical to impacting flow patterns.

Underground utilities provided for a new development will need to be in conformance with 49.35.710 which cross references to CBJ Code 62.40. Utility access easements are per 49.35.720 to allow for the efficient maintenance of utility systems. Per CBJ 62.40.070, new subdivisions are required to construct underground transmission utilities.

Off street parking is to be provided for single-family residences per CBJ Chapter 49.40 – Parking and Traffic. Any proposed development should keep parking requirements in mind when determining size and layout of lots. Single-family and duplex structures are required to have two parking spaces per each dwelling unit. Multifamily units need to provide one parking space per one bedroom unit, one and one-half parking space per two-bedroom unit, and two parking spaces per three- or more bedroom unit.

Development in the proposed Blackerby parcel is to be evaluated for triggering a traffic impact analysis per 49.40.300. Developments projected to produce 500 or more average daily trips shall be required to have a traffic impact analysis. Developments that generate fewer than 250 average daily trips are not required to have a traffic impact analysis.

49.50.300 stipulates minimum vegetative cover on lots based on zoning districts. D-1, D-3, and D-5, residential districts shall maintain 20 percent minimum vegetative cover. The entirety of the proposed Blackerby parcel is comprised of old-growth forest. Maintaining minimum vegetative requirements of proposed developments is not anticipated to be a challenge.

The CBJ requires financial responsibility for proposed developments. 49.55.010 presents available options to subdividers and developers to guarantee proper installation of proposed developments.

> *49.55.010(2) Subdivisions. The developer may, at the developer's option, complete the required improvements for a subdivision after approval and recording of the final plat if the improvements are guaranteed according to this section. The developer shall remain responsible for completion of the improvements, and the guarantee thereof shall remain in force notwithstanding damage to or interference with the construction of the improvements by individual lot construction contractors or other third parties.*

Article II of Chapter 49.70 presents development criteria for hillside development. The Blackerby parcel is considered a hillside development because slopes exceed 18 percent within the proposed

development limits. Adherence to this article ensures hillside development provides erosion and drainage control, protect waterways from sedimentation and pollution, minimize injury or damage to people or property from natural or artificial hazards in hillside development, and minimize any adverse aesthetic impact of hillside development. 49.70.220 requires the developer to obtain a hillside development endorsement prior to construction proposed developments. A hillside development application is to submit a vicinity map, site maps, finished proposed site plans, engineering drawings for construction, fill sources and type, landscaping plan, geologic report, and work schedule as detailed in 49.70.240. This is an increased level of effort to develop lots within the Blackerby parcel, but development is still considered feasible.

The proposed Blackerby parcel is currently zoned RR and would require a rezone if more dense residential lots are to be developed. Chapter 49.75, Article I discusses the rezoning process. 49.75.110 allows developers and property owners to initiate a rezone request in January or July only. A rezoning follows the procedures for a major development permit except the provision of 49.75.130(a).

Fees required for the development of major subdivisions are scheduled in Chapter 49.85. Generally, a major subdivision is subject to a preliminary plat fee of $110.00 per lot, final plat fee of $70.00 per lot, and plat amendments at $110.00 plus $25.00 per lot. Administration of developer's subdivision improvement guaranty is scheduled at $50.00 for performance bonds, $140.00 for deposit in escrow, and $140.00 for the first lot plus $25.00 for each additional lot for Deed of trust, reconveyance, agreement or substitution of trust and reconveyance lots. Hillside development endorsement review fees is for the gross hourly rate for professional review and inspection, $60.00. Zone changes and comprehensive plan amendments are $600.00.

Housing Needs Benefit Analysis

The city of Juneau lacks affordable housing. Homeowners choices are limited by location, size, cost; a large proportion of homeowners are spending more than 30% of their income on housing. The American Community Survey reports the ownership vacancy rate in the CBJ has ranged from 1.2 percent in 2020 down to 0.6 percent in 2022. A vacancy rate of five percent or lower indicates that housing supply is limited, and demand is outpacing available units. Five percent and above is considered a "normal" vacancy rate allowing households to move in and out of units due to normal relocation patterns. Thus, a lower than 5 percent vacancy rate in Juneau indicates that meeting future demand for new housing will require additional housing construction. Currently, there is no extra supply within the existing housing market to absorb this demand.[1]

Juneau lacks affordable housing for low-income and middle-income families. Families that are renting are unable to buy new homes because they are priced out of the market. Those that can purchase their first home lack options that are worth the upgrade when they are ready. Thus, first time homeowners stay in the home they first bought and make improvements to those homes. This conundrum perpetuates the housing problem. The lack of first-time family starter homes is a barrier to the cultivation of the workforce. It is estimated that approximately 312 new units are

[1] Summary Memo - NW Douglas Sub Area Study Housing Need and Residential Financial Feasibility Findings

needed to meet low-income housing needs. Then an additional 88 new units for middle-income families. The number of new units available to each income category ideally would be split between rental options and home purchases.

The proposed Blackerby subdivision would open up land area for units to be built on within the CBJ. The suggestion is to convey public lands at parcel sizes to maximize the residential usage of the proposed land area.

Geotechnical Hazards Analysis

Emprise Concepts (Emprise) was contracted by AK Built to provide geotechnical engineering and geohazards assessment services for the purpose of creating a development plan for the Blackerby Subdivision in Juneau, Alaska. The memorandum located in Appendix A focuses on the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geologic hazards that may affect the site, and conclusions and recommendations for future work and site development. The Blackerby area is predominately sloped towards the southwest. Slope angles are shallower in the southwest and become steeper as elevation increases towards the northwest corner of the proposed Blackerby subdivision. Surficial geology in the area is glaciomarine deposits, mass wasting deposits, and minor amounts of alluvial deposits. Reference Appendix A for details.

The main geologic hazards that impose a risk to the Blackerby Subdivision are slope instability, primarily precipitation-driven debris flows and debris floods, and earthquakes. A preliminary-level debris flow/debris flood analysis was performed to aid in assessing the feasibility of the subdivision and to assist in determining conceptual design options. Debris floods are common in steep, mountainous stream drainages. Figures are included in the reference section of the memorandum for the debris flood modeling. The results of the modeling results show the theorized impact of debris floods in the Blackerby Subdivision would originate within steep gullies and drainages upslope to the northeast of the subdivision boundary. The areas most susceptible to inundation from debris floods downslope are generally constrained to the shallow channels that exist within the subdivision area. See Appendix A for the debris flood modeling results.

Recommendations for the Blackerby subdivision were developed based on site observations, historical records, and modeling. It is recommended that consistent slopes steeper than 17 degrees are avoided in the Blackerby subdivision. Areas in which the surficial geology is mapped as talus because that can be an indicator of historical wasting events. Talus in the area is generally constrained to slopes steeper than 17 degrees. A hydraulics analysis should be performed to design proper drainage within the subdivision area. The information from the hydraulics analysis can be used to locate areas that should be avoided due to channel size. See Appendix A for additional details. Based on observations and the understanding of the soils at the site it is believed that the soil is generally suitable for residential structures typically found on spread footings and residential roadways.

Conceptual Designs

Three concepts were explored for the purpose of this study. Concepts are for a proposed subdivision meeting the requirements of the existing zoning, RR, with a transition to a proposed subdivision meeting the requirements of a D5 zoning to reflect an increase in density with time. The third concept produces a D5 subdivision that aims to maximize the feasible number of buildable parcels. As a starting point, roadway alignments were first sited to ensure CBJ roadway standards are feasible. CBJ roadway standards are detailed in CBJ Chapter 49.35 Article II. Table 4 lists the standards utilized in the development of the alignments presented in this study.

Table 4 - CBJ 49.35.240 Improvement Standards Utilized for Concepts

Street Feature	Standard
Right-of-Way Width, Streets	60'
Right-of-Way Width, Cul-de-sacs	Diameter of 120'
Sight Distance	AASHTO "Green" Book
Maximum Street Grade	12%, 15% for ≤200' in Hill Development areas
Minimum Street Grade	0.5%
Street Cross Slope	3%
Intersection Angle	Not less than 60°
Intersection Grade	< 2% for the first 30', then < 6% for the next 70'
Horizontal Curves	AASHTO "Green" Book
Vertical Curves	200' minimum
Travel Way Width	24'
Sidewalks	One side
Paved Roadway	Yes

RR Zone Subdivision Transitioning to D-5 Zone Subdivision

Proposed layouts for the RR zone transitioning into a D-5 zone feature the same overall parcel footprints, utilize a 50-foot green space to serve as a buffer between the existing subdivisions and the proposed subdivision, and both utilize the same ROW alignments. This study first produced the RR zoning subdivision parcel layout and then produced parcels compliant with D-5 residential district zoning to evaluate the progression of potential development over time. Appendix B provides the parcel overviews for RR zoning, Appendix C provides the parcel overviews for D-5 residential district zoning, and Appendix D provides the ROW alignments' profiles.

The parcel of interest to ADNR was overlaid on a slope map of the existing terrain to identify the possible extents of feasible parcels. The three slope bands analyzed were 0 – 18%, 18 – 30%, and greater than 30%. Slopes less than 18% represents buildable land, 18 – 30% slopes represent lands subject to Title 49 Hill Development provisions, and slopes over 30% are considered very steep. This slope mapping guided the extents layout for the perimeter of the proposed subdivision.

ROW alignments were then projected across the "buildable" parcel extents. Access streets sited are off Blackerby Street and Mary Ellen Way. Profiles were established to confirm conformance with CBJ Title 49 and a ROW named Traverse Drive was used to connect both existing access road

extensions. A ROW named Hill Climb Court was developed off Traverse Drive to increase the number of feasible parcels that could be developed. Traverse Drive and Hill Climb Court alignments and profiles are in conformance with CBJ Title 49.

With the outer perimeter of the subdivision established and the ROW alignments sited, RR zoning compliant parcels were laid out. The parcels developed were established to have primary access off Traverse Drive and Hill Climb Court, rather than the access street ROWs. The proposed RR subdivision produces 36 parcels. With the parcel layout completed, the results of the geologic hazards assessment, with a focus on debris flow modeling, were overlain by the proposed RR subdivision parcel lines. The geohazards debris flow paths will aid in the design of drainage systems and easement sitings, such as oversized culverts to allow the conveyance of debris or sitting drainage easements along parcel lines to discourage development that would alter historical flows. Concurrently with this analysis, the proposed subdivision was reviewed against the geotechnical engineer's recommended subdivision area and found to be largely within the feasible building extents identified in the geotechnical memorandum.

This study assumes the most feasible approach to developing the proposed subdivision is to first develop a RR zoning subdivision. Subsequent development and increasing densities will then be pursued by the initial parcel owners and/or developers. A projected higher density subdivision is presented in this study utilizing the D-5 residential district zoning requirements. The proposed RR subdivision parcels were individually subdivided to meet higher density parcel standards. The D-5 residential district subdivision produced 118 parcels. It should be noted that not all parcels are readily buildable at a D-5 density. Ultimately, a blend of D-1, D-3, and D-5 residential densities is considered the most feasible approach to maximizing the number of parcels that could be made available. The transition from RR to D-5 creates multiple panhandle lots. It is understood the use of panhandle lots to maximize density is not ideal and can be difficult to create adequate access to individual parcels when developed in steep terrain.

Maximum Feasible D-5 Zone Subdivision

The third concept explored for this study is a D5 zone subdivision with a focus on maximizing the number of feasible parcels utilizing the same zone designation as the adjacent subdivisions. An approach like this will require the pursuit of a rezone prior to development of the Blackerby parcel.

This concept utilizes a 30-foot green space buffer between the new subdivision and existing subdivisions. ROW alignments were developed by utilizing the geotechnical recommended building area as the maximum development extents. Access streets sited are off Blackerby Street and Mary Ellen Way. Mary Ellen Way is extended across the proposed subdivision and intersects Blackerby Street. An additional ROW, Ridge Drive, parallels the Mary Ellen Way ROW extension. A connecting street ROW, Step Up Street, is used to connect the proposed Mary Ellen Way to Ridge Drive. To access additional buildable land, two cul-de-sac ROWs named Mary's Court and Ellen's Court were sited. Proposed ROWs are developed to be in conformance with CBJ Title 49. Appendix F provides the parcel overview for a maximum feasible D-5 residential district zoning. Appendix G provides the proposed ROW alignment profiles.

The maximum feasible D-5 zone subdivision concept in this plan produces 135 parcels. Not all parcels were laid out at the minimum lots size. Oversized parcels were provided in areas of

increased geohazard risk and where steep slopes are more prevalent. Additional items to consider would be the use of slope easements along the proposed ROWs to allow road maintenance crews to make repairs or adjustments due to the presence of steep slopes.

Infrastructure Development & Cost Estimates

The development of a subdivision within the CBJ jurisdiction is required to be accomplished in accordance with Title 49 requirements. Title 49 requires the subdivision developer to construct the initial infrastructure required to support newly created parcels, such as access and utilities. Title 49 does not change the development requirements between a minor subdivision and major subdivision project. The adjacent, existing subdivisions are located within the CBJ Urban Service Area Boundary which means public utilities exist adjacent to the proposed subdivision. Access requirements have been assessed and developed in accordance with CBJ Title 49 and Engineering requirements. Road profiles meeting CBJ requirements are feasible within the proposed subdivision parcel. Future road construction would be concurrent with extensions of municipal water and sewer mains, expansion of electrical and telecommunication networks, and drainage networks constructed to tie-in with existing downstream channels.

A proposed subdivision layout has been produced for the existing RR zoning classification of the land and is appended to this document in Appendix B. The layout of the parcels was developed by first identifying road alignments that comply with Title 49 road grade requirements. Mary Ellen Way and Blackerby Street serve as access into the proposed subdivision and alignments have been developed extending these existing points of entry. Running north-south across the proposed parcel and connecting Mary Ellen Way access and Blackerby access is Traverse Drive. To increase the number of potential parcels, a cul-de-sac alignment named Hill Climb Court was developed off Traverse Drive. The project area slopes were then analyzed based upon CBJ definitions for steep slopes. The CBJ identifies building slopes between 18% and 30% as steep slopes and parcels located on such slopes are subject to CBJ's hill development requirements. Slopes more than 30% are considered very steep. Parcels within the subdivision development study area were then laid out along the feasible road alignments and in areas with slopes predominantly less than 30%. This produced 36 individual parcels with a minimum lot size of 36,000 square feet, a requirement of RR zoning. These 36 parcels were then overlayed with the geotechnical recommended building area and confirmed to be adequately sited. Debris flow runouts were also overlaid on the proposed parcels to serve as future guidance for future engineering efforts to best implement mitigating measures.

Cost estimates are developed for each of the individual road alignments depicted through the proposed subdivision. A summary of estimated costs is in Table 5.

Table 5 - Estimated Development Costs

Alignment	Estimated Cost
Traverse Drive	$5,253,605.00
Blackerby Street	$2,386,691.25
Mary Ellen Way	$867,308.75
Hill Climb Court	$988,872.50

Total Development Cost: $9,496,477.50

As this study progressed, an additional subdivision concept for a maximum feasible D-5 zone was produced. This maximum feasible D-5 zone subdivision was sited entirely within the geotechnical recommended building area and utilizes additional road ROWs and cul-de-sacs to generate 135 parcels. Table 6 gives a breakdown of estimated costs for this third concept. It is noted that the use of two ROWs, Ridge Drive and Mary Ellen Way, running parallel across the proposed Blackerby parcel creates a significant amount of road construction. Greater economic value may be obtained if a subdivision layout is produced utilizing only one ROW that traverses the Blackerby parcel, and more cul-de-sacs branched off both sides of this hypothetical ROW. The challenge is creating cul-de-sacs that would not be directly aligned into the contours of the steep slopes.

Table 6 - Estimated Development Costs (Maximum Feasible D-5 Zone)

Alignment	Estimated Cost
Ridge Drive	$4,900,284.26
Blackerby Street	$2,386,691.25
Mary Ellen Way	$4,667,839.30
Step Up Street	$857,463.66
Mary's Court	$988,872.50
Ellen's Court	$814,418.29
Blackerby Court	$215,226.82

Total Development Cost: $14,831,966.95

Development activities will need to be coordinated through the CBJ Engineering Department for extensions of existing roads, construction of new roads, and extension of utilities. The CBJ Engineering Department maintains Standard Specifications for Civil Engineering Projects and Subdivision Improvements and Standard Details. Items not specifically identified in the CBJ specifications and details are to be supplemented by the State of Alaska Department of Transportation & Public Facilities (ADOT&PF) Standard Specifications for Highway Construction and associated Standard Plans.

Coordination with the CBJ is encouraged to amend the Comprehensive Plan Land Use Map for the project area. If an amendment to the land use map to expand the Urban Service Area Boundary to encompass the proposed subdivision is approved, economic support from the CBJ may be gained for the expansion of public utilities. Policy 12.1guides the CBJ to plan for the provision of public facilities and Policy 12.2 guides the CBJ to extend public water and sewer to all areas within the Urban Service Area Boundary. Amending the Land Use Map would also open the door to developing a higher density subdivision within the proposed parcel. This approach would open discussions with CBJ to better gauge if there is a partnership opportunity between the State of Alaska and the CBJ to share investment costs and create opportunities for the citizens within the CBJ.

There is a CBJ owned parcel on the west side of the proposed Blackerby parcel, Tract A in the Mountain Side Estates subdivision. A partnership between the State of Alaska and the CBJ could

develop this parcel into useable green space or parkland for the benefit of CBJ citizens. A trail is feasible along the southwest perimeter of the Blackerby parcel that could connect Tract A in Mountain Side Estates to the Public ROW in Sunnyside subdivision, at the end of Greenwood Avenue.

Additional economic support for the proposed subdivision may be achieved through timber sales. Coordination and discussion would need to occur between the Division of Mining, Land and Water and Division of Forestry to explore the feasibility of this option. A negative to a timber sale process would be the removal of old growth forest which may be an attractive quality to potential land sale purchasers.

There is the possibility to partner with existing land developers to pursue this proposed project, but what that partnership looks like is largely up the State of Alaska. The State of Alaska could be responsible for development of the preliminary plat which could include phases, larger tracts, that would encompass developable areas that are executed upon and finalized by a developer. This would be a deviation from the Alaska Land Auction process that has historically been used to convey state lands into private ownership. The State of Alaska would have to give consideration into how the partnership would be managed and which party would be responsible for development costs or the share in revenue generated.

Subdivision Legal Access

The proposed subdivision will require access from existing residential developments. There is a dedicated ROW stub street at the end of Blackerby Street in Twin Lakes Subdivision (Plat 82-6), a public ROW at the end of Greenwood Avenue as a part of Sunnyside Subdivision (Plat 84-61), and a roadway easement at the end of Mary Ellen Way in Mountainside Estates Subdivision Phase – I (Plat 83-146). The stub street that continues Blackerby Street is a 60-foot wide ROW and allows for a street alignment and profile to meet CBJ standards, but is currently allowed for driveway use by Lots 13 and 14 of the Twin Lakes Subdivision, see Figure 1. Based on a review of readily available plats and deeds, it appears these accesses are available for use by the proposed subdivision. A formal Title Report will be necessary to determine a more accurate picture of ownership. The public ROW at the end of Greenwood Avenue does not provide full 60-foot width for access, would orient a street directly into steep terrain, and would be subject to potential debris flow movements, see Figure 2. The roadway easement at the end of Mary Ellen Way, shared equally by Lots 23 and 24, Block B of the Mountainside Estates Subdivision Phase – I, is a 60-foot wide easement and allows for an extension to comply with CBJ road standards but the existing residential driveways, gardens, and utilities will be impacted, see Figure 3.

This study deemed access into the proposed subdivision to be most feasible from Blackerby Street and Mary Ellen Way. Development of an extension of Blackerby Street is contemplated to be the least challenging and of minimal disruption to existing property owners. Access from Mary Ellen Way into the proposed subdivision is envisioned to be more complicated as the subdivision plat only notes the existence of a roadway easement, not a formal ROW. The Mary Ellen Way access development will create conflict with existing properties owners on Lots 23 and 24 of Block B. A formal ROW acquisition may be warranted to adequately develop access into the proposed

subdivision area and would serve as an opportunity to open discussions with the existing parcel owners.



Figure 1 - Access off Blackerby Street



Figure 2 - Access off Greenwood Avenue



Figure 3 - Access off Mary Ellen Way

Traffic Impact Analysis

In accordance with CBJ Title 49, Table 49.35.240 'Table of Roadway Construction Standards', roadways generating 500 or more average daily trips (ADT) will require a Traffic Impact Analysis. Roadways generating between 212 and 499 may be required to conduct a Traffic Impact Analysis.

A preliminary analysis of the subdivision was conducted using the Institute of Transportation Engineers (ITE) TripGen 12 web based application[2]. Two scenarios were examined, the low-density RR zoning layout (36 dwelling units) and the higher density D5 zoning layout (139 dwelling units). All dwelling units were assumed to be single family detached housing.

Table 7 - Estimated Daily Trips Generated

Zoning	Dwelling Units	Land Use Code	Generated ADT	TIA Required
RR	36	210	556	Yes
D-5	139	210	1387	Yes

[2] *Institute of Transportation Engineers (ITE), Trip Generation Manual, 12th Edition; TripGen 12 web app output for LUC 210 (equation-based daily vehicle trips)*

ADTs, as estimated by the *ITE Trip Generation Manual*, are estimated utilizing an empirically derived equation, T = 8.07*X + 265.45. T is the estimated average weekday vehicle trips and X is the number of dwelling units.

Using the *ITE Trip Generation Manual, 12th Edition* TripGen 12 fitted equation for LUC 210 (Single-Family Detached Housing), T = 8.07*X + 265.45 where X = 36 dwelling units, the project is estimated to generate ≈556 average weekday vehicle trip-ends (8.07×36 + 265.45 = 555.97 → 556).

Using the *ITE Trip Generation Manual, 12th Edition* TripGen 12 fitted equation for LUC 210 (Single-Family Detached Housing), T = 8.07*X + 265.45 with X = 139 dwelling units, the project is estimated to generate ≈1,387 average weekday vehicle trip-ends (8.07×139 + 265.45 = 1,387.18 → 1,387).

TripGen 12 trip generation study data set was filtered to the 'Pacific Coast' Region, which includes the State of Alaska. Appendix G provides the TripGen 12 reports generated for this analysis.

When evaluating the need for a TIA, Table 49.35.240 indicates the need for a TIA when traffic volumes are equal to or more than 500 ADT. When traffic volumes are between 212 and 499 ADT then a TIA is a 'Maybe'. The primary design used for analysis in this study report is the RR zoning, resulting in 556 ADT.

Proposed Development Phasing & Timelines

The proposed subdivision will require substantial infrastructure improvements to be built. It is feasible to construct the entire proposed subdivision with no consideration given to economics. To aid in determining a path forward, a breakdown of each ROW is provided based on a cost per parcel. Table 8 presents Traverse Way cost per parcel, Table 9 presents Blackerby Street cost per parcel, Table 10 presents Mary Ellen Way cost per parcel, and Table 11 presents Hill Climb Court cost per parcel. The proposed RR subdivision has higher costs per parcel because of the low-density zoning requirements. Should a higher density zoning be developed, such as a D-5 residential district, then the cost per parcel is more economical in comparison to a RR zoning. As such, a D-3 residential district would fall between the high end and low end of cost per parcel.

Table 8 - Traverse Way Development Cost/Lot

Traverse Way Development Cost Per Lot		
Estimated Alignment Cost:		$ 5,253,256.25
Zoning	# Parcels	Cost/Parcel
RR	27	$ 194,565.05
D-5	73	$ 71,962.41

Traverse Way is the primary frontage used in the layout of proposed subdivision parcels and therefore has the lowest cost per parcel for development.

Table 9 - Blackerby Street Development Cost/Lot

Blackerby Street Development Cost Per Lot		
Estimated Alignment Cost:		$ 2,386,691.25
Zoning	# Parcels	Cost/Parcel
RR	3	$ 795,563.75
D-5	21	$ 113,651.96

Blackerby Street is used as an access street to the proposed subdivision. In the proposed RR zoning subdivision, there are few parcels that utilize Blackerby Street as a frontage. But in the transitioned D-5 residential district zoning subdivision, Blackerby Street becomes a frontage for parcels to accommodate a higher density layout. The use of Blackerby Street as a frontage significantly reduces the cost per parcel development cost.

Table 10 - Mary Ellen Way Development Cost/Lot

Mary Ellen Way Development Cost Per Lot		
Estimated Alignment Cost:		$ 867,308.75
Zoning	# Parcels	Cost/Parcel
RR	1	$ 867,308.75
D-5	7	$ 123,901.25

Mary Ellen Way is used as an access street to the proposed subdivision. In the proposed RR zoning subdivision, there is only one parcel that utilizes Mary Ellen Way as a frontage. But in the proposed transitioned D-5 residential district zoning subdivision, Mary Ellen Way becomes a frontage for parcels to accommodate a higher density layout, thus improving the economics of development.

Table 11 - Hill Climb Court Development Cost/Lot

Hill Climb Court Development Cost Per Lot		
Estimated Alignment Cost:		$ 988,872.50
Zoning	# Parcels	Cost/Parcel
RR	5	$ 197,774.50
D-5	17	$ 58,168.97

Hill Climb Court is a cul-de-sac off Traverse Way. The development of Hill Climb Court creates additional access to feasible parcel locations. Development costs of Hill Climb Court on a per parcel basis is comparable to Traverse Way development costs.

In general, a larger upfront cost is associated with the development of the access points, Blackerby Street and Mary Ellen Way. Traverse Way and Hill Climb Court are the primary frontages in the proposed subdivision and as such are more economical per parcel. The Mary Ellen Way access is the least economical for development. Blackerby Street is the more economical access street to develop; therefore, the proposed subdivision should consider building out from Blackerby Street

first. Blackerby Street then leads into Traverse Way. Blackerby Street access should not be developed on its own as the primary frontage of Traverse Way is needed to create access to proposed parcels. Based on funding available, Traverse Way can be developed in multiple phases to match funding limits, if necessary. Traverse Way development can then be followed by Hill Climb Court. Mary Ellen Way access will require additional coordination with existing property owners and establishing a formal ROW. Figure 4 presents a proposed phasing layout for RR zoning and Figure 5 presents a phasing layout for D-5 residential district zoning.

Table 12 presents a breakdown of estimated development cost per phase. The phasing differences between the proposed RR zoning subdivision and the proposed D-5 residential district zoning subdivision are minor as the overall footprint of the phases are similar, but the cost per parcel varies. A higher density lends itself to better economics.

Table 12 - Estimated Cost per Phase

Phased Development Cost Estimates				
Phase	RR Estimated Cost	RR Cost/Parcel	D-5 Estimated Cost	D-5 Cost/Parcel
1	$ 4,137,776.70	$ 344,814.73	$ 4,055,372.41	$ 81,107.45
2	$ 3,502,170.90	$ 194,565.05	$ 3,584,574.58	$ 61,803.01
3	$ 988,872.50	$ 197,774.50	$ 988,872.48	$ 41,203.02
4	$ 867,308.75	$ 867,308.75	$ 867,308.75	$ 123,901.25

An additional third subdivision concept was produced as this study was developed. This third subdivision presents an alternative road layout and aims to maximize the number of feasible parcels utilizing a D-5 zone. Table 13 estimates the cost of each phase and provides a per parcel cost. See Figure 6 for proposed phasing layout.

Table 13 - Maximum Feasible D-5 Cost per Phase

Phased Development Cost Estimates		
Phase	Estimated Cost	Cost/Parcel
1	$ 2,601,918.07	$ 153,054.00
2	$ 4,667,839.30	$ 95,262.03
3	$ 5,757,747.96	$ 155,614.81
4	$ 990,043.38	$ 61,877.71
5	$ 814,418.29	$ 50,901.14



Figure 4 - RR Zoning Subdivision Phasing

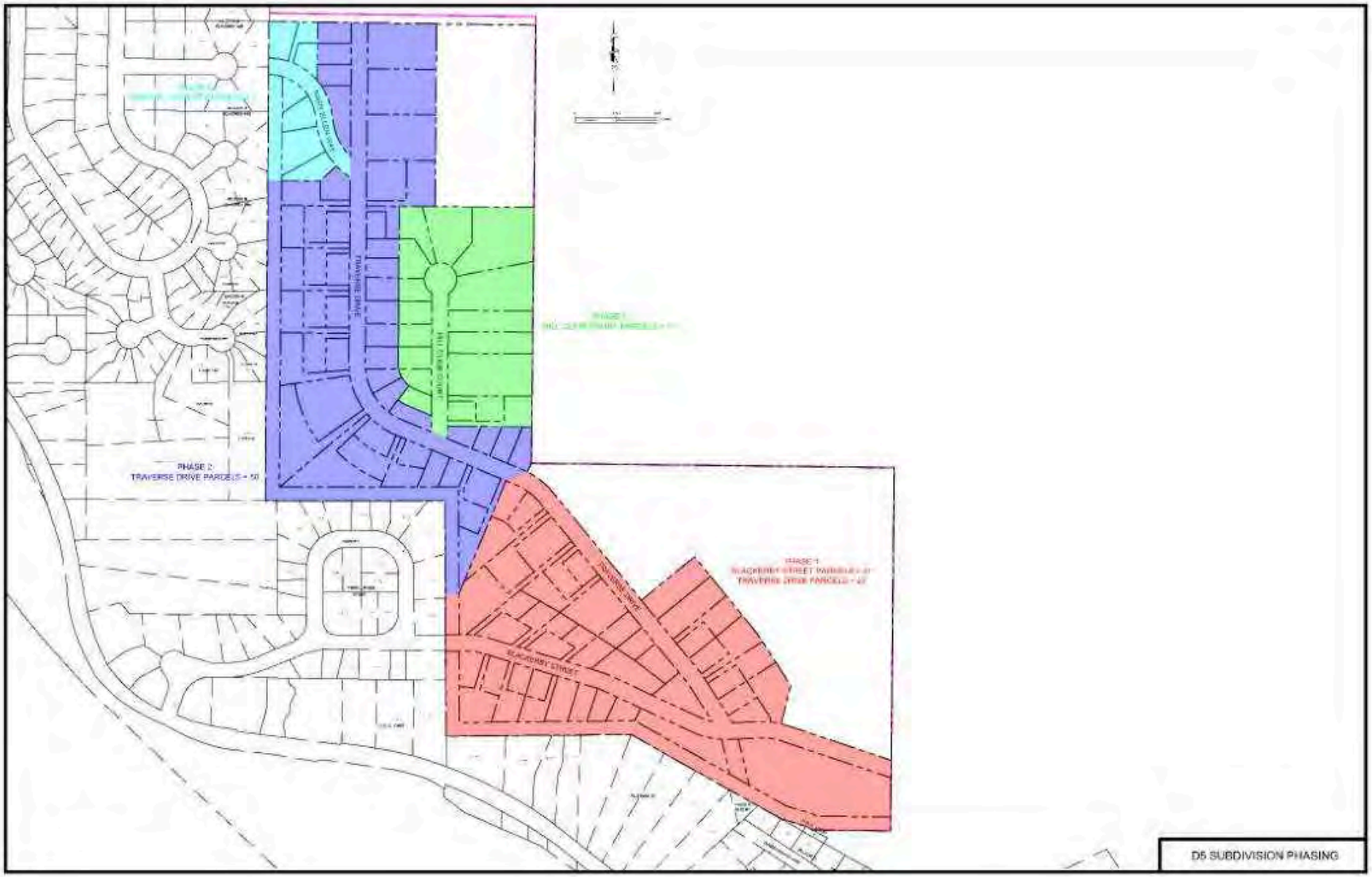


Figure 5 - D-5 Residential District Zoning Subdivision Phasing

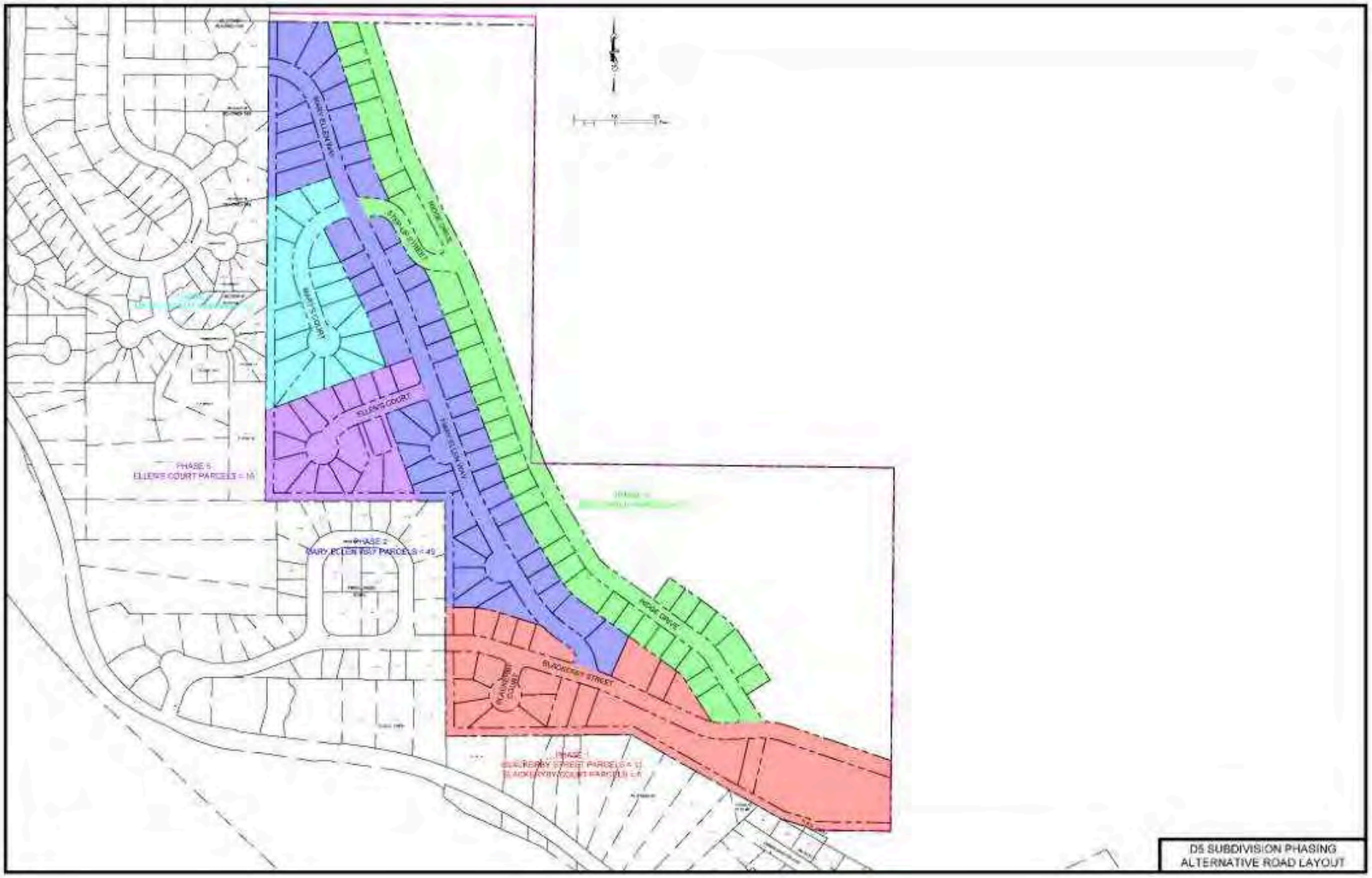


Figure 6 – Alternative Road Layout D-5 Residential District Zoning Subdivision Phasing

Appendix A – Geotechnical Engineering and Geologic Hazards

EMPRISE CONCEPTS

6 October 2025

Memorandum

Date:	6 October 2025
To:	Robert Colles, P.E. Victoria Colles AK Built Construction and Design
From:	Noah Kimmes, P.E., C.E.G., P.G. Emprise Concepts
Subject:	Alaska Department of Natural Resources – Blackerby Subdivision Development Geotechnical Engineering and Geologic Hazards

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- Attachment 1: Photo Exhibit
- Attachment 2: DGGS Shallow Landslide Susceptibility and Channelized Debris Flow Susceptibility Maps

INTRODUCTION

Emprise Concepts (Emprise) was contracted by AK Built Construction and Design (AK Built) to provide geotechnical engineering and geohazards assessment services for the purpose of creating a development plan for the Blackerby Subdivision in Juneau, Alaska. The Blackerby Subdivision is located on land owned by the Alaska Department of Natural Resources (DNR). DNR has issued the work order for the Blackerby Subdivision development study. The purpose of the subdivision development plan is to help the DNR understand the opportunities and constraints for creating a subdivision within Blackerby, including conceptual design options, a rough approximation of development costs, and evaluation of limiting factors.

This memorandum focuses on the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geologic hazards that may affect the site, and conclusions and recommendations for future work and site development. A photo exhibit is included with this memorandum as Attachment 1 and should be reviewed in conjunction with this document. Photos are referenced in the text of this document, where applicable.

SITE LOCATION AND GEOLOGIC SETTING

The Blackerby Subdivision area consists of approximately 82 acres in Juneau, Alaska located along the Gastineau Channel between Downtown Juneau and the Mendenhall Valley. Specifically, the Blackerby Subdivision is located between the Vanderbilt Hill neighborhood to the north and the Twin Lakes neighborhood to the south. A vicinity map of the project is shown on Figure 1, and a site map is shown on Figure 2. The subdivision area is composed of two rectangular shaped areas that intersect near the middle of the subdivision, as shown on Figure 2.

The majority of the subdivision area is sloped. The site generally slopes to the southwest. Slope angles are shallower in the southwestern portions of the subdivision area and increase to the northeast as the elevation increases. Slope angles are slightly steeper in the southern area of the subdivision than in the northern area. A slope angle map is shown on Figure 3.

The surficial geology of the site consists of glaciomarine deposits, mass wasting deposits, and minor amounts of alluvial deposits. The lower elevation portions of the site (below elevations of approximately 350 to 300 feet above sea level) are composed of the Holocene to Pleistocene aged First facies of the Gastineau Channel Formation. The First facies of the Gastineau Channel Formation is a gray to light-gray to greenish-gray, hard/dense, till-like, stony diamicton (a diamicton is a soil that is poorly sorted, contains a wide range of particle sizes, and is of marine origin). The First facies of the Gastineau Channel Formation is the primary member located within the subdivision area, but

minor amounts of the Third facies have been mapped within the southern portion of the subdivision area. The Third facies of the Gastineau Channel Formation is less dense and contains a more sand-sized dominant particle size when compared to the First facies. The First facies directly overlies bedrock, while the Third facies generally overlies the First facies, but may overly bedrock locally. The Gastineau Channel Formation is known to have occasional boulders up to 10-feet in size (Miller, 1973; Miller, 1975). Development and construction within the Blackerby Subdivision is anticipated to occur primarily within the First facies of the Gastineau Channel Formation.

The higher elevation portions of the site (above elevations of approximately 300 to 350 feet above seal level) are composed of recent (Holocene aged) talus. The talus is generally composed of angular gravel- to boulder- sized rock fragments that have fallen from the overlying rock slopes. The talus at the site is mapped as being "stabilized" due to being covered with trees and other vegetation and is thought to range in thickness between a few feet to more than 10 feet (Miller, 1975). A small, Holocene-aged alluvial fan is located at the southeast corner of the subdivision area, near the western end of Greenwood Ave. This unit is located within and adjacent to the bottom of a prominent channel fed from the slopes above the subdivision area. A surficial geologic map is shown on Figure 4.

The Bedrock geology of the site consists of metamorphic rocks of the Coast plutonic-metamorphic complex. The bedrock across much of the subdivision area is mapped as Phyllite of Late Cretaceous to Paleocene age. The phyllite is generally well foliated, dark gray, very fine to fine grained and weathers to a medium gray color. The slopes above the subdivision area, and a small area in the eastern corner of the subdivision, are mapped as chlorite schist, greenschist, and greenstone (Brew & Ford, 1985). A bedrock geologic map is shown on Figure 5.

AVAILABLE GEOTECHNICAL DATA AND SIMILAR DEVELOPMENTS

No geotechnical data or geotechnical engineering reports were available from publicly available sources as of the date of this memorandum. A public information request was submitted with the City and Borough of Juneau for any geotechnical information within the proposed Blackerby Subdivision area, and within adjacent developments. Unfortunately, this public information request did not yield any geotechnical information. The DNR Well Log Tracking System contains information for 5 wells drilled within 0.5 miles of the proposed subdivision, but these records contain limited geologic interpretations by the driller during well installation and no geotechnical data.

As discussed previously, the development and construction within the Blackerby Subdivision is anticipated to occur primarily within the First facies of the Gastineau Channel Formation. This surficial geologic unit (soil) is not unique to the Blackerby Subdivision area but rather is present across the Juneau and Douglas Island region, as shown on Figure 6. The eastern portion of the Twin Lakes neighborhood is constructed on this same soil unit, which is located adjacent to the northern portion of the proposed Blackerby Subdivision. The First facies of the Gastineau Channel Formation has been

built upon in Downtown Juneau, across Douglas Island, and along the northeastern shore of Auke Bay. Local contractors likely have experience building upon and working with this soil unit. They likely refer to this soil as "till" or "glacial till". Although outside of the scope of this study, interviews with local contractors may provide valuable information related to the behavior of this soil unit and any difficulties related to construction, drainage, short term stability, and long-term building and road performance. We also anticipate that there are many geotechnical boring logs and geotechnical reports, including geotechnical lab test data for this soil unit, which are not publicly available but may be obtained directly by the DNR.

SITE RECONNAISSANCE AND OBSERVATIONS

A site reconnaissance was performed by one geological engineer from Emprise Concepts, two personnel from AK Built, and one personnel from DNR on April 7th, 2025. The proposed Blackerby Subdivision area was investigated on foot by following existing trails and by traveling off-trail to observe terrain and geologic features identified by prior analysis of existing geologic maps and terrain (LiDAR) data. A summary of the site reconnaissance and significant observations is provided in the following discussion, with several references to photos included in the photo exhibit (Attachment 1). Locations of photos included in the photo exhibit are shown on Figure 7.

The proposed Blackerby Subdivision is heavily vegetated with large, old-growth trees, shrubs/bushes, devils club, and significant moss growth. Most of the trees observed during out site reconnaissance were straight and non-pistol butted (see Photos 1 and 2). One pistol butted tree was observed near the southeast portion of the subdivision (see Photo 3). Pistol butted trees can be an indicator of slope movement but can also be caused by other external forces such as snow creep. No major signs of shallow landslides (such as slumping, tension cracks, abundant pistol butted trees, or hummocky terrain) were observed during our site reconnaissance.

Several shallow stream channels with primarily coarse-grained (gravel to small boulder) streambeds were observed to cut through the subdivision, generally running from northeast to southwest (see Photos 4 and 5). Exposed soil was limited to underneath fallen trees or within the stream channels (See Photos 6 through 8). Exposed soil that was observed was primarily composed of loose, brown, silty, angular to subangular gravel with sand and cobbles. This soil appeared to be recent alluvial or debris flood deposits likely overlying the Gastineau Channel Formation that was mapped by others within the subdivision area (Miller, 1975).

The debris flood channel present to the east of Mary Ellen Way and within the northern limits of the subdivision area was deeply incised and contained abundant woody debris aligned with the stream channel (See Photos 9 through 12). A portion of the channel close to Mary Ellen Way where the channel becomes less incised was lined with sandbags at the time of the field reconnaissance. Approximately 400 vertical feet (from about 270 feet to 670 feet above sea level) of another significant

debris flood channel near the middle of the subdivision was investigated and mapped. This channel was observed to be relatively small and shallow at lower elevations (see Photos 4 and 5), broad and up to 6 feet deep at mid elevations (see Photos 13 and 14) and deeply incised and over 10 feet deep at upper elevations (see Photos 15 through 17). Many fallen trees and woody debris lined the banks of this channel. The stream bed was covered with cobbles and boulders up to 6 feet in maximum dimension and was dry to an elevation of about 600 feet at the time of our site reconnaissance. This channel showed signs of significant flow events that have transported material (both soil/rock and trees) downslope. Traditional debris flow deposits were not observed at the bottom of these channels but the channels suggest that debris floods (debris floods are generally more fluid-rich than debris flows and are initiated by mobilization of the stream bed by flowing water) occur during large precipitation events common to southeast Alaska.

A large channel mapped as an alluvial fan (Miller, 1975) was observed near the southern extent of the subdivision area (see Photos 18 and 19). This channel was the largest observed within the subdivision area, with a depth of up to 20 feet and width of over 30 feet at its top. The debris flood channel present above Wire Street, to the southeast of the south end of the subdivision, was similar to the debris flood channel observed within the middle of the subdivision. This channel was incised, had a coarse-grained stream bed, and numerous woody debris aligned with the stream channel (see Photos 20 and 21).

A small cut into soil was observed at a construction site within the Vanderbilt Hills neighborhood. The surficial geology in this area is mapped as the First facies of the Gastineau Channel Formation (Miller, 1975). Our observations of this soil are consistent with the description provided by Miller (1973). Based solely upon visual observation, this soil appeared to be adequate for use as foundation soils for residential structures typically founded on spread footings, and as subgrade soils for residential roadways.

GEOLOGIC HAZARDS ANALYSIS

A geologic hazard is an adverse geologic condition capable of causing damage or loss of property or life (DGGS, n.d.). Geologic hazards are common in Alaska due to the often mountainous and steep ground, complex geologic environment, high seismicity, and dynamic weather and climate. Common geologic hazards include landslides, debris flows, rock fall, and other mass wasting/slope instability events, earthquakes, tsunamis, flooding, erosion, avalanches, volcanism, and thawing permafrost. Juneau and much of Southeast Alaska are at risk from several of these geologic hazards due to most of the developable ground located between steep mountains and the ocean, and large storms with high intensity precipitation. The main geologic hazards that impose a risk to the Blackerby Subdivision are slope instability (primarily precipitation-driven debris flows and debris floods) and earthquakes.

A detailed geologic hazard analysis is outside of the scope of this study, but we believe that a thorough, preliminary-level debris flow/debris flood analysis was performed to aid in assessing feasibility and determining conceptual design options.

Juneau is also subject to significant earthquakes from the Queen Charlotte-Fairweather fault which runs northwest-southeast to the west of Juneau. This fault system has generated several large-magnitude earthquakes, including a magnitude 8.1 in 1949, a magnitude 7.9 in 1958, and a magnitude 7.6 in 1972 (City and Borough of Juneau, n.d.). Large magnitude earthquakes have the potential to create seismically induced slope failures. A detailed seismic analysis, including seismic slope stability analysis of the slopes above (to the northeast of) the proposed Blackerby Subdivision, is outside of the scope of this study. Much of Juneau is exposed to hazards from snow avalanches during the winter and spring. We did not observe indications of avalanche activity within the proposed subdevelopment area during our site visit and did not see any prominent avalanche paths during review of satellite imagery of the slopes above the proposed subdevelopment.

Previous Analysis by Others

The DNR's Department of Geological and Geophysical Surveys (DGGS) performed a site-specific slope stability analysis for the Blackerby Subdivision area between 2023 and 2024. This analysis produced a shallow-landslide susceptibility map and a channelized debris flow susceptibility map (Nicolazzo and Larsen, 2025). These susceptibility maps are included in Attachment 2 of this memorandum. DGGS used a smaller proposed development area than that provided in the scope of work for the Blackerby Subdivision development study discussed in this memo. The smaller development area can be seen on the maps in Attachment 2.

DGGS utilized shallow landslide susceptibility protocols created by Burns and others (2012) that approximates a factor of safety (FS) for each soil type and slope angle. DGGS found that much of the northern portion of the proposed subdivision, and approximately half of the southern portion of the proposed subdivision have generally low to moderate susceptibility to shallow landslides, with moderate susceptibility defined as having a FS < 1.5 but > 1.25. DGGS state that they believe their approach used to assess shallow landslide susceptibility is conservative.

DGGS utilized channelized debris flow susceptibility mapping protocols created by Burns and others (2022) that approximates debris flow inundation potential based upon slope characteristics and the terrain's proximity to streams/channels. DGGS found that the proposed development area is unlikely to be inundated by a channelized debris flow.

Debris Flood Modeling

Observations made during our site reconnaissance suggest that debris flood deposits are present within the proposed development area. Additionally, we understand that during a significant precipitation event in early December 2020, debris floods reached and inundated Wire Street and Mary

Ellen Way, to the southeast and northwest of the proposed Blackerby Subdivision, respectively. Debris floods form in similar environments to debris flows, but differ in their mechanism of initiation, and generally in their bulk density. While debris flows are a gravity-driven mass movement (i.e.: initiated by failure of slope/portion of a slope), debris floods are initiated by fluid flow driven mobilization of a streambed. Church and Jakob (2020) define a debris flood as, "floods during which the entire bed, barring the very largest clasts, becomes mobile for at least a few minutes and over a length scale of at least 10 times the channel width." Debris floods, especially those initiated by large precipitation events, are more fluid rich than debris flows and have a lower bulk density. Debris floods are common in steep, mountainous stream drainages. To estimate the runout extent of debris floods within the proposed Blackerby Subdivision, probabilistic runout modeling was performed using the software Flow-R (v2.1.0). For details on probabilistic runout modeling with Flow-R, refer to the paper by Horton, et. al. (2013), included in the references of this memo.

Debris Flood Modeling Methodology

Debris flood runout modeling with Flow-R used the following procedure:

1. A Digital Elevation Model (DEM) was obtained from publicly available DGGS LiDAR data (Zechmann, et. al., 2023) and was resampled on a 2-meter grid.
2. Debris flood source areas were determined by performing a terrain-based flow accumulation analysis. A flow accumulation analysis determines the number of upstream cells of a DEM that flow into a downstream cell. A lower cutoff of 1,500 was assigned to the flow accumulation model for selection of debris flood source areas (in other words, 1,500 upstream cells must flow into a downstream cell for it to be considered a debris flood source area). The lower cutoff of 1,500 upstream cells was selected through trial and error to only select source areas within the major upslope drainages/channels. Source areas were further refined by being limited to areas where slope angles are greater than 25-degrees.
3. Flow-R runout model parameters were calibrated by our understanding of the runout extent of the debris flood at Wire Street in December 2022. Flow-R *susceptibility sum* results were normalized by min-max normalization between a scale of 0 to 100, and values less than 1 removed. This method of processing and presenting the Flow-R model results was designed to remove areas with very low, model-determined, debris flood susceptibility. A map showing the Wire Street debris flood model is shown on Figure 8. The following parameters were determined to be the best fit for the Wire Street debris flood:
    - x (flow direction algorithm exponent) = 4
    - dh (flow direction algorithm central cell height modifier) = 0.25 meters
    - persistence function weights = gamma
    - minimum travel angle = 10 degrees
    - velocity limitation = 15 meters/second

4. Debris flood runout modeling was performed for all source areas that could impact the proposed Blackerby Subdivision using the Flow-R model parameters determined in step 3. Flow-R *susceptibility sum* results were normalized in the same manner described in step 3.

Debris Flood Modeling Results

Debris Flood modeling results for the Blackerby Subdivision are shown on Figure 9. Debris floods that impact the subdivision originate within the steep gullies and drainages upslope (to the northeast) of the subdivision boundary (shown by the green source areas on Figure 9). As the debris floods travel downslope, the areas that are susceptible to inundation from debris floods are generally constrained to the shallow channels that exist within the subdivision area. Large debris flood events have a minor potential to overload these shallow channels and fan out on the terrain adjacent to the channels, as shown by the areas designated *Very Low Susceptibility* in Figure 9, but this portion of the debris flood is anticipated to be primarily water with lesser debris that quickly loses height and energy as it spreads outside of the channel.

CONCLUSIONS AND RECOMMENDATIONS

This memorandum summarizes the geotechnical and geohazard conditions and constraints affecting the development of the Blackerby Subdivision. Specifically, this memorandum provides a discussion of the site location and geologic setting, observations and discussion related to a site reconnaissance visit performed in April 2025, a discussion of geotechnically-similar developments in the region, and a discussion of geologic hazards that may affect the site.

Based upon the analyses performed as part of this study, review of analyses by others, and observations made during our site reconnaissance, we have developed a revised Blackerby Subdivision boundary with our recommended extents, as shown on Figure 10. This recommended Blackerby Subdivision Area has been selected to:

- Avoid consistent slopes that are steeper than 17 degrees. This slope angle is consistent with DGGS's shallow landslide susceptibility slope angle threshold for a FS > 1.5 in the Gastineau Channel Formation.
- Avoid the majority of the original Blackerby Subdivision area where surficial geology is mapped as talus. The talus at the site is generally constrained to slopes steeper than 17 degrees. Talus can lead to difficult construction and is an indicator of historical mass wasting (likely rockfall) events.

The recommended Blackerby Subdivision Area is very similar to the area used by DGGS in the susceptibility mapping (see maps in Attachment 2). Figure 10 also shows the locations within the recommended Blackerby Subdivision area that are susceptible to debris floods. Many of these

locations can be managed with proper design of drainage structures within the subdivision. We recommend that a hydraulics analysis be performed to design proper drainage for the subdivision. The hydraulics analysis should consider current design precipitation events, and it is recommended that the analysis consider projected maximum (i.e.: 100 year event or similar) precipitation events for the anticipated design life of the subdivision's infrastructure. Locating residential plots where significant channels are present, such as the large channel present in the southeastern portion of the subdivision area, should be avoided.

Based upon our observations and understanding of the soils at the site (primarily the First facies of the Gastineau Channel Formation), we believe that this soil is generally suitable as foundation soils for residential structures typically founded on spread footings, and residential roadways. A geotechnical site investigation should be performed, and geotechnical engineering report should be prepared, prior to design of structures, roadways, or utilities within the Blackerby Subdivision.

We appreciate this opportunity to provide professional services on this important project. If you have any questions or require additional information regarding this memo, please contact Noah Kimmes at (315) 559-2722.

Sincerely,



Noah Kimmes, P.E., C.E.G., P.G.
Project Geological Engineer

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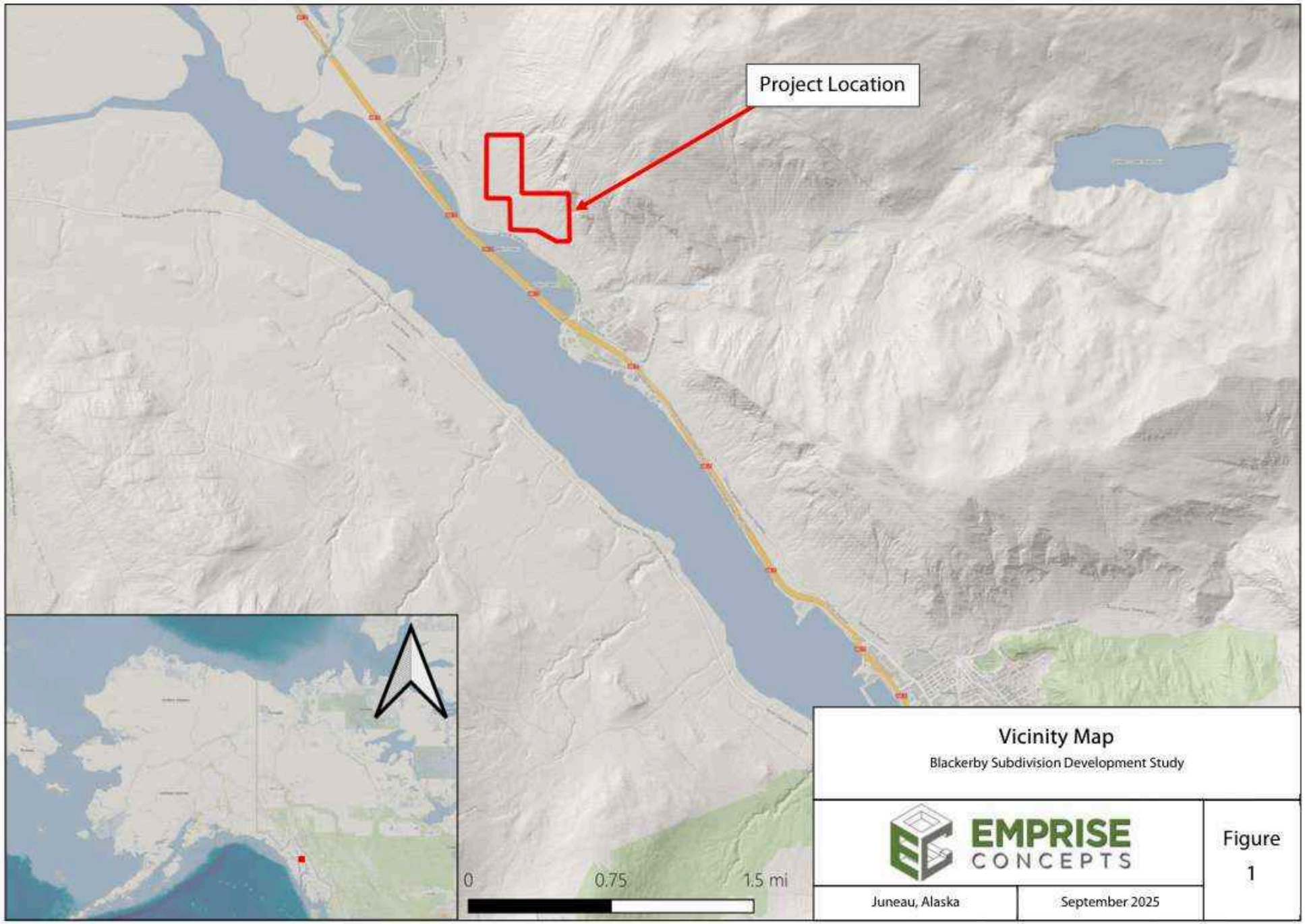
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FIGURES



Vicinity Map

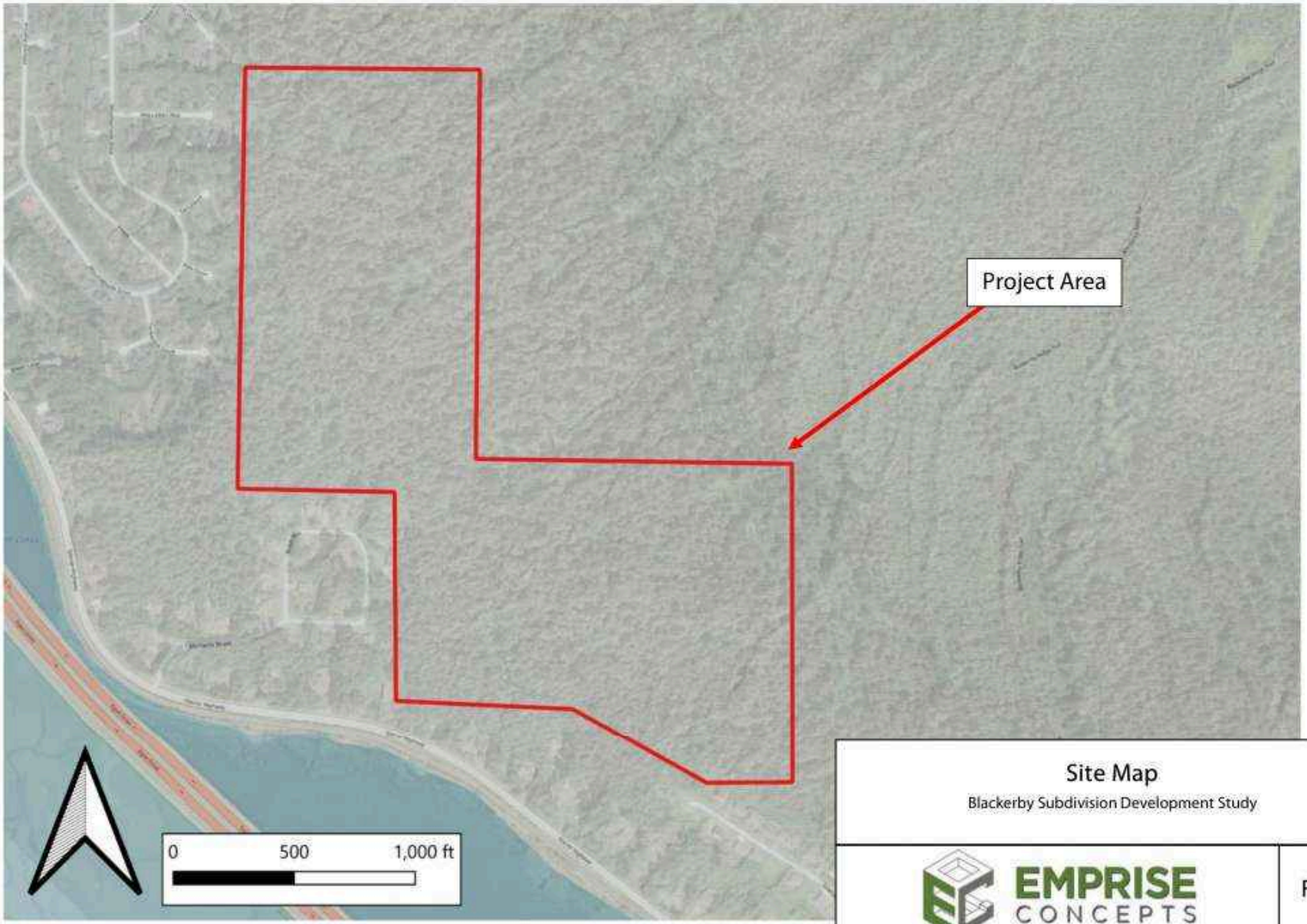
Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska

September 2025

Figure 1



Site Map

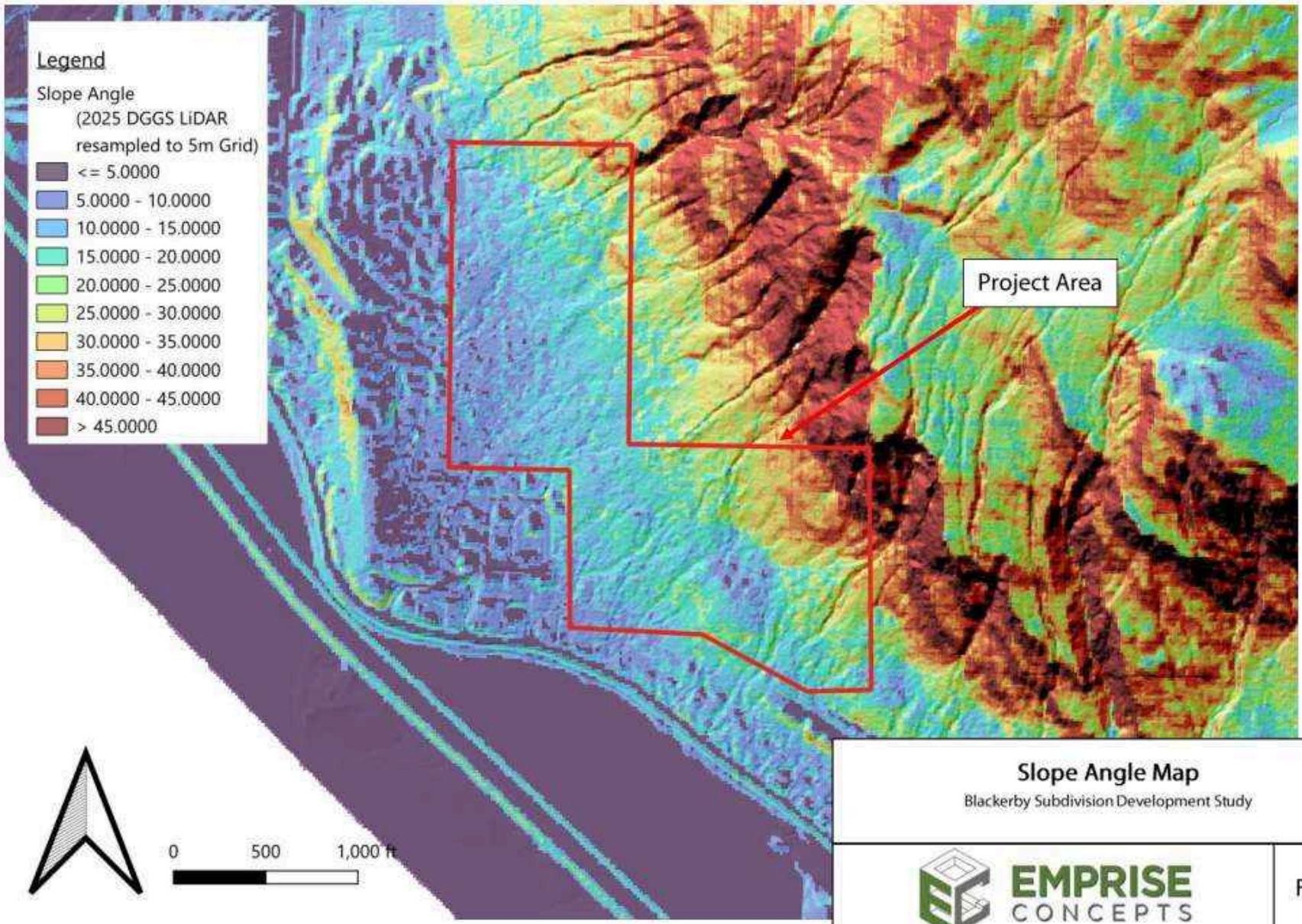
Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska

September 2025

Figure 2



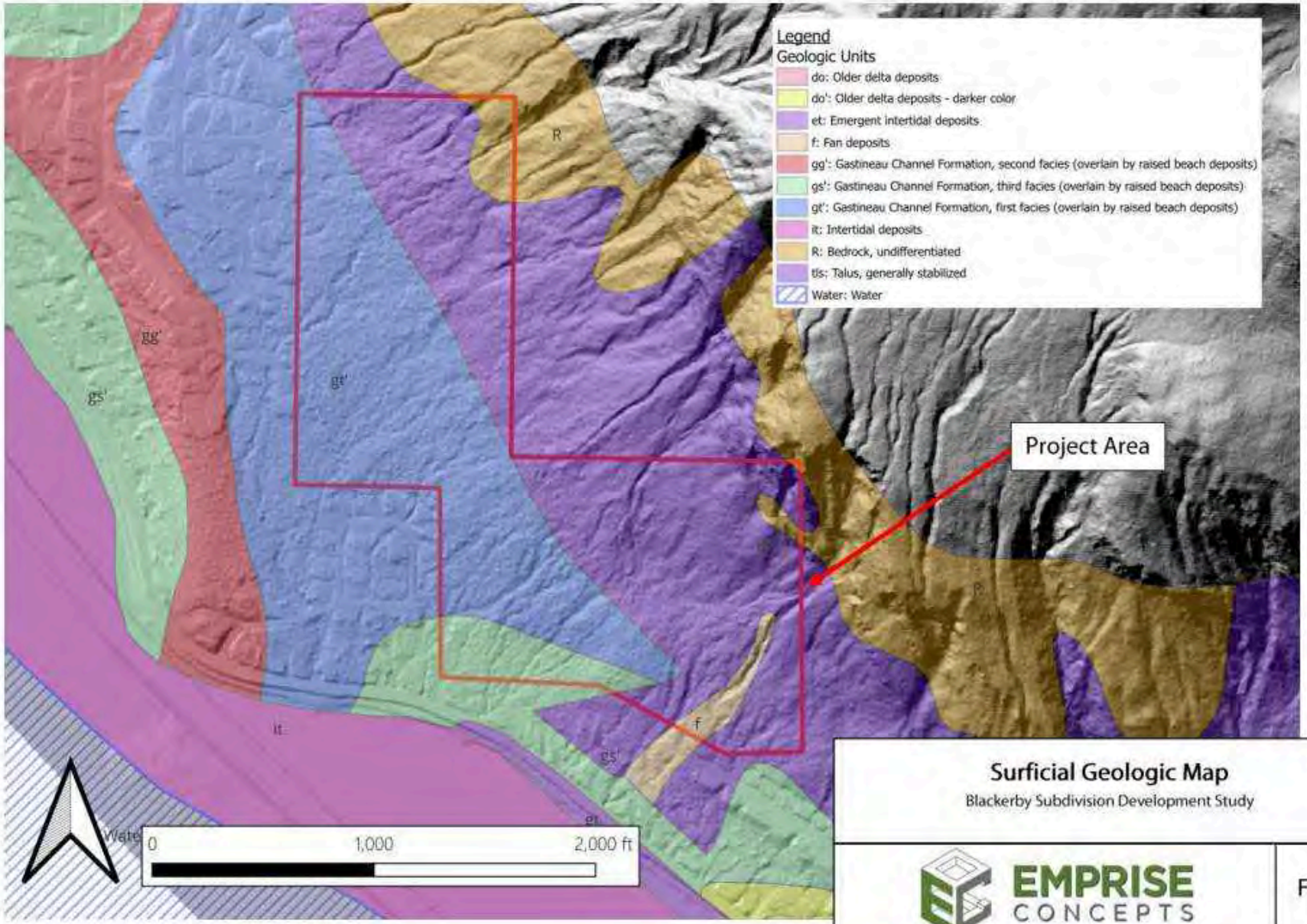
Slope Angle Map

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | August 2025

Figure 3



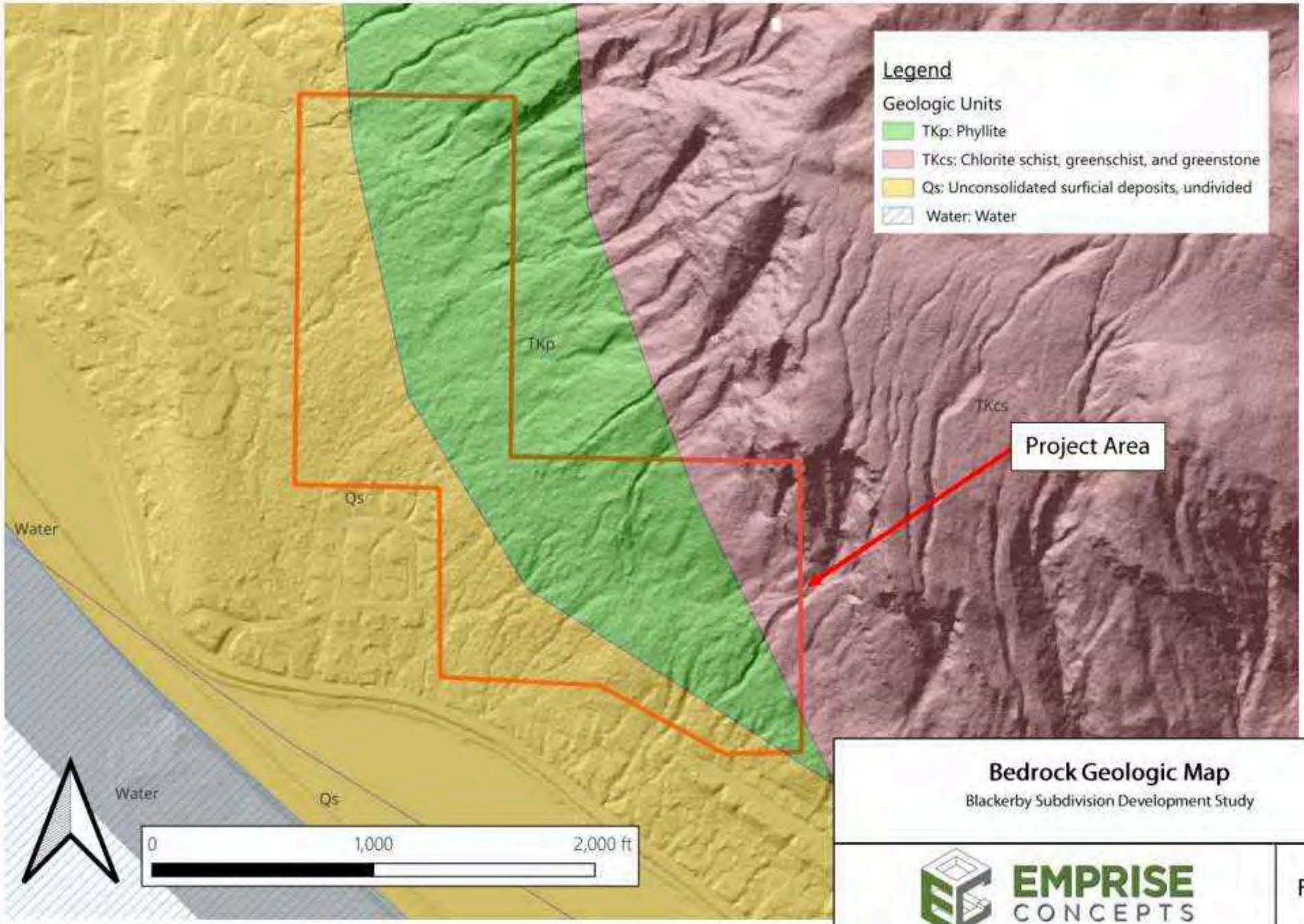
Surficial Geologic Map

Blackerby Subdivision Development Study

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Juneau, Alaska | August 2025

Figure 4



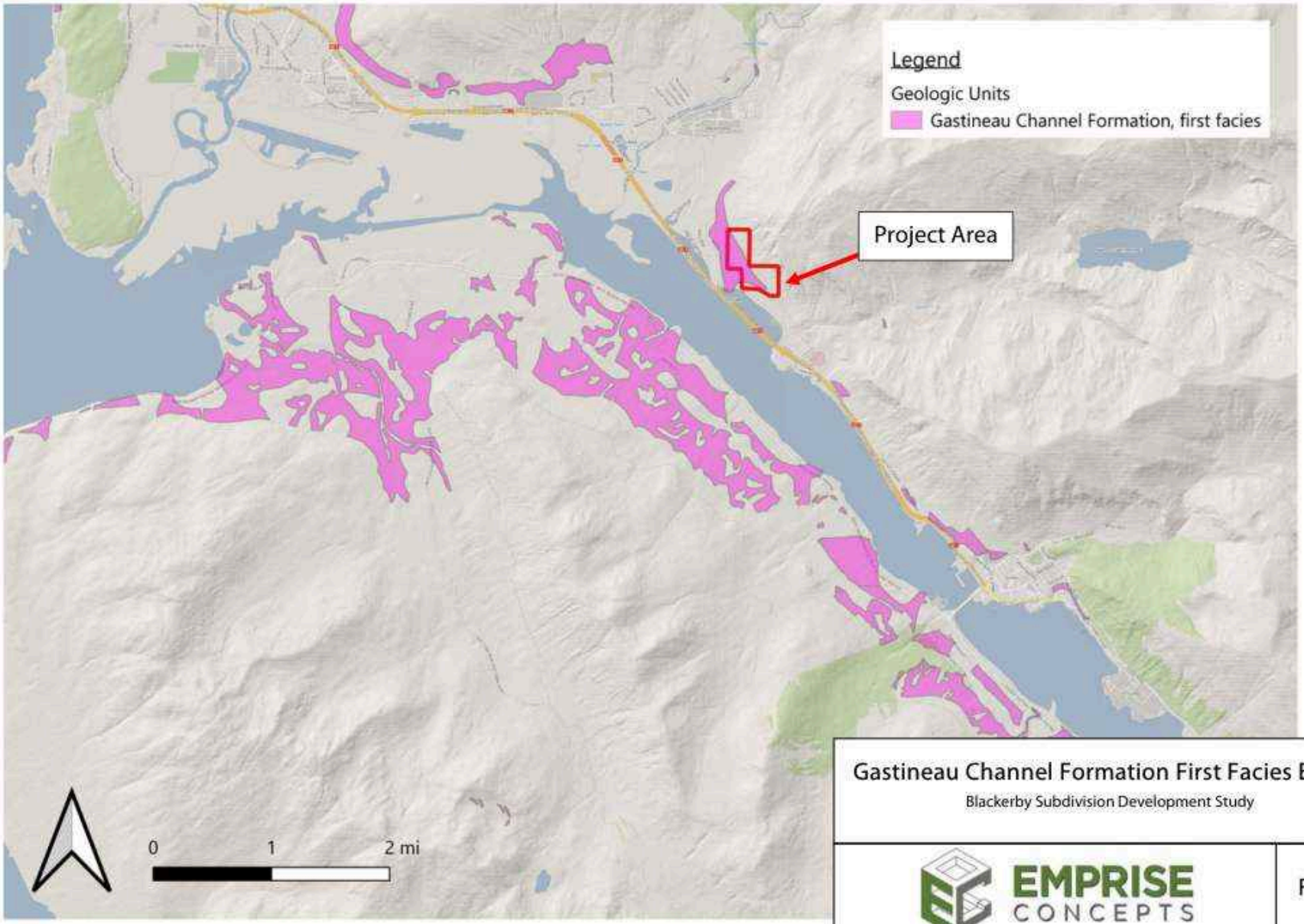
Bedrock Geologic Map

Blackerby Subdivision Development Study

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Figure 5



Gastineau Channel Formation First Facies Extent

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 6

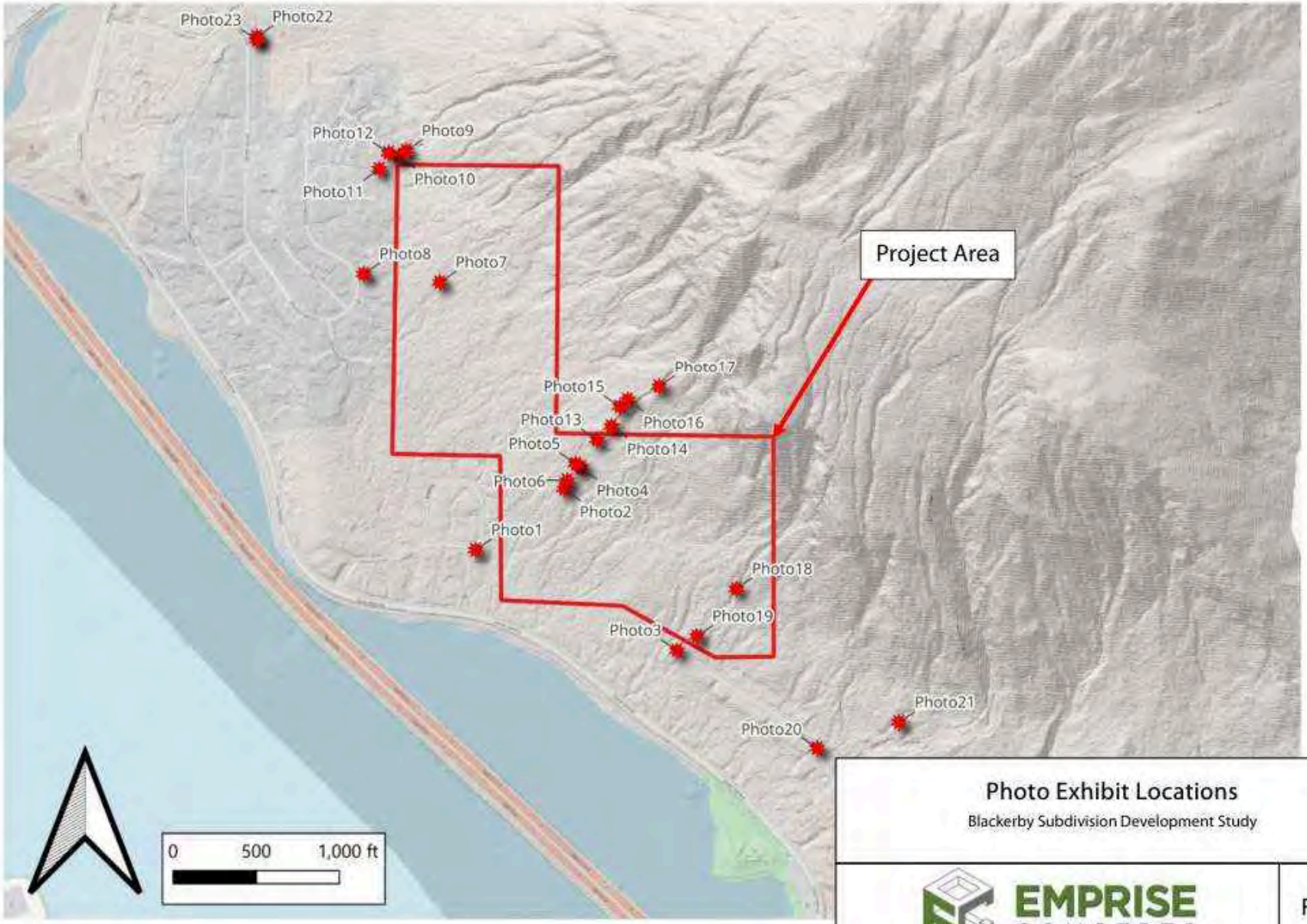


Photo Exhibit Locations

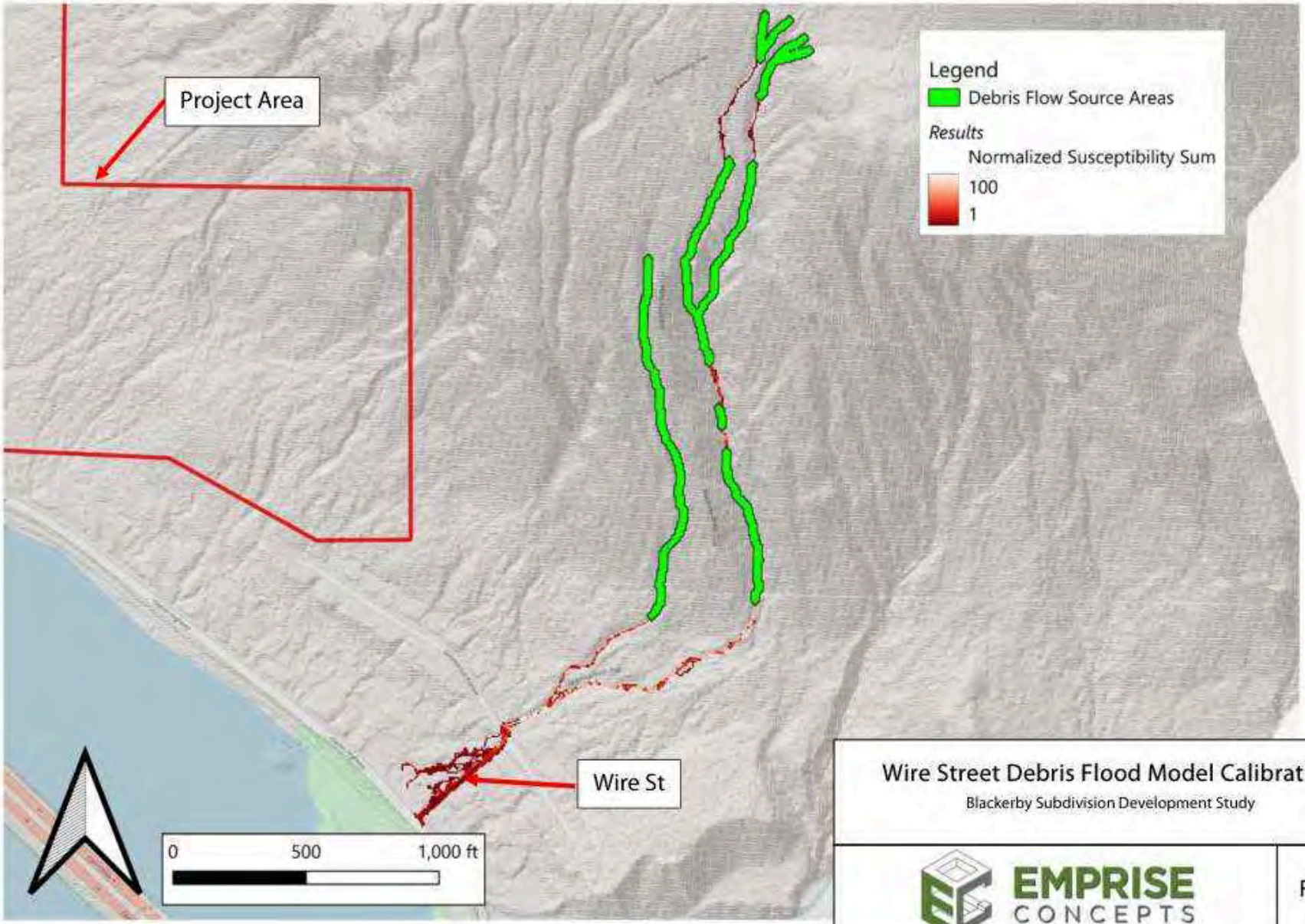
Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska

September 2025

Figure 7



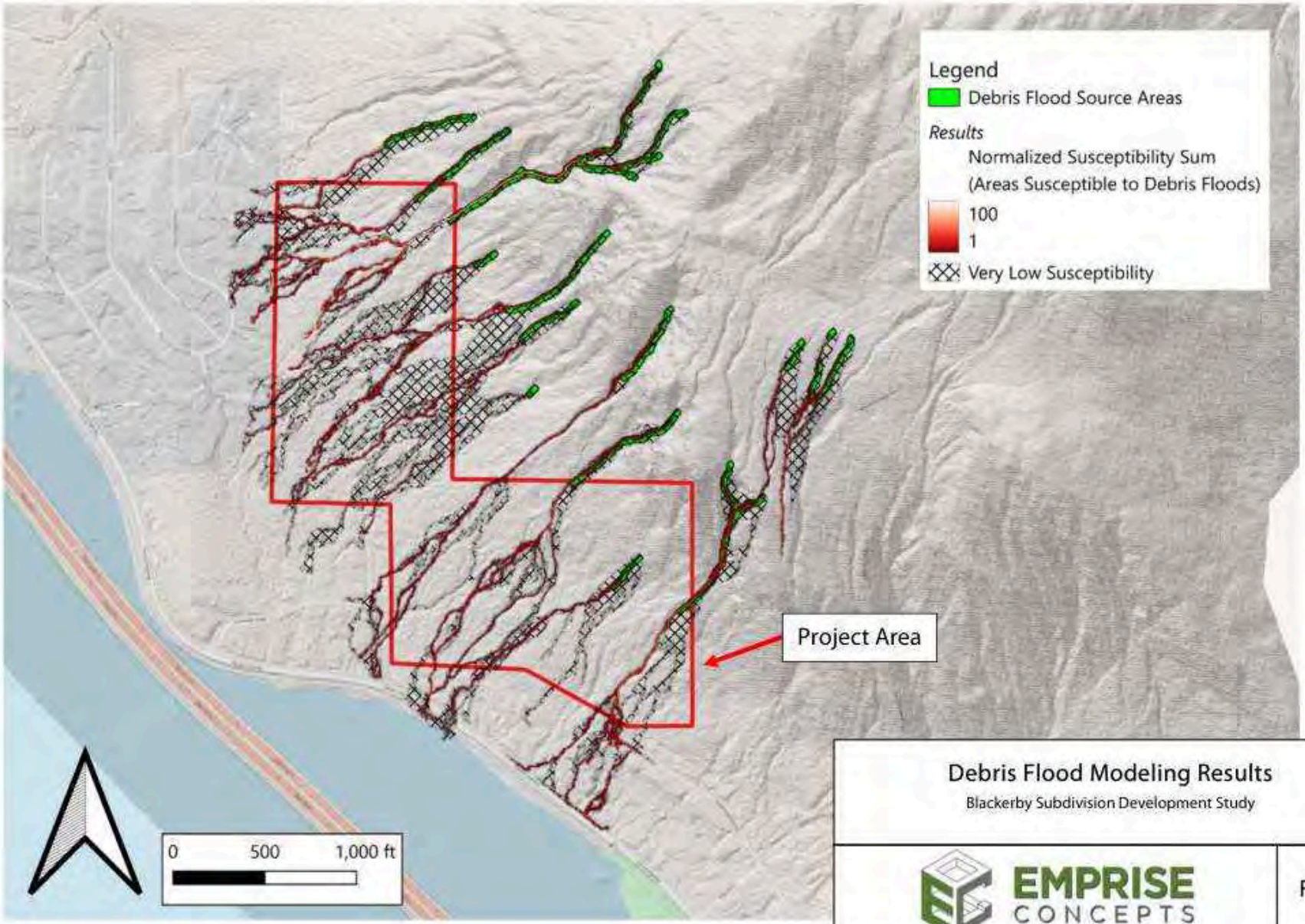
Wire Street Debris Flood Model Calibration

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 8



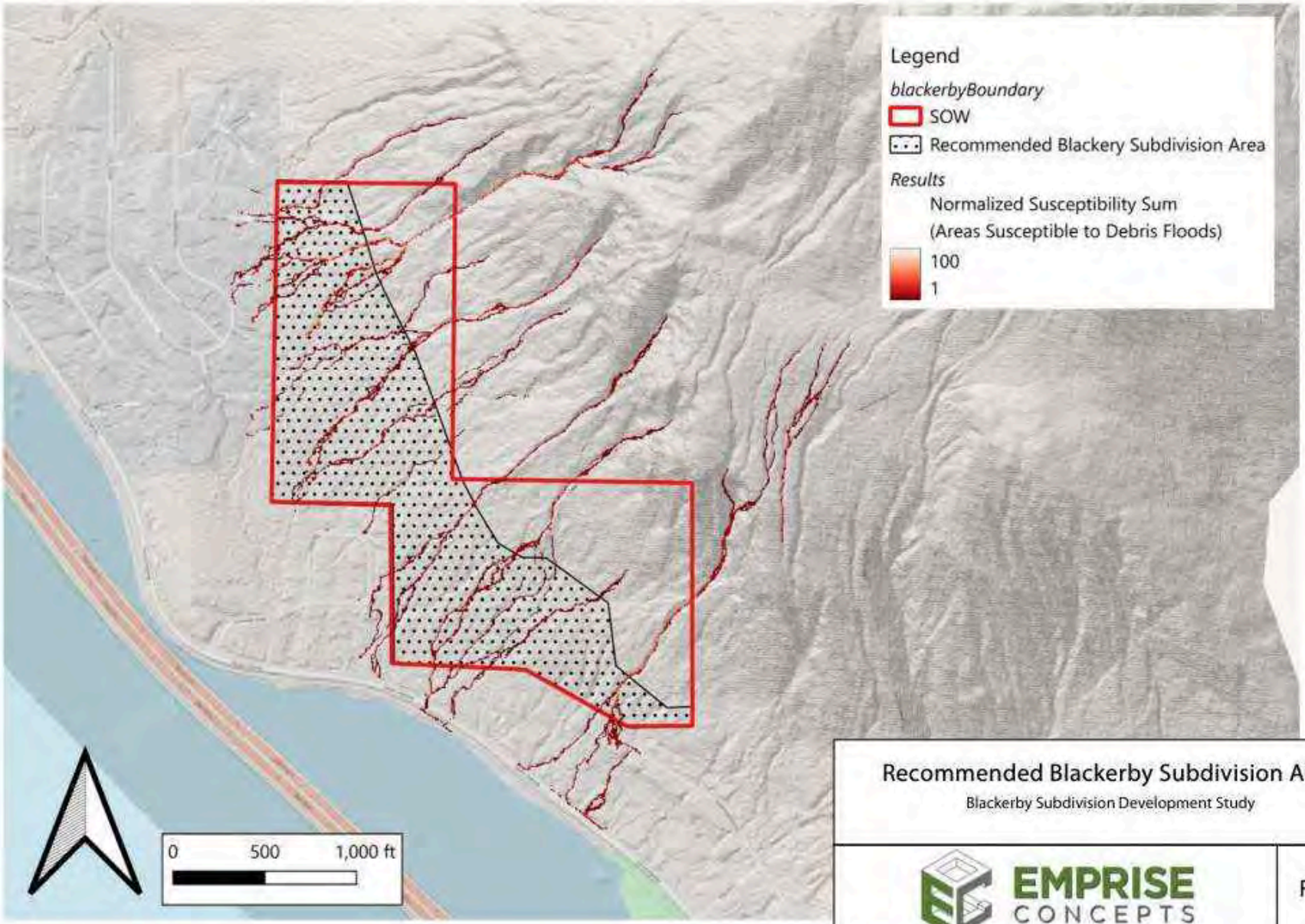
Debris Flood Modeling Results

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 9



Recommended Blackerby Subdivision Area

Blackerby Subdivision Development Study

EMPRISE CONCEPTS

Juneau, Alaska | September 2025

Figure 10

ATTACHMENT 1 – PHOTO EXHIBIT

EMPRISE CONCEPTS

Photo Exhibit

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 1 Date: 4/7/2025 Description: Trees growing on the lower elevation portion of the proposed development area. Trees are generally straight, large, and not pistol-butted (1 of 2).	
Photograph # 2 Date: 4/7/2025 Description: Trees growing on the lower elevation portion of the proposed development area. Trees are generally straight, large, and not pistol-butted (2 of 2).	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 3 Date: 4/7/2025 Description: Pistol-butted tree observed near the south-end of the site.	
Photograph # 4 Date: 4/7/2025 Description: Bottom of debris channel near middle of the proposed subdivision, looking down-channel (southwest).	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 5 Date: 4/7/2025 Description: Bottom of debris channel near middle of the proposed subdivision, looking up-channel (northeast).	
Photograph # 6 Date: 4/7/2025 Description: Small soil exposure near bottom of debris channel at middle of the proposed subdivision. Soil is: gray-tan, silty GRAVEL with sand to silty SAND with gravel, with cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM to SM).	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 7

Date: 4/7/2025

Description:

Soil exposure at bank of channel near northern portion of proposed subdivision. Soil is: brown, silty GRAVEL with sand and cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM)



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 8

Date: 4/7/2025

Description:

Close-up view of the soil exposure shown on Photograph #7. Soil is: brown, silty GRAVEL with sand and cobbles, trace to some clay, gravel and cobbles are angular to sub-angular. (GM)



EMPRISE CONCEPTS

Photographic Record

Client: AK Built | Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 9 Date: 4/7/2025 Description: Bottom of the Mary Ellen Way debris flow/flood channel that inundated Mary Ellen Way in December 2020, looking down-channel (south to southwest).	
Photograph # 10 Date: 4/7/2025 Description: Bottom of the Mary Ellen Way debris flow/flood channel that inundated Mary Ellen Way in December 2020, looking up-channel (northeast). Note the numerous trees/woody debris present within the channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built | Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 11 Date: 4/7/2025 Description: Woody debris present within the bottom of the Mary Ellen Way debris flow/flood channel.	
Photograph # 12 Date: 4/7/2025 Description: Woody debris present within the bottom of the Mary Ellen Way debris flow/flood channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 13 Date: 4/7/2025 Description: Mid-slope portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Debris channel is full of platy bedrock fragments up to 2 feet in maximum dimension and woody debris.	
Photograph # 14 Date: 4/7/2025 Description: Mid-slope portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Note tree with semi-intact root wad stuck in channel.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built | Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 15

Date: 4/7/2025

Description:

Upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Channel becomes more incised further up slope. Boulders and cobbles line the bottom of the channel. Large woody debris is present within the sidewalls of the channel oriented with the direction of flow.



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

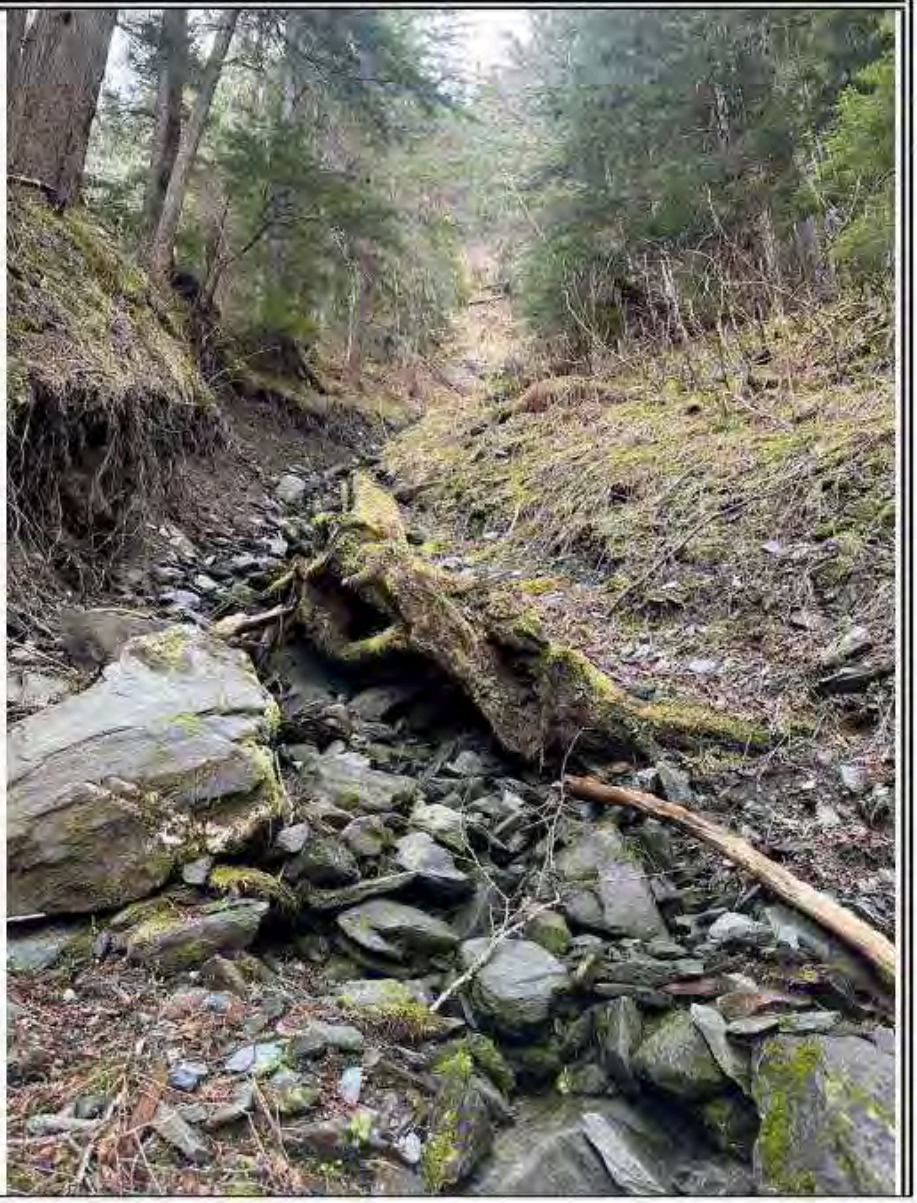
Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 16

Date: 4/7/2025

Description:

Upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Note undercut channel bank of left side of photo, large boulders within channel, and woody debris.



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 17

Date: 4/7/2025

Description:

Large boulder within upper portion of debris channel near middle of the proposed subdivision, looking up-channel (northeast). Channel steepens and widens into large, funnel/wedge shaped feature just up-channel of this photo.



EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 18 Date: 4/7/2025 Description: Debris channel at the south end of the proposed subdivision, looking down-channel (southwest). This channel is mapped as an alluvial fan deposit on the surficial geologic map shown on Figure 4.	
Photograph # 19 Date: 4/7/2025 Description: Debris channel at the south end of the proposed subdivision, looking down-channel (southwest). This channel is mapped as an alluvial fan deposit on the surficial geologic map shown on Figure 4.	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built | Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

Photograph # 20 Date: 4/7/2025 Description: Bottom of one of the Wire Street debris flow/flood channel that inundated Wire Street and the Twin Lakes Playground in December 2020, looking up-channel (northeast). Note the numerous trees/woody debris present within the channel.	
Photograph # 21 Date: 4/7/2025 Description: Mid-slope portion of one of the Wire Street debris flow/flood channel that inundated Wire Street and the Twin Lakes Playground in December 2020, looking up-channel (northeast).	

EMPRISE CONCEPTS

Photographic Record

Client: AK Built Project Number: 225004

Site Name: AKDNR Blackerby Subdivision Development Study

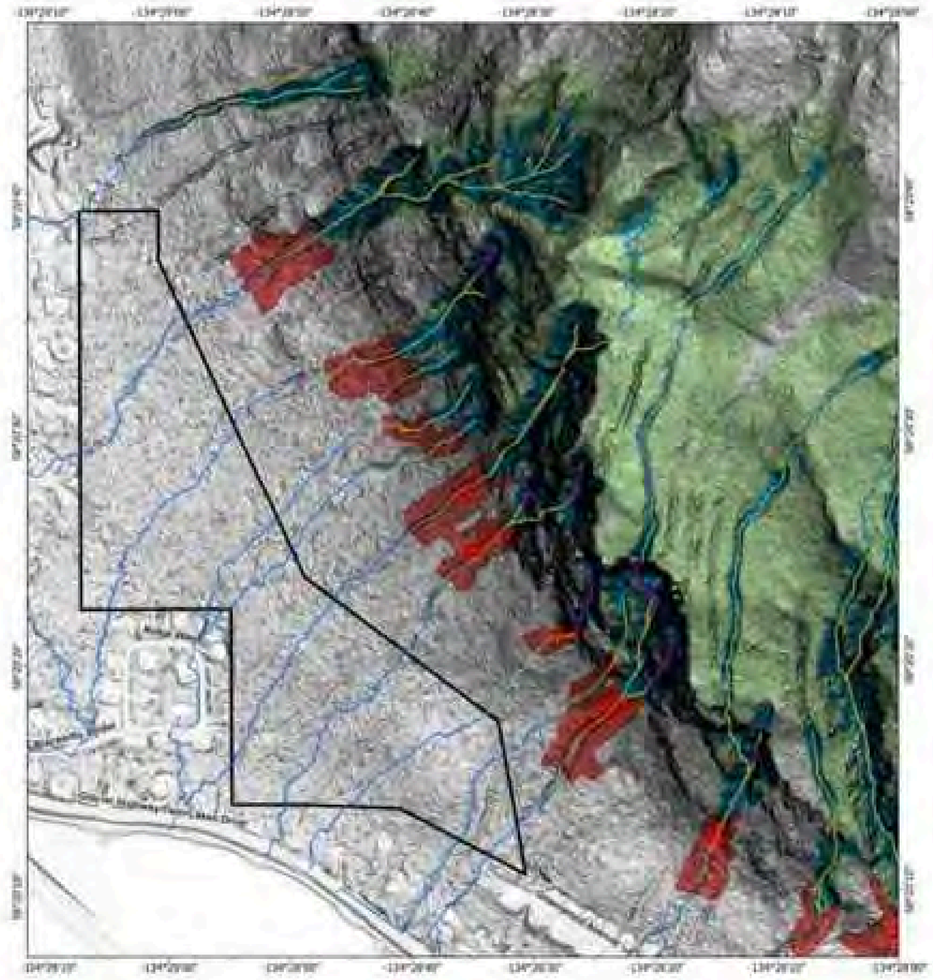
Photograph # 22 Date: 4/7/2025 Description: Soil cut slope/grading in the Vanderbilt Hill neighborhood at the north end of Hillcrest Avenue. The soil in this area is mapped as the First facies of the Gastineau Channel Formation.	
Photograph # 23 Date: 4/7/2025 Description: Soil cut slope/grading in the Vanderbilt Hill neighborhood at the north end of Hillcrest Avenue. The soil in this area is mapped as the First facies of the Gastineau Channel Formation.	

ATTACHMENT 2 – DGGS SHALLOW LANDSLIDE SUSCEPTIBILITY AND CHANNELIZED DEBRIS FLOW SUSCEPTIBILITY MAPS

ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Preliminary Interpretive Report 2024-7
Nicolazzo and Larsen, 2025
SHEET 1 OF 1
Explanatory report accompanies map
http://doi.org/10.14509/31275





Shallow Landslide Susceptibility



ROTATIONAL LANDSLIDE | TRANSLATIONAL LANDSLIDE | ROCKFALL | ROCK TOPPLE | DEBRIS FLOW

Illustrations courtesy of Highland, 2004.

Channelized Debris Flow Susceptibility

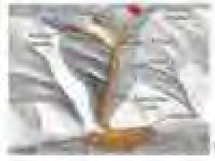


Illustration adapted from Hungr and others, 2005.



Location of Map Area

Mass Movement Potential at Blackerby Land Parcel, Juneau, Alaska

By
J.A. Nicolazzo and M.C. Larsen
2025

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Affiliations:
- Alaska Division of Geological & Geophysical Surveys, 3354 College Rd, Fairbanks, AK 99709

Basemap hillshade raster derived from:
Nicolazzo, J.A. and others (2025)
Projection:
Universal Transverse Mercator Zone 8N
Datum:
North American Datum of 1983

Field investigation by:
M.C. Larsen, J.A. Nicolazzo (2024)
GIS raster layers created by:
J.A. Nicolazzo, M.C. Larsen (2025)
Cartography by:
J.A. Nicolazzo (2025)
Cartographic review by:
A.R. Mesdjian (2025)

EXPLANATION

The Shallow Landslide Susceptibility map represents assessment of a first flows of slope materials (soils and bedrock) mapped by Ford and Bove, 1975) that have a shallow failure plane. Movement types may include slumps, translational slides, earth flows, and complex combinations of these types. This map was prepared following protocols created by Burns and others (2012) and is based on the categorical factors of safety (FOS) by cross soil type and slope angle. FOS calculations are assigned input values based on site field judgment and with a conservative approach.

The Channelized Debris Flow Susceptibility map delimits confined debris flow initiation (influence, transportation potential) by elevation, and the modeled extents of deposits. These zones were considered following protocols created by Burns and others (2012) and are based on slope characteristics and the proximity to elevation. Hydrological flood magnitudes are not included in the analyses. Because flows are not mapped in these flows in the area, the map is based on my assumed "typical" event. The "extreme" event is scaled up from the assumed typical event.

The susceptibility maps are intended to provide users with relative hazard information regarding possible slope movements in the area, to guide regional and site-specific investigations for future development, and to assist in regional planning. They are not intended to replace site-specific engineering analyses.

The susceptibility maps are not regulatory. Revisions can happen when new data or other information regarding factors that affect landslide and debris flow susceptibility are acquired or when historic movements occur. It is possible that areas susceptible to landslides or debris flows were not identified on these maps.

SHALLOW LANDSLIDE SUSCEPTIBILITY MAP

SUSCEPTIBILITY

- MAJOR CONTRIBUTING BASIN
- PARCEL
- HCRP hardwood forest flow ridges
- HIGH: FOS less than 1.25
- MODERATE: FOS 1.25 to < 1.5
- LOW: FOS 1.5 to 2.5 and greater

CHANNELIZED DEBRIS FLOW SUSCEPTIBILITY MAP

INITIATION POTENTIAL	TRANSPORT POTENTIAL	INUNDATION
HIGH	HIGH	EXTREME EVENT
MODERATE	MODERATE	TYPICAL EVENT
LOW	LOW	
	VERY LOW TO NONE	

LIMITATIONS

The Shallow Landslide Susceptibility and Channelized Debris Flow Susceptibility maps presented here were developed using input from many sources. Several limitations are worth noting and understood that these hazard maps are designed for regional guidelines and should not be used as an alternative to site-specific studies.

- The susceptibility maps presented here are heavily based on lidar data. Lidar-based mapping is a "snapshot" view of the landscape at the time the lidar dataset was collected and does not represent changes that may have occurred after it was collected. Colonization of lidar collection and processing also apply to these maps.
- Due to the observing equipment error or possible aerial imagery, limited GIS verification, and reliance on lidar-based mapping, some landslides and debris flow deposits may have been misidentified or not mapped. Missing may change as new information becomes available and as new landslides and debris flows occur.
- The Shallow Landslide Susceptibility Map was based on a calculated factor of safety, which incorporates previously mapped soil types and limited field data. Depth to failure depth to groundwater, root and engineering properties were assumed based on site land judgment and with a conservative approach; however, local conditions may vary significantly from the values used to make this map.
- Because there are no mapped debris flows in the area, the Channelized Debris Flow Susceptibility map is based on an assumed "typical" event size. Any flows not represented are actual, historical events that occurred in the area. The "extreme" event is scaled up from the assumed typical event.

REFERENCES CITED

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Burns, W.J., Hofer, I.P., and Mickelson, K.A., 2012, Protocol for shallow landslide susceptibility mapping: Oregon Department of Geology and Mineral Industries Special Paper 45, 32 p. https://pubs.oregon.gov/dogami/sp/SP-45.pdf

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Jacobsen, J.M., Larsen, M.C., and Wikstrom Jones, K.M., 2024, Lidar-derived elevation data for Blackerby parcel, Juneau, Southeast, Alaska, collected June 12, 2023: Alaska Division of Geological & Geophysical Surveys Raw Data File 2024-9, 4p. https://doi.org/10.14509/31431

ACKNOWLEDGMENTS

Funding for this project was provided by the State of Alaska Division of Mining, Land and Water (RSA18991/18992).

Appendix B – Rural Reserve (RR) Subdivision Parcel Plans





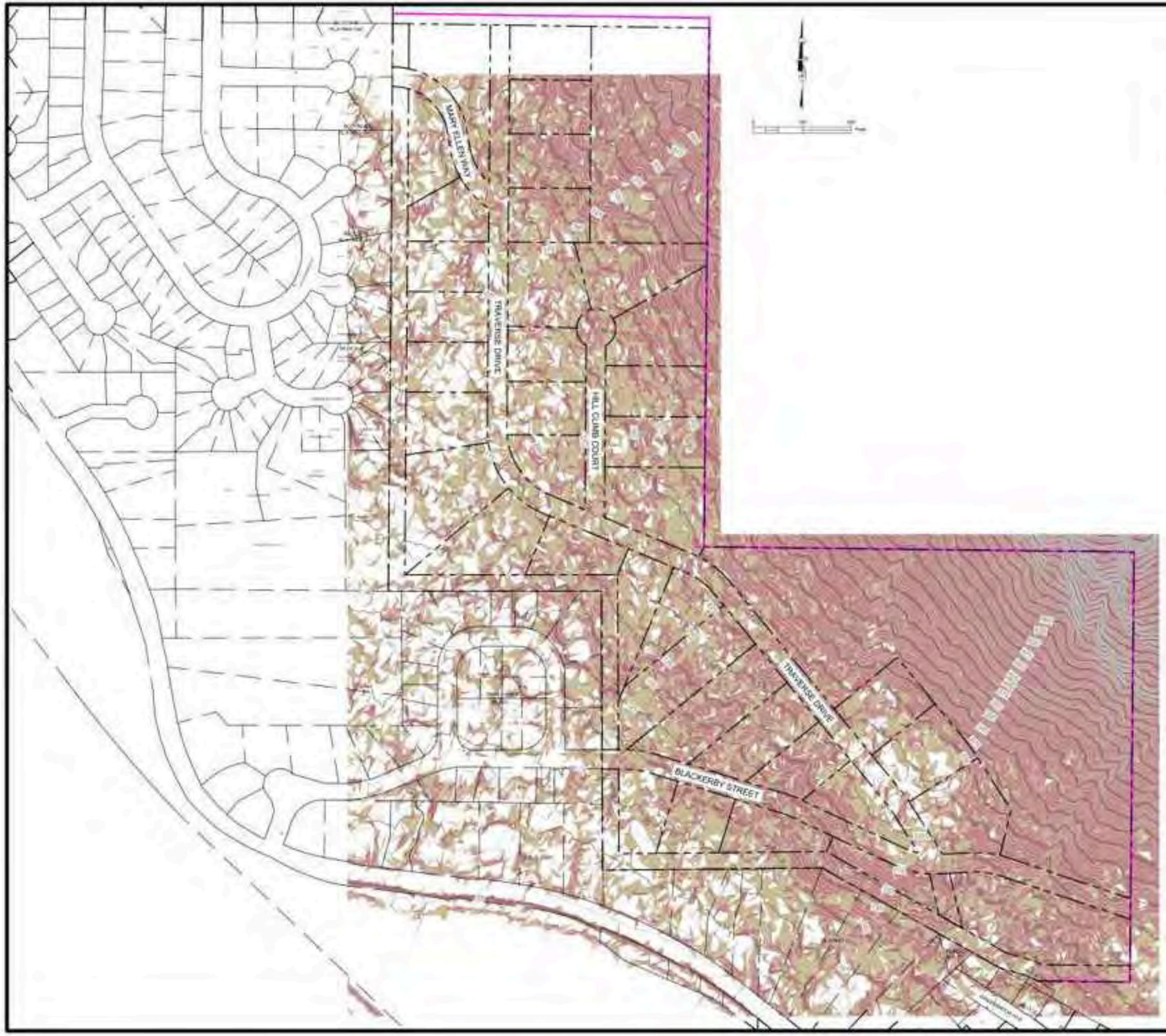
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	17,992.54	599.24	235.48 119.67 239.10 28.71 91.31 90.98	S19°39' 16.87"E S84° 41' 55.69"W N6° 19' 09.37"W N88° 31' 59.56"E S81° 14' 41.11"E S75° 53' 55.55"E
102	11,992.94	599.91	235.48 184.14 172.31 108.91	N19° 39' 16.87"E S74° 53' 44.33"E S 79° 39' 16.87"W S88° 34' 43.56"W
103	17,992.94	599.89	112.31 145.74 85.86 146.37 93.81 329.71	N19° 39' 16.87"E S73° 53' 45.33"E S49° 51' 24.04"E S69° 59' 37.55"E S25° 59' 02.40"W S88° 34' 43.56"W
200	36,715.54	917.69	193.42 174.80 26.07 180.60 89.60 243.07	N82° 39' 44.83"E S29° 05' 15.17"E S16° 59' 38.08"E S32° 32' 13.06"E N71° 22' 39.18"W N68° 54' 07.56"W
201	31,129.94	882.54	291.47 194.36 103.83 10.28 39.41 131.09	N82° 39' 44.83"E S29° 23' 15.17"E S38° 39' 44.83"W N64° 59' 37.56"W N69° 31' 39.04"W N73° 59' 40.52"W
202	52,739.26	1,024.44	186.19 113.89 291.67 188.97	N82° 39' 44.83"E S29° 23' 15.17"E S38° 39' 44.83"W N7° 59' 40.52"W
203	68,940.22	1,285.89	512.88 153.82 394.18 168.66 80.86 0.84	N29° 39' 44.83"E S29° 23' 15.17"E S29° 39' 44.83"W S73° 59' 40.52"W N81° 17' 47.71"W N89° 31' 04.26"W
204	13,401.24	1,281.79	394.44 110.75 512.88 21.93 148.04 93.25	N82° 39' 44.83"E S29° 23' 15.17"E S29° 39' 44.83"W N89° 31' 56.96"W N6° 19' 20.27"W N22° 39' 52.51"E
205	18,943.10	486.84	394.44 596.09 45.72 108.14 47.23	S29° 59' 44.83"W N22° 29' 33.31"E N67° 30' 01.49"E S22° 29' 52.51"W S29° 39' 52.51"W
231	30,958.12	637.94	195.02 137.43 124.77 46.63 260.83	N22° 29' 52.51"E S67° 30' 01.49"E S67° 30' 01.49"E S22° 29' 52.51"W S89° 59' 05.54"W
232	52,911.06	1,132.47	418.81 194.83 10.38 186.28 368.99	N89° 59' 05.58"E S89° 59' 49.25"E S89° 59' 01.49"E S12° 29' 52.51"E S89° 59' 05.54"W
233	15,618.63	1,183.27	414.81 0.69 367.66 256.25 154.36	S89° 59' 39.06"W S89° 59' 25.54"W N6° 27' 56.39"E N8° 12' 16.92"E S24° 13' 18.58"E
234	43,514.36	953.64	336.28 193.56 284.15 118.66 43.44	S81° 32' 04.92"W N6° 27' 56.08"E S89° 39' 31.29"E S6° 20' 28.71"W S4° 59' 12.92"E
241	30,897.14	867.66	284.73 134.14 249.66 154.14	N89° 34' 31.29"W N6° 27' 56.08"E S89° 34' 31.29"E S6° 20' 28.71"W
242	16,479.92	867.33	249.66 134.14 249.66 154.14	N89° 34' 31.29"W N6° 27' 56.08"E S89° 34' 31.29"E S6° 20' 28.71"W
243	16,959.11	867.34	249.53 134.14 249.52 154.14	S89° 34' 31.29"E N6° 27' 56.08"E S89° 34' 31.29"E S6° 20' 28.71"W
244	17,035.23	919.20	249.52 139.32 134.49 131.45 102.20	N89° 34' 31.29"W N6° 27' 56.08"E N89° 46' 20.08"E S40° 49' 17.48"E S6° 20' 28.71"W

Parcel Area Table

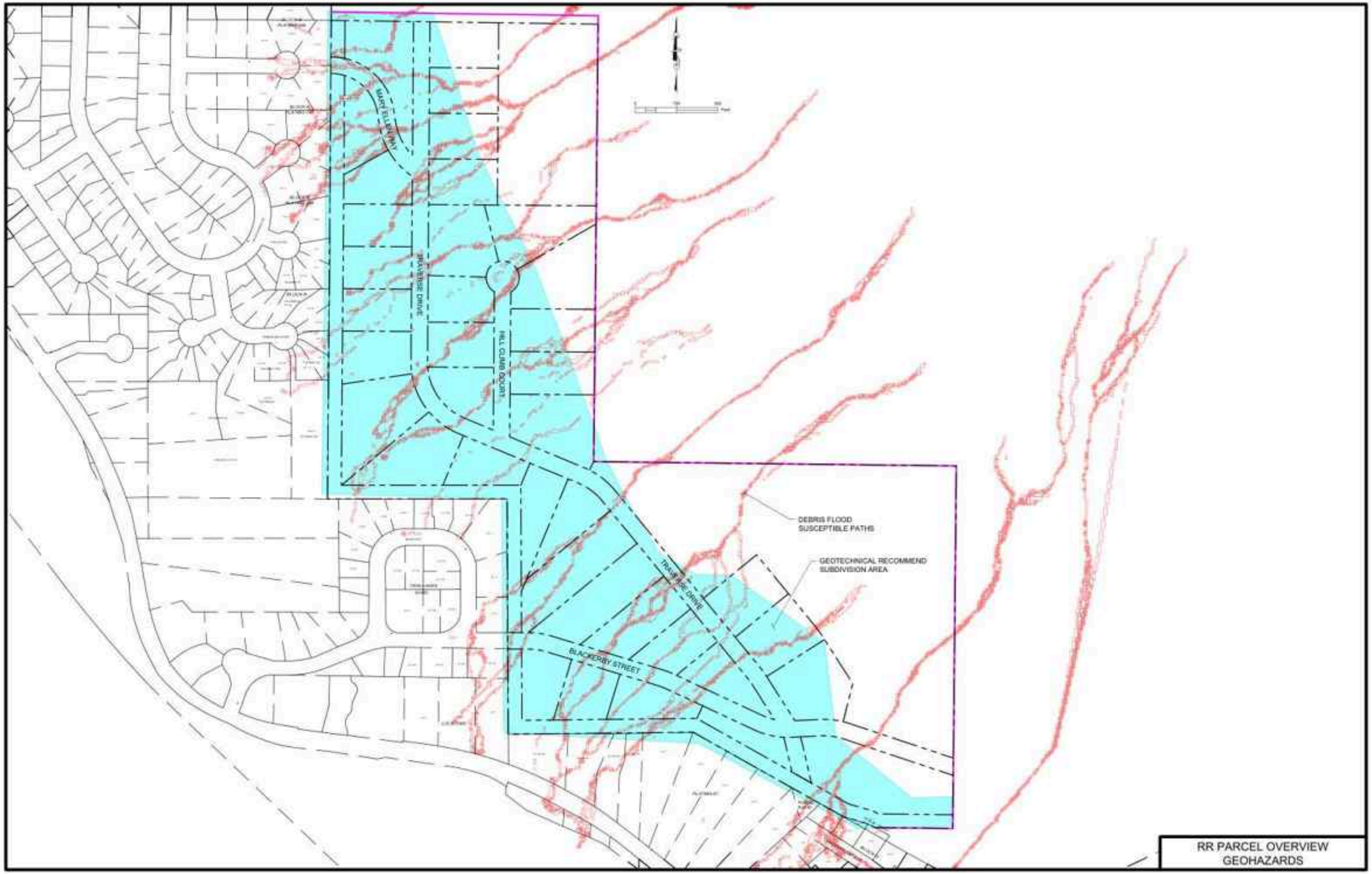
Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
210	37,932.31	874.34	194.65 181.89 162.91 93.18 191.50	S89° 39' 21.09"E N6° 27' 51.68"E S81° 09' 04.11"E S8° 19' 34.09"E S76° 57' 29.46"E
220	55,133.99	962.29	255.00 190.39 140.42 81.19 86.71 186.68	N37° 27' 13.60"E S39° 32' 57.00"E S74° 09' 10.64"W N64° 14' 42.18"W N37° 27' 03.00"W N32° 32' 57.00"E
221	49,445.47	896.69	250.00 149.27 62.78 3.53 250.00 3.53 23.11 146.21	N32° 39' 44.83"E S39° 21' 15.17"E S32° 39' 44.83"W S32° 32' 57.00"E S57° 27' 03.00"E N32° 32' 57.00"E N23° 58' 38.09"W N39° 23' 15.17"W
222	35,748.95	699.69	234.43 162.87 240.00 162.37	S39° 39' 44.83"W N39° 23' 15.17"W N39° 09' 44.83"E S39° 39' 37.17"E
223	56,405.43	1,004.12	398.72 240.72 94.08 15.92 295.29 149.34	S39° 39' 31.20"E S0° 20' 15.94"W S29° 23' 03.17"W N57° 32' 56.80"W N57° 39' 37.49"W N9° 20' 28.71"E
224	47,142.25	938.97	398.72 156.54 161.76 156.54	N89° 39' 31.20"W N9° 20' 28.71"E S89° 39' 31.20"E S0° 20' 15.94"W
225	47,611.13	926.83	261.16 156.54 242.80 156.54	N89° 39' 31.20"W N9° 20' 28.71"E S89° 39' 31.20"E S0° 20' 15.94"W
226	28,165.51	1,108.19	397.80 91.29 84.64 221.66 312.80	N89° 39' 31.20"W N9° 20' 28.71"E N15° 16' 55.82"E N89° 09' 25.12"E S0° 20' 15.94"W
227	62,411.19	1,099.81	252.46 47.10 340.00 89.05 221.66 117.55	N18° 07' 02.41"E S89° 39' 31.20"E S89° 39' 31.20"E S0° 20' 15.94"W S89° 09' 25.12"W N89° 09' 46.84"W
228	49,460.60	982.73	271.43 258.19 252.99 272.49 47.75	N89° 29' 09.06"W N0° 05' 28.71"E S89° 54' 31.29"E S 9° 07' 36.43"E S89° 40' 59.82"W
229	38,240.51	784.99	241.88 189.82 271.43 94.06 113.80	N89° 39' 31.20"W N0° 29' 28.71"E S89° 29' 09.06"E S29° 59' 31.82"E S0° 20' 28.71"W
230	35,464.31	699.99	230.69 189.68 248.61 18.57 148.13	S89° 39' 31.20"E S0° 29' 28.71"W N89° 54' 31.29"W N1° 56' 50.87"W N0° 29' 28.71"E
231	39,348.14	833.87	266.61 221.72 118.20 242.65	S89° 54' 31.29"E S0° 29' 28.71"W N89° 39' 31.49"W N89° 09' 46.84"E
232	51,559.71	832.47	119.69 87.18 250.00 186.24 47.19 153.99	N0° 29' 28.71"E N72° 03' 28.71"E S89° 54' 31.29"E S0° 29' 28.71"W N89° 39' 31.29"W S89° 54' 31.29"E
233	41,598.71	832.47	250.00 186.24 250.00 186.24	N89° 39' 31.20"W N0° 29' 28.71"E S89° 39' 31.20"E S0° 29' 28.71"W
234	41,598.71	832.47	250.00 186.24 250.00 186.24	N89° 39' 31.20"W N0° 29' 28.71"E S89° 39' 31.20"E S0° 29' 28.71"W
235	41,432.96	831.66	250.00 186.57 250.21 186.89	S89° 54' 31.29"E N0° 29' 28.71"E S89° 11' 08.23"E S0° 29' 28.71"W
236	34,958.66	1,230.61	137.77 346.23 0.29 494.25 140.33 33.16 277.01	N0° 27' 51.68"E S89° 11' 08.23"E S0° 29' 28.71"W N0° 29' 28.71"E N26° 41' 22.35"E N8° 33' 34.02"W N42° 10' 38.13"W

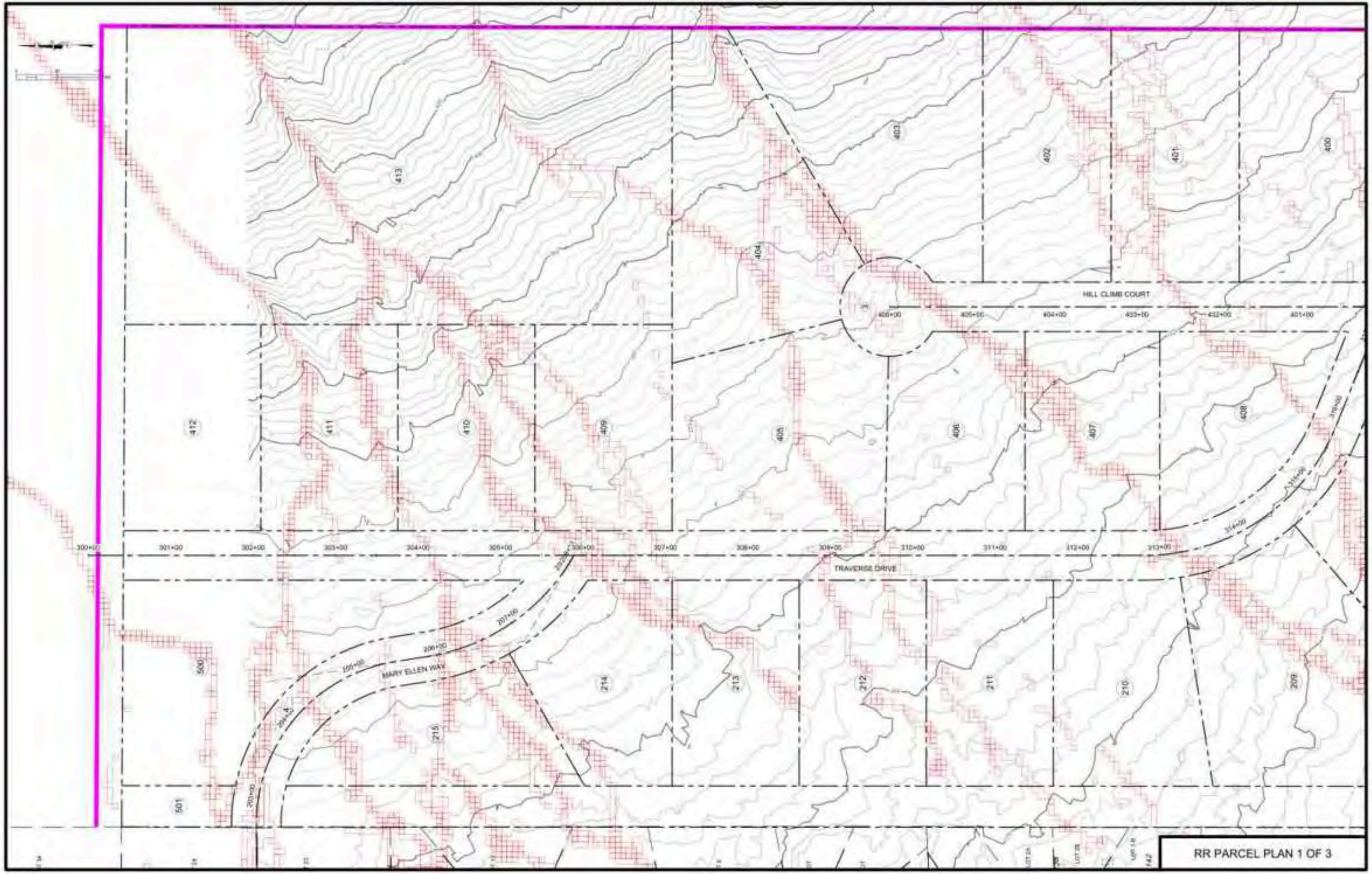
RR PARCEL OVERVIEW



Slopes Table				
Slopes	Minimum Slope	Maximum Slope	Area	Color
1	15.00%	30.00%	1217536.61	
2	30.00%	4228.42%	2356866.49	

RR PARCEL OVERVIEW SLOPE MAP


MARY ELLEN WAY
TRAVERSE DRIVE
HILL CLIMB COURT
DEBRIS FLOOD
SUSCEPTIBLE PATHS
GEOTECHNICAL RECOMMEND
SUBDIVISION AREA
TRAVERSE DRIVE
BLACKERBY STREET
RR PARCEL OVERVIEW
GEOHAZARDS


HILL CLIMB COURT
TRAVERSE DRIVE
MARY ELLEN WAY
RR PARCEL PLAN 1 OF 3

HILL CLIMB COURT

TRAVERSE DRIVE

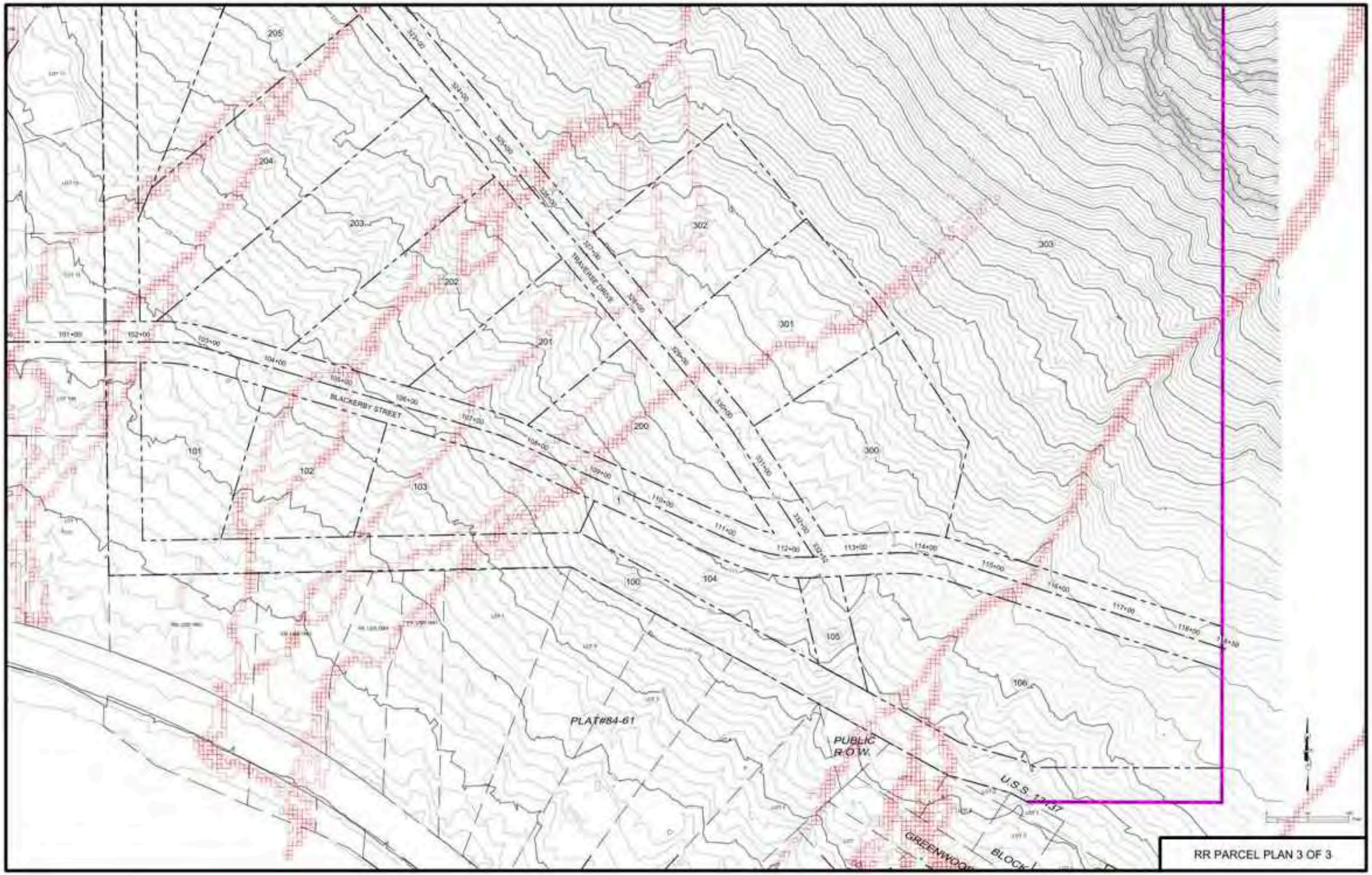
BLACKBERRY STREET

RIDGE WAY

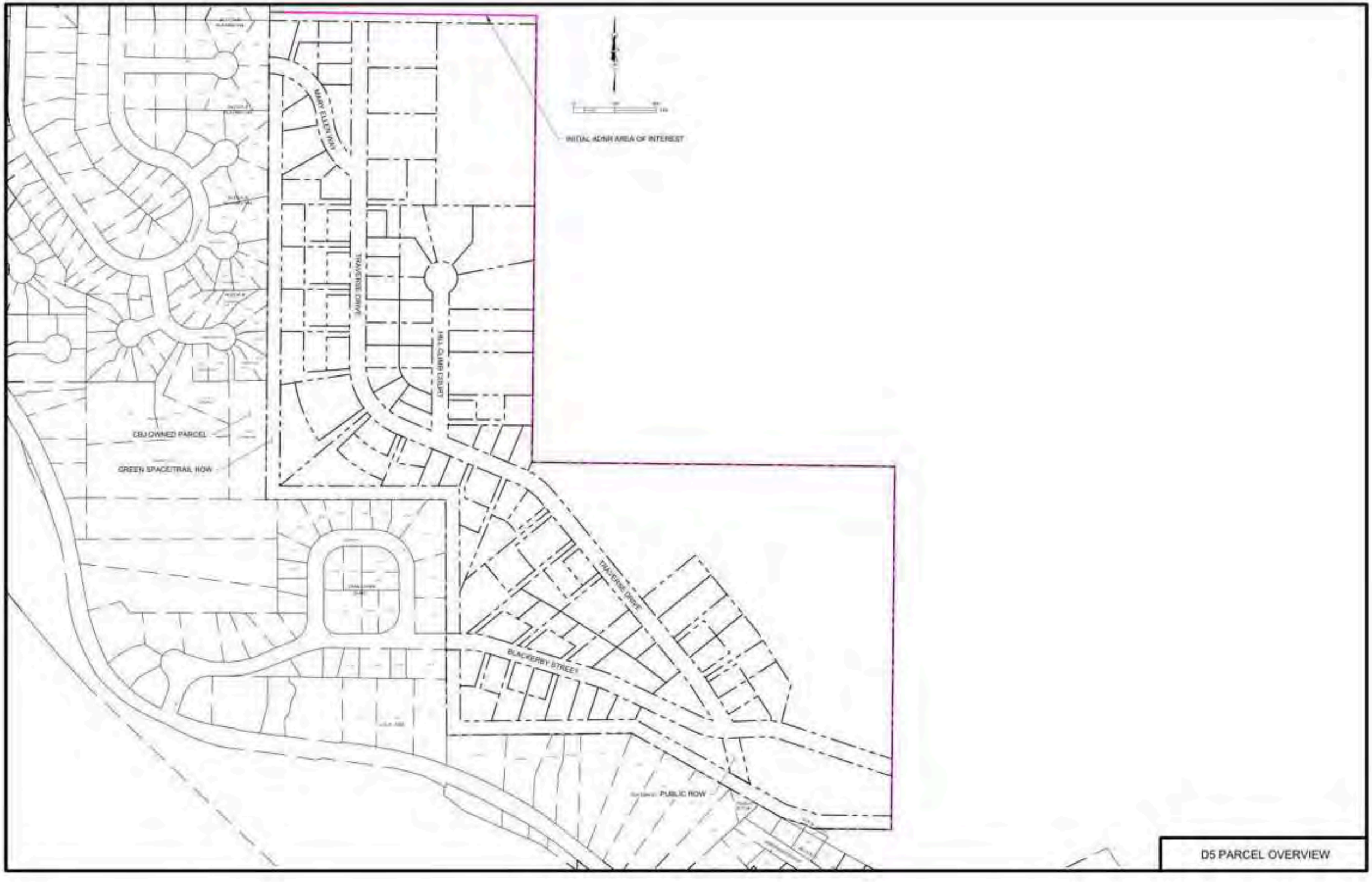
TWIN LAKES SUBD.

U.S.S. 1565

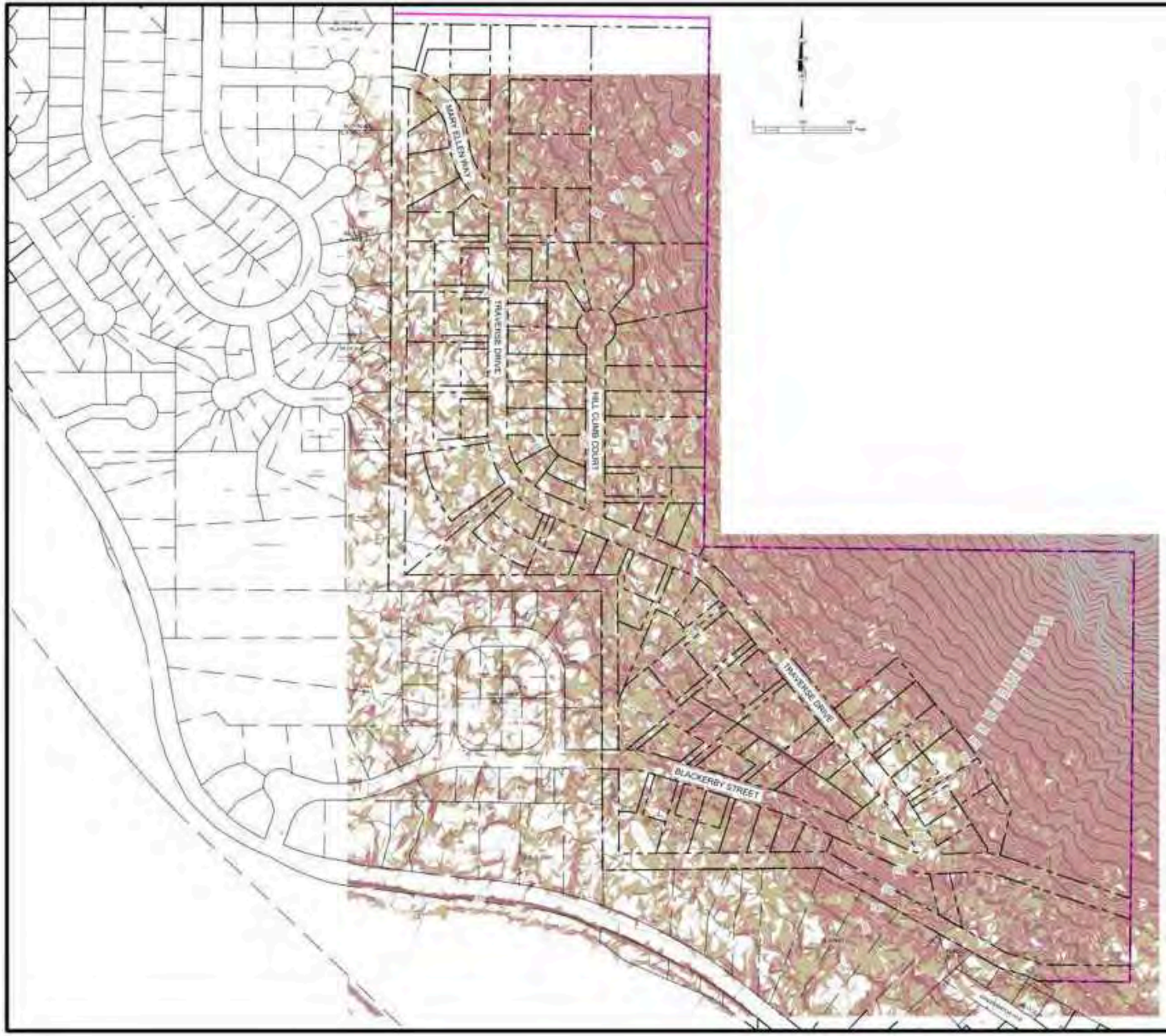
RR PARCEL PLAN 2 OF 3


BLACKERBY STREET
TRAVERSE DRIVE
PLAT#84-61
PUBLIC R.O.W.
U.S.S. 12.37
GREENWOOD
BLOCK
RR PARCEL PLAN 3 OF 3

Appendix C – Residential District D-5 Subdivision Parcel Plans

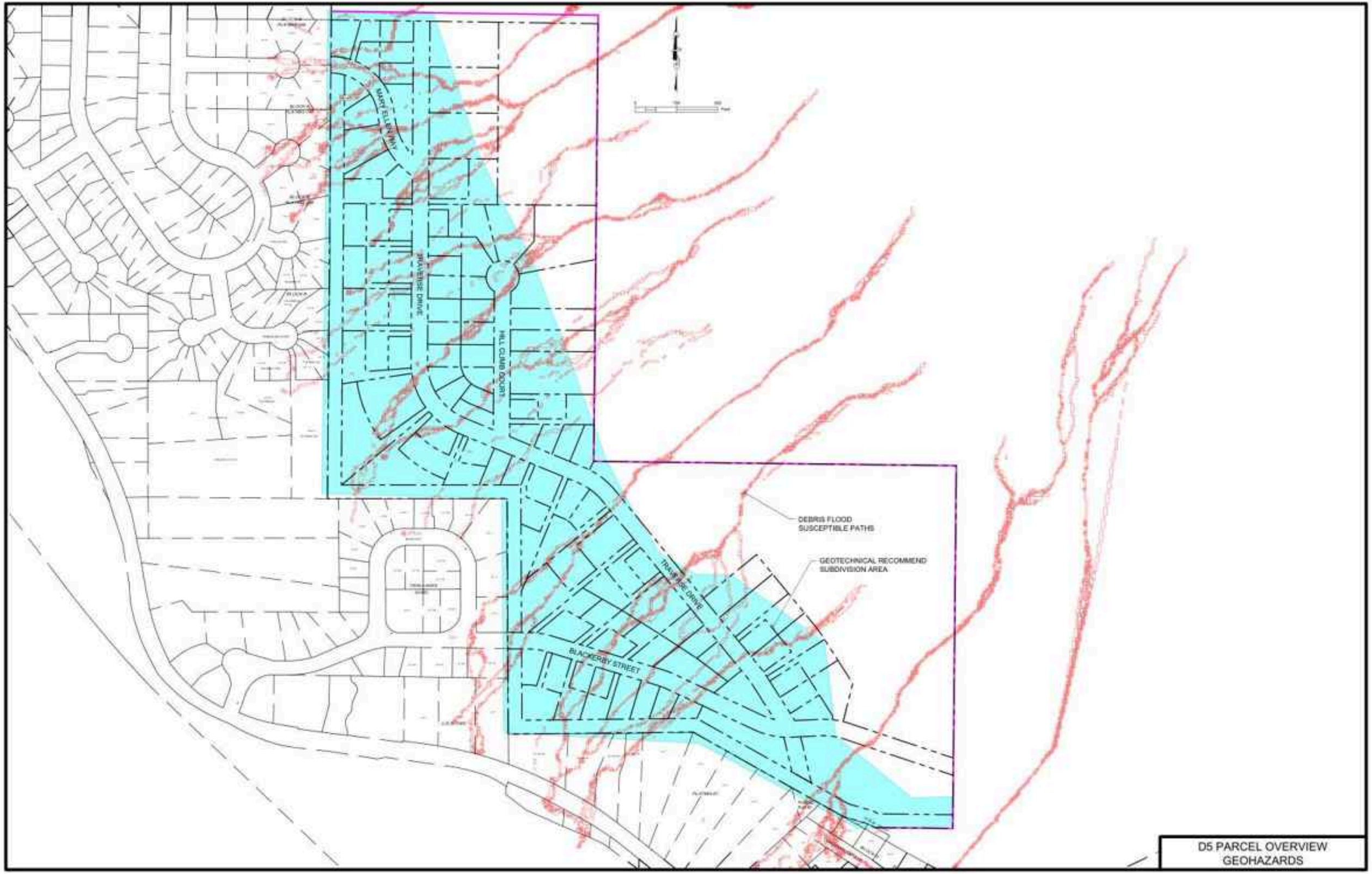


D5 PARCEL OVERVIEW



Slopes Table				
Shapefile	Minimum Slope	Maximum Slope	Area	Color
1	15.00%	30.00%	1217536.61	
2	30.00%	4228.42%	2399999.49	

D5 PARCEL OVERVIEW SLOPE MAP



D5 PARCEL OVERVIEW
GEOHAZARDS

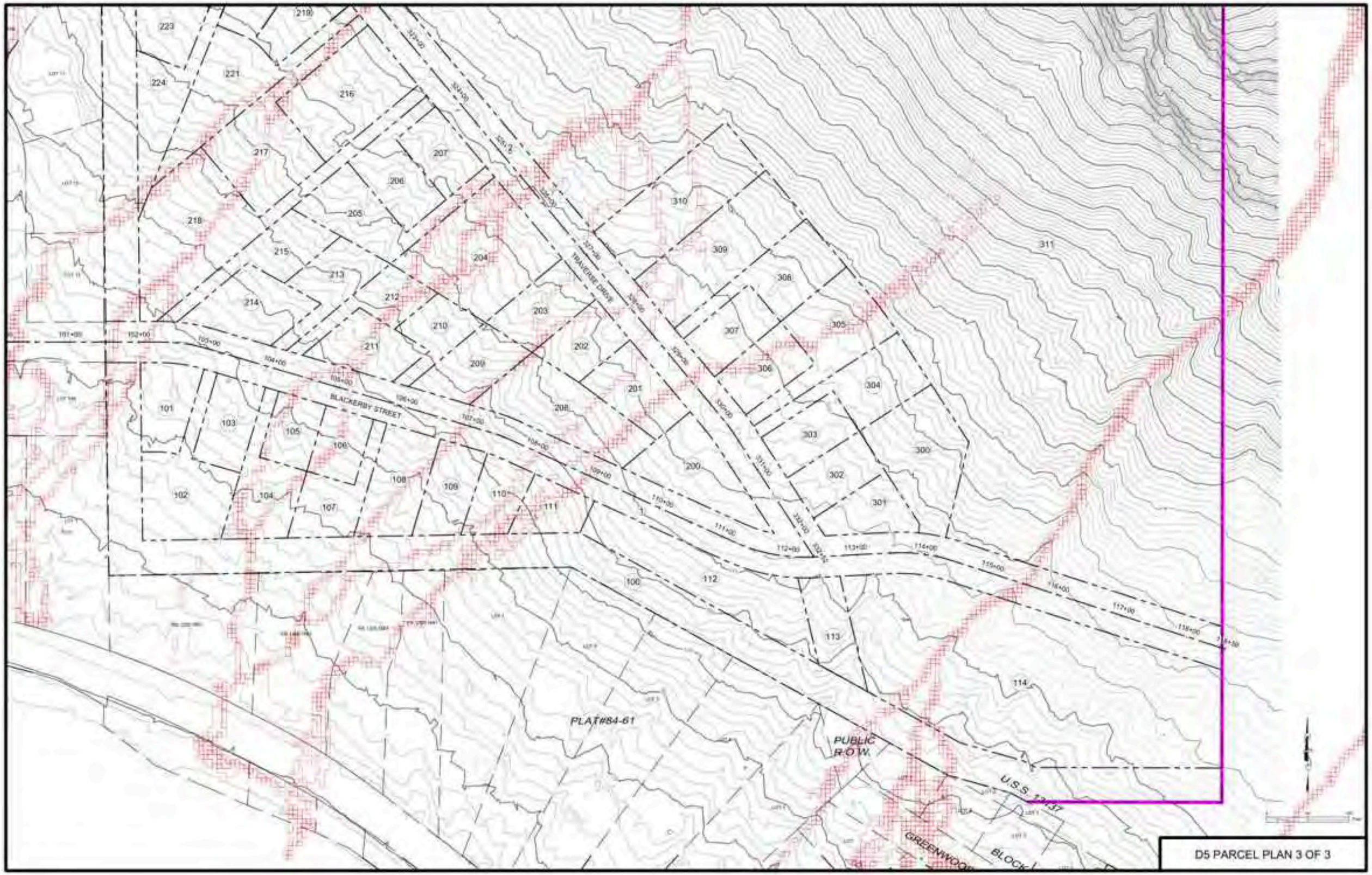
HILL CLIMB COURT

TRAVERSE DRIVE

MARY ELLEN WAY

D5 PARCEL PLAN 1 OF 3


HILL CLIMB COURT
TRAVERSE DRIVE
BLACKBERRY STREET
RIDGE WAY
TWIN LAKES SUBD.
U.S.S. 1565
D5 PARCEL PLAN 2 OF 3


BLACKERBY STREET
PLAT#84-61
PUBLIC R.O.W.
U.S.S. 13+37
D5 PARCEL PLAN 3 OF 3

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	9,621.13	408.69	130.00 1.59 25.87 27.07 150.01 28.71 63.24 1.59	S16° 58' 19.47"W N73° 05' 40.53"W N61° 17' 47.71"W N89° 34' 19.99"W N0° 10' 20.27"W S89° 31' 54.89"E S61° 17' 47.71"E S73° 05' 40.53"E
102	17,904.45	761.24	100.00 20.00 130.00 73.52 100.46 113.87 129.09 27.07 25.87 1.59	N16° 58' 19.47"E S73° 05' 40.53"E S16° 58' 19.47"W S73° 05' 40.53"E S16° 58' 19.47"W S89° 24' 45.46"W N0° 10' 20.27"W S89° 31' 54.89"E S61° 17' 47.71"E S73° 05' 40.53"E
103	9,550.97	607.03	73.52 130.00 73.52 130.00	S73° 05' 40.53"E S16° 58' 19.47"W N73° 05' 40.53"W N16° 58' 19.47"E
104	12,873.80	625.47	20.00 100.00 72.07 101.39 96.00 100.46 130.00	S73° 05' 40.53"E S16° 58' 19.47"W S73° 05' 40.53"E S16° 58' 19.47"W S89° 24' 45.46"W N16° 58' 19.47"E N16° 58' 19.47"E
105	7,256.79	344.14	72.07 100.00 72.07 100.00	S73° 05' 40.53"E S16° 58' 19.47"W N73° 05' 40.53"W N16° 58' 19.47"E
106	7,256.78	344.14	72.07 100.00 72.07 100.00	S73° 05' 40.53"E S16° 58' 19.47"W N73° 05' 40.53"W N16° 58' 19.47"E
107	9,998.65	562.32	20.00 172.31 96.00 101.26 72.07 100.00	S73° 05' 40.53"E S16° 58' 19.47"W S89° 24' 45.46"W N16° 58' 19.47"E S73° 05' 40.53"E N16° 58' 19.47"E
108	12,910.21	484.68	90.92 146.76 84.95 172.31	S73° 05' 40.53"E S16° 58' 19.47"W S89° 24' 45.46"W N16° 58' 19.47"E
109	8,851.83	434.81	6.71 125.33 71.00 146.15 64.52	S72° 11' 16.77"E S15° 41' 37.50"W S89° 24' 45.46"W N15° 58' 19.47"E S73° 05' 40.53"E
110	7,728.81	365.59	51.25 96.57 85.35 125.33 24.37	S84° 59' 37.05"E S25° 05' 22.46"W S89° 24' 45.46"W N16° 58' 19.47"E S86° 08' 15.26"E
111	7,060.69	347.77	96.12 92.81 166.47 90.37	S84° 59' 37.05"E S25° 05' 22.46"W S89° 24' 45.80"W N25° 06' 22.48"E
200	14,808.74	564.31	191.69 94.15 94.15 96.45 26.07 150.93 49.00	N64° 56' 37.55"W N50° 39' 44.83"E N50° 39' 44.83"E S39° 20' 15.17"E S39° 56' 36.09"E S32° 32' 57.00"E N71° 22' 30.18"W
201	10,995.40	407.74	90.91 134.41 84.15 140.28	N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N62° 32' 31.66"W
202	8,423.55	376.39	80.66 121.32 77.19 96.91	N39° 32' 57.21"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W
203	10,307.22	426.21	121.32 80.66 143.73 77.19	S50° 39' 44.83"W N39° 53' 57.21"W N50° 39' 44.83"E S39° 20' 15.17"E
204	26,389.63	668.64	143.73 81.09 81.09 187.68 152.84	S50° 39' 44.83"W N57° 47' 39.73"W N57° 47' 39.73"W N50° 39' 44.83"E S39° 20' 15.17"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
205	14,798.53	772.56	20.00 197.08 62.42 52.42 106.29 133.83 75.00 75.00	S39° 20' 15.17"E S50° 39' 44.83"W N61° 23' 31.73"W N89° 07' 31.73"W N89° 39' 44.83"E S39° 20' 15.17"E N50° 39' 44.83"E N50° 39' 44.83"E
206	11,537.43	567.66	20.00 75.00 113.83 75.00 133.83 106.00	S39° 20' 15.17"E S50° 39' 44.83"W S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
207	8,537.43	377.66	113.83 75.00 113.83 75.00	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
208	16,152.37	845.39	140.28 94.15 162.68 39.43 36.27 119.52 80.96	S52° 53' 31.48"E S50° 39' 44.83"W N64° 56' 37.55"W N89° 01' 39.04"W N73° 03' 46.53"W N50° 39' 44.83"E S39° 53' 07.21"E
209	10,202.70	436.12	50.61 145.73 80.96 119.82	N73° 03' 46.53"W N50° 39' 44.83"E S39° 53' 07.21"E S50° 39' 44.83"W
210	7,882.09	466.29	83.23 61.89 145.73 24.05 75.18 50.01	N50° 39' 44.83"E S39° 47' 39.73"E S50° 39' 44.83"W N73° 03' 46.53"W N50° 39' 44.83"E N61° 47' 39.73"W
211	10,152.11	438.24	75.18 136.88 106.17 60.01 60.01	S50° 39' 44.83"W N73° 03' 46.53"W N50° 39' 44.83"E S57° 47' 39.73"E S57° 47' 39.73"E
212	8,555.47	562.60	24.05 157.08 61.89 62.33 60.01 106.17	N73° 03' 46.53"W N50° 39' 44.83"E S57° 47' 39.73"E S50° 39' 44.83"W N57° 47' 39.73"W S50° 39' 44.83"W
213	10,094.77	567.26	24.05 95.56 60.89 107.15 62.42 157.08	N73° 03' 46.53"W N50° 39' 44.83"E N62° 23' 31.73"W N89° 39' 44.83"E S66° 23' 31.73"E S50° 39' 44.83"W
214	12,864.35	460.62	90.13 134.49 60.99 60.00 95.58 84.55	N70° 46' 13.29"W N50° 39' 44.83"E S66° 23' 31.73"E S50° 39' 44.83"W S52° 39' 44.83"W N73° 03' 46.53"W
215	11,073.70	671.34	5.64 256.25 62.42 107.15 60.99 134.49 24.37	N89° 31' 54.89"W S50° 39' 44.83"E S66° 23' 31.73"E S50° 39' 44.83"W S50° 39' 44.83"W N61° 52' 29.47"W
216	15,867.19	577.40	113.70 175.00 113.70 175.00	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
217	20,212.28	867.40	20.00 175.00 113.70 125.00 103.70 300.00	S39° 20' 15.17"E S50° 39' 44.83"W S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
218	33,261.77	1,281.79	23.83 149.04 48.20 54.94 103.70 125.00 175.00 20.00 150.00 106.29 256.25	N89° 31' 54.89"W N0° 10' 20.27"W N22° 29' 52.51"E N50° 39' 44.83"E S39° 20' 15.17"E N50° 39' 44.83"E S39° 20' 15.17"E S39° 39' 44.83"W S50° 39' 44.83"W S50° 39' 44.83"W
219	9,816.55	417.38	27.23 180.06 27.23 22.11 140.00 60.81	S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W N47° 15' 19.80"W N34° 49' 35.47"E S47° 15' 19.80"E
220	16,216.45	426.66	47.34 140.06 17.21 40.70 140.06 40.70	S81° 20' 16.01"E S34° 49' 35.47"W N81° 20' 16.01"W N81° 37.01.49"W N22° 29' 52.51"E S81° 37.01.49"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
221	18,110.02	917.79	20.00 300.02 94.94 256.08 46.76 17.21 22.11 37.23 140.60	S39° 20' 15.17"E S50° 39' 44.83"W S50° 39' 44.83"W N22° 29' 52.51"E S81° 37' 57.49"E S81° 20' 16.01"E S47° 15' 19.80"E S39° 20' 15.17"E N50° 39' 44.83"E
222	13,806.74	647.47	110.60 120.60 94.32 40.95 62.60	S81° 37' 57.49"E S22° 29' 52.51"W N67° 37' 57.49"W N0° 10' 20.27"W N22° 29' 52.51"E
223	11,791.19	638.55	20.00 62.60 46.56 94.32 97.69 165.30 19.39 21.95 268.45 474.91	S81° 30' 57.49"E S22° 29' 52.51"W S0° 10' 20.27"E S81° 30' 57.49"E S22° 29' 52.51"W N67° 30' 57.49"W S22° 29' 52.51"W S39° 58' 25.54"W N50° 00' 56.66"E
224	7,079.17	348.03	70.00 88.60 15.77 115.63	S81° 30' 57.49"E S22° 29' 52.51"W S89° 58' 25.54"W N22° 29' 52.51"E
225	9,109.97	406.05	56.77 115.60 75.77 72.32 70.12 15.23	S81° 30' 57.49"E S22° 29' 52.51"W S89° 58' 25.54"W N22° 29' 52.51"E N22° 29' 52.51"E S81° 30' 57.49"E
227	8,668.80	377.66	102.21 72.32 105.30 97.84	S81° 30' 57.49"E S22° 29' 52.51"W N81° 24' 56.05"E N22° 29' 52.51"E
228	13,884.78	622.82	20.00 97.84 105.30 72.32 152.28 21.95 173.33	S81° 30' 57.49"E S22° 29' 52.51"W S89° 58' 25.54"W N22° 29' 52.51"E N22° 29' 52.51"E
229	11,562.13	436.23	113.83 88.67 149.88 89.67	S56° 43' 43.59"E S22° 37' 29.94"W N33° 43' 43.59"W N48° 00' 53.77"E
230	17,945.01	720.41	19.28 173.30 19.39 165.30 89.67 149.88 89.67 9.62	S81° 30' 57.49"E S22° 29' 52.51"W N67° 30' 57.49"W N22° 47' 31.86"W N48° 33' 53.77"E S33° 43' 43.59"E N22° 37' 29.94"E S81° 26' 19.22"E
231	53,274.24	1,805.52	20.00 89.67 89.67 165.30 19.39 21.95 268.45 474.91	S42° 02' 09.40"E S48° 45' 53.71"W S48° 58' 53.71"W S55° 47' 31.86"E S67° 30' 57.49"E S22° 29' 52.51"W N67° 30' 57.49"W N50° 00' 56.66"E
232	36,846.34	788.84	101.60 101.60 230.77 202.60 134.86	S54° 58' 10.18"W S54° 58' 10.18"W N22° 19' 51.45"W N81° 32' 38.92"E S22° 19' 51.45"E
233	34,170.59	1,240.48	101.60 23.00 614.91 6.89 367.66 34.26 230.77 101.60	N54° 08' 10.18"E S37° 58' 36.42"E S50° 05' 36.36"W S89° 58' 25.54"W N0° 27' 00.08"E N81° 32' 38.92"E S22° 19' 51.45"E N54° 08' 10.18"E
234	9,761.72	401.22	23.44 83.00 32.39 80.89 83.00 80.69	S1° 58' 25.58"E S89° 37' 40.12"W N1° 58' 25.58"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
235	13,858.47	621.12	20.00 83.00 80.69 32.39 83.00 37.34 110.69 196.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W S1° 58' 25.58"E S89° 37' 40.12"W N1° 58' 25.58"W N0° 25' 28.71"E S89° 34' 31.29"E
236	20,094.79	867.09	20.00 292.00 64.26 193.66 83.73 110.69 37.34 83.00	S0° 25' 28.48"E S81° 32' 06.92"W S81° 32' 06.92"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S1° 58' 25.58"E S89° 37' 40.12"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
237	6,473.34	394.27	114.14 83.00 114.14 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
238	12,793.34	660.21	20.00 83.00 114.14 83.00 134.14 83.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
239	16,220.45	927.66	20.00 165.00 83.73 184.14 83.00 134.14 83.00 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S89° 34' 31.29"E
240	9,473.35	394.27	114.14 83.00 114.14 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
241	12,793.35	660.21	20.00 83.00 114.14 83.00 134.14 165.00	S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
242	16,309.83	957.59	20.00 165.00 83.00 184.14 83.00 134.14 83.00 83.00	S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S89° 34' 31.29"E
243	9,473.35	394.27	83.00 114.14 83.00 114.14	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W
244	12,793.35	660.27	83.00 134.14 165.00 20.00 83.00 114.14	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W S0° 25' 28.71"W
245	16,309.83	957.59	83.00 134.14 165.00 83.52 134.14 83.00 83.00	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
246	14,858.58	979.01	83.52 83.00 140.67 73.00 108.31 20.00 165.00	N89° 34' 31.29"W N0° 27' 00.08"E S89° 34' 31.29"E S0° 25' 28.71"W S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
247	10,799.29	408.58	108.31 73.00 79.99 65.73 82.33	N89° 34' 31.29"W N0° 25' 28.71"E N47° 19' 22.02"E S49° 34' 58.51"E S0° 25' 28.71"W
248	11,380.32	487.40	79.99 140.97 16.19 184.65 65.73	S47° 19' 22.02"W N89° 34' 31.29"W N0° 27' 00.08"E N60° 46' 23.69"E S30° 57' 01.45"E
249	19,775.53	971.14	96.94 184.65 159.69 125.76 4.16 125.76 73.00 113.46 74.11 58.18	S15° 19' 06.99"E S60° 46' 23.69"W N0° 27' 00.08"E N89° 38' 24.74"E S8° 56' 04.83"E S89° 38' 24.74"W N0° 27' 00.08"E N56° 27' 45.60"E S21° 02' 54.20"E S8° 33' 34.66"E
250	11,359.48	433.67		
251	7,200.00	360.00	119.70 113.46 101.80	S53° 32' 28.31"E S56° 27' 45.60"W N0° 27' 00.08"E
300	19,991.97	982.20	13.88 91.11 73.00 125.00 160.36 142.63 46.02	N0° 52' 13.59"E N32° 32' 57.90"W N32° 32' 57.90"W N0° 27' 03.08"E S57° 27' 03.08"E S14° 03' 32.64"W N89° 02' 09.84"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
301	9,213.80	396.40	59.38 125.00 91.11 13.88 41.16 90.71	N32° 32' 57.90"W N57° 27' 03.08"E S32° 32' 57.90"E S5° 52' 13.84"W N89° 29' 21.86"W S87° 27' 03.08"W
302	8,750.00	388.04	73.08 125.00 70.04 125.00	N32° 32' 57.90"W N57° 27' 03.08"E S32° 32' 57.90"E S57° 27' 03.08"W
303	8,750.00	390.08	73.08 125.00 73.08 125.00	N32° 32' 57.90"W N57° 27' 03.08"E S32° 32' 57.90"E S57° 27' 03.08"W
304	13,150.00	469.08	20.08 200.00 90.08 125.00 73.08 125.00	N32° 32' 57.90"W N57° 27' 03.93"E S32° 32' 57.90"E S57° 27' 03.90"W N32° 32' 57.90"W S57° 27' 03.90"W
305	17,172.13	723.08	76.47 125.00 24.16 54.79 125.00 54.79 62.79 3.83 202.00 3.83	N34° 14' 03.12"W W64° 04' 50.77"E N31° 37' 42.20"W N58° 22' 15.17"W N0° 39' 44.83"E S39° 20' 15.17"E S35° 56' 36.09"E S32° 32' 57.90"E S37° 27' 03.90"W N32° 32' 57.90"W
306	9,491.80	409.63	54.78 125.00 54.79 24.16 125.00 16.71	N58° 22' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S31° 37' 42.20"E S54° 04' 50.77"W N31° 37' 42.20"W
307	9,835.75	392.97	71.49 125.00 71.49 125.00	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W
308	13,935.75	662.97	20.00 250.00 91.49 125.00 71.49 125.00	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W S50° 39' 44.83"W
309	22,971.49	982.97	125.00 125.00 91.49 250.00 91.49 125.00 125.00 91.49	N50° 39' 44.83"E N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W S50° 39' 44.83"W N39° 20' 15.17"W N50° 39' 44.83"E
310	22,971.49	982.97	250.00 91.49 125.00 125.00 91.49	N39° 20' 15.17"W N50° 39' 44.83"E S39° 20' 15.17"E S50° 39' 44.83"W N39° 20' 15.17"W
400	6,888.81	424.11	99.34 144.81 53.36 133.10 94.58 16.42	N61° 39' 07.49"W N22° 29' 52.51"E S89° 34' 31.29"E S0° 39' 16.94"W S26° 33' 07.73"W N69° 33' 59.98"W
401	9,143.67	408.78	116.43 78.54 144.81 75.08	N22° 29' 52.51"E S89° 34' 31.29"E S22° 29' 52.51"W N61° 39' 07.49"W
402	7,156.40	350.01	99.64 75.84 116.43 75.08	N22° 29' 52.51"E S89° 34' 31.29"E S22° 29' 52.51"W N61° 39' 07.49"W
403	7,080.00	351.48	45.34 121.57 99.34 99.92	N0° 25' 28.71"E S89° 34' 31.29"E S22° 29' 52.51"W N61° 39' 07.49"W
404	7,193.33	344.97	75.08 103.33 75.08 103.33	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
405	11,256.67	586.33	20.00 254.67 80.08 102.33 73.69 102.33	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E N89° 34' 31.29"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
406	15,301.66	833.12	20.00 102.33 102.33 86.00 102.05 110.00 33.36 70.04 70.04 121.97	N0° 25' 28.71"E S89° 34' 31.29"E S89° 34' 31.29"E N0° 25' 28.71"E S0° 25' 28.71"W S0° 35' 16.94"W N89° 24' 31.29"W N89° 24' 31.29"W N89° 34' 31.29"W
407	47,742.25	924.97	367.16 195.94 102.05 354.67 155.04	S89° 34' 31.29"E S0° 35' 16.94"W N89° 24' 31.29"W N89° 34' 31.29"W N0° 25' 28.71"E
408	23,886.85	770.09	367.16 77.77 367.39 77.77	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
409	23,914.20	770.63	367.39 77.77 367.60 77.77	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W
410	44,667.16	908.04	74.54 284.66 180.02 367.60 91.33	N13° 49' 16.38"E N75° 18' 24.07"E S0° 35' 16.94"W N89° 34' 31.29"W N0° 25' 28.71"E
411	34,253.35	902.21	91.55 69.46 224.84 191.66 284.66 40.00 114.85	N0° 25' 28.71"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 35' 16.94"W S75° 18' 24.07"W N29° 51' 30.87"W N41° 02' 34.29"E
412	29,760.69	696.38	212.46 47.10 135.21 86.48 41.58 114.85 57.76	N14° 07' 00.41"W S89° 34' 31.29"E S89° 34' 31.29"E S0° 25' 28.71"W S0° 25' 28.71"W S41° 02' 34.29"W N76° 52' 36.17"W
413	15,226.91	601.48	33.78 119.19 82.20 212.46 20.00 114.85	N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E S14° 07' 00.41"E S89° 19' 13.12"W N33° 12' 40.28"W
414	12,915.51	466.81	99.72 72.47 70.09 33.78 114.85 57.76	N89° 24' 03.66"W N0° 25' 28.71"E N0° 25' 28.71"E S89° 34' 31.29"E S33° 12' 40.28"E S26° 11' 02.29"W
415	9,815.14	387.77	28.69 120.69 83.67 99.72 84.06	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 24' 03.66"E S26° 59' 20.62"E
416	10,096.37	408.72	99.67 120.69 83.67 120.69	S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E S89° 34' 31.29"E
417	9,871.20	404.96	51.75 120.69 83.67 81.75 120.69	S0° 25' 28.71"W N89° 34' 31.29"W S89° 34' 31.29"E N0° 25' 28.71"E S89° 34' 31.29"E
418	9,849.00	403.14	81.69 118.98 18.49 83.34 120.69	S0° 25' 28.71"W N89° 34' 31.29"W N4° 52' 51.44"W N0° 25' 28.71"E S89° 34' 31.29"E
419	9,526.10	378.19	97.49 83.34 36.34 40.03 32.63 118.98	S0° 25' 28.71"W N87° 20' 07.49"W N89° 54' 12.05"W N40° 40' 10.34"W N19° 37' 43.02"W S89° 34' 31.29"E
420	7,282.25	368.06	76.51 89.84 83.67 65.34 26.34 83.34	S0° 25' 28.71"W N87° 20' 07.49"W N89° 54' 12.05"W N31° 41' 40.38"E S59° 54' 12.65"E S87° 20' 07.49"E
421	8,616.42	419.21	38.03 83.34 83.67 89.84 99.73 112.29	N89° 54' 12.05"W N31° 41' 40.38"E S59° 54' 12.65"E S87° 20' 07.49"E S0° 25' 28.71"W N87° 20' 07.49"W

D5 PARCEL TABLES 1

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
422	7,824.89	371.69	88.34 120.69 40.30 95.34 86.34	N40° 40' 15.58"W N60° 57' 45.53"E S40° 40' 15.54"E S27° 41' 43.38"W S27° 41' 43.38"W
423	7,589.41	369.70	94.76 121.83 32.62 120.69	N15° 41' 52.28"W S89° 34' 31.29"E S19° 37' 43.02"E S60° 57' 45.53"W
424	8,868.79	465.66	83.38 120.69 63.24 16.45 121.83 16.27	N0° 25' 28.71"E S89° 52' 16.64"E S0° 25' 28.71"W S4° 53' 31.44"E N89° 34' 31.29"W N1° 58' 00.81"W
425	8,868.84	404.82	81.75 120.69 81.79 120.69	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 55' 16.98"W
426	10,172.90	409.98	84.51 120.69 83.67 120.69	N0° 25' 28.71"E S89° 56' 20.46"E S0° 25' 28.71"W N89° 34' 31.29"W
427	10,172.90	409.99	84.91 120.71 83.67 120.69	N0° 25' 28.71"E S89° 29' 49.98"E S0° 25' 28.71"W N89° 56' 20.46"W
428	8,567.27	383.67	70.00 120.69 72.47 120.71	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 29' 49.98"W
429	8,449.20	381.38	70.00 72.00 45.59 70.00 120.69	N0° 25' 28.71"E S89° 34' 31.29"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
430	7,067.36	349.32	98.16 72.00 98.16 72.00	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
431	7,192.94	477.66	20.00 120.69 118.14 45.69 98.16 72.00	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E N89° 34' 31.29"W
432	20,354.66	632.47	20.00 148.60 146.24 103.60 166.24 47.10 82.22 120.69	N0° 25' 28.71"E S89° 34' 31.29"E N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N89° 34' 31.29"W
433	21,294.08	582.47	47.10 145.91 146.24 148.60 95.00	N0° 25' 28.71"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
434	41,559.17	632.47	258.06 166.24 103.60 148.60 166.24	S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N89° 34' 31.29"W N0° 25' 28.71"E
435	41,599.77	632.47	250.06 166.24 258.06 166.24	S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
436	41,433.99	621.48	250.01 164.92 250.06 166.57	S89° 11' 26.33"E S0° 25' 28.71"W N89° 34' 31.29"W N0° 25' 28.71"E
500	15,467.21	647.89	164.12 157.69 256.88 149.53 59.19	N21° 31' 49.34"W S89° 34' 31.29"E S0° 25' 28.71"W N29° 47' 37.35"W N9° 32' 34.09"W

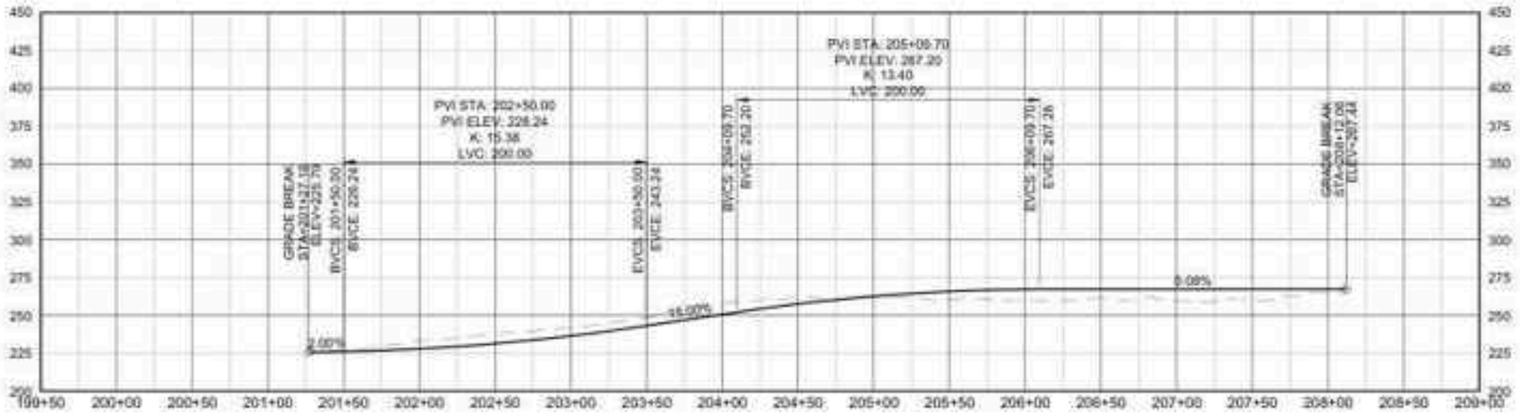
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
501	9,797.46	387.53	33.79 57.70 121.50 79.47 107.66	N37° 27' 34.21"W N0° 48' 21.67"E S89° 34' 31.29"E S0° 25' 28.71"W N89° 34' 31.29"W
502	9,301.92	396.25	79.47 121.50 79.47 121.39	S0° 25' 28.71"W N89° 34' 31.29"W N0° 48' 21.67"E S89° 34' 31.29"E
503	9,330.04	396.41	79.47 121.39 77.49 120.69 0.26	S0° 25' 28.71"W N89° 34' 31.29"W N0° 48' 21.67"E S89° 11' 38.33"E S0° 25' 28.71"W
504	7,997.02	397.76	150.35 73.68 70.00 79.47 97.70	N64° 07' 03.04"W N15° 51' 59.49"E S89° 34' 31.29"E S0° 48' 21.67"W S0° 48' 21.67"W
505	7,855.50	408.72	20.03 147.57 70.00 77.49 70.00 73.69	N70° 18' 24.75"W N15° 46' 08.77"E S89° 11' 38.33"E S0° 48' 21.67"W N89° 34' 31.29"W S15° 51' 59.43"W
506	12,224.04	459.36	0.36 150.35 20.03 88.26 147.57 70.00	S89° 45' 39.61"W N0° 27' 00.08"E S89° 11' 38.33"E S89° 11' 38.32"E S15° 46' 16.77"W N81° 31' 12.26"W

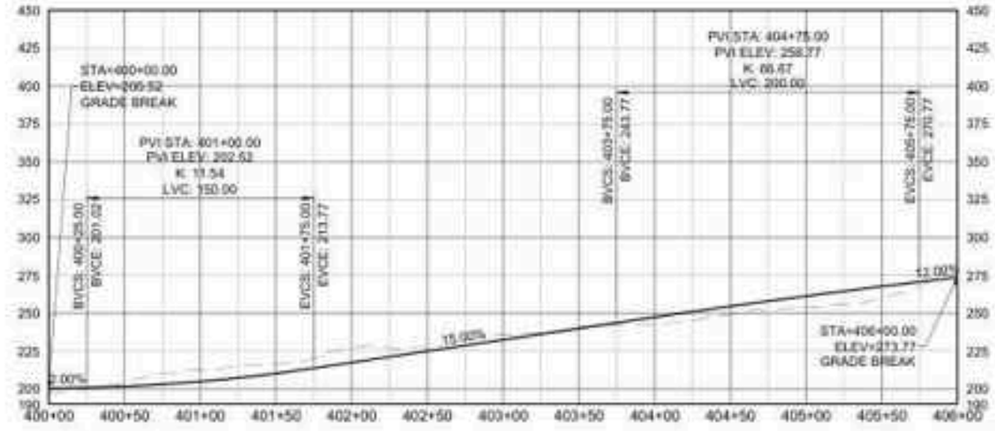
D5 PARCEL TABLES 2

Appendix D – Proposed RR to D-5 Subdivision Alignment Profiles

Profile View of AL-MARY ELLEN WAY

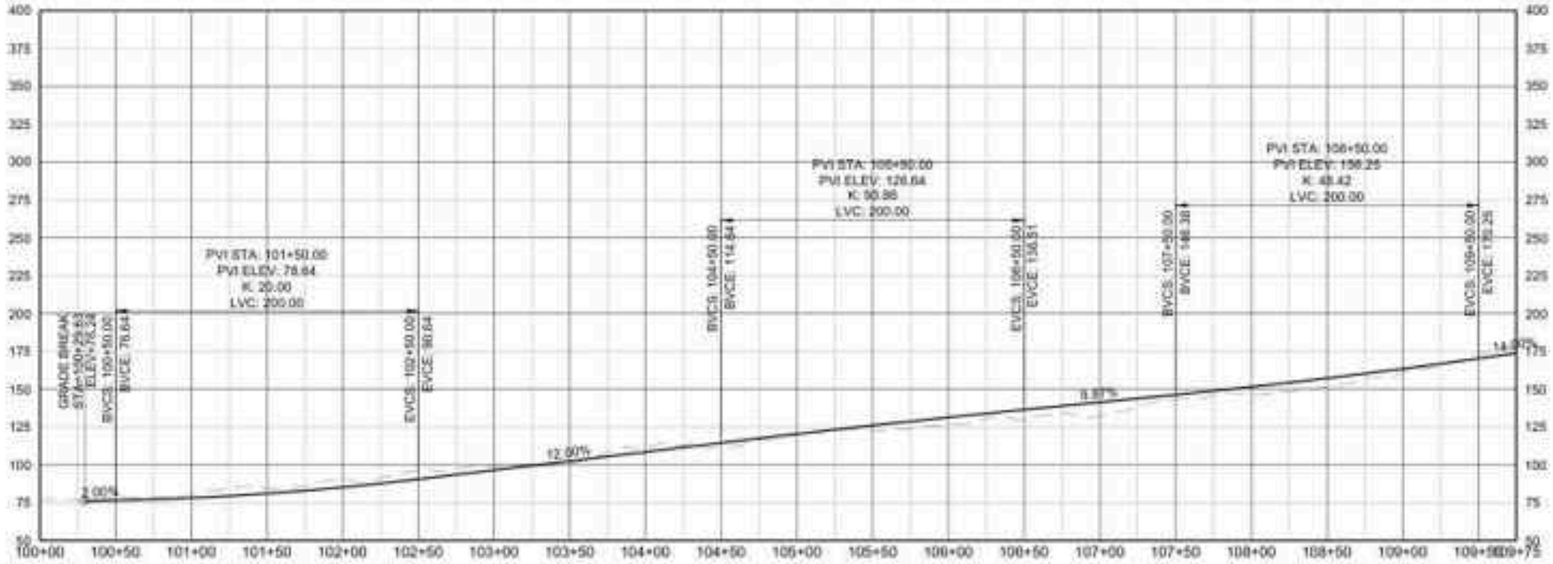


Profile View of AL-HILL CLIMB COURT

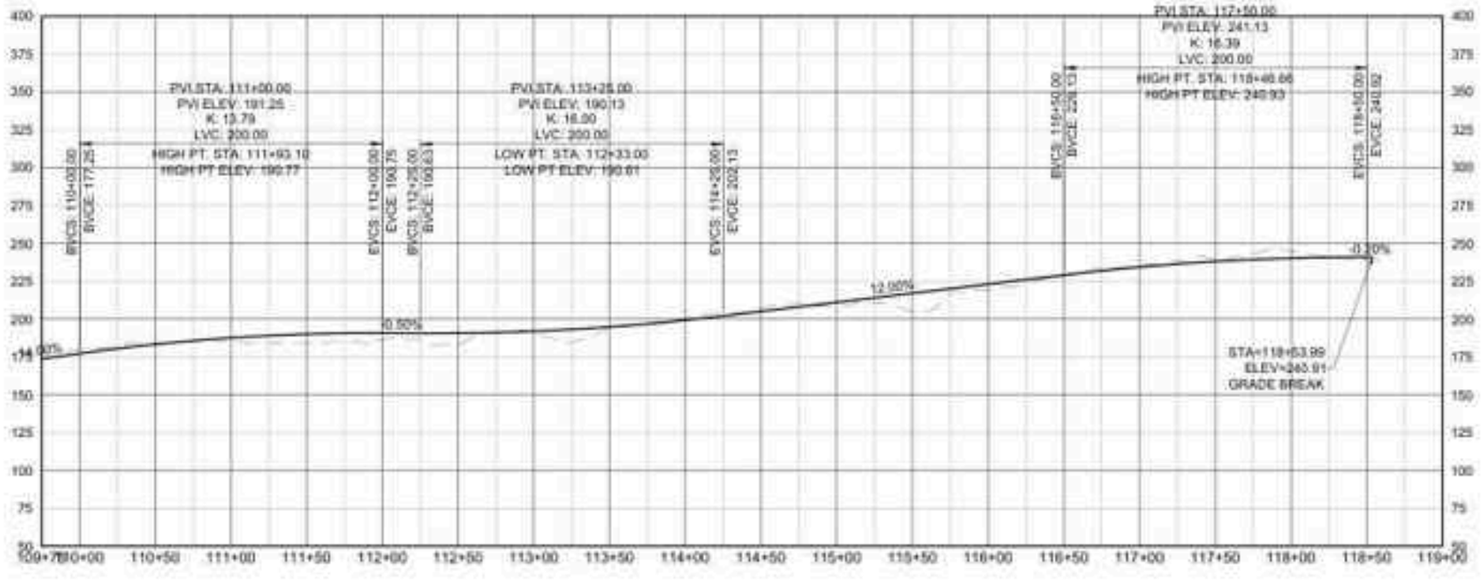


MARY ELLEN WAY & HILL CLIMB COURT PROFILES

Profile View of AL-BLACKERBY STREET

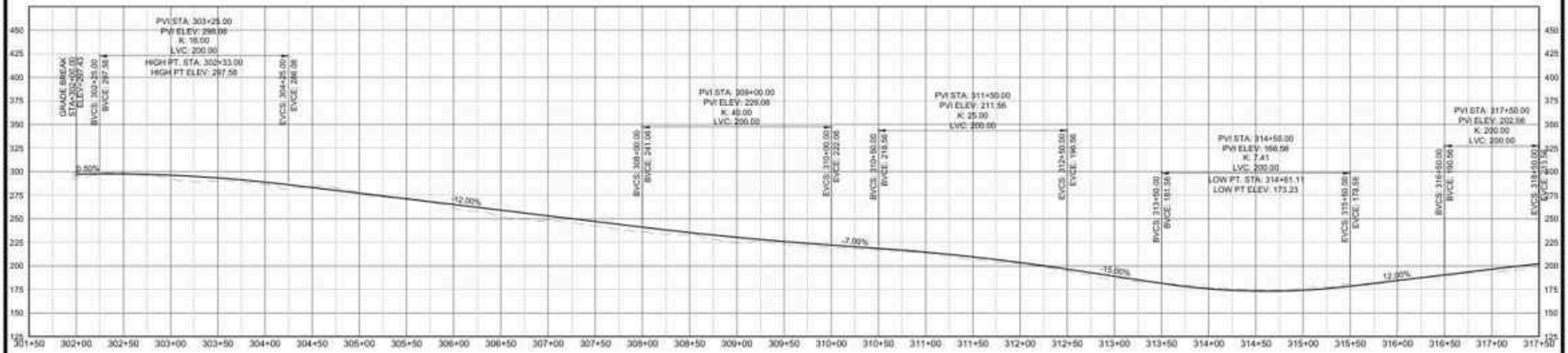


Profile View of AL-BLACKERBY STREET

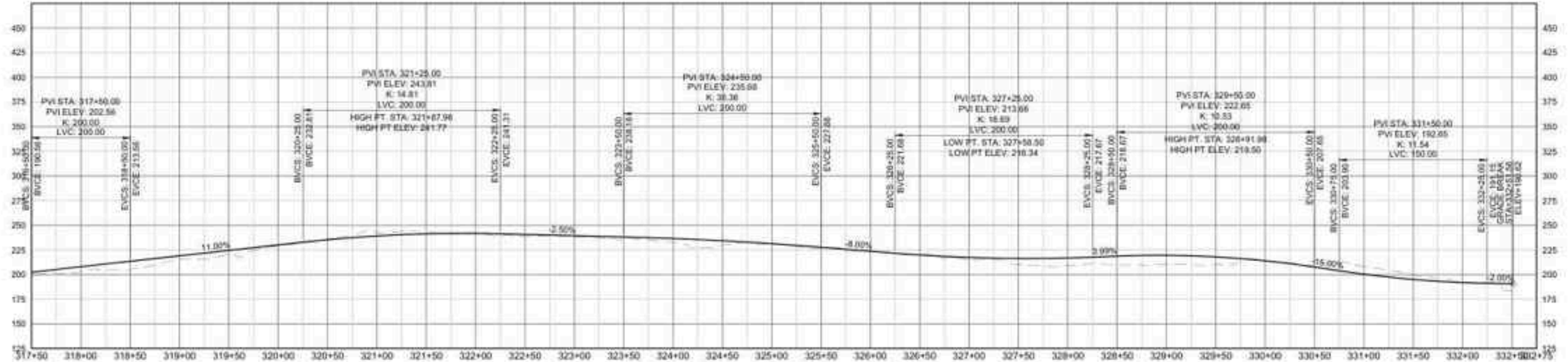


BLACKERBY STREET PROFILE

Profile View of AL-TRAVERSE DRIVE

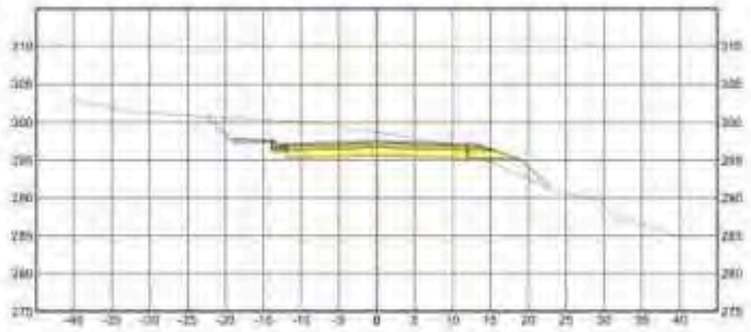


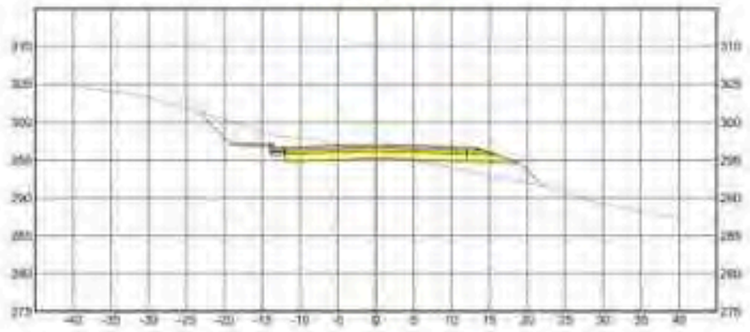
Profile View of AL-TRAVERSE DRIVE

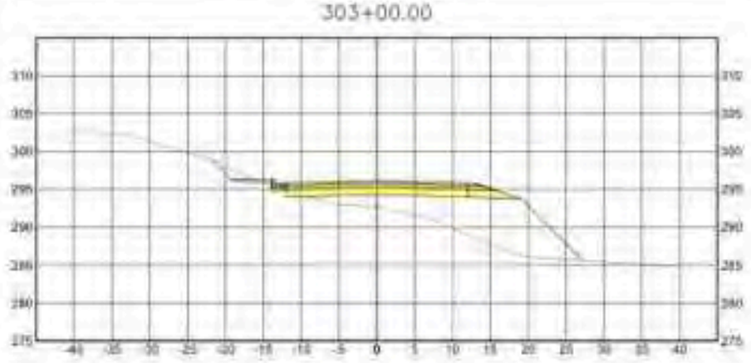


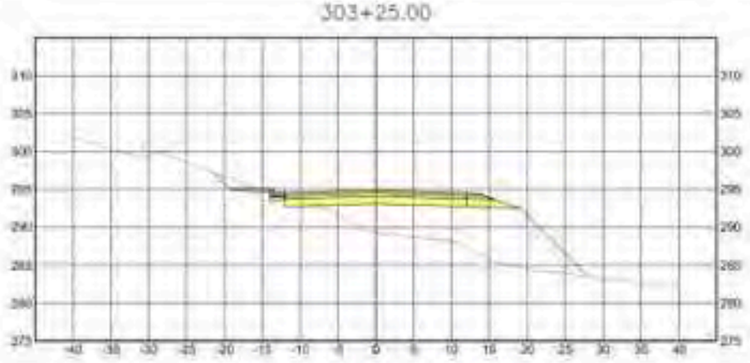
TRAVERSE DRIVE PROFILE

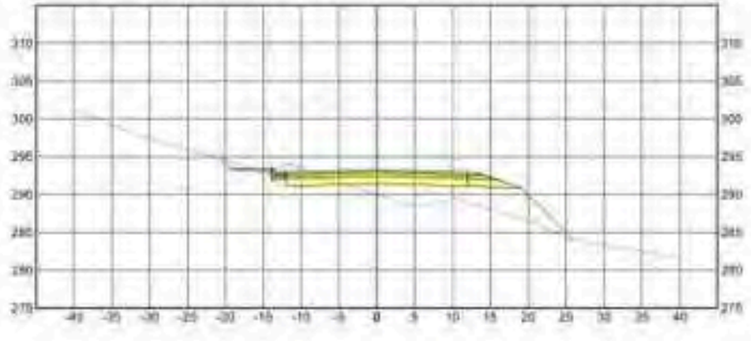
Appendix E – Proposed RR to D-5 Subdivision Alignment Cross Sections

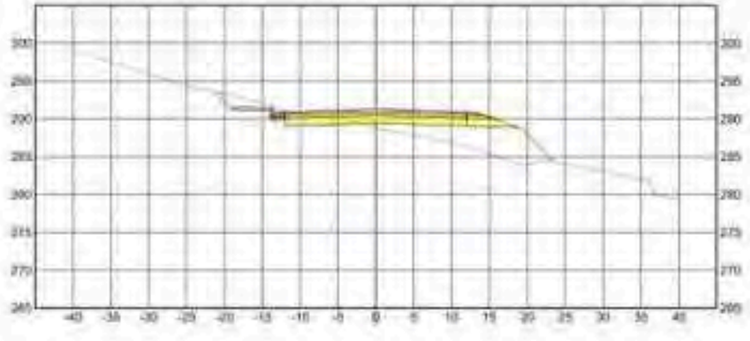












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CERTIFICATE OF AUTHORIZATION
#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-1 TRAVERSE DRIVE

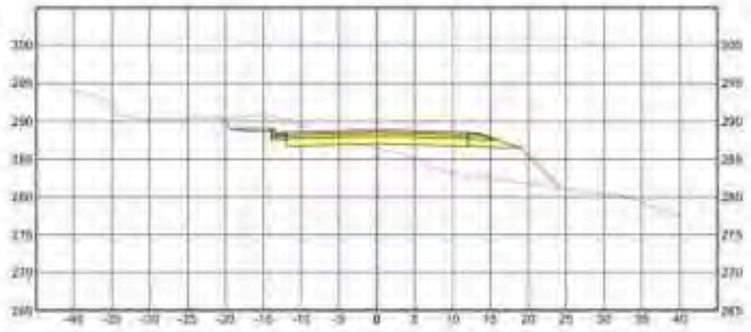
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PLOT DATE: 8/26/2025

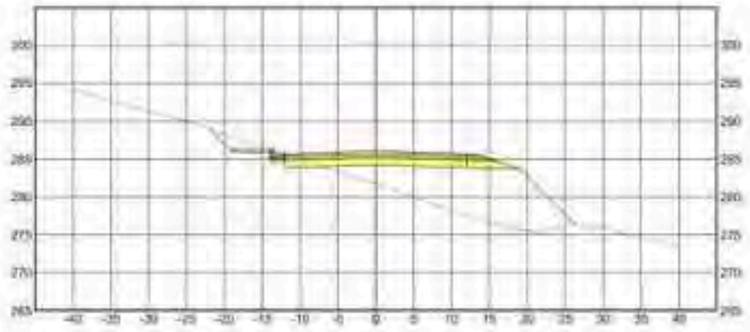
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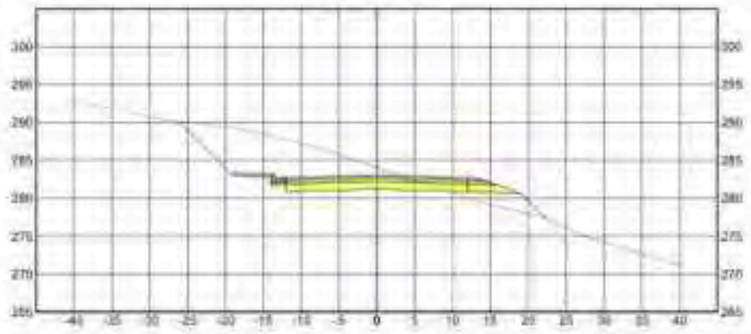
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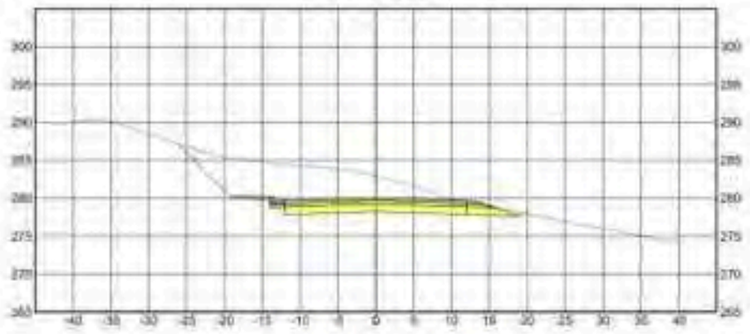
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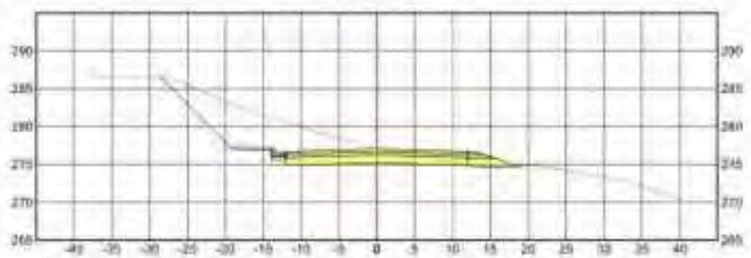
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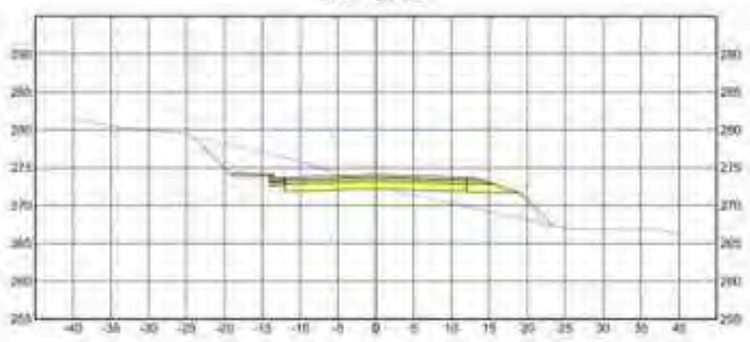
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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 62-25

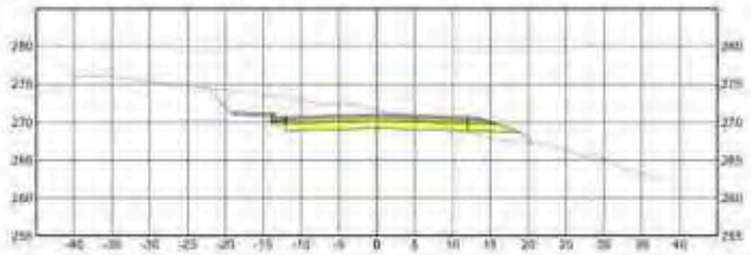
AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-2 TRAVERSE DRIVE

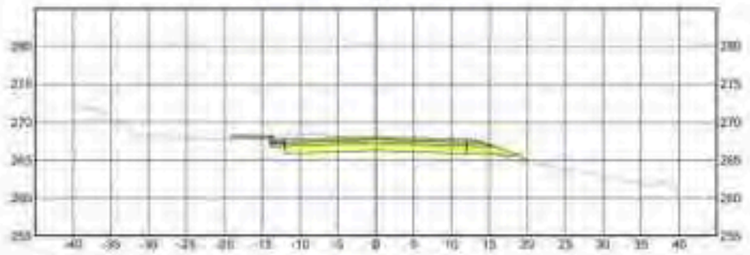
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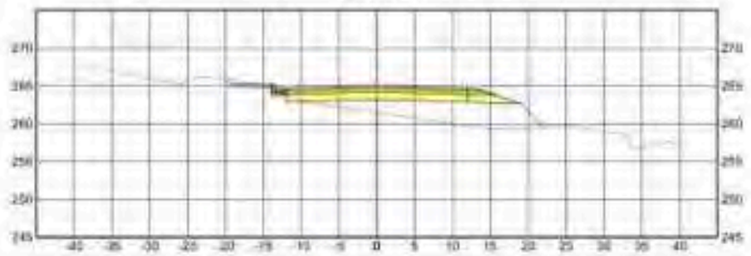
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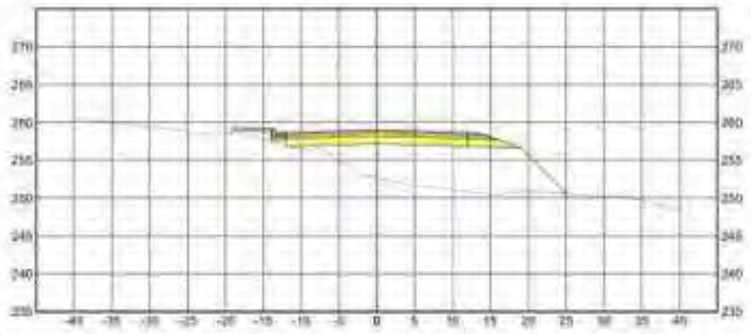
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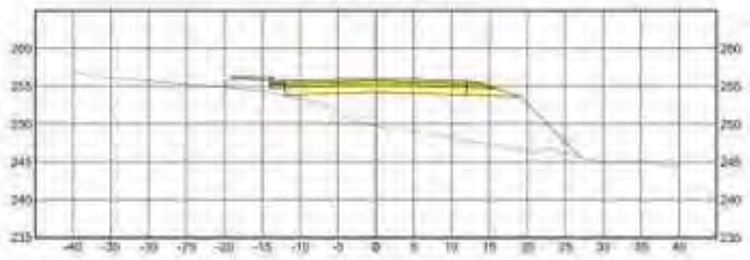
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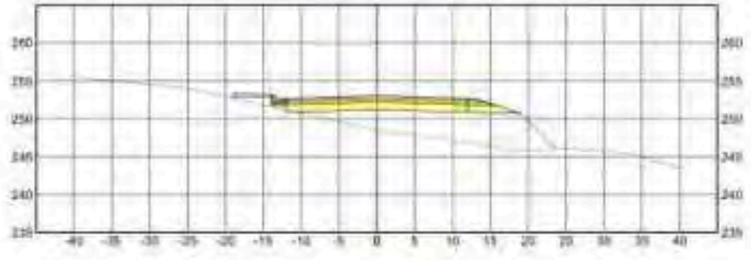
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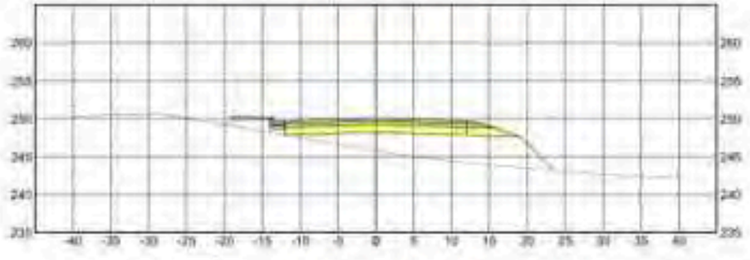
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307+00.00



307+25.00



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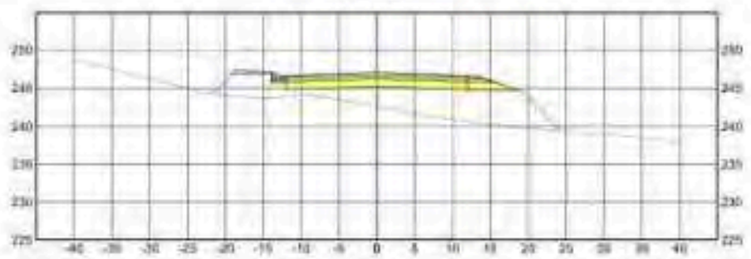
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BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
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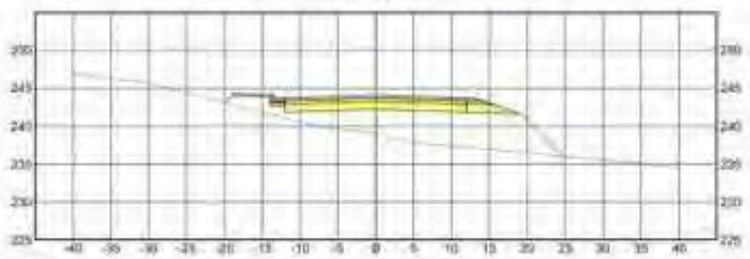
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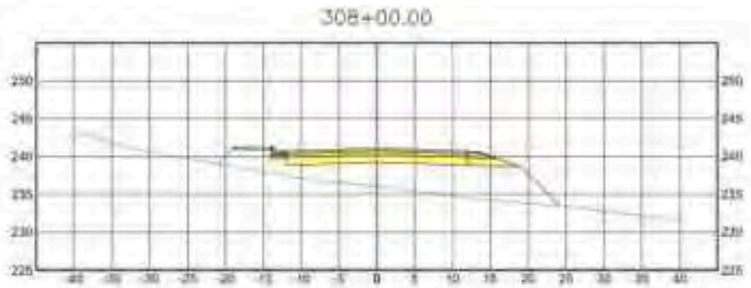
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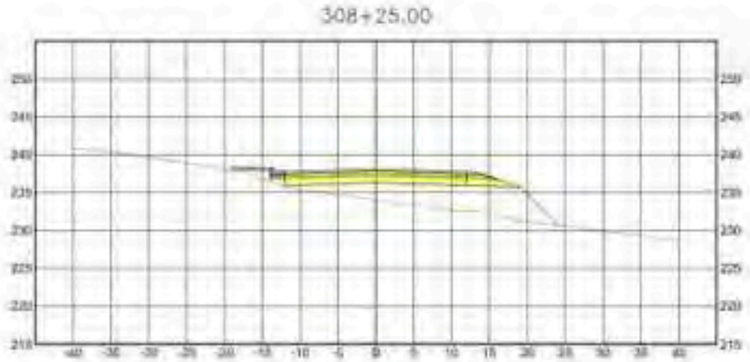
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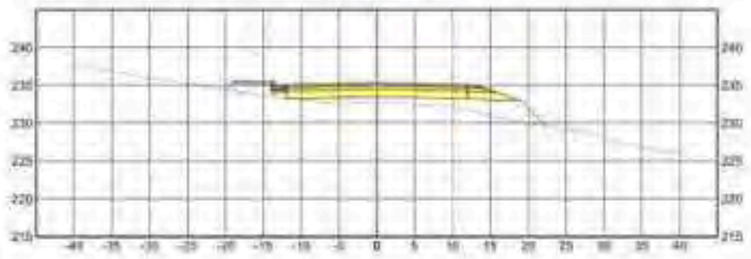
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STATE OF ALASKA DNR
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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

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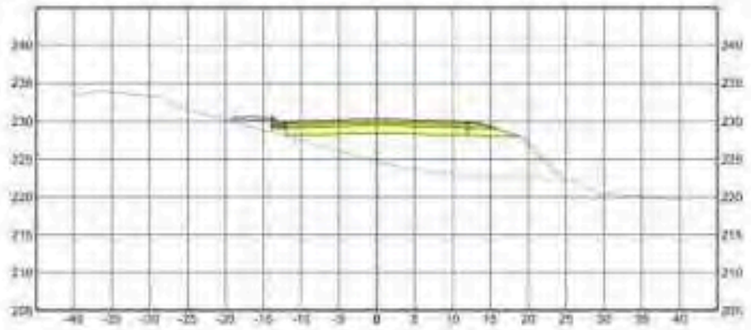
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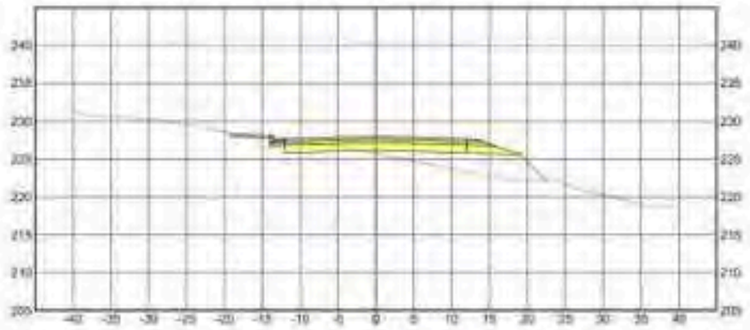
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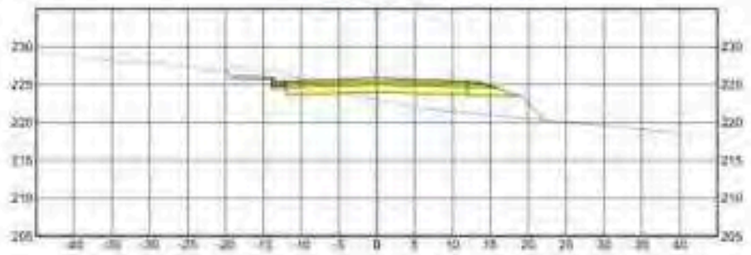
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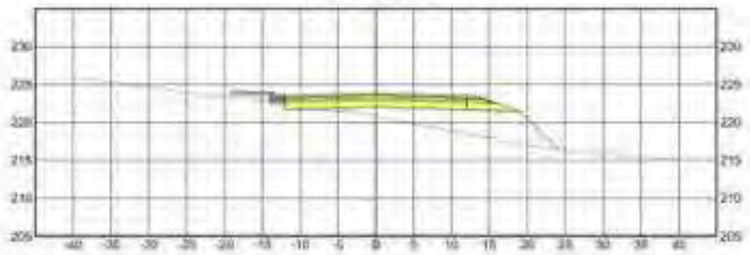
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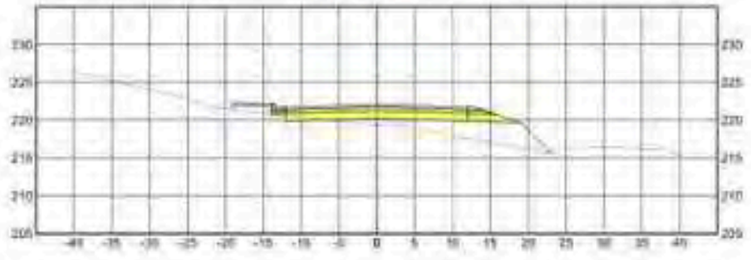
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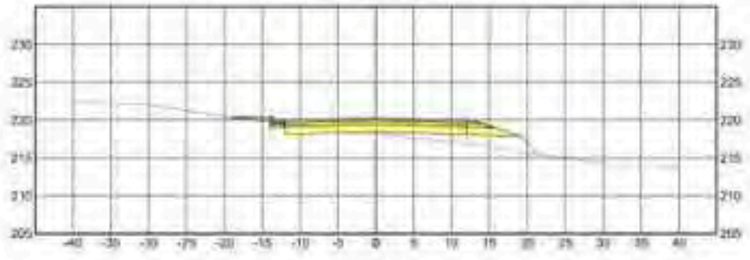
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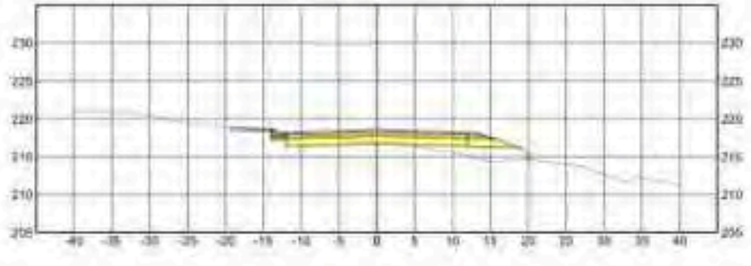
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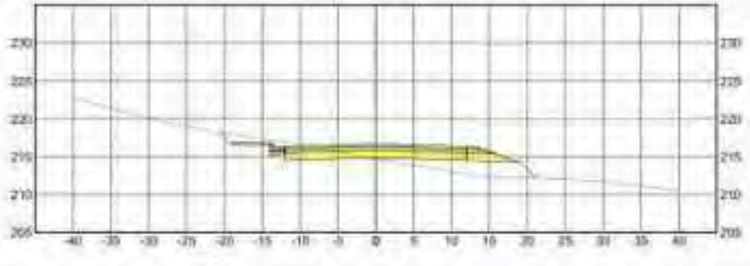
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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

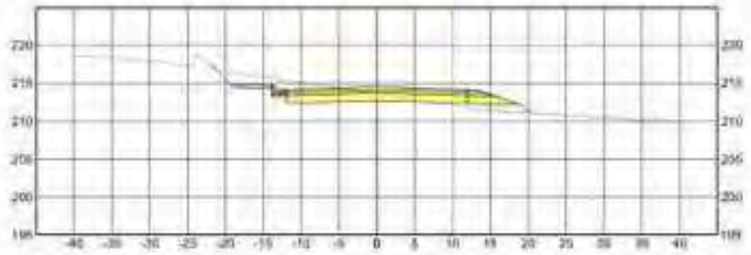
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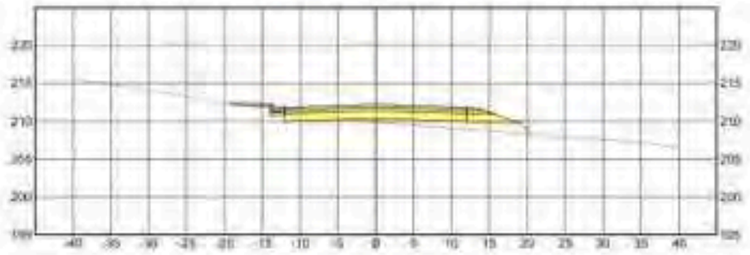
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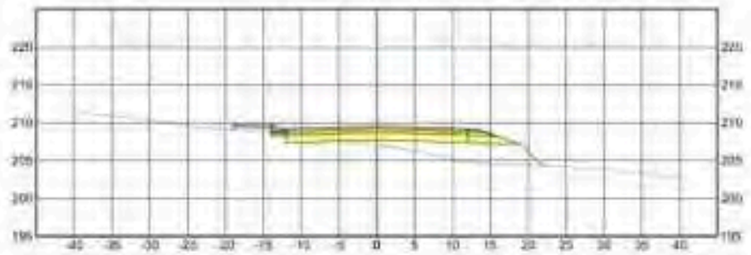
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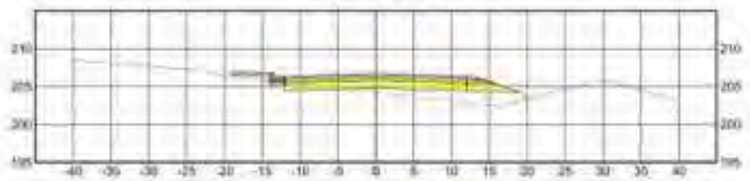
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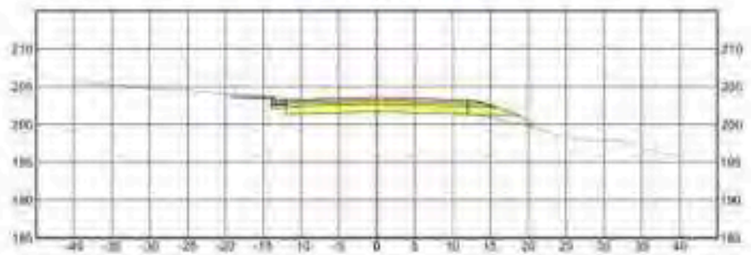
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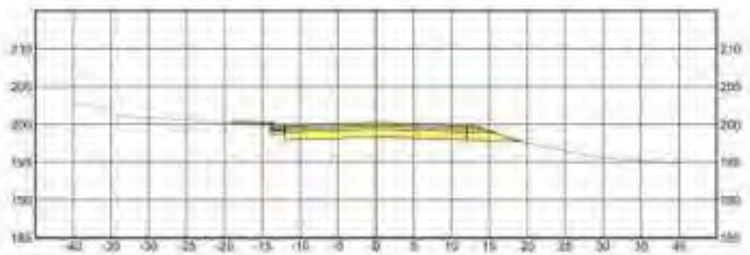
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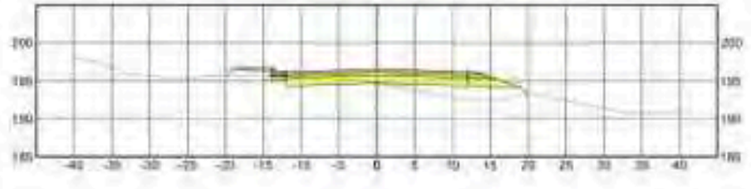
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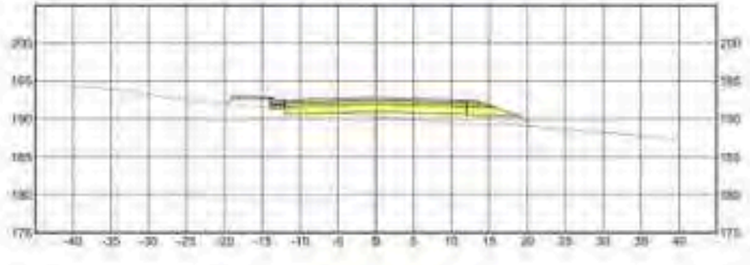
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312+75.00



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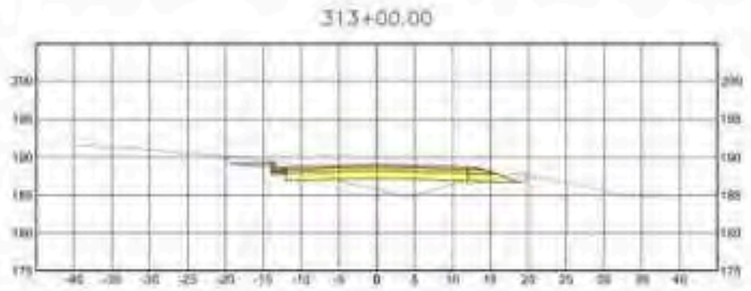
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DEVELOPMENT STUDY
JUNEAU, ALASKA

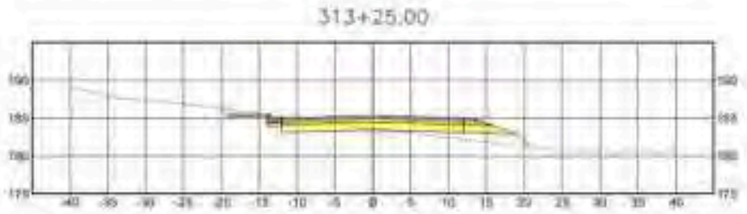
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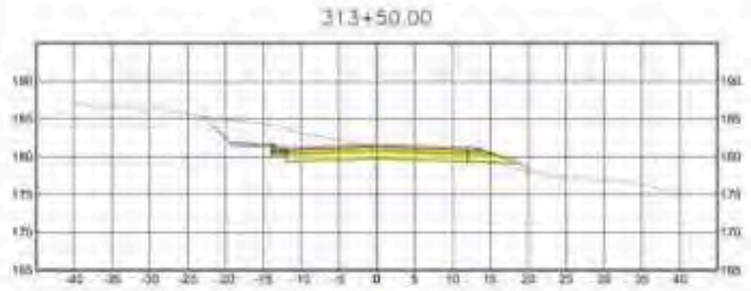
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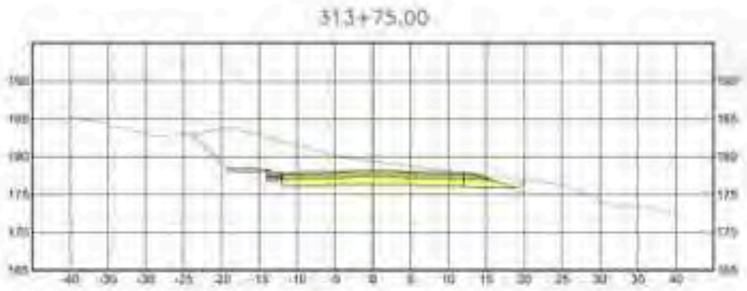
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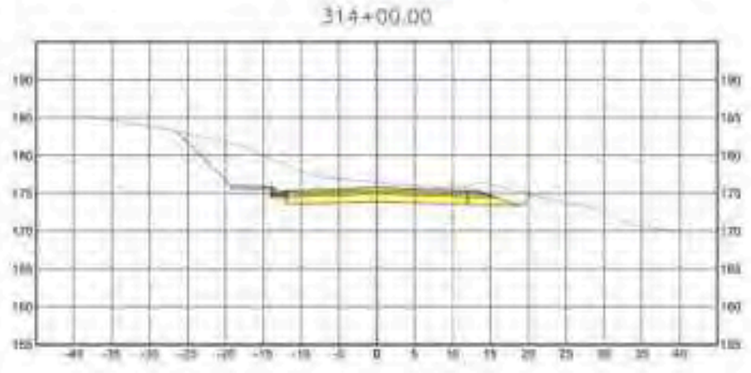
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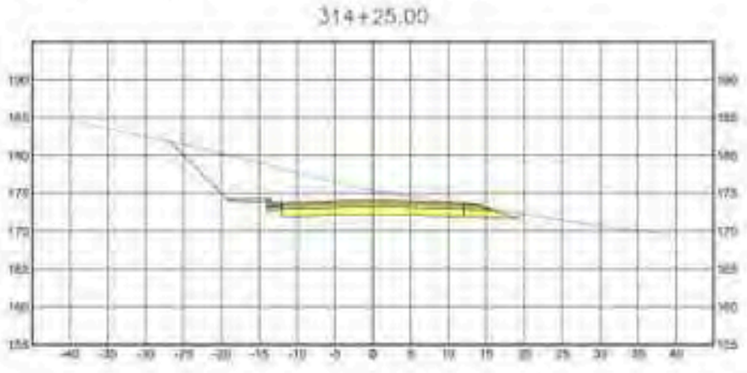












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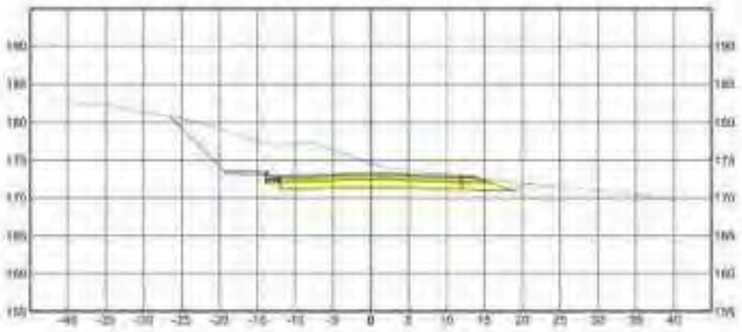
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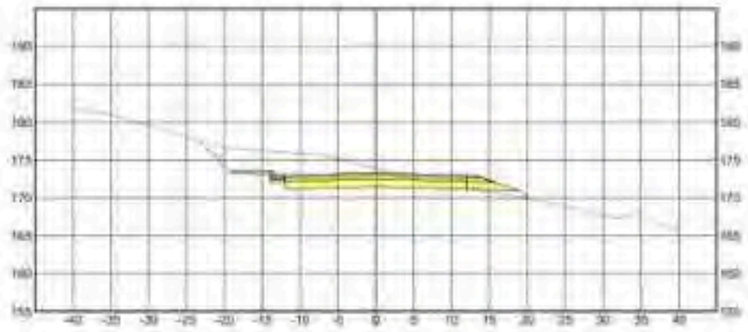
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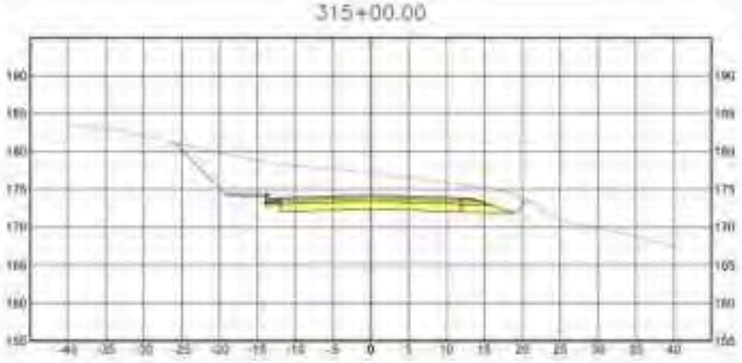
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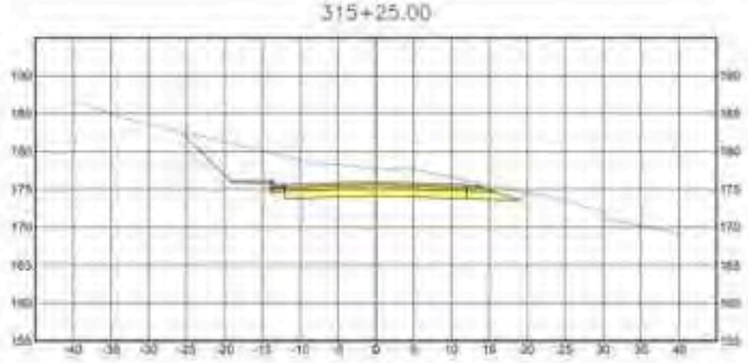
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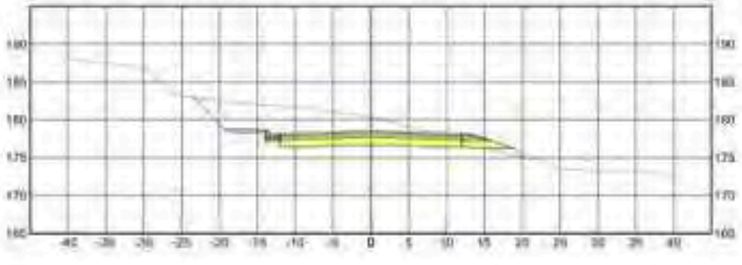
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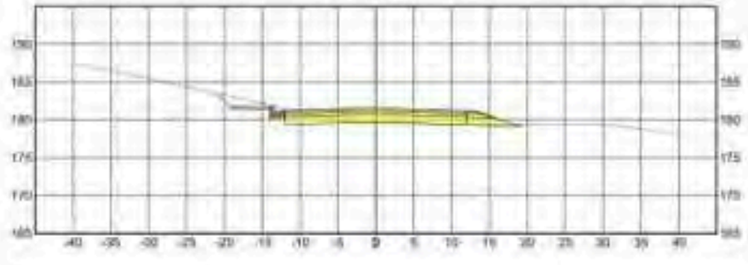












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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 62-25

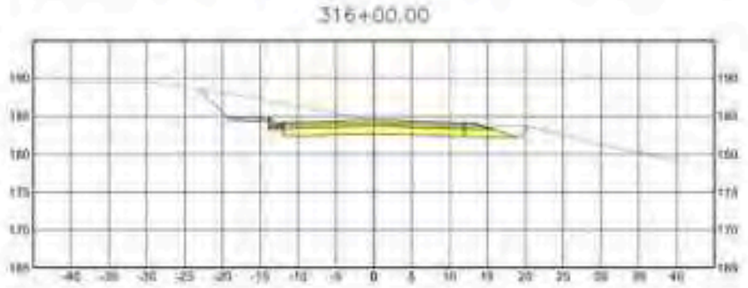
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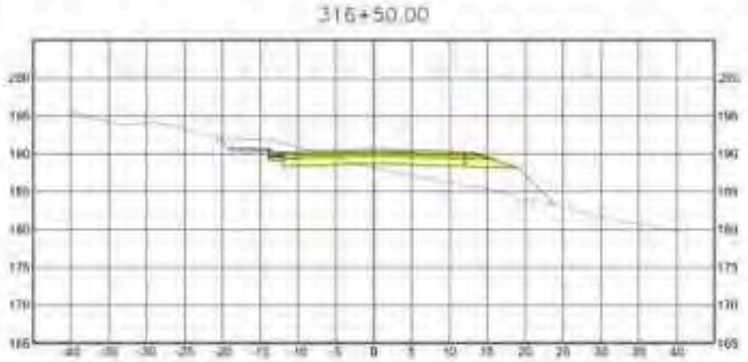
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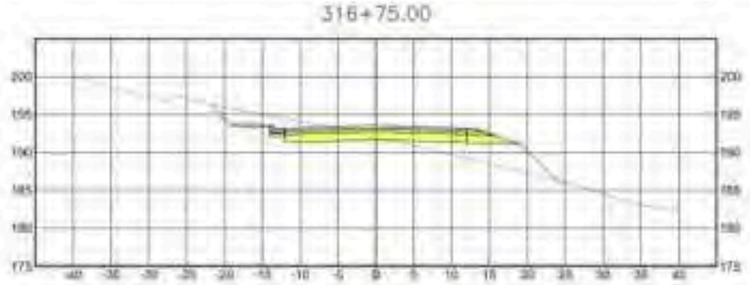
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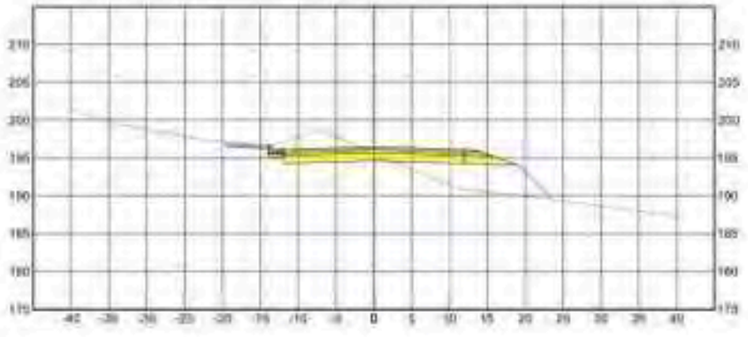
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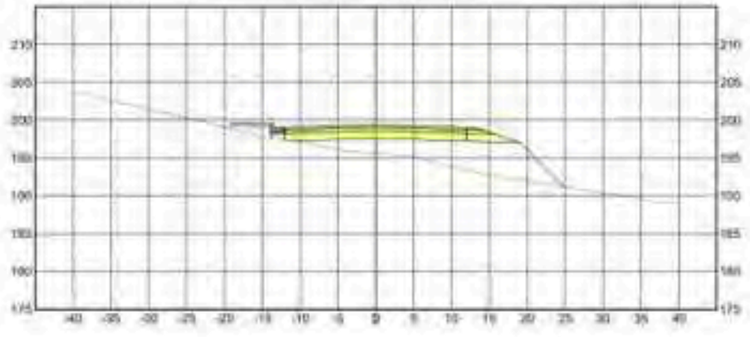












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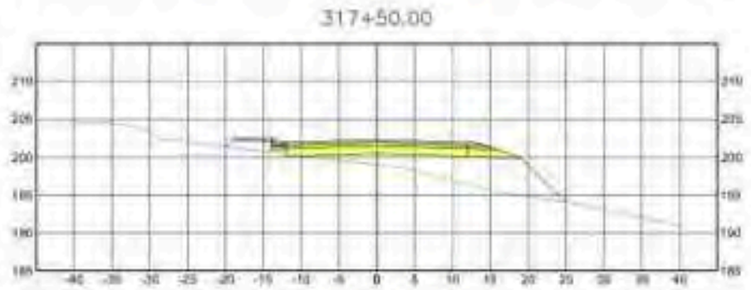
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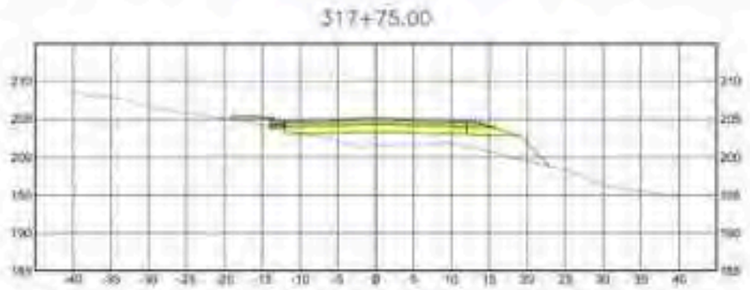
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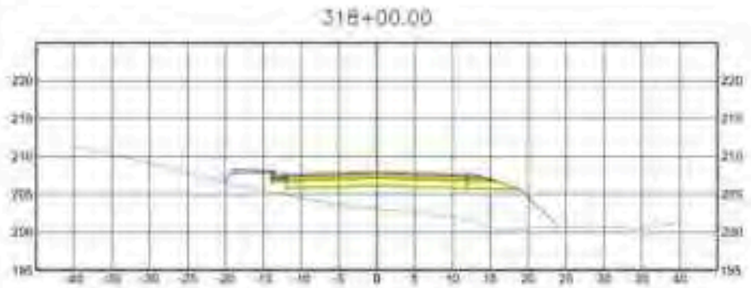
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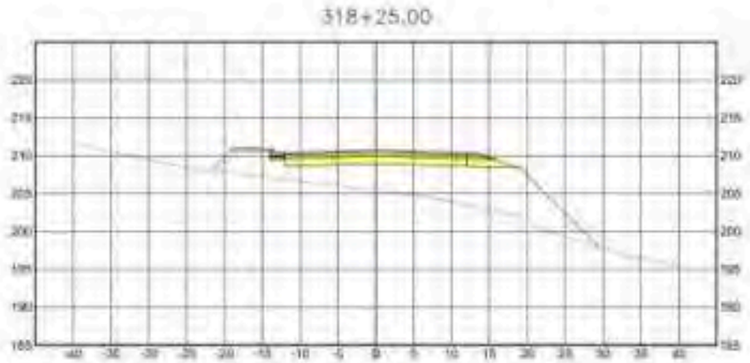
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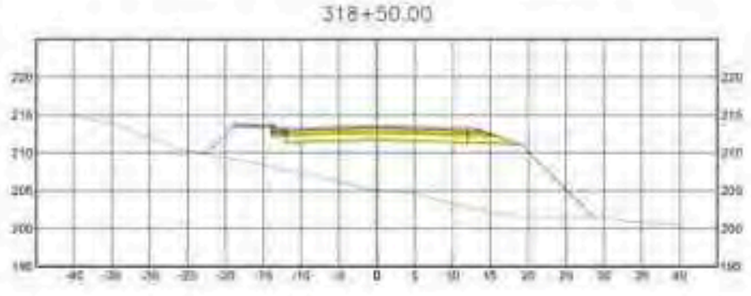
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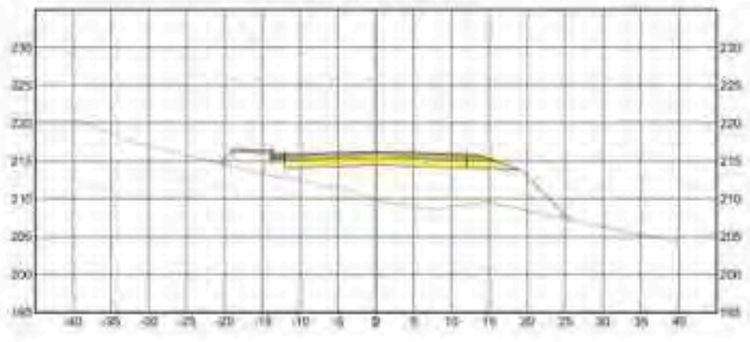












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JUNEAU, ALASKA

PROJECT NO: WO 02-25

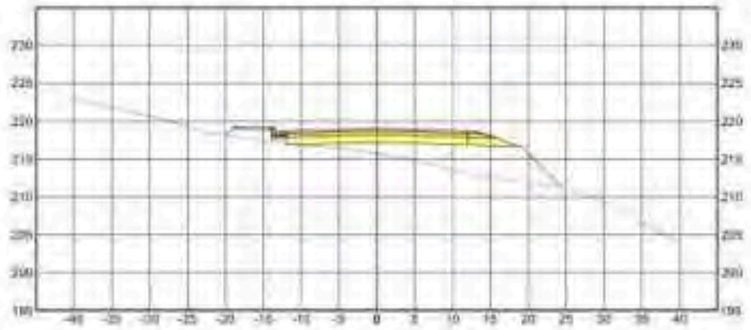
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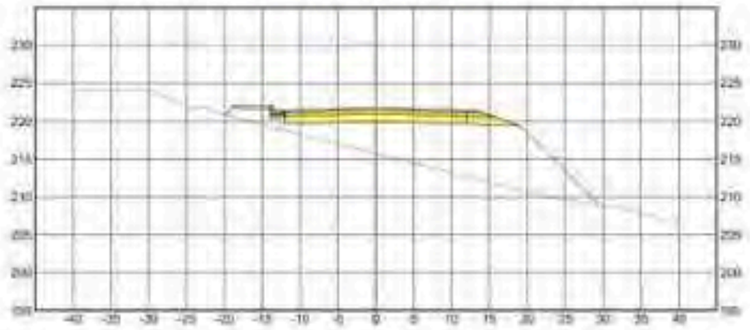
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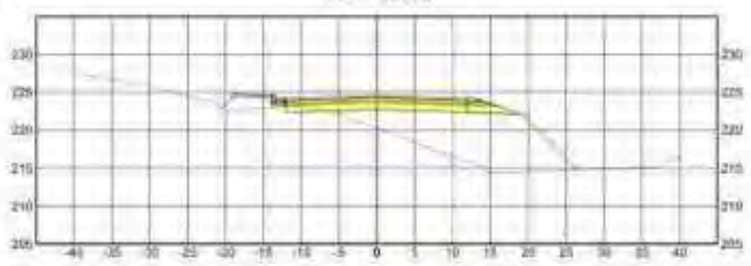
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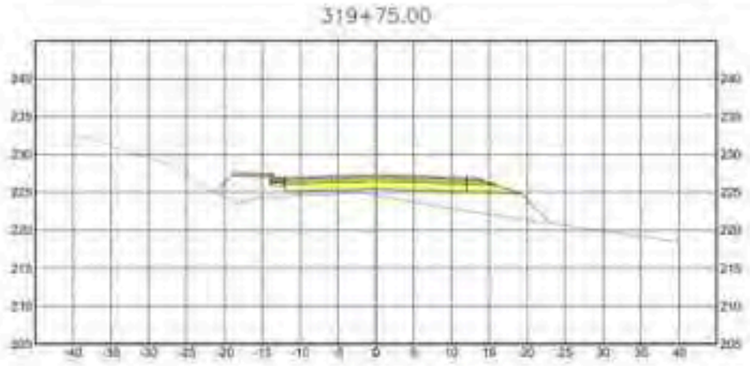
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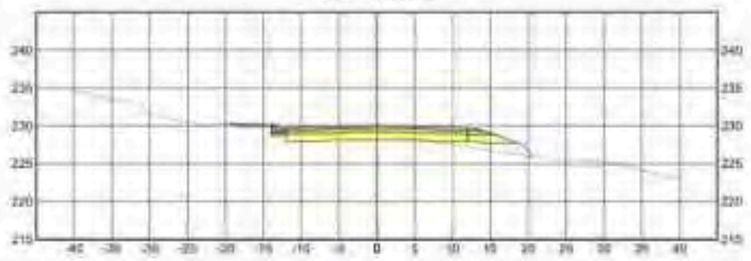
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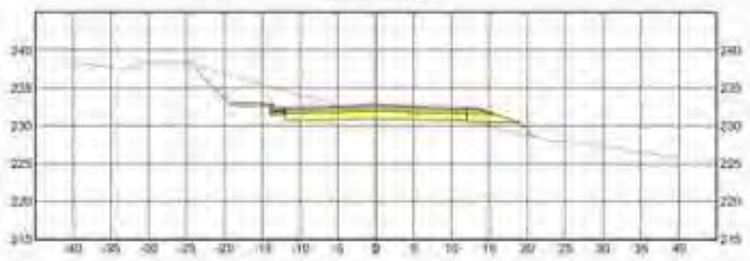












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#204451

STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
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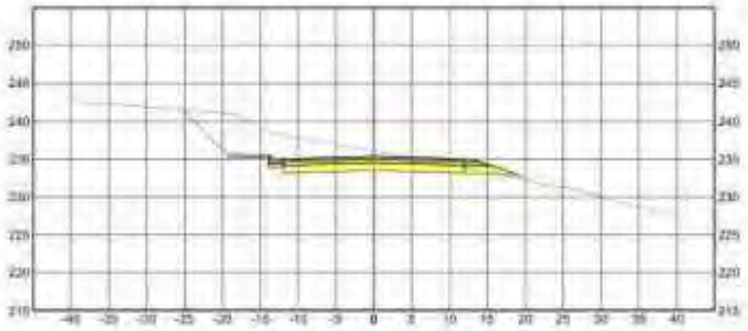
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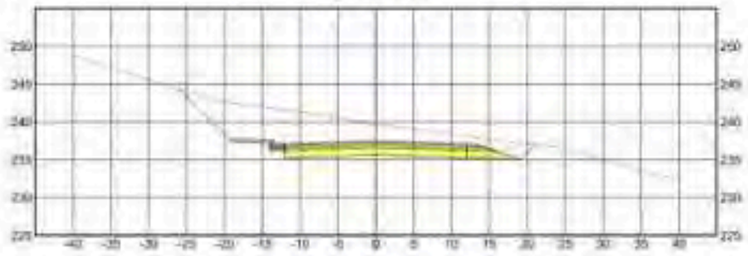
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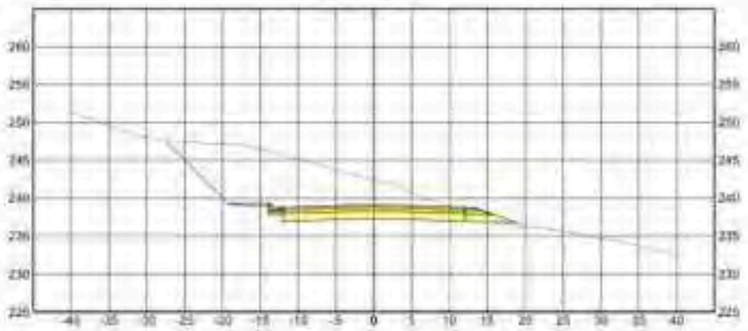
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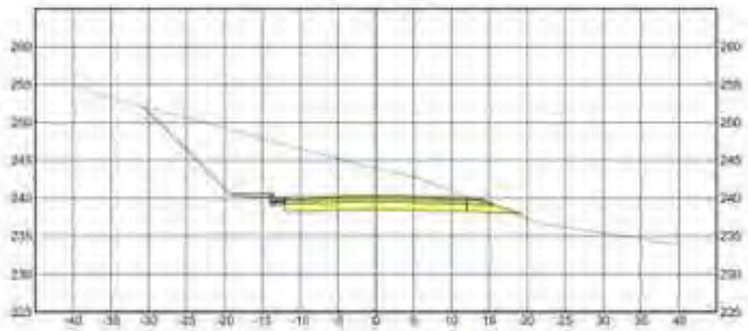
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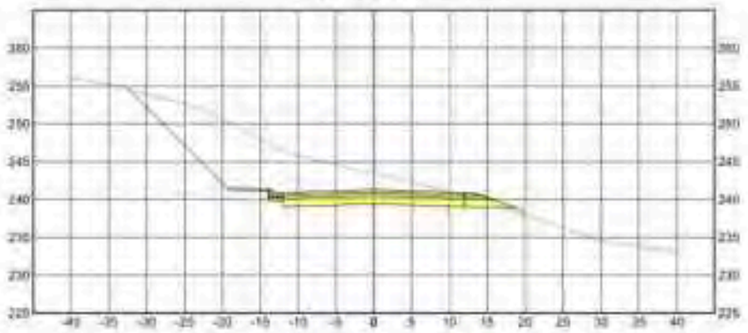
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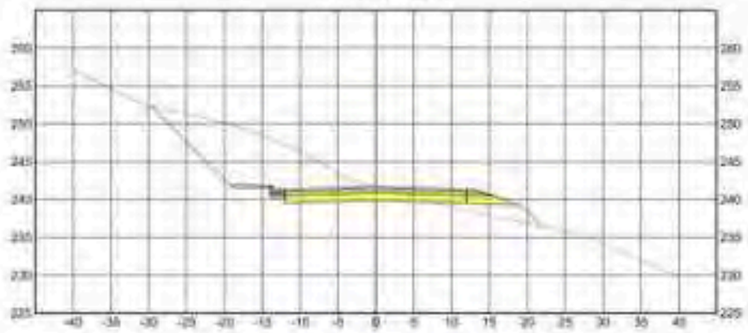
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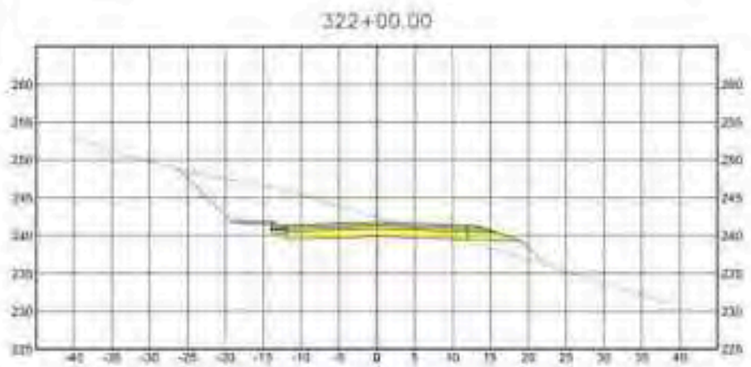
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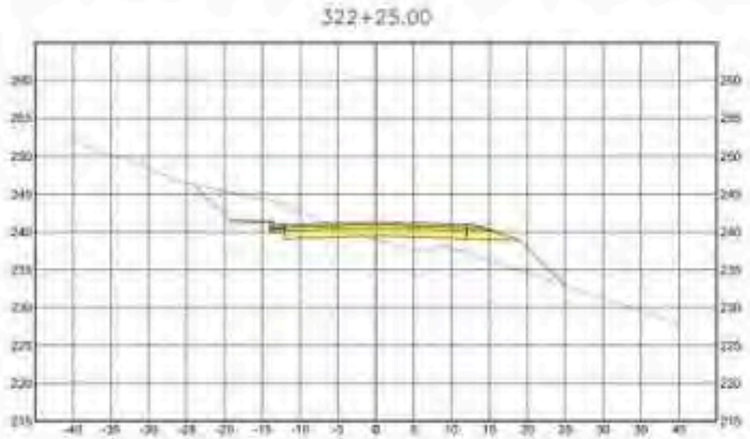
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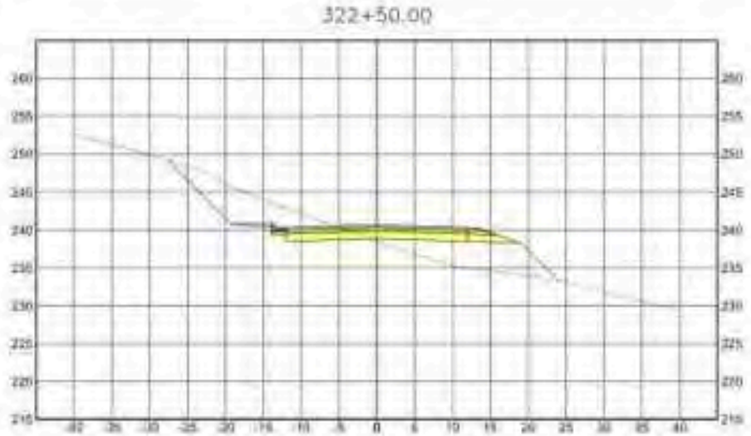
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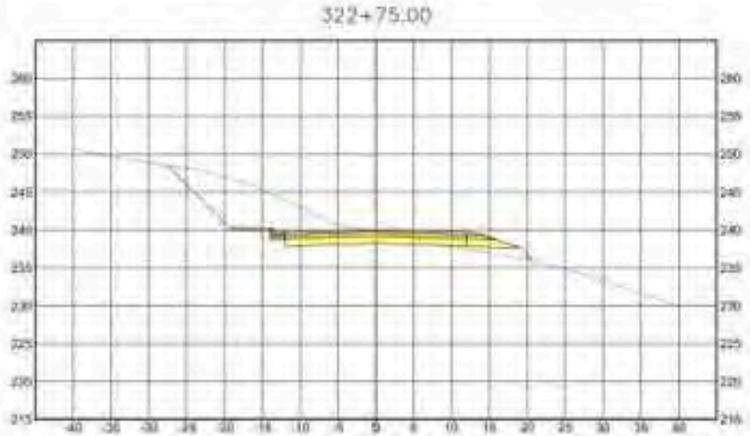
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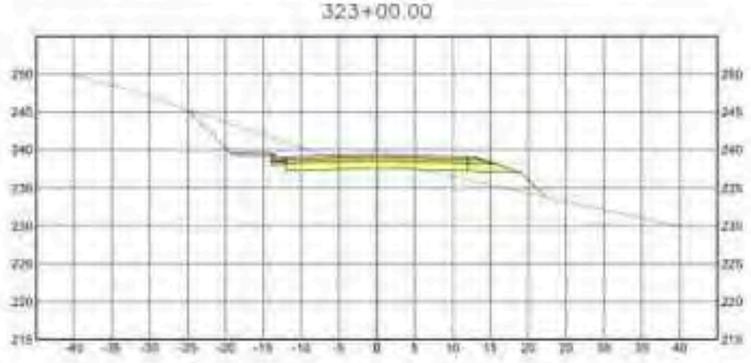
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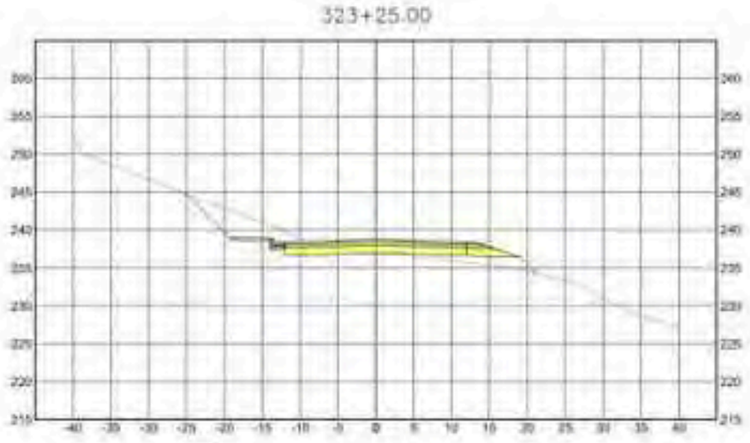












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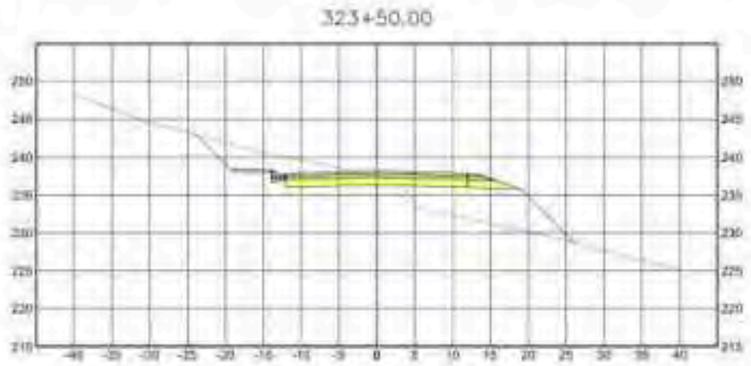
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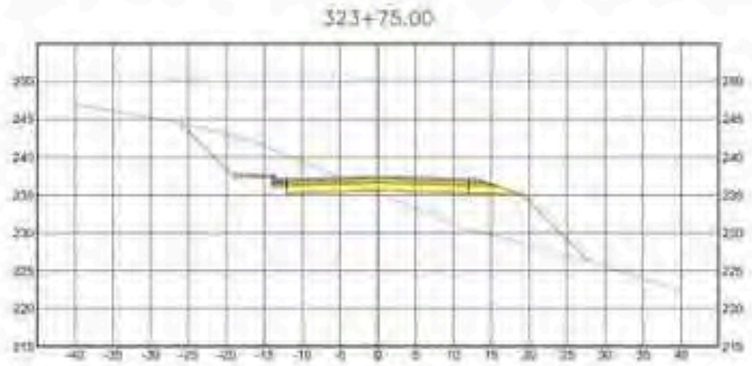
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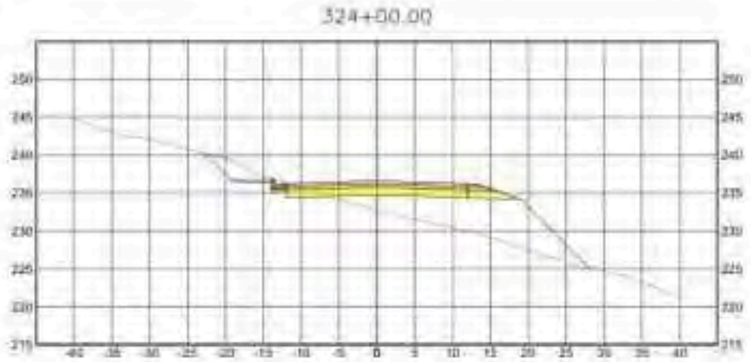
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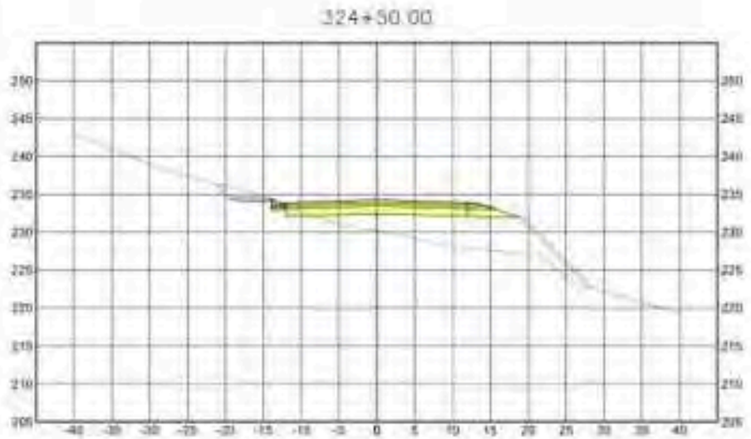
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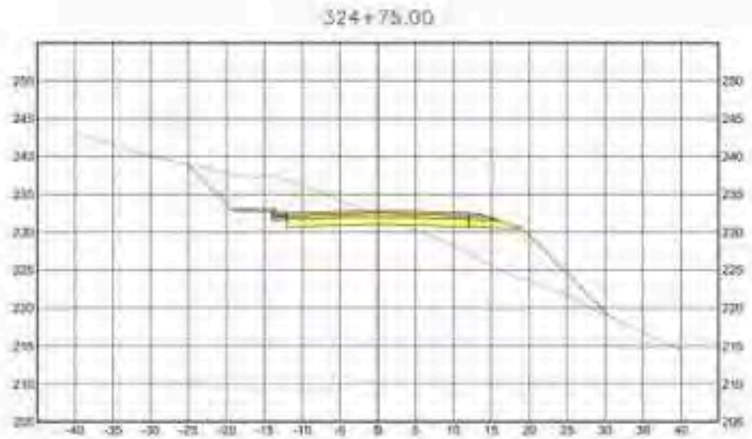












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JUNEAU, ALASKA

PROJECT NO: WO 02-25

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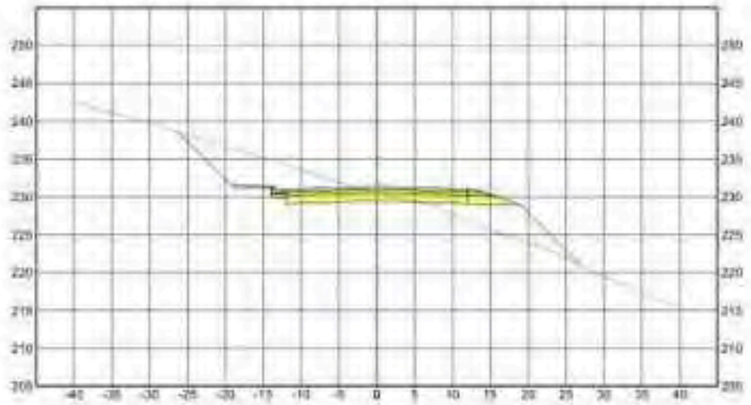
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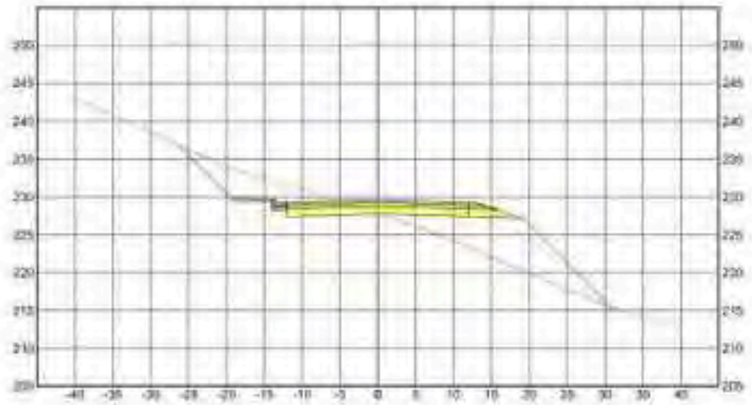
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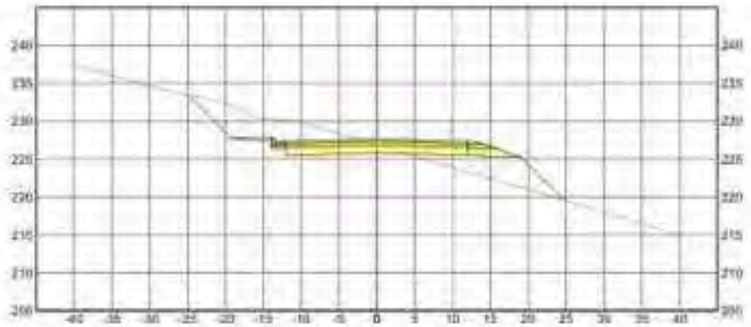
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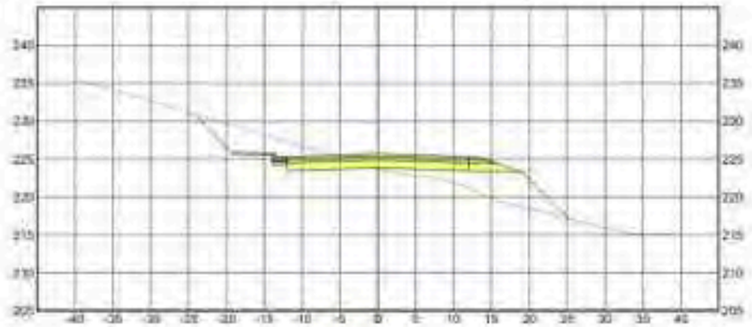
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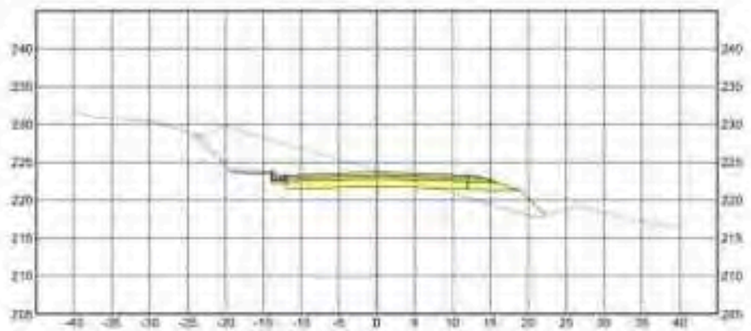
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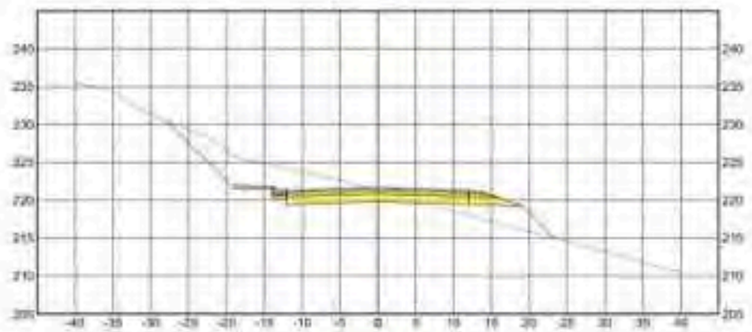
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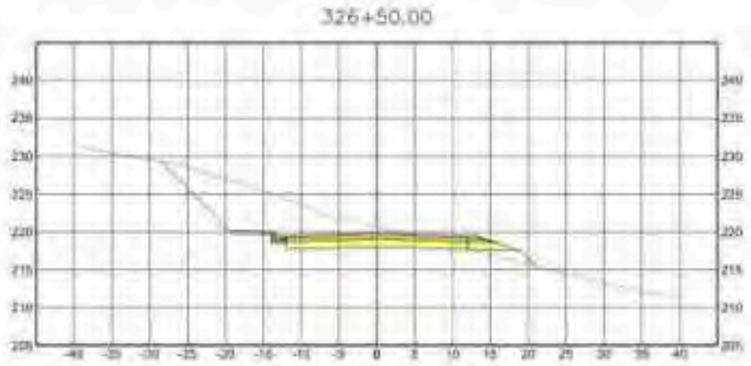
STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

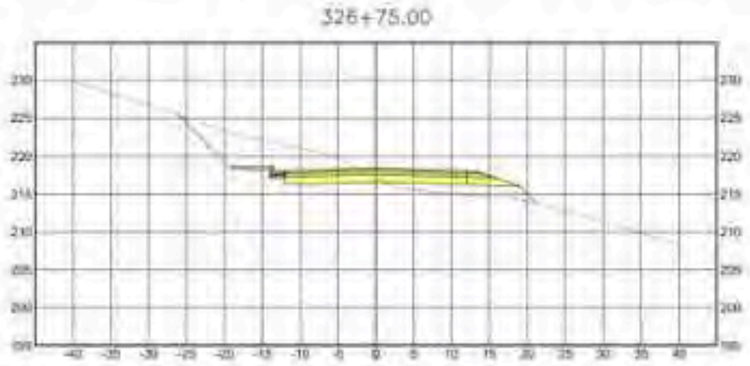
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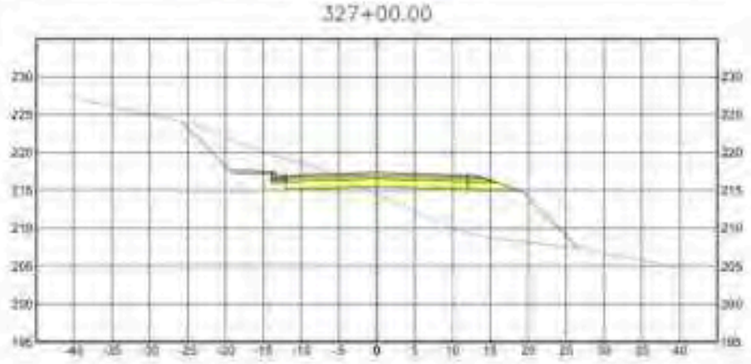
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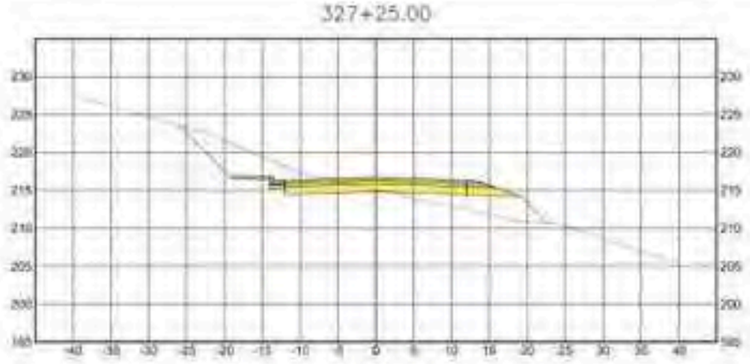
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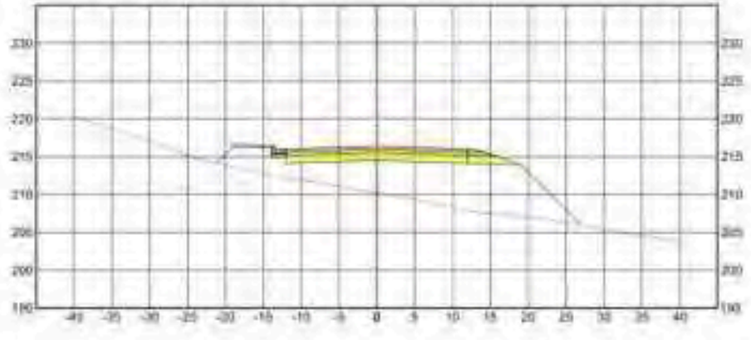
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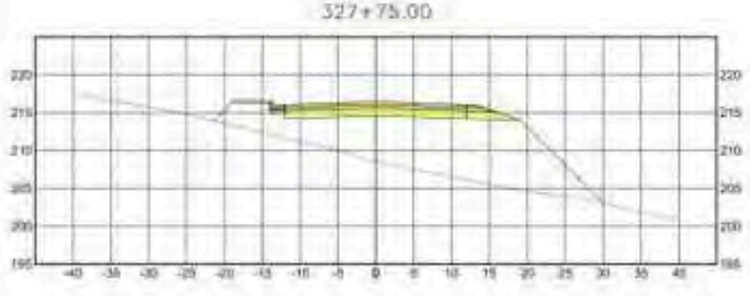












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STATE OF ALASKA DNR
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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

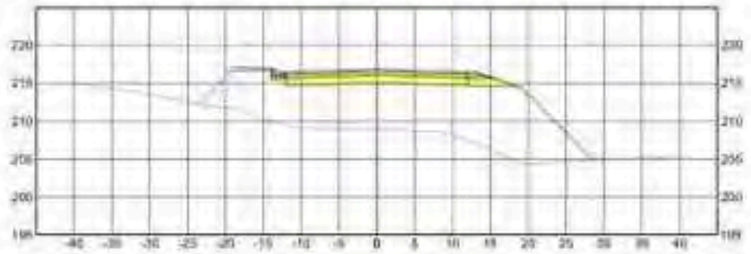
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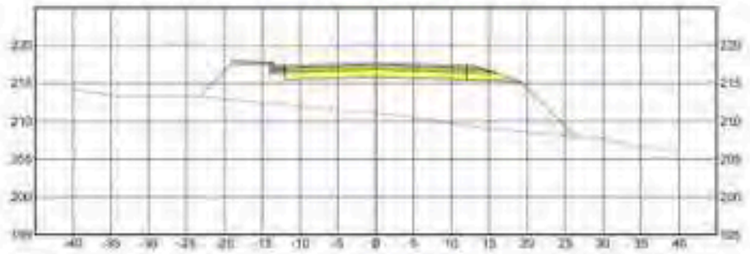
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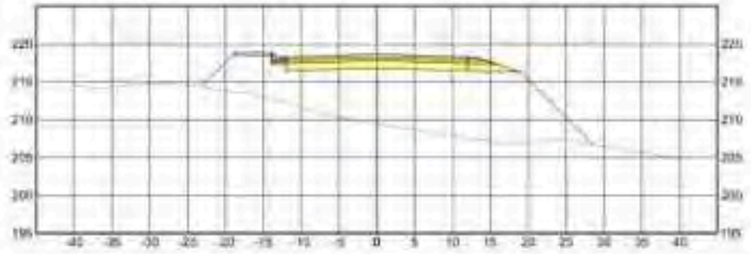
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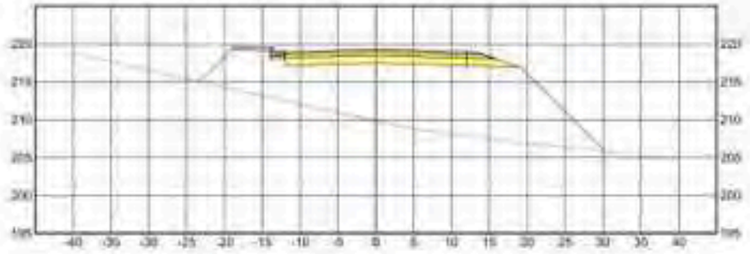
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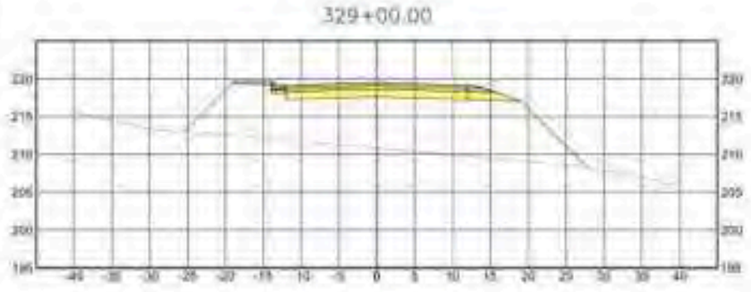
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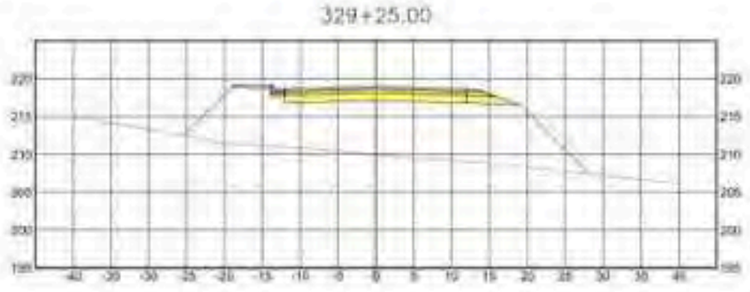


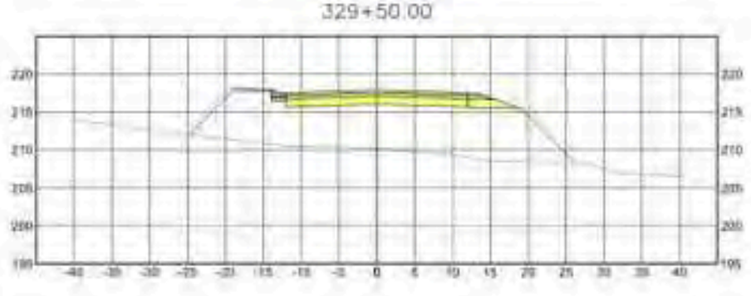


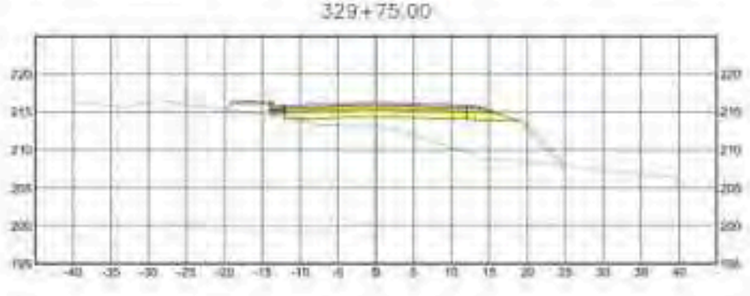












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STATE OF ALASKA DNR
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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 62-25

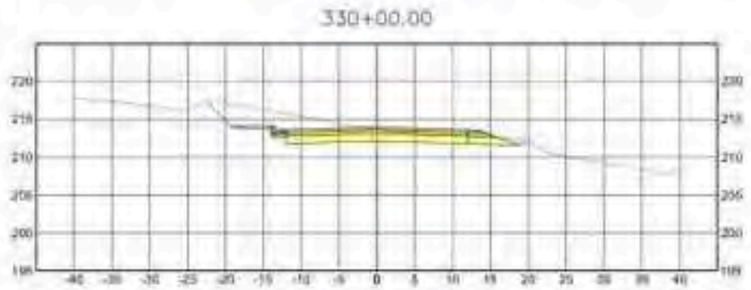
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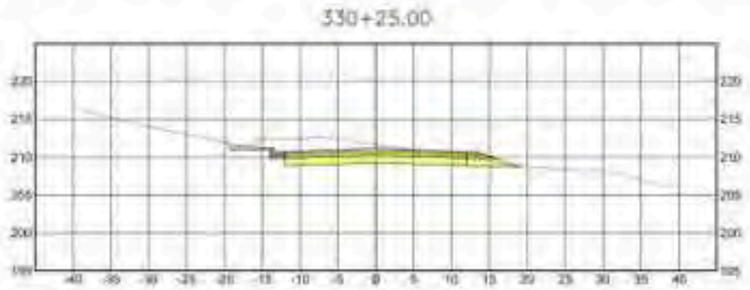
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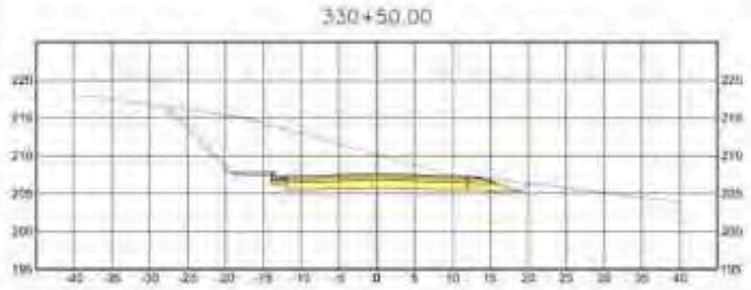
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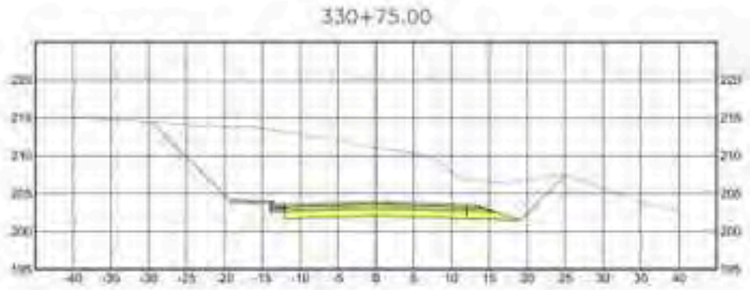
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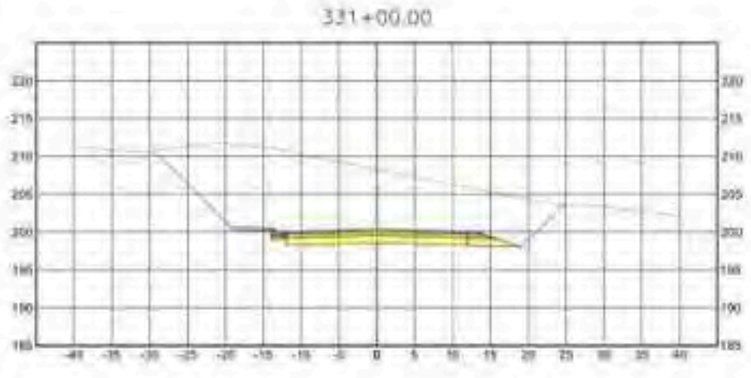
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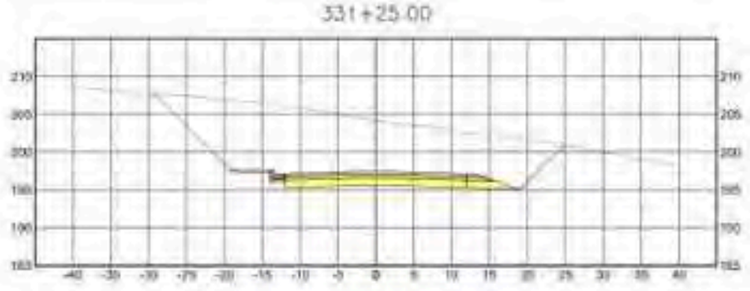


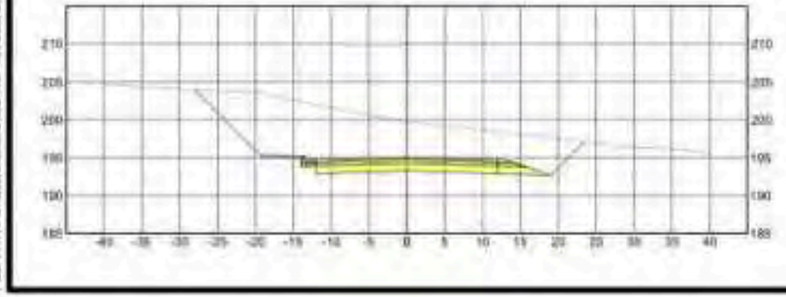


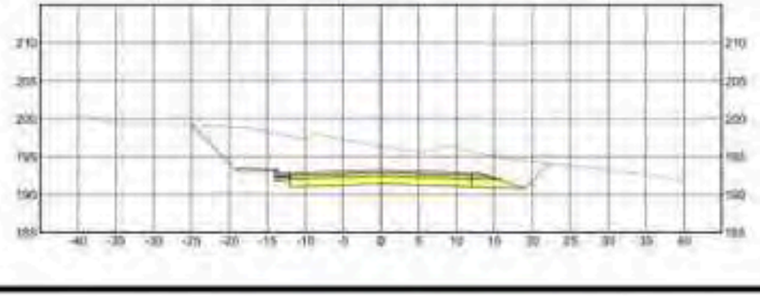












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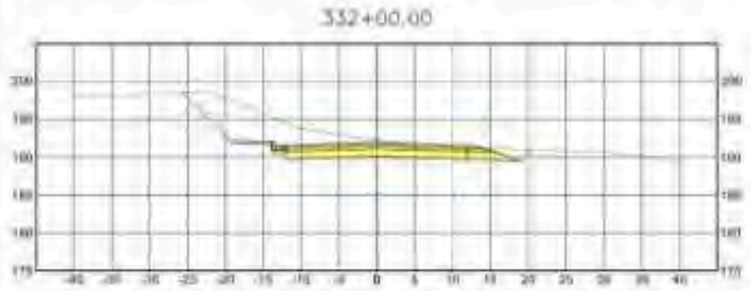
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XS-18 TRAVERSE DRIVE

DATE:
8/26/2025

PLOT DATE: 8/26/2025

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PLOT DATE: 8/26/2025

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#204451

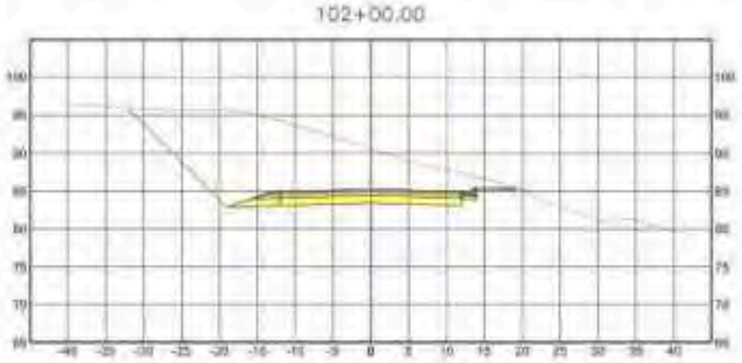
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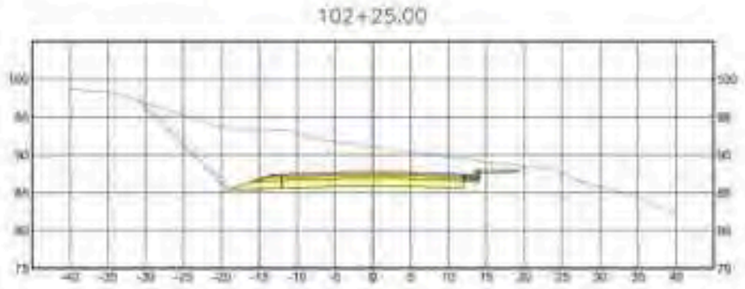
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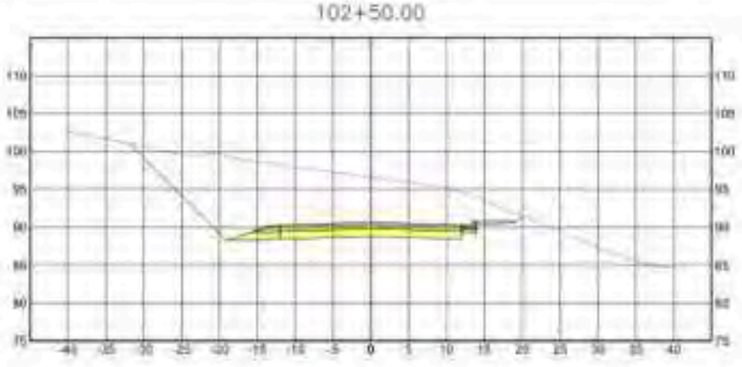
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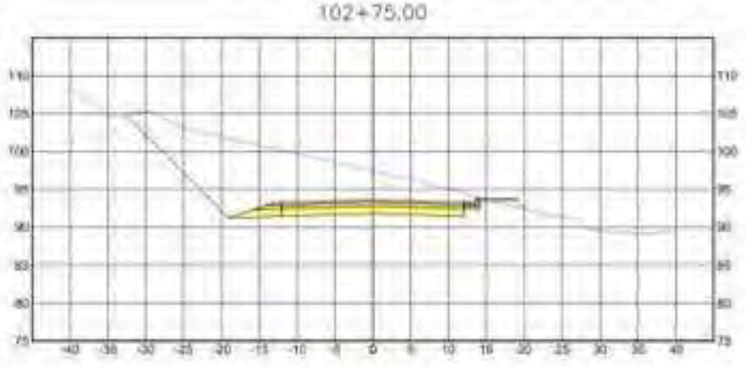
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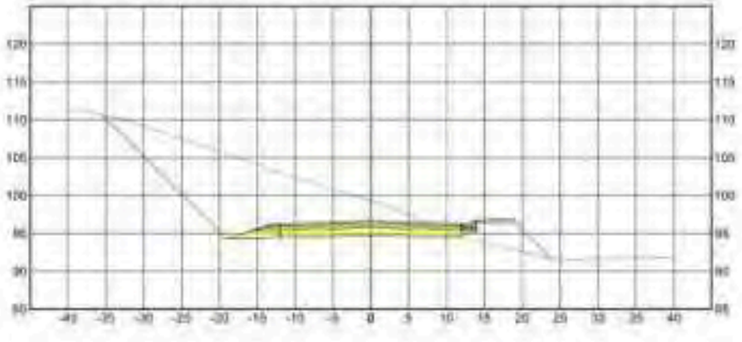
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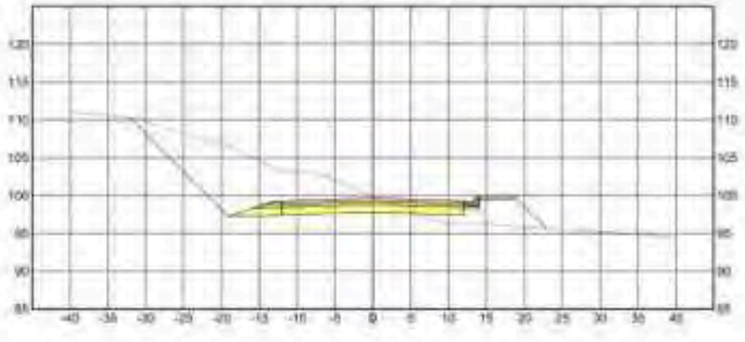












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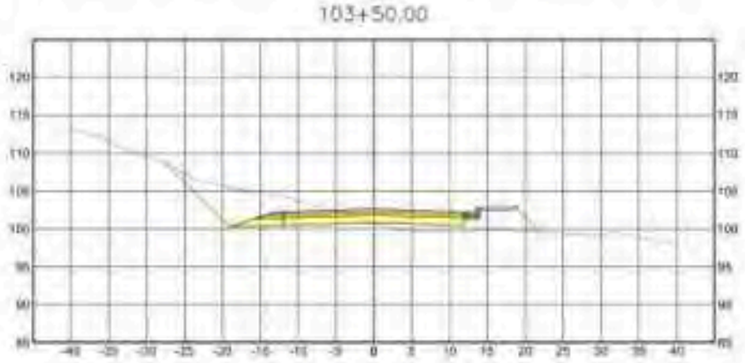
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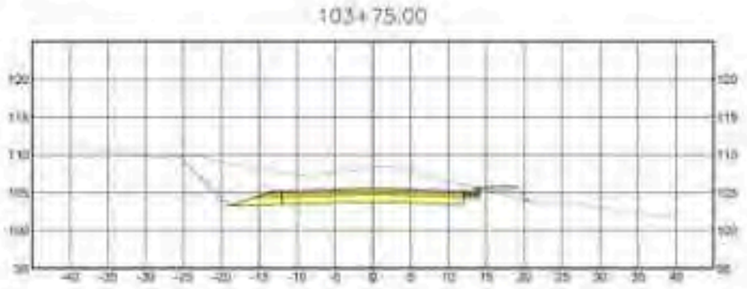
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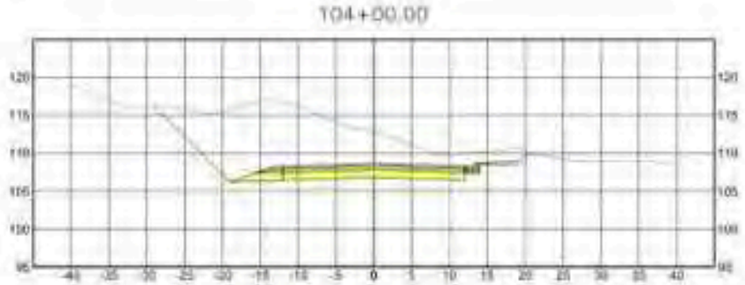
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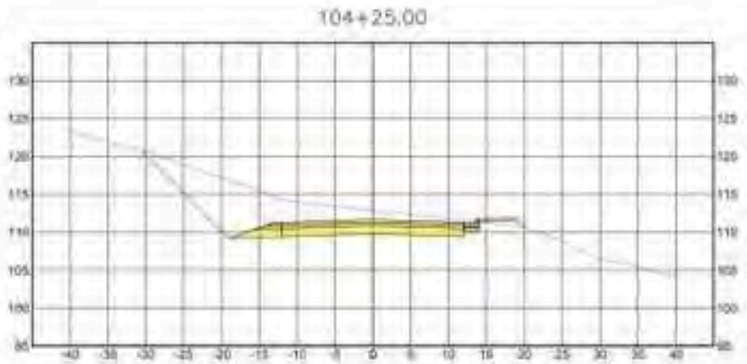
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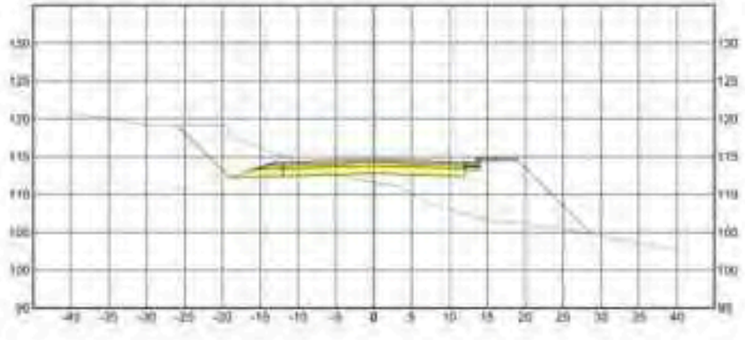
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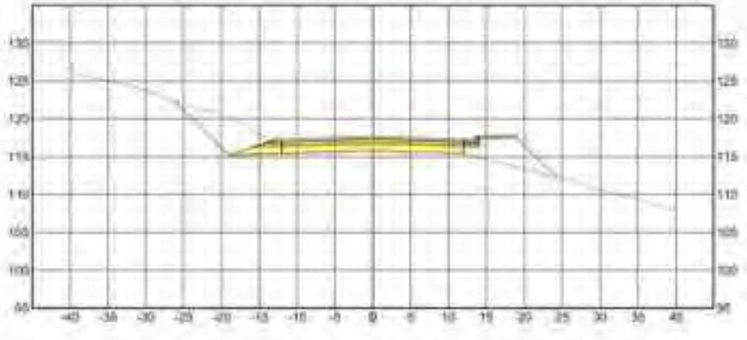












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STATE OF ALASKA DNR
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JUNEAU, ALASKA

PROJECT NO: WO 62-25

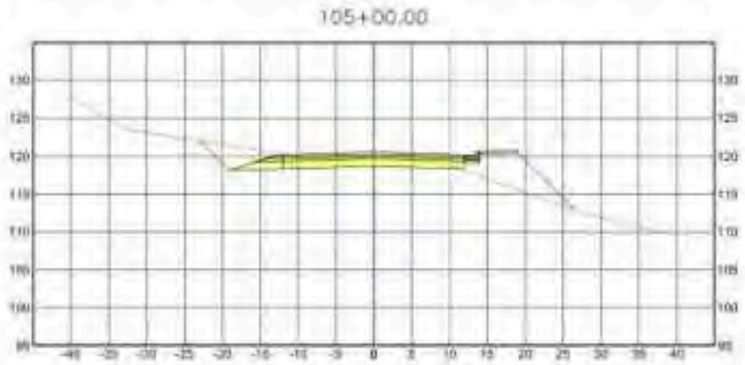
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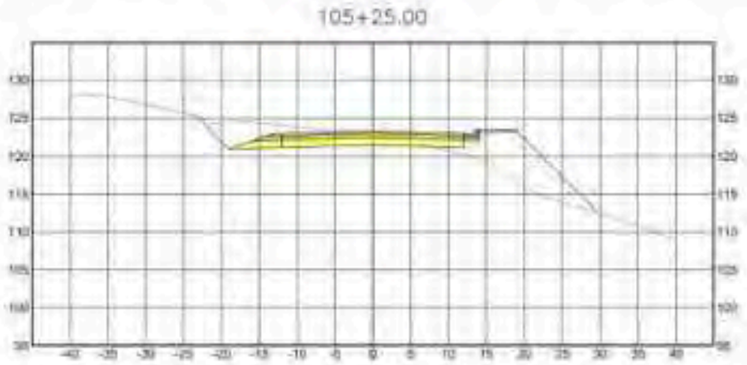
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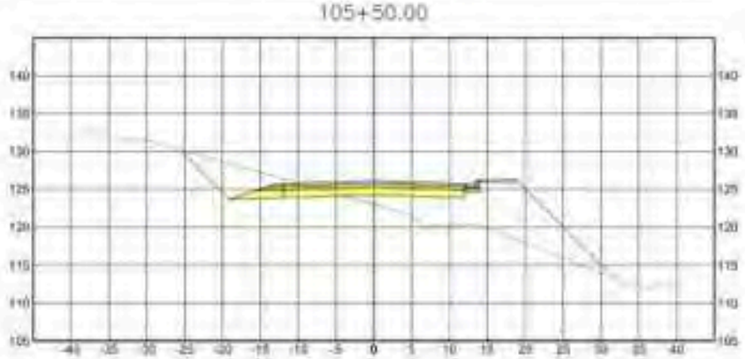
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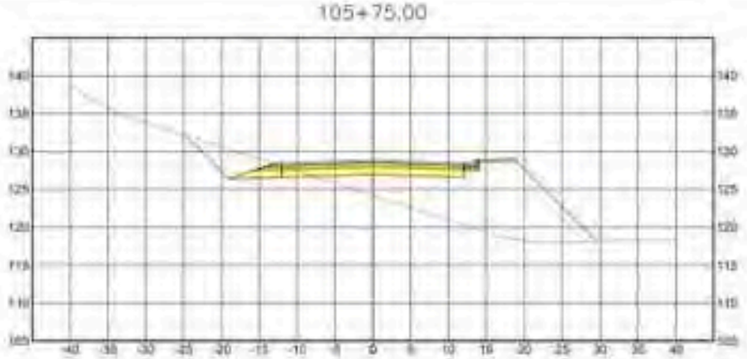
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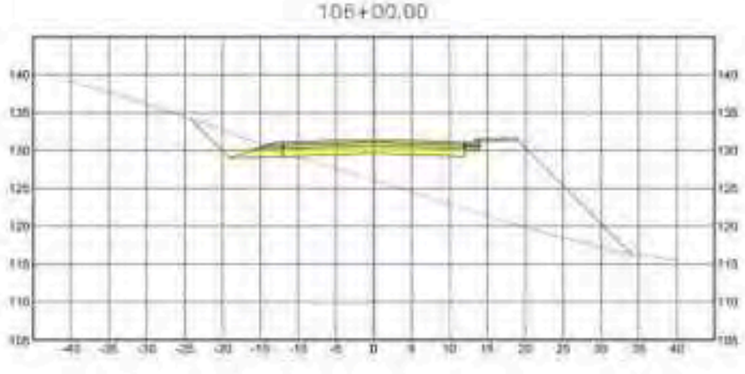
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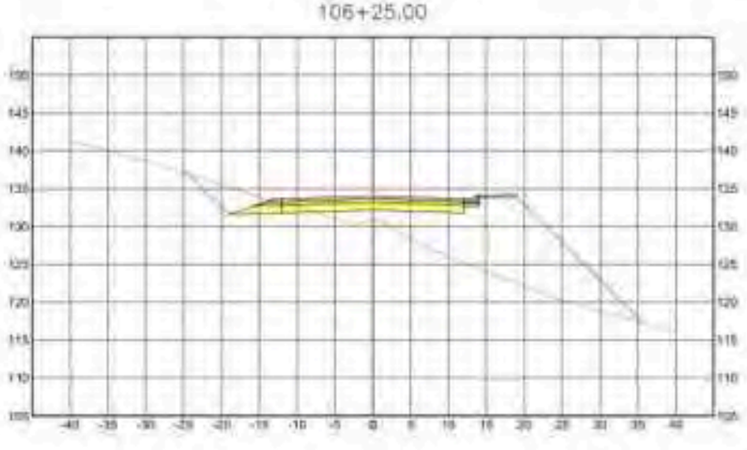












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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

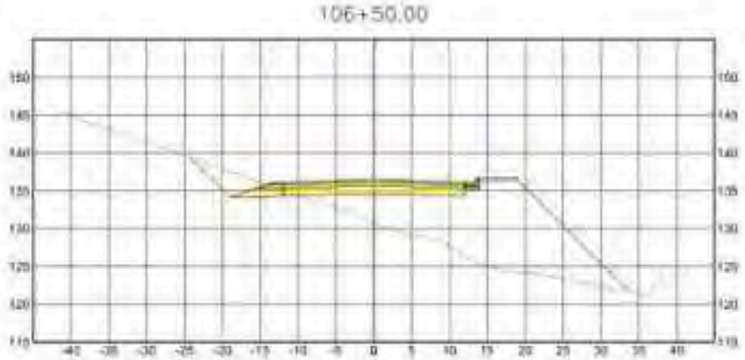
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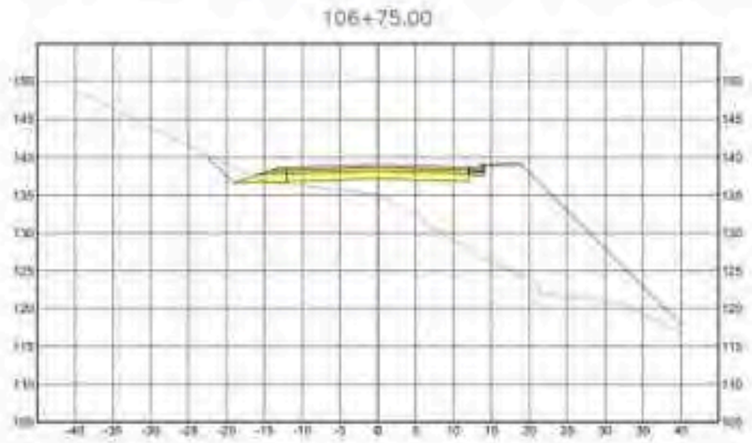
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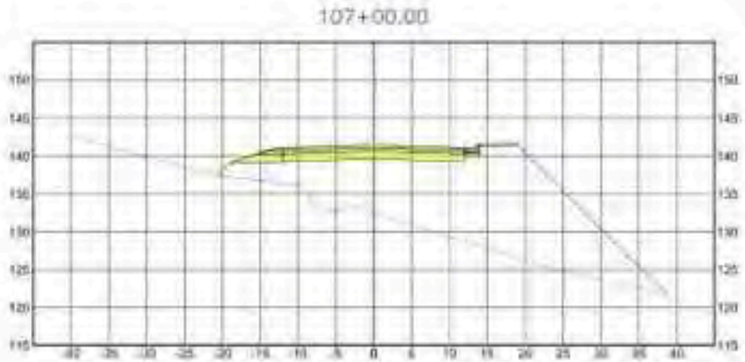
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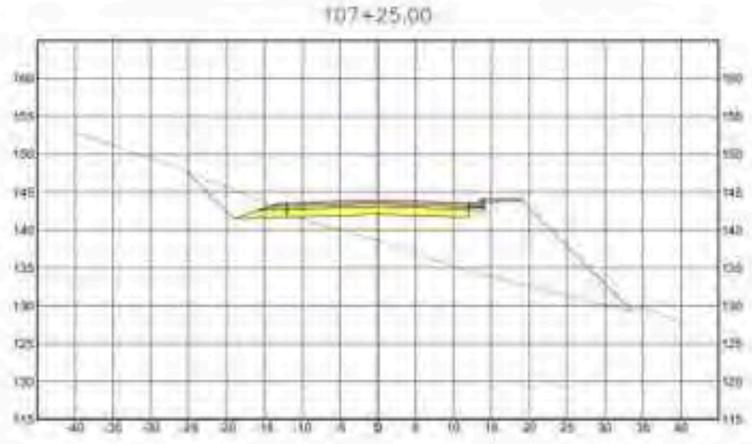
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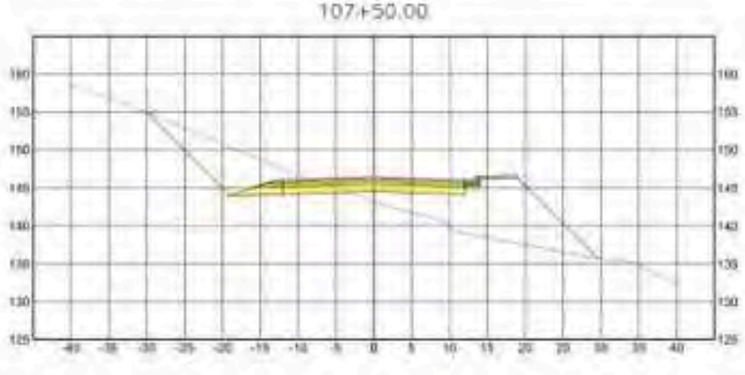
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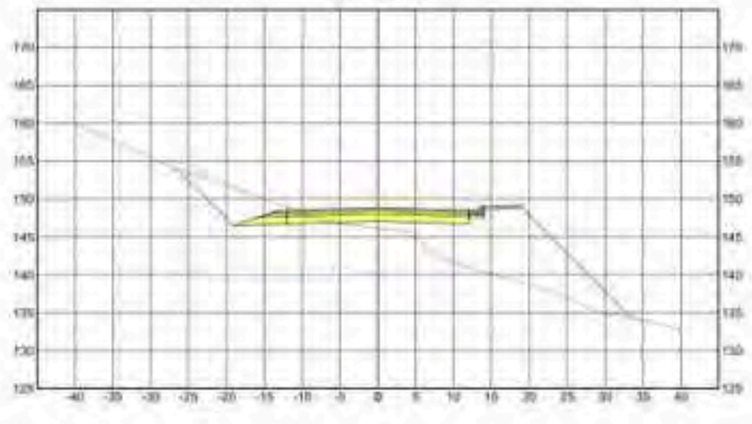












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DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 62-25

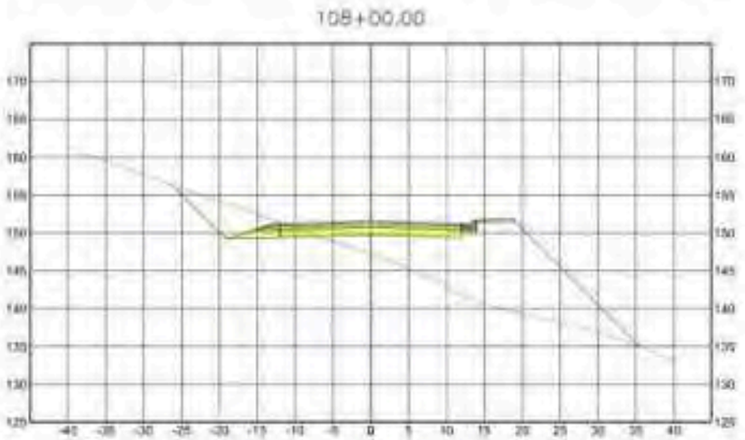
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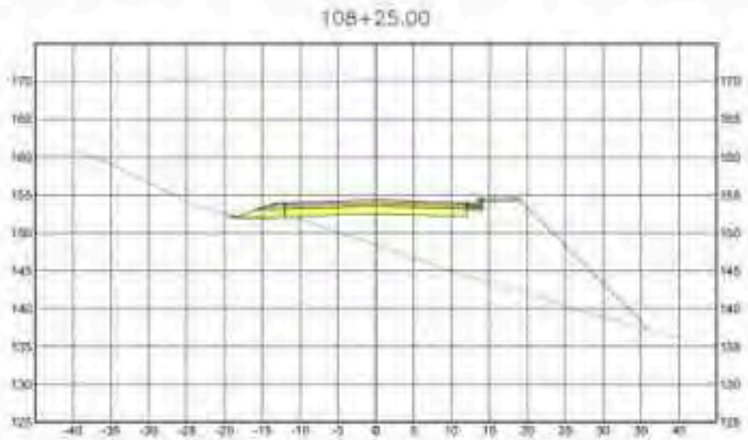
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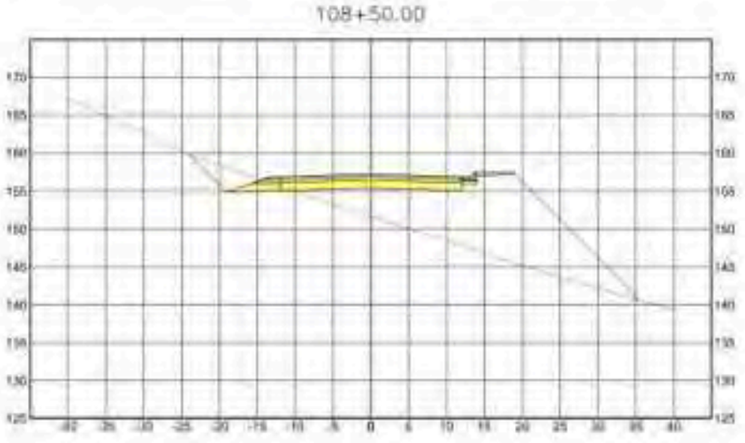
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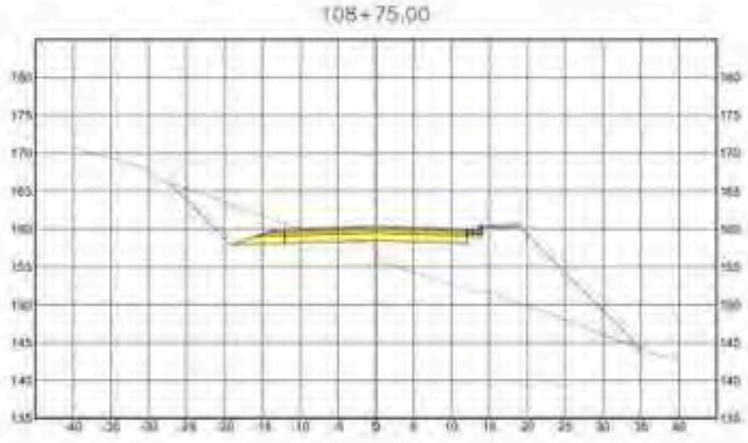
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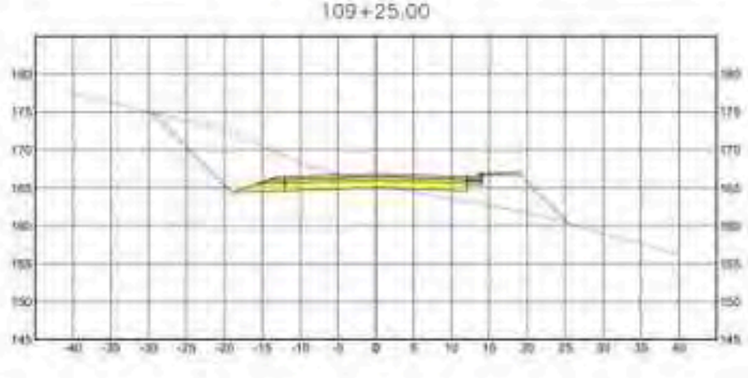












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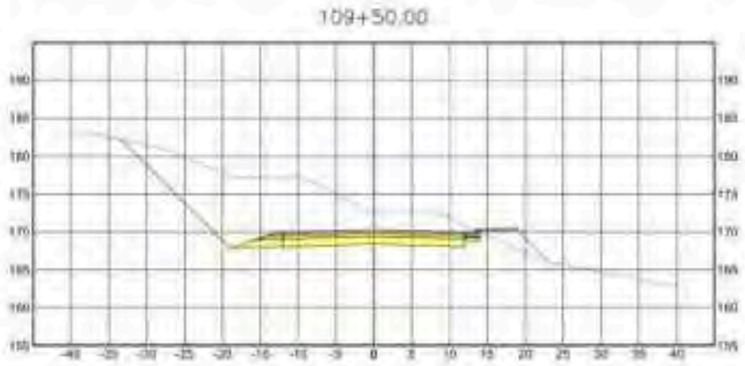
STATE OF ALASKA DNR
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DEVELOPMENT STUDY
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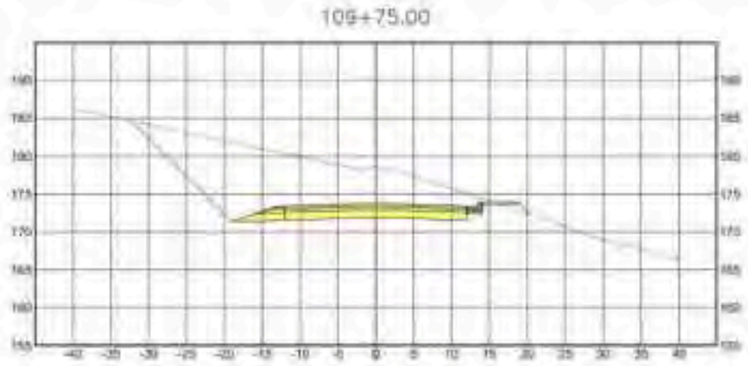
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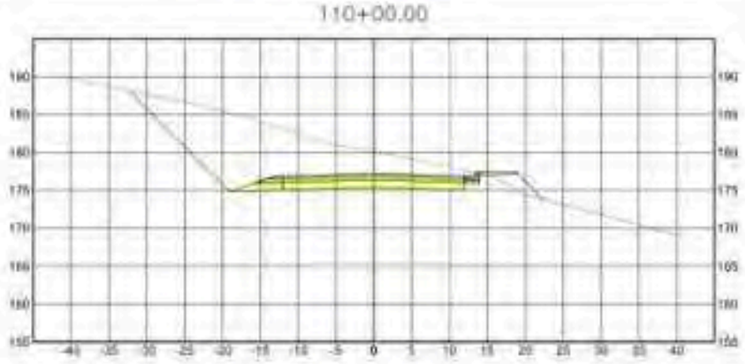
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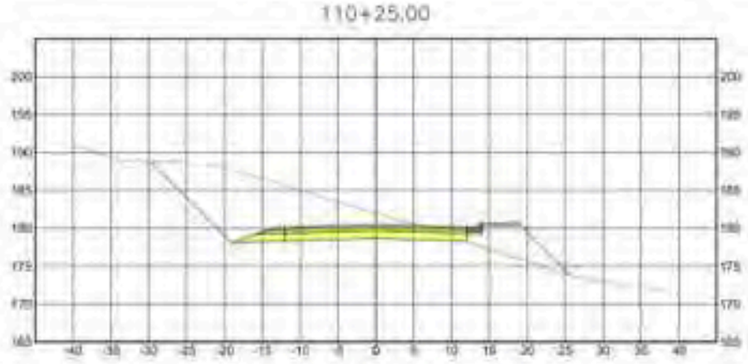
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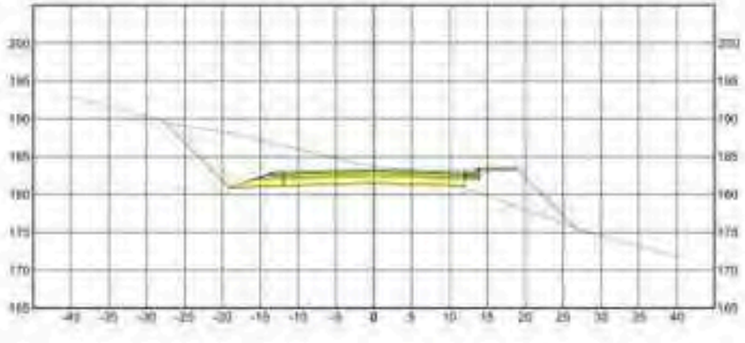
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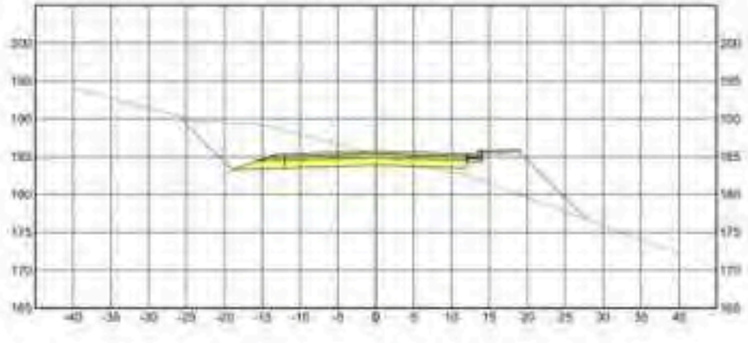












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JUNEAU, ALASKA

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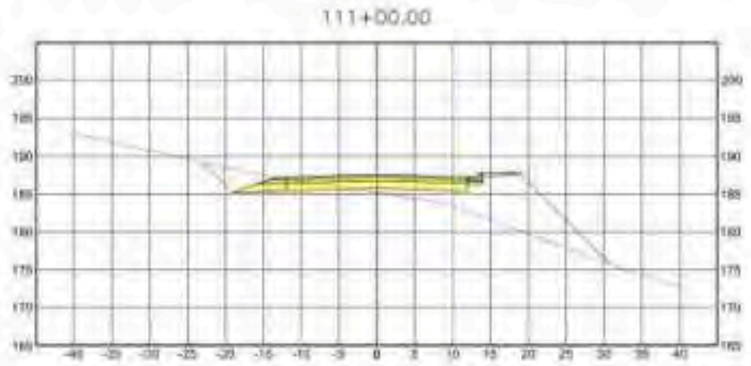
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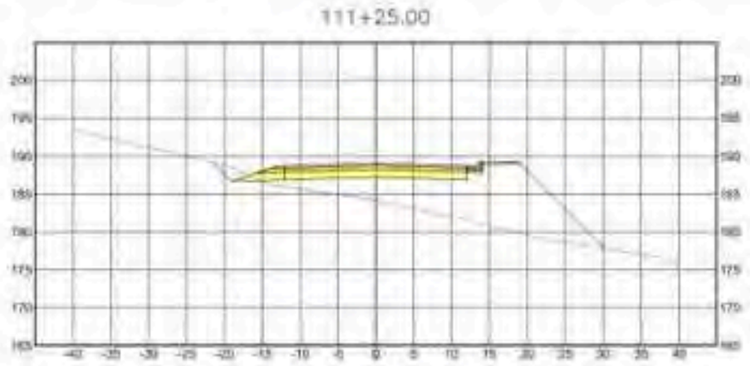
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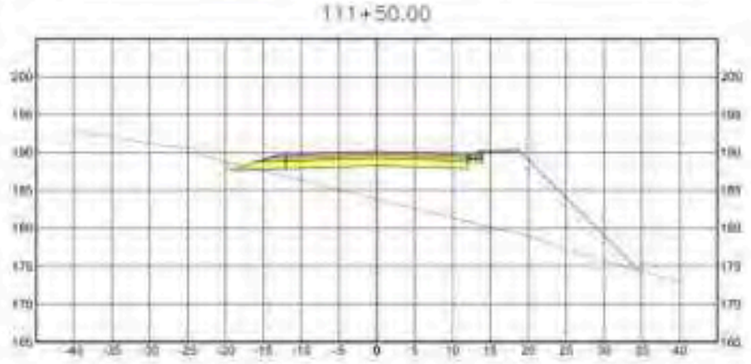
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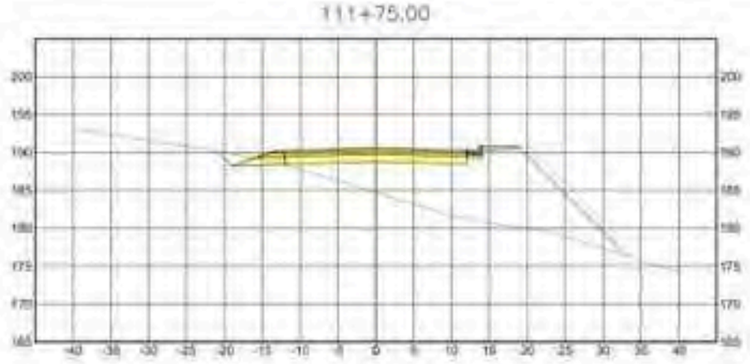
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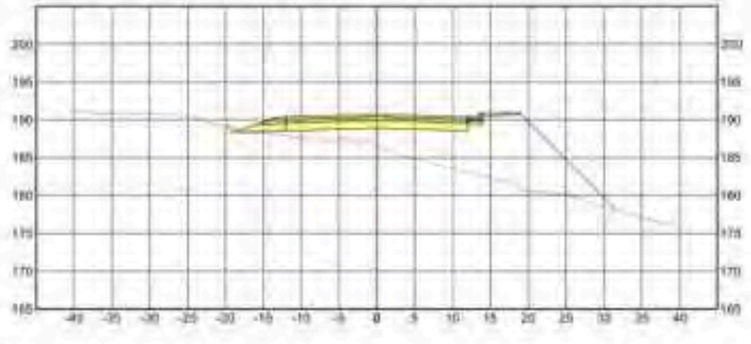
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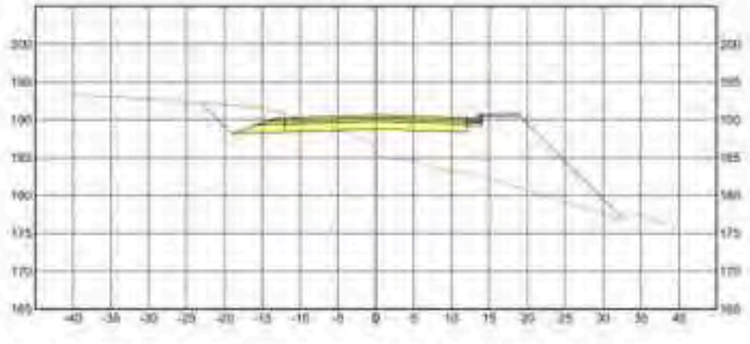












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PROJECT NO: WO 62-25

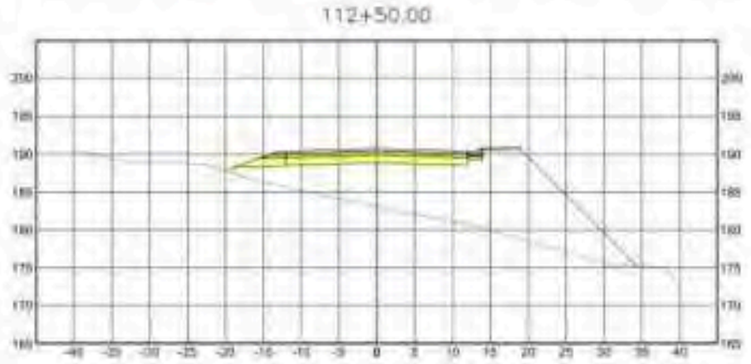
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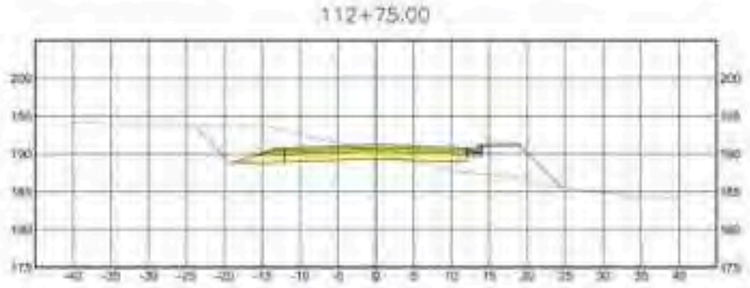
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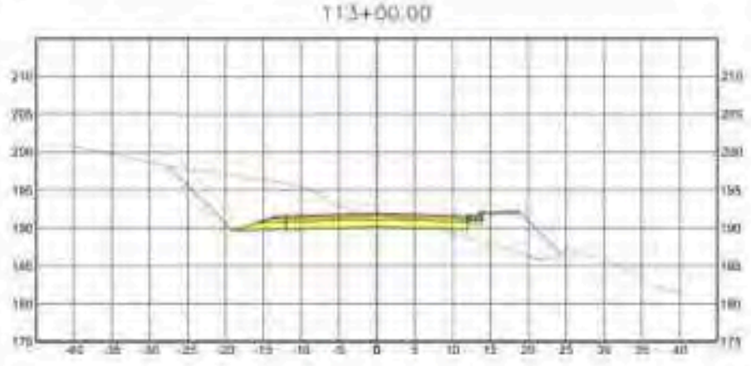
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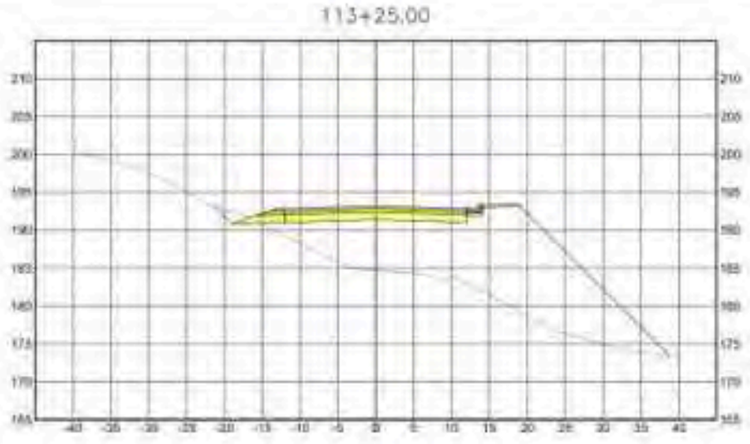
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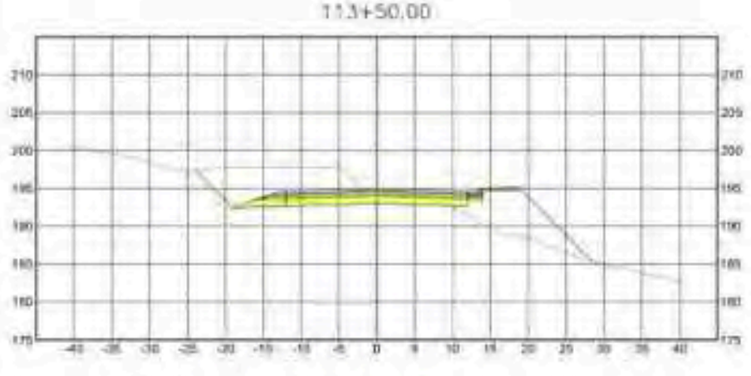
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PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

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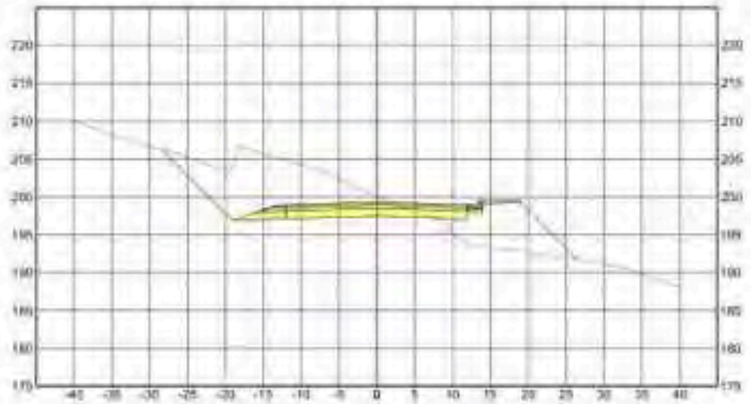
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8/26/2025

PLOT DATE: 8/26/2025

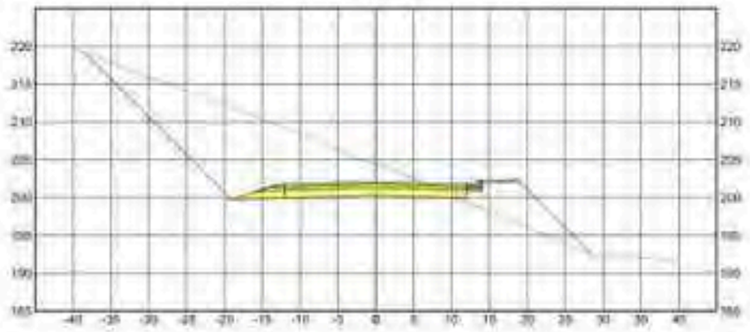
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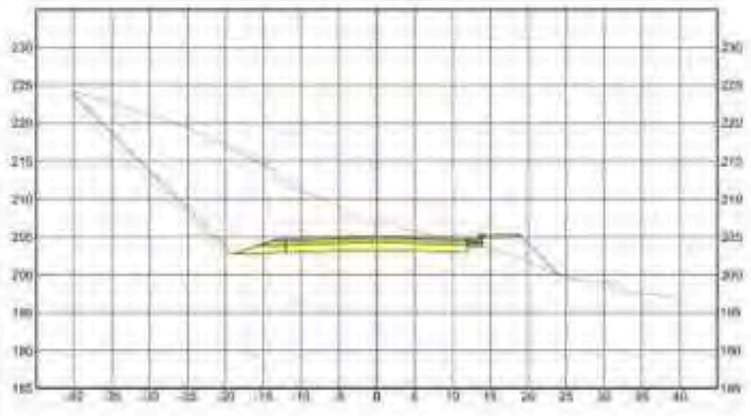
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114+25.00



114+50.00



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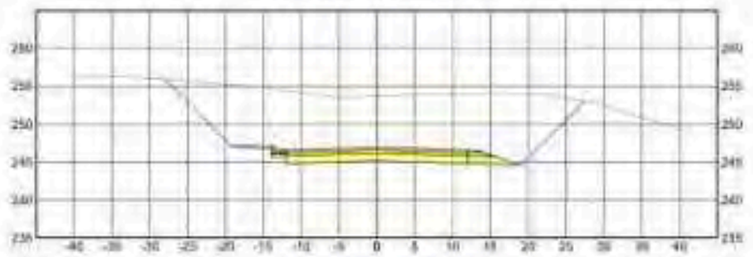
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BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

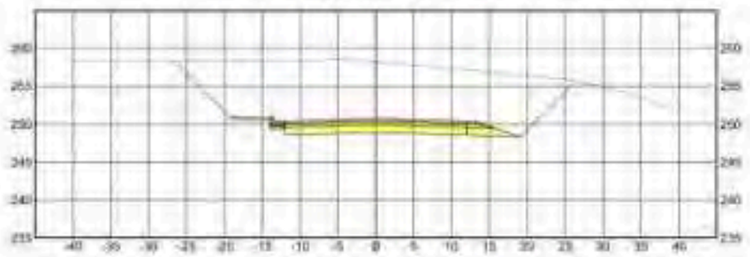
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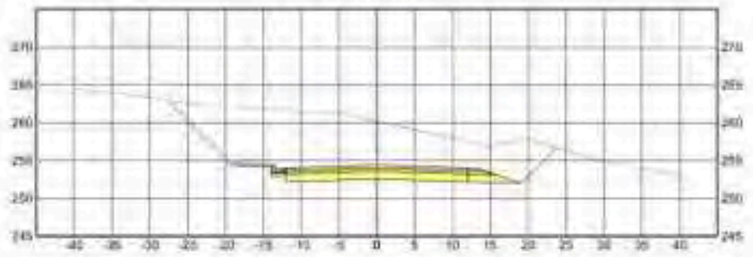
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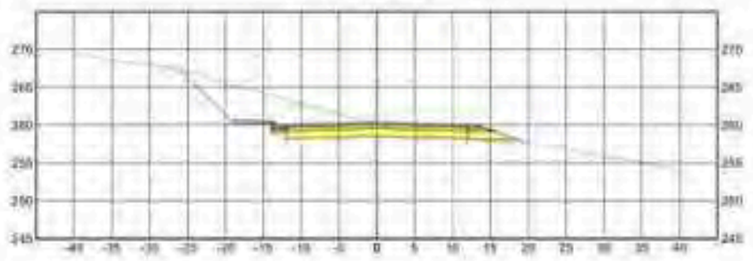
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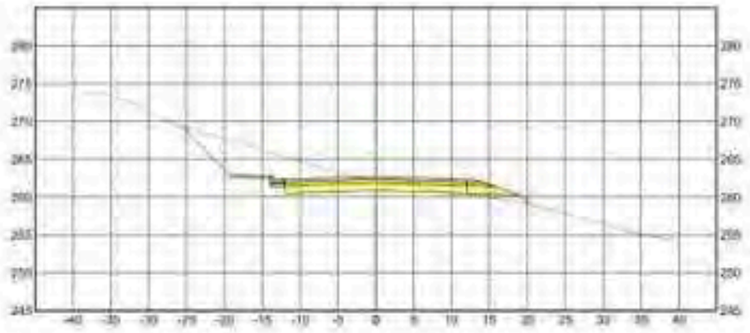












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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

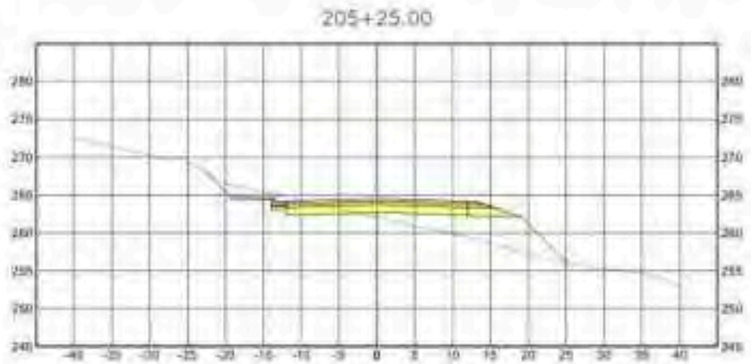
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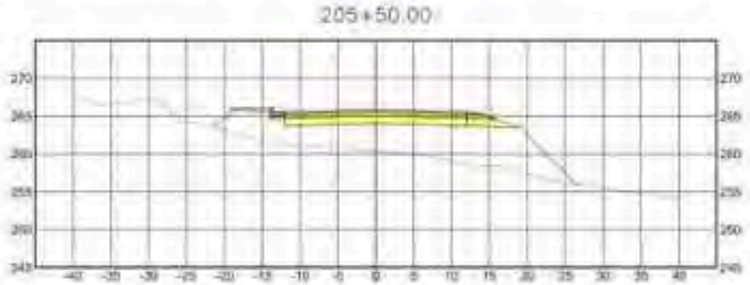
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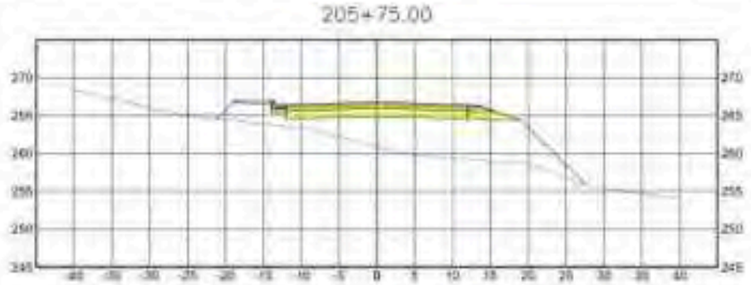
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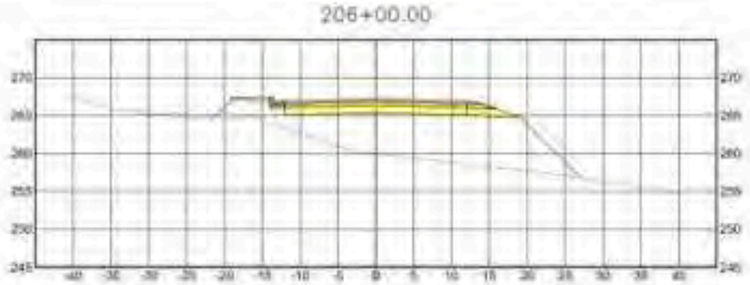
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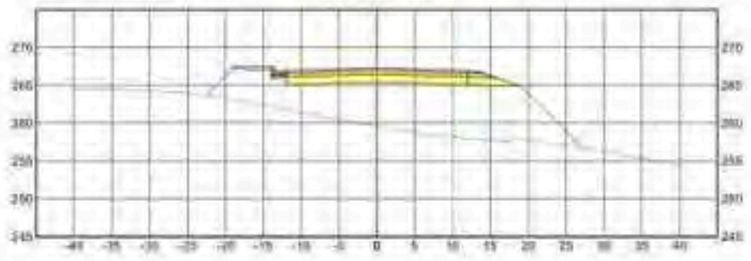
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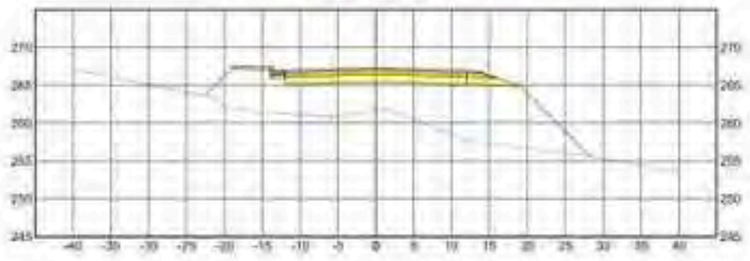












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JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-30 MARY ELLEN WAY

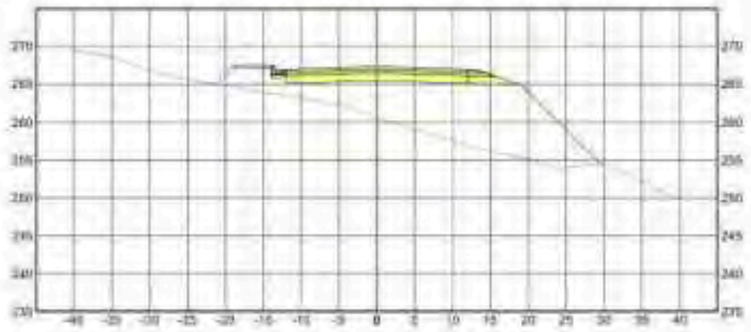
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8/26/2025

PLOT DATE: 8/26/2025

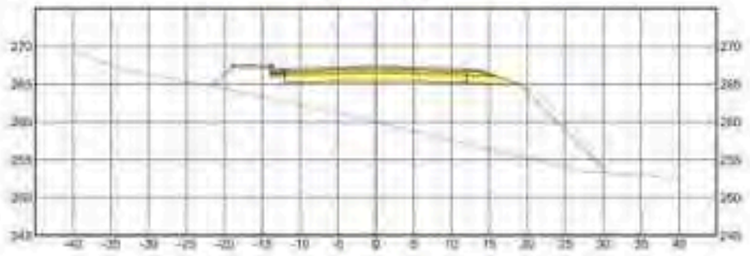
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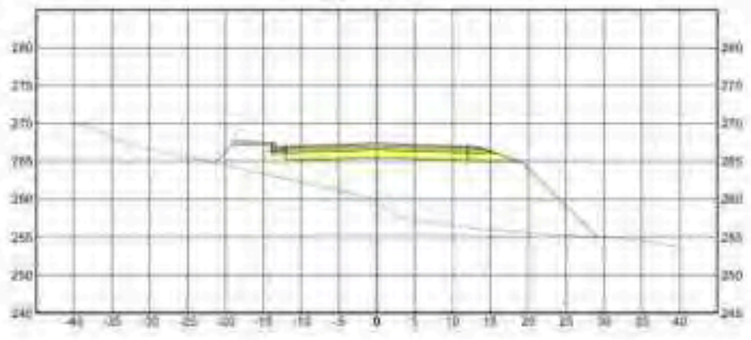
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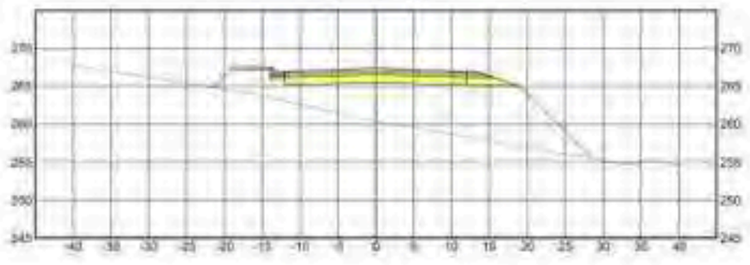
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207+25.00



207+50.00



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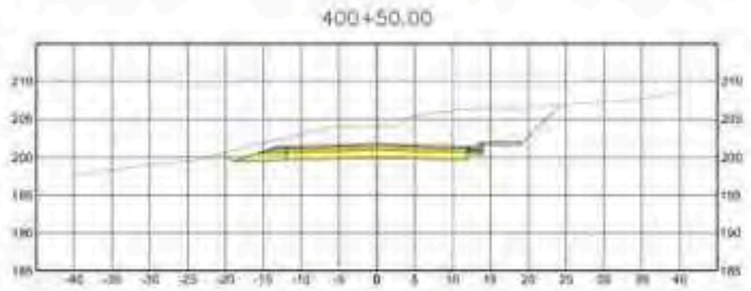
STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
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JUNEAU, ALASKA

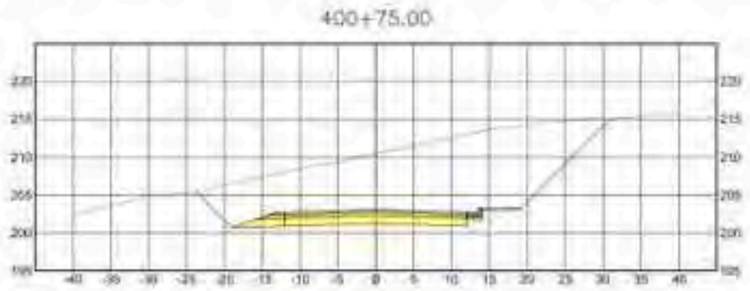
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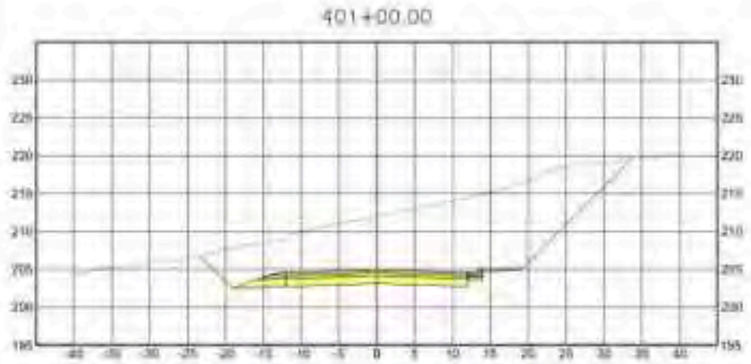
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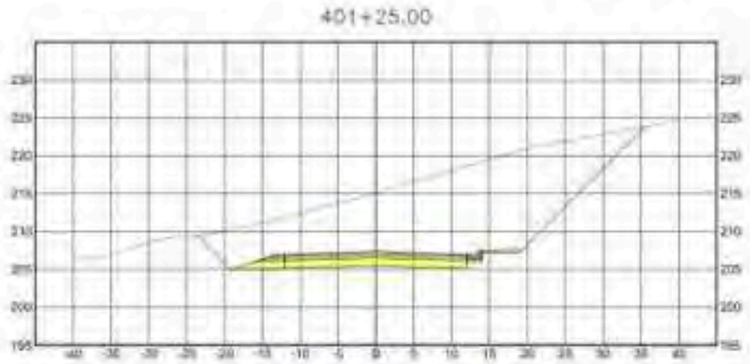
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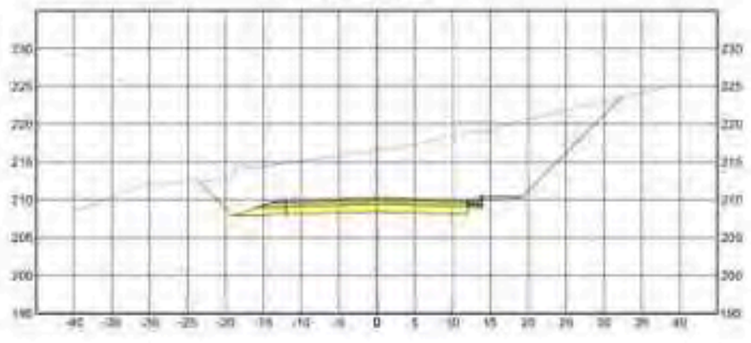
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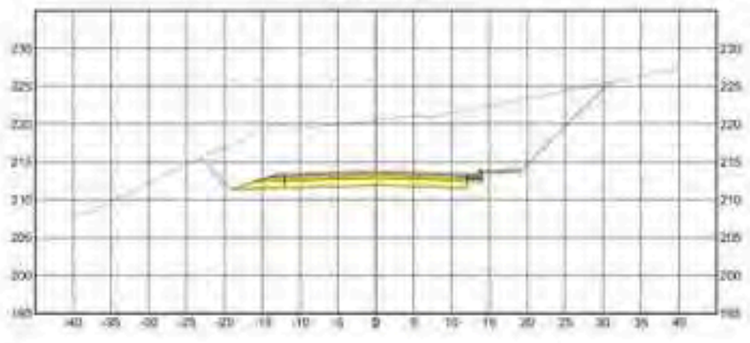












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JUNEAU, ALASKA

PROJECT NO: WO 62-25

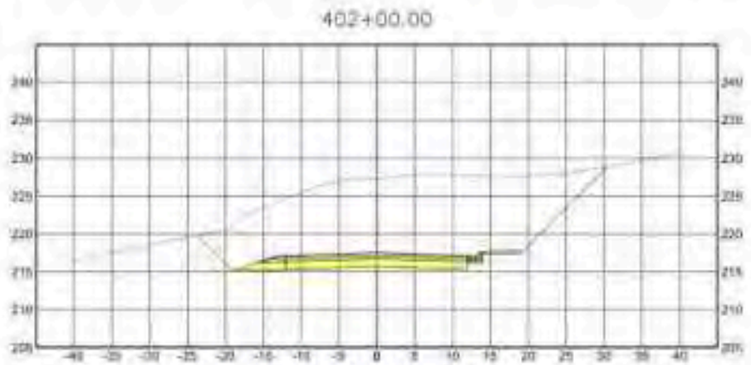
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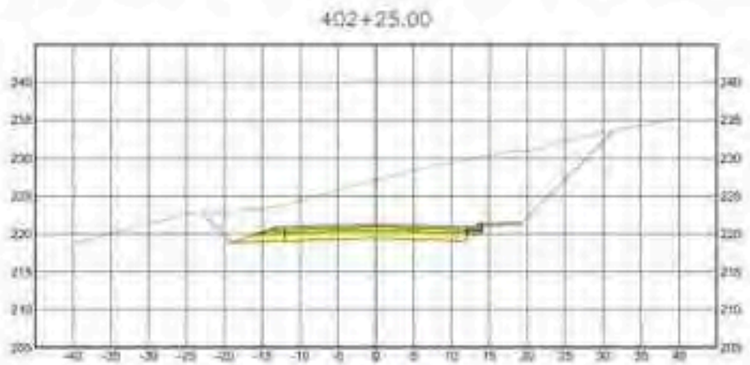
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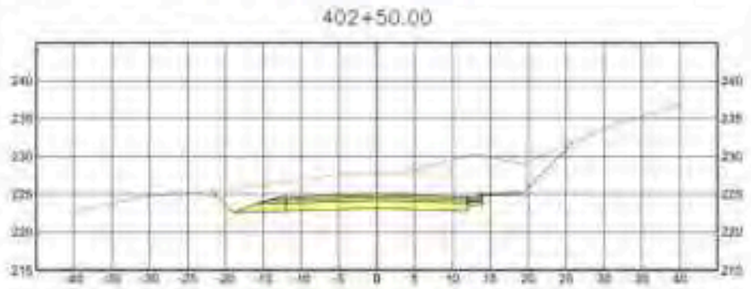
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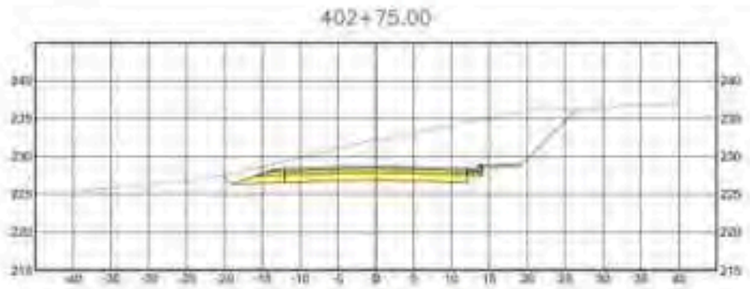
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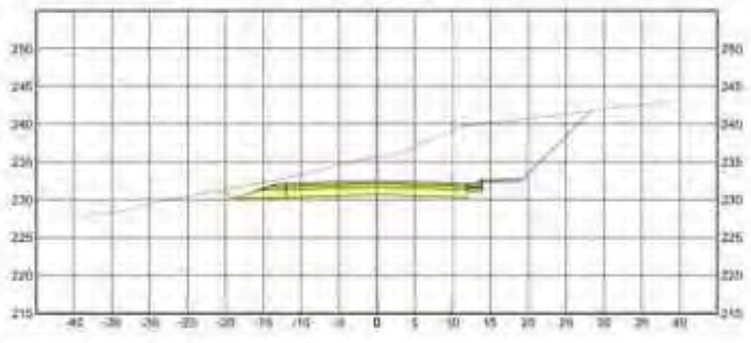
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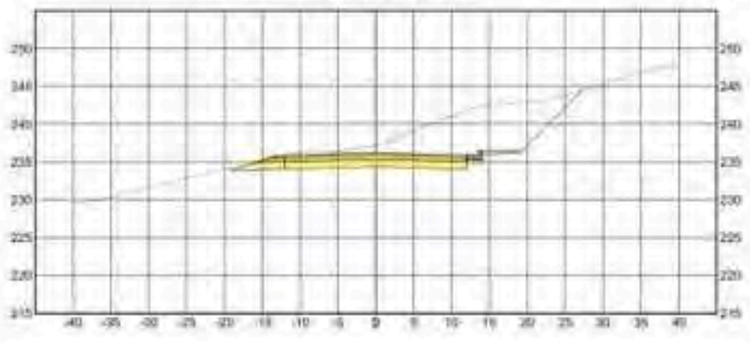












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BLACKERBY SUBDIVISION
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JUNEAU, ALASKA

PROJECT NO: WO 62-25

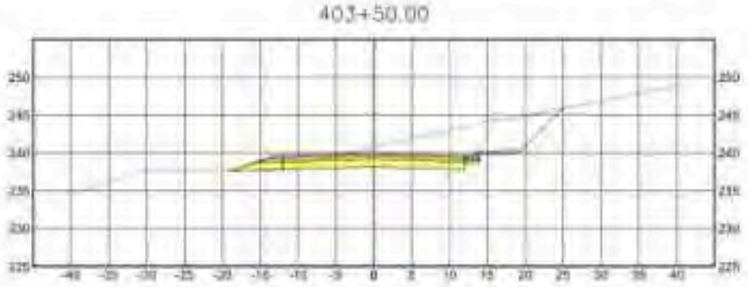
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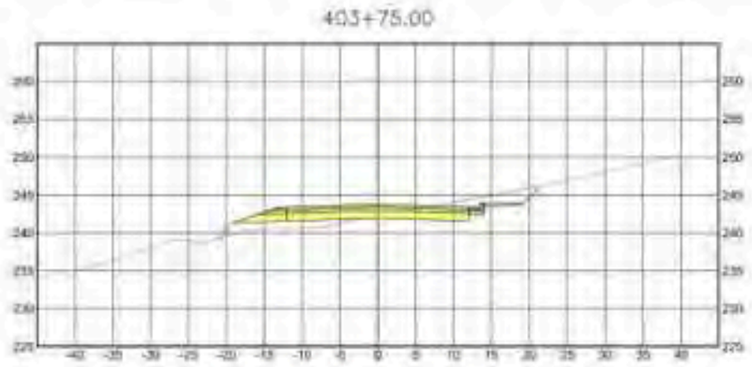
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XS-33 HILL CLIMB COURT

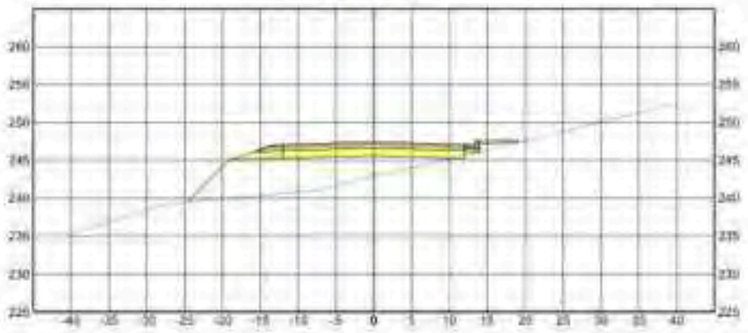
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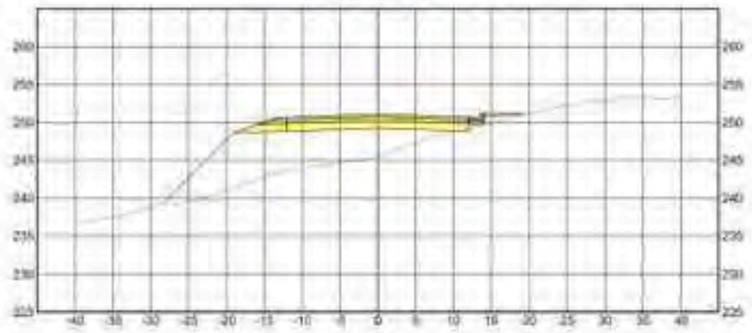
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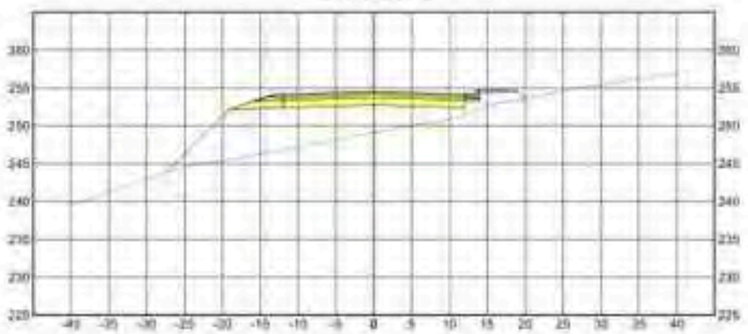
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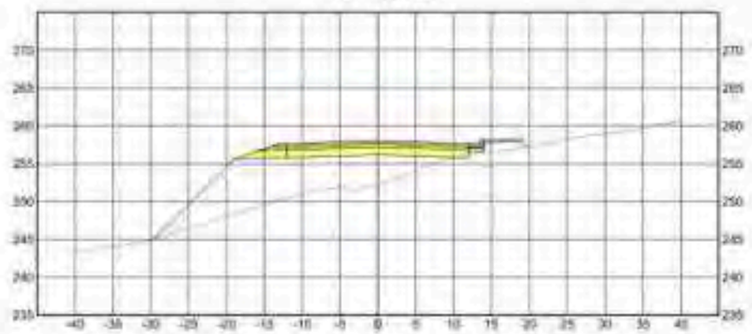












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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-34 HILL CLIMB COURT

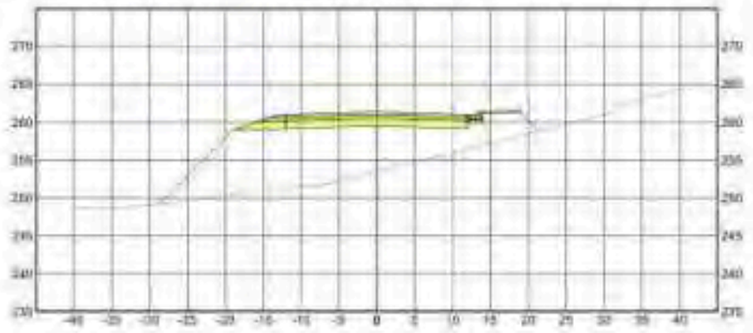
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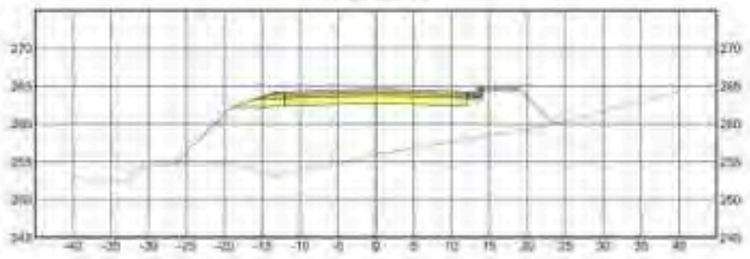
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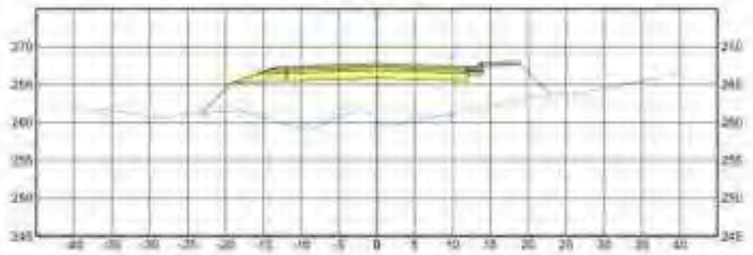
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405+50.00



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STATE OF ALASKA DNR
BLACKERBY SUBDIVISION
DEVELOPMENT STUDY
JUNEAU, ALASKA

PROJECT NO: WO 02-25

AK BUILT PROJECT NO: 0064.01

SHEET TITLE:
XS-35 HILL CLIMB COURT

DATE:
8/26/2025

FILE PATH: C:\Users\aabb\OneDrive - AK Built Construction & Design\AK Built - Flat Hat\Projects\0064.01 ADNR Blackerby Subdivision Study\7_ACAD\0064.01_XS.dwg

Appendix F – Maximum Feasible D-5 Subdivision Parcel Plans

ADNR AREA OF INTEREST

MARY ELLEN WAY

STEP-UP STREET

RIDGE DRIVE

MARY'S COURT

ELLEN'S COURT

MARY ELLEN WAY

CBJ OWNED PARCEL

GREENSPACE/TRAIL ROW

RIDGE DRIVE

BLACKBERRY STREET

BLACKBERRY COURT

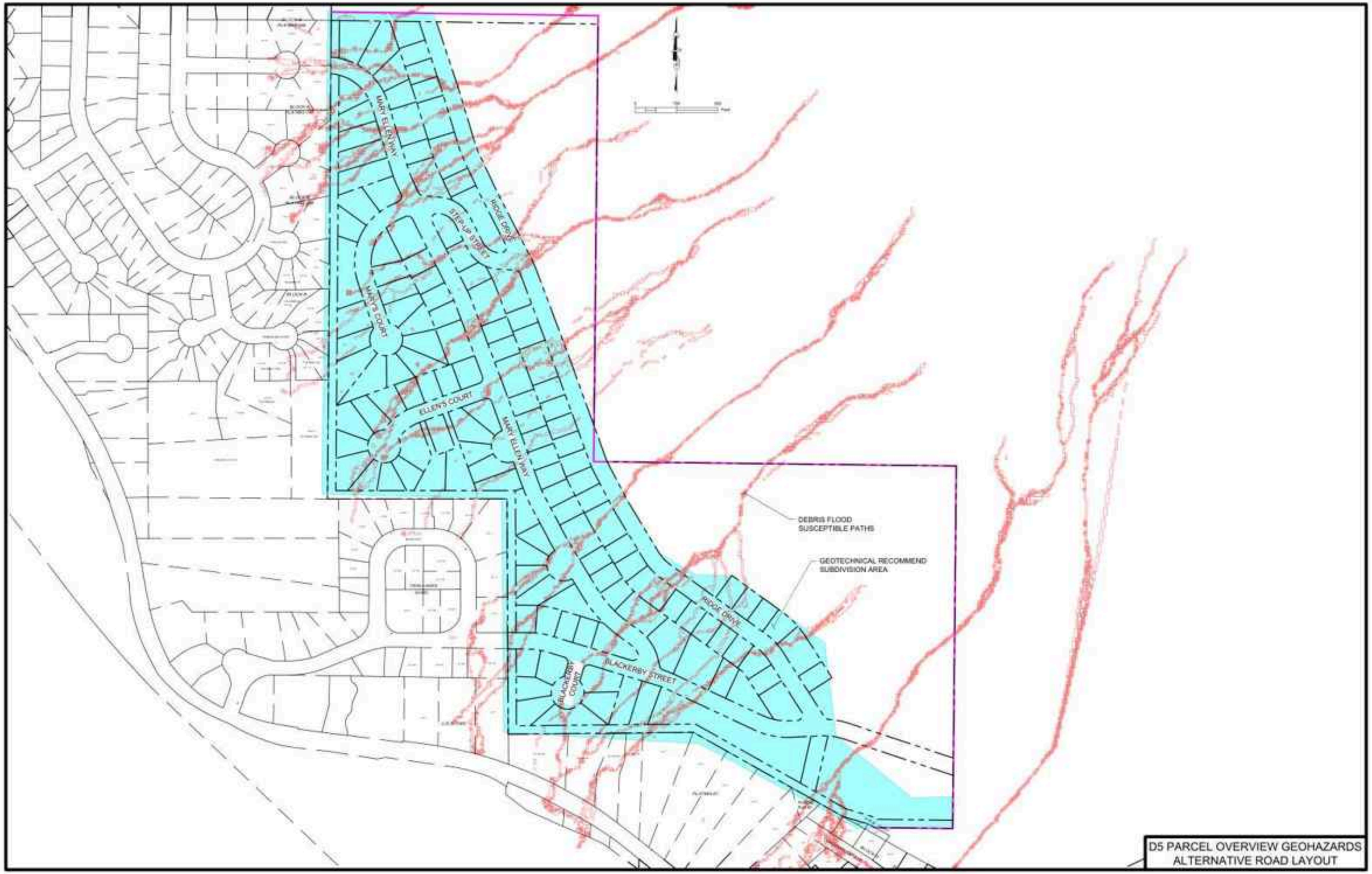
PUBLIC ROW

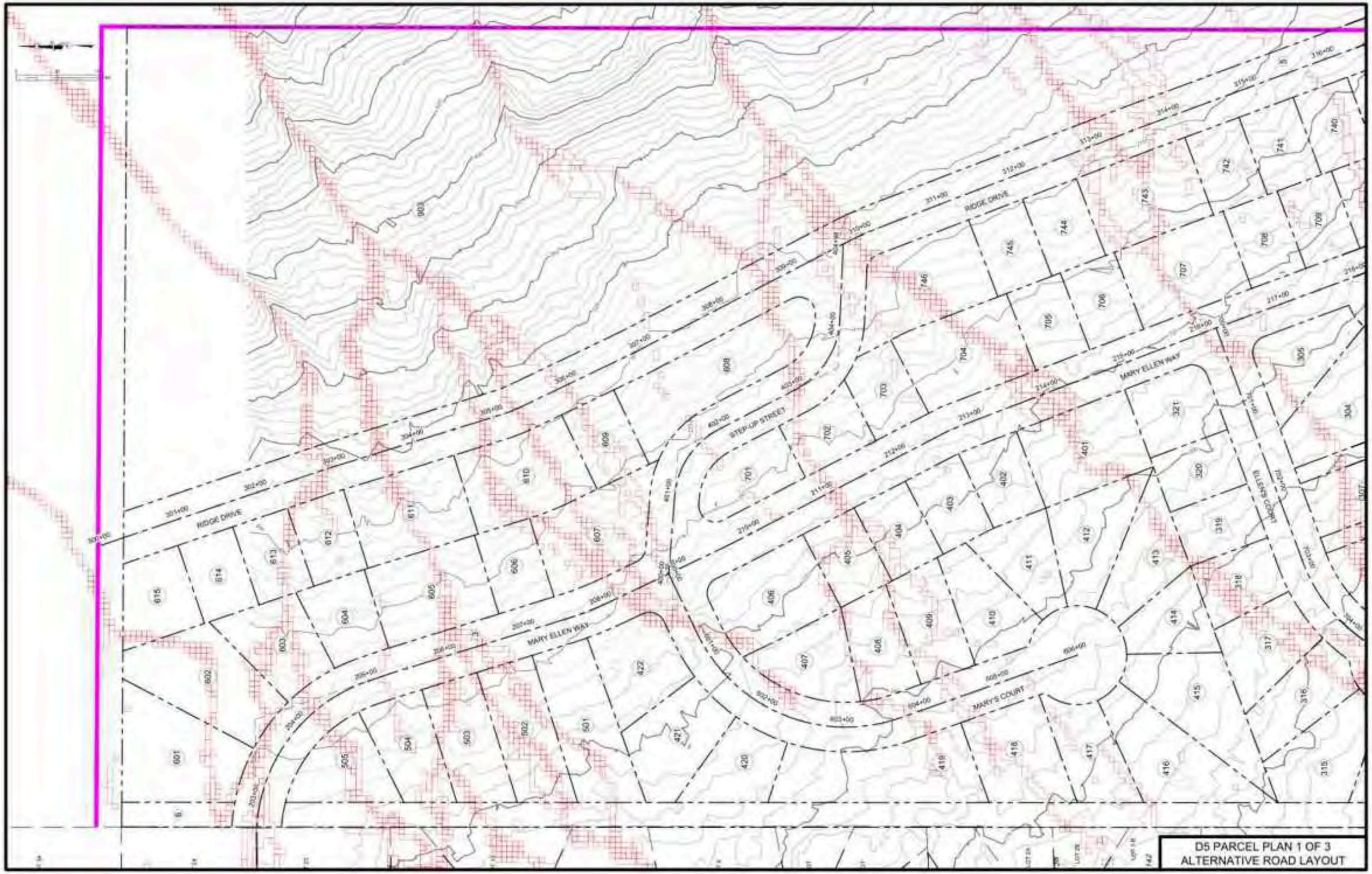
D5 PARCEL OVERVIEW
ALTERNATIVE ROAD LAYOUT

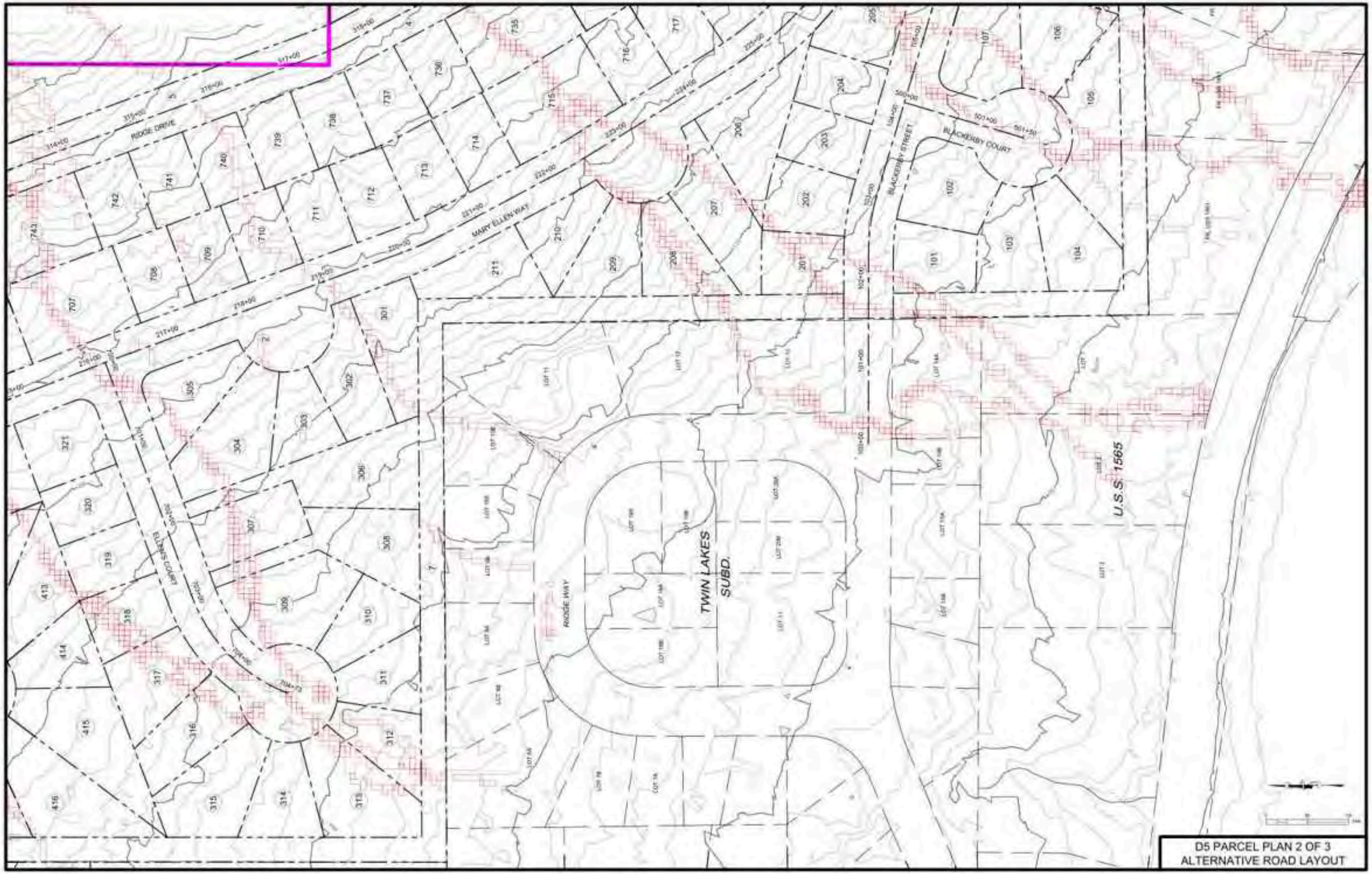


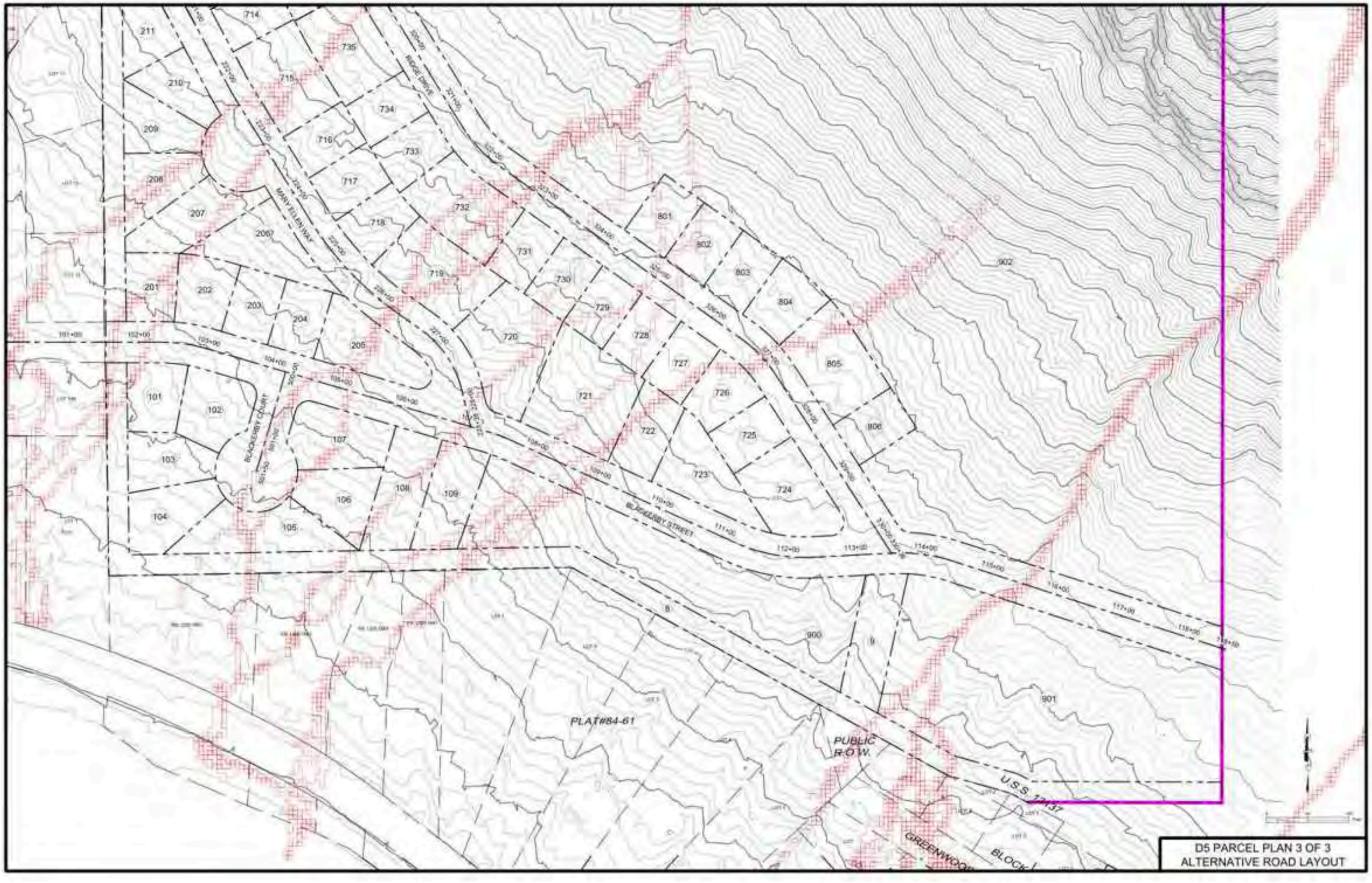
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Slopes	Minimum Slope	Maximum Slope	Area	Color
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2	30.00%	4228.42%	7000000.00	

D5 PARCEL OVERVIEW SLOPE MAP
ALTERNATIVE ROAD LAYOUT


MARY ELLEN WAY
STEP-UP STREET
RIDGE DRIVE
MARY'S COURT
ELLEN'S COURT
MARY ELLEN WAY
DEBRIS FLOOD SUSCEPTIBLE PATHS
GEOTECHNICAL RECOMMEND SUBDIVISION AREA
RIDGE DRIVE
BLACKERBY COURT
BLACKERBY STREET
D5 PARCEL OVERVIEW GEOHAZARDS
ALTERNATIVE ROAD LAYOUT


RIDGE DRIVE
STEP-UP STREET
MARY ELLEN WAY
MARY'S COURT
RIDGE DRIVE
MARY ELLEN WAY
D5 PARCEL PLAN 1 OF 3
ALTERNATIVE ROAD LAYOUT


RIDGE DRIVE
MARY ELLEN WAY
BLACKBERRY STREET
BLACKBERRY COURT
LAWSON SHELTON DRIVE
RIDGE WAY
TWIN LAKES SUBD.
U.S.S. 1565
D5 PARCEL PLAN 2 OF 3
ALTERNATIVE ROAD LAYOUT


MARY ELLEN WAY
BLACKBERRY COURT
BLACKBERRY STREET
PLAT#84-61
PUBLIC R.O.W.
U.S.S. 12137
GREENWOOD
BLOCK
D5 PARCEL PLAN 3 OF 3
ALTERNATIVE ROAD LAYOUT

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
101	9,892.83	359.86	89.90 100.41 48.71 41.34 100.00	N81° 46' 09.29"W N6° 15' 20.27"W S89° 31' 54.89"E S84° 08' 04.87"E S11° 14' 05.14"W
102	10,139.90	391.88	70.03 100.00 21.90 96.65 31.42 68.84 53.84	N84° 28' 41.70"W N11° 14' 05.14"E S70° 54' 41.69"E S72° 03' 45.53"E S26° 03' 45.53"E S19° 56' 18.47"W S81° 12' 48.58"W
103	9,689.12	395.56	89.90 70.03 96.58 129.35 89.73	S81° 48' 09.29"E S84° 28' 41.70"E S8° 53' 26.46"W S89° 20' 31.26"W N6° 15' 20.27"W
104	10,355.20	424.24	126.36 33.42 122.11 49.83 89.73	N80° 33' 31.69"E S25° 27' 54.48"E S48° 40' 36.68"W S69° 24' 45.64"W N6° 15' 20.27"W
105	13,818.27	842.23	122.11 526.32 129.37 260.43	N48° 40' 39.98"E N89° 33' 18.07"E S31° 38' 01.28"E S69° 24' 45.64"W
106	9,855.74	421.71	126.34 126.47 126.37 40.33	N89° 31' 37.15"E S19° 56' 18.47"W N81° 39' 01.28"W N19° 56' 34.85"E
107	11,914.41	438.49	125.34 44.85 48.04 31.42 126.38 62.45	S89° 31' 37.15"W N21° 44' 14.19"W N19° 56' 18.47"E N81° 56' 18.47"E S73° 03' 45.53"E S19° 56' 18.47"W
108	12,455.80	486.14	166.82 73.41 126.47 62.45 70.00	S19° 56' 18.47"W S89° 24' 45.56"W N19° 56' 18.47"E N19° 56' 18.47"E S73° 03' 45.53"E
109	15,982.30	492.60	166.82 34.13 27.80 70.00 148.86 89.12	N19° 56' 18.47"E S73° 03' 45.53"E S70° 03' 44.53"E S73° 03' 45.53"E S22° 01' 02.52"W S89° 24' 45.69"W
201	7,429.74	349.80	100.06 20.83 49.47 100.51 80.73 27.90	S4° 49' 07.98"E N87° 20' 03.60"W N89° 31' 54.89"W N6° 15' 20.27"W S89° 31' 54.89"E S41° 25' 53.00"E
202	8,870.75	361.42	100.06 1.03 80.25 13.04 100.06 10.04 59.96	N4° 49' 07.98"E S86° 10' 12.16"E S70° 07' 06.29"E S73° 03' 45.53"E S19° 56' 18.47"W N73° 03' 45.53"W N39° 11' 46.42"W
203	7,890.00	340.00	100.00 70.00 100.00 70.00	N19° 56' 18.47"E S73° 03' 45.53"E S19° 56' 18.47"W N73° 03' 45.53"W
204	7,000.00	340.00	100.00 70.00 100.00 70.00	N19° 56' 18.47"E S73° 03' 45.53"E S19° 56' 18.47"W N73° 03' 45.53"W
205	12,149.23	492.58	100.06 18.23 73.12 46.83 43.52 0.00 49.10 153.09	N19° 56' 18.47"E S73° 03' 45.53"E S49° 45' 29.08"E S54° 01' 58.69"E S43° 52' 53.09"E S53° 43' 46.92"E S36° 36' 16.31"W N73° 03' 45.53"W
206	12,444.38	585.52	166.69 57.60 122.43 18.22 70.00 70.00 10.04 90.00	N89° 40' 04.19"E S31° 10' 01.82"E S38° 16' 58.62"E N73° 03' 45.53"W N73° 03' 45.53"W N73° 03' 45.53"W N73° 03' 45.53"W N19° 07' 08.29"W
207	11,949.10	521.17	102.82 89.48 19.51 166.69 1.03 27.90 90.73 23.04	N24° 16' 58.47"E S18° 26' 41.08"E S31° 10' 01.82"E S58° 48' 58.18"W N89° 16' 13.18"W N67° 25' 53.60"W N83° 31' 54.89"W N6° 15' 20.27"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
208	9,825.07	429.66	113.20 .05.00 153.62 121.20	N89° 46' 28.73"E S19° 07' 46.94"E S84° 16' 38.47"W N6° 15' 20.27"W
209	8,405.91	356.78	142.60 .55.00 113.26 107.25	S58° 52' 39.26"E S14° 24' 40.17"W S89° 44' 39.73"W N6° 15' 20.27"W
210	7,394.50	389.67	100.17 15.52 29.75 5.38 23.02 142.62	N82° 18' 41.53"E S27° 41' 18.07"E S29° 23' 39.98"E S31° 11' 01.82"E S44° 58' 39.48"W N58° 52' 39.26"W
211	9,156.05	436.19	20.09 -0.89 96.02 74.63 100.17 164.67	N70° 05' 21.75"E S19° 54' 38.25"E S22° 47' 08.19"E S27° 41' 18.07"E S62° 18' 41.93"W N6° 15' 20.27"W
301	9,221.84	438.61	102.60 70.00 20.09 141.79 25.24	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W S65° 35' 25.54"W N19° 54' 38.25"W
302	9,035.51	442.23	103.96 86.47 23.16 102.60 63.99	N62° 39' 47.12"E S68° 31' 25.03"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 56' 38.25"W
303	7,119.72	380.37	120.91 35.00 103.96 100.89	S89° 54' 51.75"E S13° 37' 52.31"E S62° 39' 47.12"W N19° 54' 38.25"W
304	12,758.54	478.89	161.33 .35.00 -120.91 111.25 50.00	S89° 49' 59.91"E S22° 47' 48.82"W N83° 54' 51.75"W N19° 54' 38.25"W N70° 05' 21.75"E
305	9,681.44	427.82	161.33 95.12 30.90 110.54 32.92	N89° 29' 30.91"E N70° 05' 21.75"E S84° 19' 55.01"E S19° 54' 38.25"E S64° 47' 55.57"W
306	10,437.65	547.76	142.09 35.00 133.06 20.90 111.25 100.49 53.99 25.24 119.73	N11° 31' 31.86"E N70° 05' 21.75"E N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S19° 54' 38.25"E S89° 59' 25.54"W
307	9,309.84	408.00	133.06 30.00 35.00 133.06 70.00	S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N70° 05' 21.75"E
308	13,308.44	716.57	133.06 20.00 133.06 35.00 142.09 113.72 77.30 62.47	N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E N70° 05' 21.75"E S19° 54' 38.25"E S89° 59' 25.54"W N28° 04' 41.59"E N28° 04' 41.59"E
309	13,344.99	470.83	111.61 66.71 97.06 133.06 82.47	N67° 20' 48.04"W N6° 48' 08.17"E N83° 44' 08.43"E S19° 54' 38.25"E S28° 04' 41.59"W
310	7,952.38	370.74	120.04 33.00 111.61 77.30 25.29	N28° 28' 40.02"W N46° 31' 51.63"E S37° 20' 48.04"E S25° 04' 41.59"W S89° 59' 25.54"W
311	7,404.62	367.32	103.06 35.00 120.04 108.72	N9° 29' 53.33"E N62° 48' 12.76"E S28° 28' 49.03"E S64° 59' 25.54"W
312	7,443.87	399.84	140.21 91.99 103.06 108.89	N39° 40' 21.44"E S89° 22' 22.02"E S9° 29' 53.33"W S89° 59' 25.54"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
313	12,850.58	469.40	123.29 58.31 149.21 42.31 116.28	N76° 20' 25.01"E S31° 57' 01.48"E S39° 45' 21.44"W S89° 59' 25.54"W N6° 28' 49.91"E
314	8,146.82	365.80	129.28 119.23 125.29 .35.00	S78° 20' 25.01"E N6° 28' 49.91"E S73° 14' 03.28"E S3° 03' 16.17"W
315	11,940.86	449.91	129.28 85.59 52.57 147.51 35.00	N76° 14' 03.28"W N6° 28' 49.91"E N78° 55' 21.75"E S36° 48' 42.12"E S36° 28' 37.31"W
316	9,645.93	421.24	147.51 41.90 132.15 42.83 36.85	N36° 48' 42.12"W N75° 55' 21.75"W S44° 14' 02.67"E S40° 25' 52.02"W S75° 47' 08.44"W
317	9,996.66	413.86	132.15 80.23 29.09 152.46 70.00	S44° 14' 02.67"W N75° 55' 21.75"E N75° 55' 21.75"E S29° 47' 46.43"E S84° 29' 09.48"W
318	7,632.53	354.51	122.49 82.21 103.00 42.36 27.64	N26° 47' 46.43"W N75° 55' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W S65° 35' 47.56"E
319	7,000.00	340.00	100.00 70.00 100.00 70.00	N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W
320	7,000.00	340.00	100.00 70.00 100.00 70.00	N19° 54' 38.25"W N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W
321	8,802.86	370.02	100.00 86.86 76.78 0.00 31.39 75.50	N19° 54' 38.25"W S70° 05' 21.75"E S20° 33' 21.76"E S20° 33' 21.76"E S24° 24' 23.06"W S75° 05' 20.46"W
401	14,522.53	480.40	100.00 148.78 88.89 11.16 139.08	N69° 26' 38.24"E S20° 33' 21.76"E S70° 05' 21.75"W S70° 05' 21.75"W N20° 33' 21.76"W
402	7,147.81	342.91	99.35 12.58 62.81 100.00 86.58 1.21	N69° 12' 39.77"E S20° 40' 21.06"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N27° 03' 02.15"W
403	7,078.90	341.53	100.00 66.05 6.71 99.95 39.47 30.35	N62° 56' 57.85"E S21° 03' 02.15"E S25° 55' 11.19"E S65° 12' 39.77"W N27° 03' 02.15"W N21° 03' 02.15"W
404	7,000.00	340.00	100.00 70.00 100.00 6.14 91.86	N62° 56' 57.85"E S21° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W N27° 03' 02.15"W
405	7,000.00	340.00	100.00 70.00 100.00 6.82 61.18	N62° 56' 57.85"E S21° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W N27° 03' 02.15"W
406	13,704.84	462.96	19.62 59.99 100.00 50.58 .30.17 131.42 23.12 16.30 78.05 100.00 78.05	N26° 56' 31.68"W N25° 08' 41.23"W N69° 19' 03.58"E N64° 51' 18.77"E S70° 05' 21.75"E S25° 08' 41.23"E S25° 08' 41.23"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W
407	3,322.24	488.62	116.63 159.35 30.83 19.62 78.05	S75° 28' 04.06"W N21° 04' 23.63"E S25° 08' 41.23"E S24° 55' 31.68"E S27° 03' 02.15"E

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
408	8,437.45	382.80	116.63 61.19 128.79 86.47 39.77	N25° 25' 04.99"E S27° 03' 02.15"E S75° 55' 59.73"W N19° 04' 05.27"W N12° 21' 52.53"W
409	9,196.24	468.01	128.75 9.82 61.89 138.37 70.00	N75° 55' 59.73"E S27° 03' 02.15"E S27° 03' 02.15"E S75° 55' 59.73"W N19° 04' 05.27"W
410	9,761.21	454.33	138.37 9.14 30.33 132.41 .20.31 68.49	N75° 55' 59.73"E S27° 03' 02.15"E S27° 03' 02.15"E S40° 36' 18.48"W N81° 42' 56.29"W N19° 04' 05.27"W
411	9,998.56	396.36	132.41 98.47 1.31 66.58 122.69 .35.00	S49° 39' 18.48"E S27° 03' 02.15"E S27° 03' 02.15"E S25° 33' 21.76"E S75° 55' 59.73"W N27° 40' 59.98"W
412	11,528.62	483.68	122.69 139.66 0.47 199.16 .35.00	N25° 55' 08.70"E S25° 33' 21.76"E S75° 55' 21.75"W N67° 32' 59.25"W N6° 44' 21.18"E
413	9,930.19	464.50	114.47 .35.00 199.16 58.37 70.00	N39° 42' 56.34"W N39° 59' 42.32"E S67° 32' 59.25"E S75° 55' 21.75"W S75° 55' 21.75"W
414	7,846.64	376.41	114.47 82.21 .35.00 115.64 .35.00	S39° 42' 56.34"E S75° 55' 21.75"W S75° 55' 21.75"W N67° 42' 10.92"W N72° 38' 03.46"E
415	14,648.85	587.48	242.21 .35.00 115.64 80.22 61.80 52.31	N25° 47' 05.28"E S75° 59' 35.40"E S9° 42' 10.92"E S75° 55' 21.75"W S75° 55' 21.75"W S75° 55' 21.75"W
416	14,720.08	576.00	142.48 134.35 .35.00 242.21	N6° 28' 49.91"E N68° 28' 26.30"E S46° 34' 14.27"E S27° 47' 08.28"W
417	9,023.84	431.52	156.35 80.82 134.67 7.81 97.88	S68° 08' 28.52"W N6° 28' 49.91"E N75° 55' 59.73"E S19° 04' 05.27"E S6° 32' 13.02"W
418	12,174.13	445.90	138.67 106.02 102.98 100.75	S75° 55' 59.73"E N6° 28' 49.91"E N75° 57' 04.75"E S19° 04' 05.27"E
419	17,523.62	604.87	152.96 208.38 75.66 100.49 66.37	S75° 57' 04.75"E N6° 28' 49.91"E S71° 34' 39.08"E .05° 19' 19.68"E S19° 04' 05.27"E
420	8,346.58	397.33	75.66 112.79 127.91 70.00	N71° 34' 39.08"W N6° 28' 49.91"E S84° 08' 22.84"E S27° 08' 29.03"W
421	11,782.82	428.51	127.91 34.52 80.39 112.22 70.00	N84° 08' 22.84"W N6° 28' 49.91"E N75° 47' 08.19"E S39° 42' 06.66"E S44° 34' 49.28"W
422	10,879.44	415.00	112.22 121.99 49.86 23.12 51.42 .30.17 46.36	N39° 42' 06.66"W N75° 47' 08.19"E S22° 12' 48.52"E S25° 08' 41.23"E S19° 51' 18.77"W S64° 51' 18.77"W S50° 04' 39.04"W
501	14,810.90	552.12	82.91 159.06 48.82 21.18 101.89 .80.35	N6° 28' 49.91"E N73° 09' 46.10"E S16° 50' 14.06"E S18° 04' 33.36"E S75° 47' 08.19"W S75° 47' 08.19"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
502	12,323.10	496.46	166.96 73.31 100.16 143.49 70.00	S73° 09' 46.10"W N6° 28' 49.91"E N73° 09' 46.10"E S16° 50' 14.06"E
503	10,850.59	461.90	165.16 73.31 143.49 70.00	S73° 09' 46.10"W N6° 28' 49.91"E N73° 09' 46.10"E S16° 50' 14.06"E
504	9,429.97	412.55	143.49 84.19 133.07 21.23 24.80 4.48 25.19	S73° 09' 46.10"W N6° 28' 49.91"E N63° 49' 55.15"E S22° 10' 14.06"E S19° 20' 23.75"E S17° 55' 13.33"E S16° 50' 14.06"E
505	9,357.75	412.47	123.07 143.73 145.68	S63° 49' 55.15"W N6° 28' 49.91"E S59° 43' 02.77"E
601	15,365.61	537.51	160.14 70.00 137.11 169.27	S29° 23' 35.87"W N70° 19' 33.26"W N6° 28' 49.91"E S89° 11' 58.53"E
602	16,212.25	550.44	160.14 .33.19 104.73 .5.77 130.63 70.00	S29° 23' 35.87"W S89° 11' 58.53"E S19° 20' 23.75"E S19° 20' 23.75"E S49° 49' 52.11"W N52° 53' 16.01"W
603	10,274.27	421.25	130.63 84.23 46.80 103.57 70.00	N40° 49' 52.11"E S19° 20' 23.75"E S19° 20' 23.75"E S83° 16' 08.38"W N39° 25' 39.17"W
604	7,820.96	361.19	103.57 .23.17 .33.41 1.94 .5.79 100.06 .5.79 .6.83 24.50 .33.68	N83° 16' 08.38"E S19° 20' 23.75"E S19° 20' 23.75"E S17° 55' 13.33"E S19° 50' 14.06"E S73° 09' 46.10"W N19° 50' 14.06"W N17° 55' 13.33"W N19° 20' 23.75"W N22° 32' 01.70"W
605	14,068.00	480.00	100.06 .4.77 135.23 100.06 140.06	N73° 09' 46.10"E S16° 50' 14.06"E S16° 50' 14.06"E S73° 09' 46.10"E S16° 50' 14.06"W
606	7,000.00	340.00	100.06 .4.77 .85.23 100.06 70.00	N73° 09' 46.10"E S16° 50' 14.06"E S16° 50' 14.06"E S73° 09' 46.10"E N16° 50' 14.06"W
607	14,267.82	510.36	100.06 2.23 47.85 .39.20 70.00 12.52 43.13 .60.47 .0.80 .20.94 44.25 .62.35 3.23	N73° 09' 46.10"E S16° 50' 14.06"E S20° 59' 28.08"E S25° 08' 41.23"E S25° 08' 41.23"E S25° 08' 41.23"E N70° 36' 26.86"W N65° 08' 41.23"W N65° 08' 46.36"W N53° 04' 48.72"W N25° 08' 41.23"W N25° 08' 41.23"W N16° 50' 14.06"W
608	16,624.78	609.15	100.06 .37.04 .7.85 197.58 .41.69 0.00 .5.74 73.34 104.74 .36.75 12.52	N64° 01' 18.77"E S25° 08' 41.23"E S25° 08' 51.09"E S27° 03' 02.15"E S32° 56' 35.66"W N81° 03' 02.51"W N27° 03' 02.15"W N57° 03' 03.63"W N27° 01' 05.11"W N46° 34' 38.61"W N25° 08' 41.23"W
609	7,000.00	340.00	100.06 .11.00 100.06 .55.00	N64° 01' 18.77"E S25° 08' 41.23"E N64° 51' 18.77"W N25° 08' 41.23"W
610	14,724.06	494.50	39.20 100.06 39.20 47.85 2.23 56.23 100.06 97.46 .33.35	S25° 08' 41.23"E S64° 51' 18.77"W N25° 08' 41.23"W N25° 50' 28.08"W N16° 50' 14.06"W N16° 50' 14.06"W N17° 55' 13.33"W N16° 20' 23.75"W N22° 32' 01.70"W
611	14,068.00	480.00	100.06 .4.77 135.23 100.06 140.06	N73° 09' 46.10"W N16° 50' 14.06"W N16° 50' 14.06"W N73° 09' 46.10"E S16° 50' 14.06"E
612	7,852.45	343.96	100.06 .53.41 .6.88 .13.96 100.06 .6.77 .9.78 .1.94 .53.41	N71° 39' 36.20"E S18° 20' 23.75"E S17° 55' 13.33"E S16° 50' 14.06"E S73° 09' 46.10"W N16° 50' 14.06"W N16° 50' 14.06"W N17° 55' 13.33"W N18° 20' 23.75"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
613	7,000.00	340.00	100.00 70.00 100.00 70.00	N71° 39' 36.20"E S18° 20' 23.75"E S71° 39' 36.20"E N18° 20' 23.75"W
614	7,000.00	340.00	100.00 70.00 100.00 70.00	N71° 39' 36.20"E S18° 20' 23.75"E S71° 39' 36.20"E N18° 20' 23.75"W
615	9,725.90	390.37	100.00 104.72 105.89 .10.42 .39.09	S71° 39' 36.20"W N18° 20' 23.75"W S89° 11' 58.53"E S18° 20' 23.75"E S18° 20' 23.75"E
701	9,275.82	370.59	100.00 112.51 .42.59 7.66 71.02 .66.37	N62° 56' 57.85"W N27° 03' 02.15"W N33° 54' 08.51"E S89° 08' 41.23"E S54° 04' 02.17"E S27° 01' 05.11"E
702	7,000.00	348.35	.70.05 .36.37 .60.02 .53.61 .86.29	N62° 56' 57.85"E S27° 01' 05.11"E S40° 14' 41.23"E S62° 56' 57.85"W N27° 03' 02.15"W
703	7,000.00	353.02	.53.61 .33.11 .47.06 100.00 .72.24	N62° 56' 57.85"E S54° 04' 26.51"E S27° 03' 02.15"E S62° 56' 57.85"W N27° 03' 02.15"W
704	14,067.07	691.34	.55.89 100.00 124.28 .15.74 100.00 .17.44 .7.93 .114.07	S25° 33' 21.76"E S89° 26' 38.24"W N25° 33' 21.76"W N27° 03' 02.15"W N62° 56' 57.85"E S27° 03' 02.15"E S23° 48' 11.98"E S25° 33' 21.76"E
705	7,000.00	340.00	.100.00 .59.01 .10.99 100.00 .70.00	N89° 26' 38.24"E S25° 33' 21.76"E S25° 33' 21.76"E S89° 26' 38.24"W N25° 33' 21.76"W
706	7,000.00	340.00	.100.00 .76.35 .5.79 .51.93 .12.45 100.06 .89.79 .76.21	N89° 26' 38.24"E S25° 33' 21.76"E S20° 14' 00.01"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N25° 33' 21.76"W
707	14,896.32	661.13	.100.06 .2.23 .47.85 .39.20 .70.00 .12.52 .43.13 .60.47 .0.80 .20.94 .44.25 .62.35 3.23	S73° 09' 46.10"W S16° 50' 14.06"E S20° 59' 28.08"E S25° 08' 41.23"E S25° 08' 41.23"E N70° 36' 26.86"W N65° 08' 41.23"W N65° 08' 46.36"W N53° 04' 48.72"W N25° 08' 41.23"W S27° 59' 28.08"W N16° 50' 14.06"W
708	7,000.00	340.00	.100.06 .57.55 .12.45 100.06 .70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
709	7,000.00	340.00	.100.06 .57.55 .12.45 100.06 .70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
710	7,000.00	340.00	.100.06 .57.55 .12.45 100.06 .70.00	N64° 01' 18.77"E S25° 08' 41.23"E S25° 08' 51.09"E S27° 03' 02.15"E S32° 56' 35.66"W N81° 03' 02.51"W N27° 03' 02.15"W N57° 03' 03.63"W N27° 01' 05.11"W N46° 34' 38.61"W N25° 08' 41.23"W
711	7,000.00	340.00	.100.06 .57.55 .12.45 100.06 .70.00	N70° 05' 21.75"E S19° 54' 38.25"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W
712	7,139.44	562.87	.100.06 .45.98 .15.27 .5.75 100.06 .28.89 .40.96	N70° 05' 21.75"E S19° 54' 38.25"E S21° 14' 09.54"E S23° 08' 50.15"E S89° 15' 56.53"W N21° 48' 16.36"W N19° 54' 38.25"W
713	7,139.06	342.79	.100.06 .22.79 .45.15 100.06 .43.13 .39.68	S89° 15' 56.53"E S25° 42' 56.21"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N25° 42' 56.21"W

D5 SUBDIVISION PARCEL TABLES 1
ALTERNATIVE ROAD LAYOUT

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
714	7,000.00	340.00	100.00 2.48 67.52 100.00 70.00	N82° 18' 41.93"E S27° 41' 18.07"E S27° 41' 18.07"E N62° 18' 41.93"W N27° 41' 18.07"W
715	14,121.43	462.43	100.00 39.66 25.11 36.19 100.00 2.48 35.72 20.04 19.66	S55° 49' 58.18"W N31° 10' 01.82"W N29° 24' 39.68"W N27° 41' 18.07"W N62° 18' 41.93"E S27° 41' 18.07"E S27° 41' 18.07"E S29° 25' 39.95"E S31° 10' 01.82"E
716	7,000.00	340.00	100.00 9.16 60.84 100.00 70.00	N58° 49' 58.18"E S31° 10' 01.82"E S31° 10' 01.82"E S58° 49' 58.18"W N31° 10' 01.82"W
717	7,000.00	341.62	100.00 9.16 43.39 15.62 100.00 20.31 52.75	N58° 49' 58.18"E S31° 10' 01.82"E S31° 10' 01.82"E S32° 32' 24.67"E S56° 09' 12.41"W N32° 32' 24.67"W N31° 10' 01.82"W
718	7,263.74	347.31	100.00 15.65 44.92 100.00 83.35	N56° 09' 12.40"E S33° 33' 59.95"E S41° 07' 10.25"E S44° 58' 51.08"W N39° 27' 56.22"W
719	19,456.42	613.71	35.15 106.10 37.23 46.00 67.40 100.00 51.92 99.64	S54° 01' 56.60"E S47° 49' 05.50"W N48° 06' 26.57"W N54° 01' 56.60"W N49° 31' 33.80"E N44° 58' 51.08"E S49° 31' 33.80"E S54° 01' 56.60"E
720	18,199.71	583.19	106.10 31.83 70.00 158.85 38.42 20.87 26.16 91.46	N47° 49' 05.39"E S54° 01' 56.60"E S54° 01' 56.60"E S33° 49' 05.42"W N68° 55' 30.44"W N42° 57' 31.05"W N13° 03' 40.52"W N27° 02' 17.48"W
721	23,537.50	676.21	158.88 70.00 70.00 8.38 135.98 140.00	N23° 46' 05.62"E S54° 01' 56.60"E S54° 01' 56.60"E S54° 01' 56.60"E S20° 06' 22.40"W W84° 09' 37.50"W
722	8,693.89	369.70	130.98 63.62 7.58 117.49 70.00	N20° 06' 22.40"E S54° 01' 56.60"E S54° 01' 56.60"E S20° 06' 22.40"W W84° 09' 37.50"W
723	12,344.15	501.55	117.42 7.04 28.25 16.88 70.00 102.98 46.00 140.27	N20° 06' 22.40"E S54° 01' 56.60"E S43° 17' 37.85"E S32° 32' 57.00"E S32° 32' 57.00"E S32° 32' 57.00"E N70° 58' 23.41"W W84° 09' 37.50"W
724	10,864.05	469.69	100.00 135.00 41.59 26.43 69.00 102.58	N57° 27' 03.00"E S32° 32' 57.00"E S27° 27' 03.00"W S57° 27' 03.00"W N44° 45' 43.14"W N32° 32' 57.00"W
725	7,000.00	340.00	100.00 70.00 100.00 70.00	N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W
726	7,656.34	383.19	100.00 14.72 83.74 16.88 100.00 16.88 35.25 7.04 7.98	N30° 06' 01.31"E S54° 01' 56.60"E S43° 17' 37.85"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W N43° 17' 37.85"W N54° 01' 56.60"W N54° 01' 56.60"W
727	7,000.00	340.00	100.00 70.00 100.00 63.62 6.38	N30° 06' 01.31"E S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W N54° 01' 56.60"W
728	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 06' 01.31"E S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W
729	7,000.00	340.00	100.00 70.00 100.00 70.00	N30° 06' 01.31"E S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W

Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
730	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 06' 01.31"E S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W
731	7,000.00	340.00	100.00 70.00 100.00 31.84 38.16	N35° 06' 01.31"E S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W N44° 01' 56.49"W
732	14,869.31	467.61	85.64 100.00 86.84 51.92 44.92 100.00 67.49	S54° 01' 56.60"E S35° 06' 01.31"W N54° 01' 56.60"W N49° 31' 33.80"W N41° 47' 10.28"W N52° 46' 46.41"E S46° 37' 55.14"E
733	7,319.82	348.34	100.00 43.59 24.30 100.00 16.05 15.62 49.59	N58° 49' 58.18"E S31° 10' 01.82"E S34° 11' 36.71"E S52° 46' 46.41"W N35° 37' 59.58"W N32° 32' 24.67"W N31° 10' 01.82"W
734	7,000.00	340.00	100.00 70.00 100.00 9.16 60.84	N58° 49' 58.18"E S31° 10' 01.82"E S58° 49' 58.18"W N31° 10' 01.82"W N31° 10' 01.82"W
735	14,182.15	480.64	100.00 9.16 76.84 20.04 35.72 100.00 35.72 10.96 89.10	S58° 49' 58.18"E N31° 10' 01.82"W N31° 10' 01.82"W N28° 25' 39.95"W N27° 41' 18.07"E N62° 18' 41.93"W S27° 41' 18.07"E S29° 25' 39.95"E S31° 10' 01.82"E
736	7,000.00	340.00	100.00 70.00 100.00 2.48 67.52	N62° 18' 41.93"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N27° 41' 18.07"W
737	7,259.46	346.37	100.00 20.56 67.53 100.00 2.48 45.13 22.78 9.75	N67° 25' 25.17"E S29° 10' 28.66"E S27° 41' 18.07"E S62° 18' 41.93"W N27° 41' 18.07"W N27° 41' 18.07"W N25° 42' 39.27"W N23° 06' 00.15"W
738	7,138.78	342.76	100.00 56.44 10.64 100.00 15.27 45.48 12.43	N70° 05' 21.75"E S19° 54' 38.25"E S21° 14' 09.06"E S67° 20' 20.17"W N21° 14' 09.06"W N19° 54' 38.25"W N19° 54' 38.25"W
739	7,000.00	340.00	100.00 70.00 100.00 67.53 12.43	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
740	7,000.00	340.00	100.00 70.00 100.00 67.53 12.43	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
Ave	7,000.00	340.00	100.00 70.00 100.00 67.53 12.43	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
742	7,000.00	340.00	100.00 70.00 100.00 67.53 12.43	N70° 05' 21.75"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N19° 54' 38.25"W
743	14,522.53	480.49	1.91 51.50 100.00 51.50 0.79 76.38 10.66 100.00 87.37	S20° 14' 09.01"E S19° 54' 38.25"E S70° 05' 21.75"W N19° 54' 38.25"W N20° 14' 09.01"W N20° 33' 21.76"W N20° 33' 21.76"W N69° 26' 38.24"E S20° 33' 21.76"E
744	7,000.00	340.00	100.00 70.00 100.00 59.01 10.99	N69° 26' 38.24"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W N20° 33' 21.76"W
745	7,000.00	340.00	100.00 70.00 100.00 70.00	N69° 26' 38.24"E S20° 33' 21.76"E S69° 26' 38.24"W N20° 33' 21.76"W

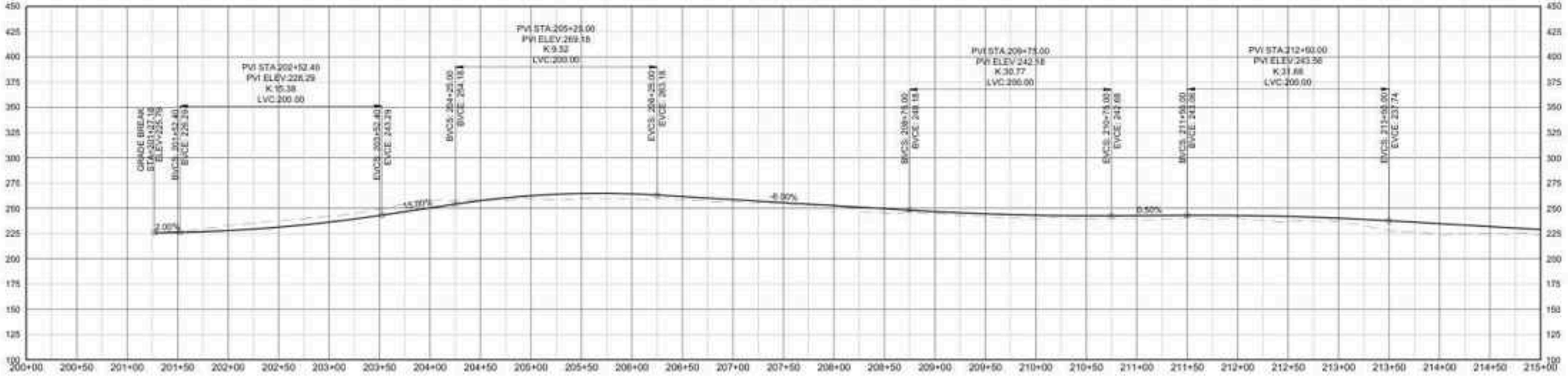
Parcel Area Table

Parcel #	Area (SF)	Perimeter	Segment Lengths	Segment Bearings
746	15,362.39	537.84	100.00 114.97 7.93 46.06 47.98 46.06 82.74 22.78 3.69 114.97	S69° 26' 38.24"W N20° 33' 21.76"W N20° 48' 17.96"W N27° 02' 02.15"W N27° 02' 03.15"W S79° 53' 46.71"E S87° 53' 02.15"E S84° 20' 14.12"E S21° 10' 23.93"E S29° 33' 21.76"E
801	7,089.68	341.79	100.00 70.90 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
802	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
803	7,000.00	340.00	100.00 70.00 100.00 70.00	N35° 58' 01.31"E S54° 01' 58.69"E S35° 58' 01.31"W N54° 01' 58.69"W
804	8,128.80	352.58	100.00 98.01 74.01 100.00 51.95 18.07	N35° 58' 01.31"E S54° 01' 58.69"E S47° 35' 52.48"E S48° 58' 13.80"W N41° 35' 52.60"W N54° 01' 58.69"W
805	14,745.88	494.92	100.00 105.69 64.31 100.00 49.23 105.69	S57° 27' 03.00"E N32° 32' 57.00"E S38° 49' 21.35"W N48° 54' 13.96"E S39° 49' 21.35"E S32° 32' 57.00"E
806	7,000.00	340.00	100.00 70.00 100.00 70.00	N57° 27' 03.00"E S32° 32' 57.00"E S57° 27' 03.00"W N32° 32' 57.00"W

D5 SUBDIVISION PARCEL TABLES 2
ALTERNATIVE ROAD LAYOUT

Appendix G – Maximum Feasible D-5 Subdivision Alignment Profiles

Profile View of AL-MARY ELLEN WAY

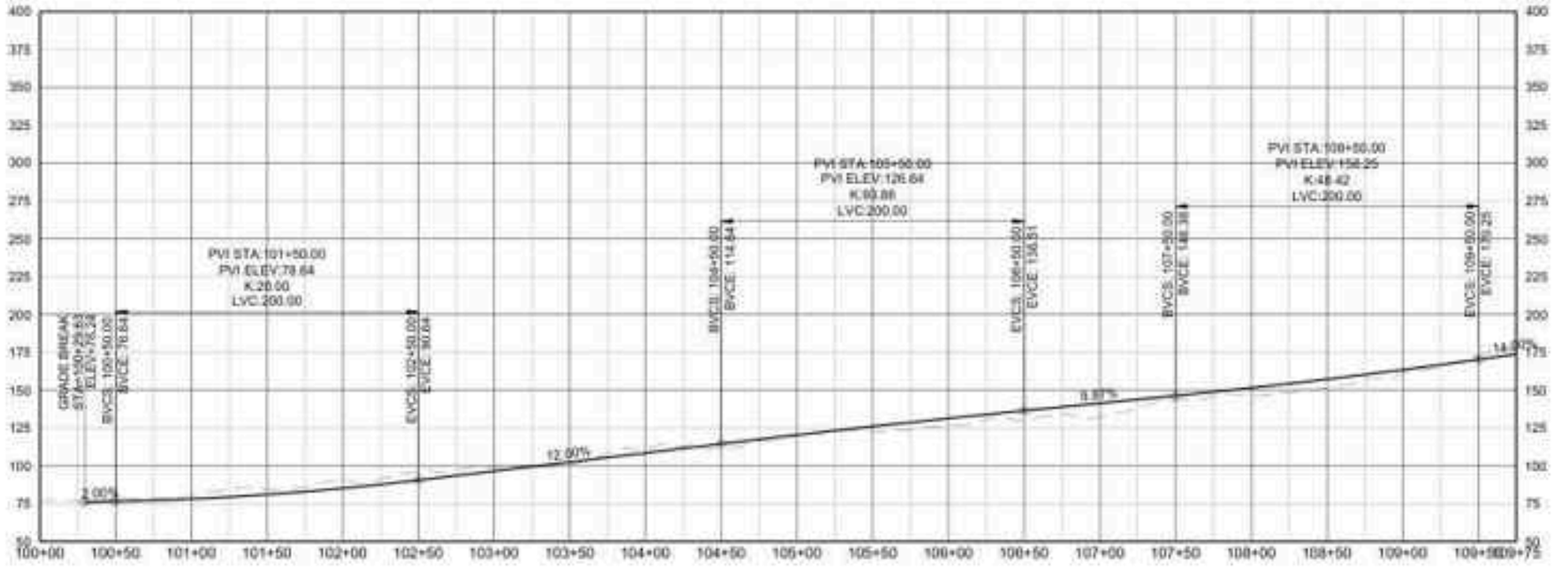


Profile View of AL-MARY ELLEN WAY

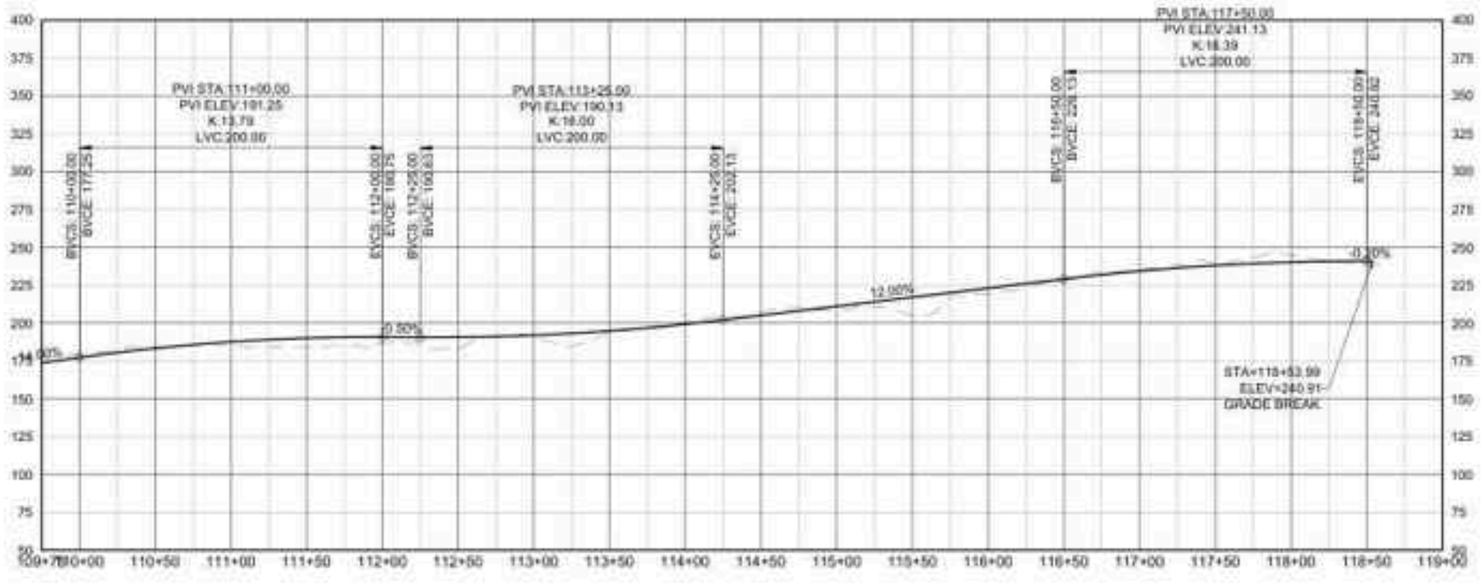


MARY ELLEN WAY PROFILE
ALTERNATIVE ROAD LAYOUT

Profile View of AL-BLACKERBY STREET

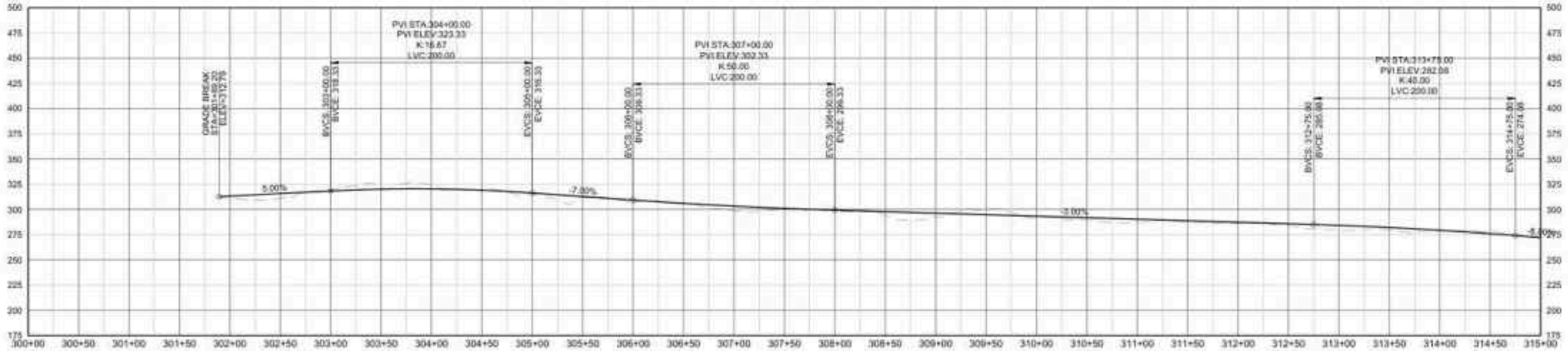


Profile View of AL-BLACKERBY STREET

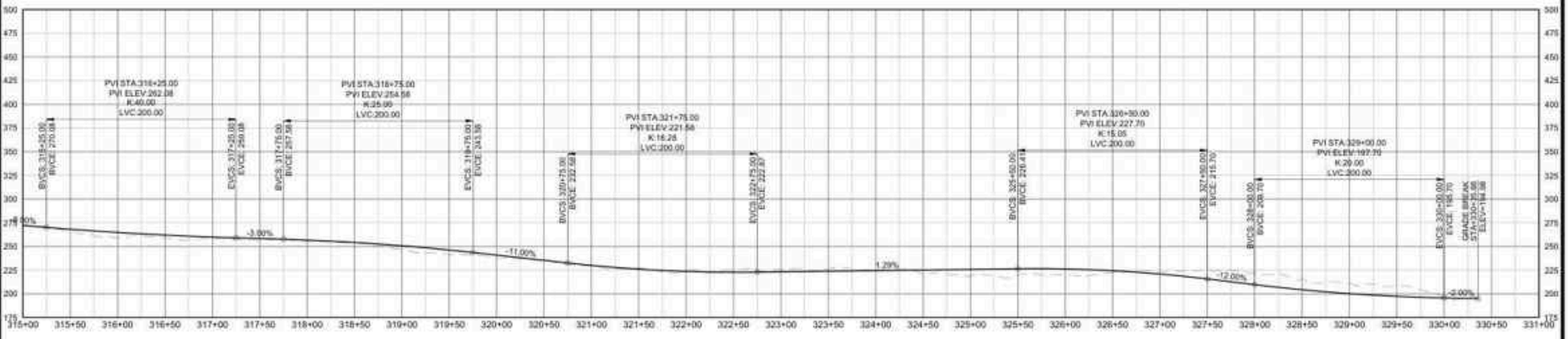


BLACKERBY STREET PROFILE
ALTERNATIVE ROAD LAYOUT

Profile View of AL-RIDGE DRIVE



Profile View of AL-RIDGE DRIVE

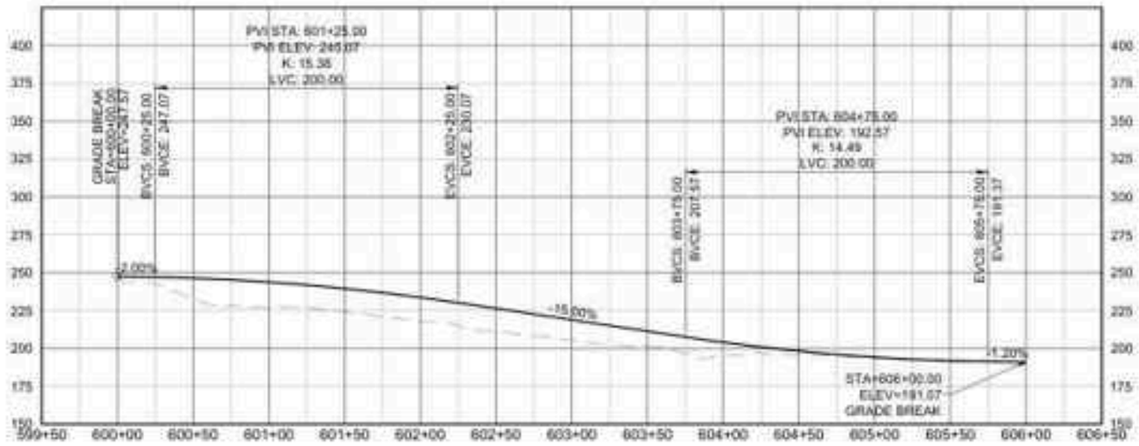


RIDGE DRIVE PROFILE
ALTERNATIVE ROAD LAYOUT

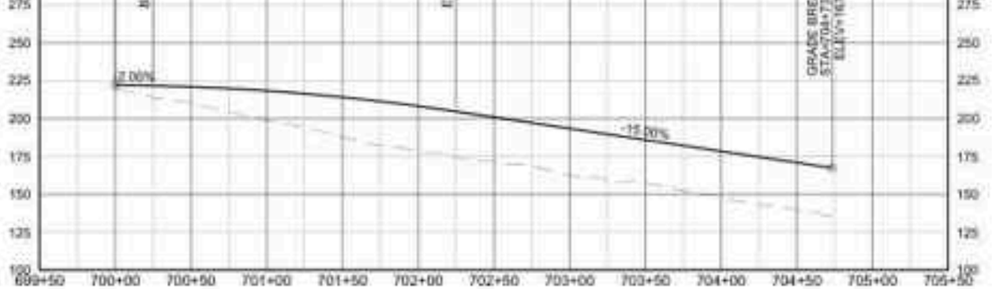
Profile View of AL-STEP UP STREET



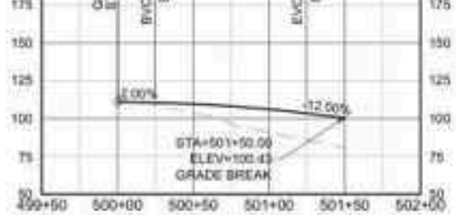
Profile View of AL-MARY'S COURT



Profile View of AL-ELLEN'S COURT



Profile View of AL-BLACKERBY COURT



STEP-UP ST & CULDESAC PROFILES
ALTERNATIVE ROAD LAYOUT

Appendix H – Rough Order of Magnitude Engineer's Estimates

Engineer's Rough Order of Magnitude Estimate - Blackerby Street					
Item No.	Item Description	Quantity	Unit	Unit Price	Extended Price
201.0003.0000	Clearing and Grubbing	1.8	Acre	$ 30,000.00	$ 54,000.00
203.0003.0000	Unclassified Excavation	5,190	Cubic Yard	$ 25.00	$ 129,750.00
203.0006.000A	Borrow, Type A	3,467	Ton	$ 50.00	$ 173,350.00
301.0001.00D1	Aggregate Base Course, Grading D-1	1,214	Ton	$ 90.00	$ 109,260.00
401.0001.002B	HMA, Type II; Class B	963	Ton	$ 250.00	$ 240,750.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	55.9	Ton	$ 1,500.00	$ 83,850.00
603.0001.0036	CSP 36 Inch	585	Linear Foot	$ 200.00	$ 117,000.00
609.0002.0001	Curb and Gutter, Type 1	1,300	Linear Foot	$ 115.00	$ 149,500.00
615.0001.0000	Standard Sign	36.5	Square Foot	$ 200.00	$ 7,300.00
618.0002.0000	Seeding	55	Pounds	$ 80.00	$ 4,368.00
620.0001.0000	Topsoil	4,045	Square Yard	$ 5.00	$ 20,225.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	1,300	Linear Foot	$ 300.00	$ 390,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	1,300	Linear Foot	$ 400.00	$ 520,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 150,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 7,500.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 10,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 2,169,353.00
				Contingency @ 10%:	$ 216,935.30
				Construction Engineering @ 15%:	$ 325,402.95
				Total:	$ 2,711,691.25

Engineer's Rough Order of Magnitude Estimate - Hill Climb Court					
Item No.	Item Description	Quantity	Unit	Unit Price	Extended Price
201.0003.0000	Clearing and Grubbing	0.8	Acre	$ 30,000.00	$ 24,000.00
203.0003.0000	Unclassified Excavation	3,802	Cubic Yard	$ 25.00	$ 95,050.00
203.0006.000A	Borrow, Type A	1,091	Ton	$ 50.00	$ 54,550.00
301.0001.00D1	Aggregate Base Course, Grading D-1	486	Ton	$ 90.00	$ 43,740.00
401.0001.002B	HMA, Type II; Class B	386	Ton	$ 250.00	$ 96,500.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	22.4	Ton	$ 1,500.00	$ 33,600.00
603.0001.0036	CSP 36 Inch	0	Linear Foot	$ 200.00	$ -
609.0002.0001	Curb and Gutter, Type 1	550	Linear Foot	$ 115.00	$ 63,250.00
615.0001.0000	Standard Sign	12.5	Square Foot	$ 200.00	$ 2,500.00
618.0002.0000	Seeding	23	Pounds	$ 80.00	$ 1,848.00
620.0001.0000	Topsoil	1,712	Square Yard	$ 5.00	$ 8,560.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	550	Linear Foot	$ 300.00	$ 165,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	550	Linear Foot	$ 400.00	$ 220,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 80,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 5,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 5,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 901,098.00
				Contingency @ 10%:	$ 90,109.80
				Construction Engineering @ 15%:	$ 135,164.70
				Total:	$ 1,126,372.50

Engineer's Rough Order of Magnitude Estimate - Mary Ellen Way					
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Extended Price**
201.0003.0000	Clearing and Grubbing	0.7	Acre	$ 30,000.00	$ 21,000.00
203.0003.0000	Unclassified Excavation	1,325	Cubic Yard	$ 25.00	$ 33,125.00
203.0006.000A	Borrow, Type A	1,954	Ton	$ 50.00	$ 97,700.00
301.0001.00D1	Aggregate Base Course, Grading D-1	364	Ton	$ 90.00	$ 32,760.00
401.0001.002B	HMA, Type II; Class B	292	Ton	$ 250.00	$ 73,000.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	17.0	Ton	$ 1,500.00	$ 25,500.00
603.0001.0036	CSP 36 Inch	203	Linear Foot	$ 200.00	$ 40,500.00
609.0002.0001	Curb and Gutter, Type 1	450	Linear Foot	$ 115.00	$ 51,750.00
615.0001.0000	Standard Sign	12.5	Square Foot	$ 200.00	$ 2,500.00
618.0002.0000	Seeding	19	Pounds	$ 80.00	$ 1,512.00
620.0001.0000	Topsoil	1,400	Square Yard	$ 5.00	$ 7,000.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	450	Linear Foot	$ 300.00	$ 135,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	450	Linear Foot	$ 400.00	$ 180,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 70,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 5,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 5,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 783,847.00
				Contingency @ 10%:	$ 78,384.70
				Construction Engineering @ 15%:	$ 117,577.05
				Total:	$ 979,808.75

Engineer's Rough Order of Magnitude Estimate - Traverse Way					
Item No.	Item Description	Quantity	Unit	Unit Price	Extended Price
201.0003.0000	Clearing and Grubbing	4.2	Acre	$ 30,000.00	$ 126,000.00
203.0003.0000	Unclassified Excavation	7,339	Cubic Yard	$ 25.00	$ 183,475.00
203.0006.000A	Borrow, Type A	7,184	Ton	$ 50.00	$ 359,200.00
301.0001.00D1	Aggregate Base Course, Grading D-1	2,862	Ton	$ 90.00	$ 257,580.00
401.0001.002B	HMA, Type II; Class B	2,269	Ton	$ 250.00	$ 567,250.00
401.0004.5828	Asphalt Binder, Grade PG 58-28	131.7	Ton	$ 1,500.00	$ 197,550.00
603.0001.0036	CSP 36 Inch	1,350	Linear Foot	$ 200.00	$ 270,000.00
609.0002.0001	Curb and Gutter, Type 1	3,000	Linear Foot	$ 115.00	$ 345,000.00
615.0001.0000	Standard Sign	36.5	Square Foot	$ 200.00	$ 7,300.00
618.0002.0000	Seeding	126	Pounds	$ 80.00	$ 10,080.00
620.0001.0000	Topsoil	9,334	Square Yard	$ 5.00	$ 46,670.00
626.0001.0008	Sanitary Sewer Conduit, 8 Inch	3,000	Linear Foot	$ 300.00	$ 900,000.00
627.0002.0004	Steel Water Conduit, 4 Inch	3,000	Linear Foot	$ 400.00	$ 1,200,000.00
640.0001.0000	Mobilization and Demobilization	All Required	Lump Sum	Lump Sum	$ 300,000.00
641.0001.0000	Erosion, Sediment and Pollution Control Administration	All Required	Lump Sum	Lump Sum	$ 10,000.00
642.0001.0000	Construction Surveying	All Required	Lump Sum	Lump Sum	$ 20,000.00
654.2002.0000	Eagle Monitoring	All Required	Contingent Sum	Contigent Sum	$ 2,500.00
				Basic Bid:	$ 4,802,605.00
				Contingency @ 10%:	$ 480,260.50
				Construction Engineering @ 15%:	$ 720,390.75
				Total:	$ 6,003,256.25

Appendix I – ITE TripGen 12 Web App Results

Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15 out of 155
Avg. Num. of Dwelling Units: 197
Directional Distribution: 50% entering , 50% exiting

Vehicle Trip Generation per Dwelling Unit

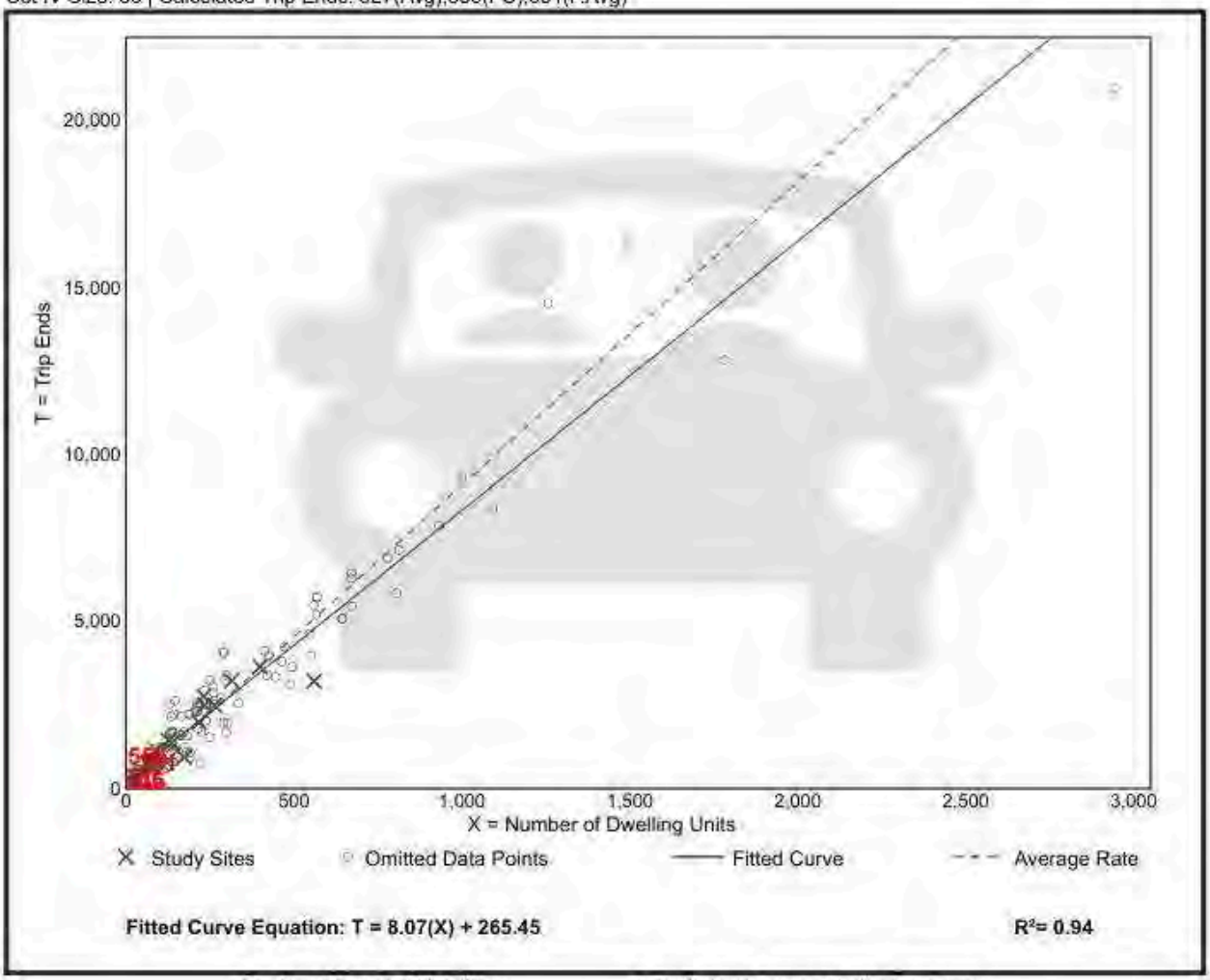
Average Rate	Range of Rates	Standard Deviation
9.19	5.44 - 12.92	2.31

Data Filtered By: [Region: Pacific Coast]

Data Plot and Equation

Caution – Filtered Data Set

Set IV Size: 36 | Calculated Trip Ends: 327(Avg),556(FC),331(F.Avg)



Fitted Curve Equation: T = 8.07(X) + 265.45

R^2= 0.94

Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15 out of 155
Avg. Num. of Dwelling Units: 197
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Vehicle Trip Generation per Dwelling Unit

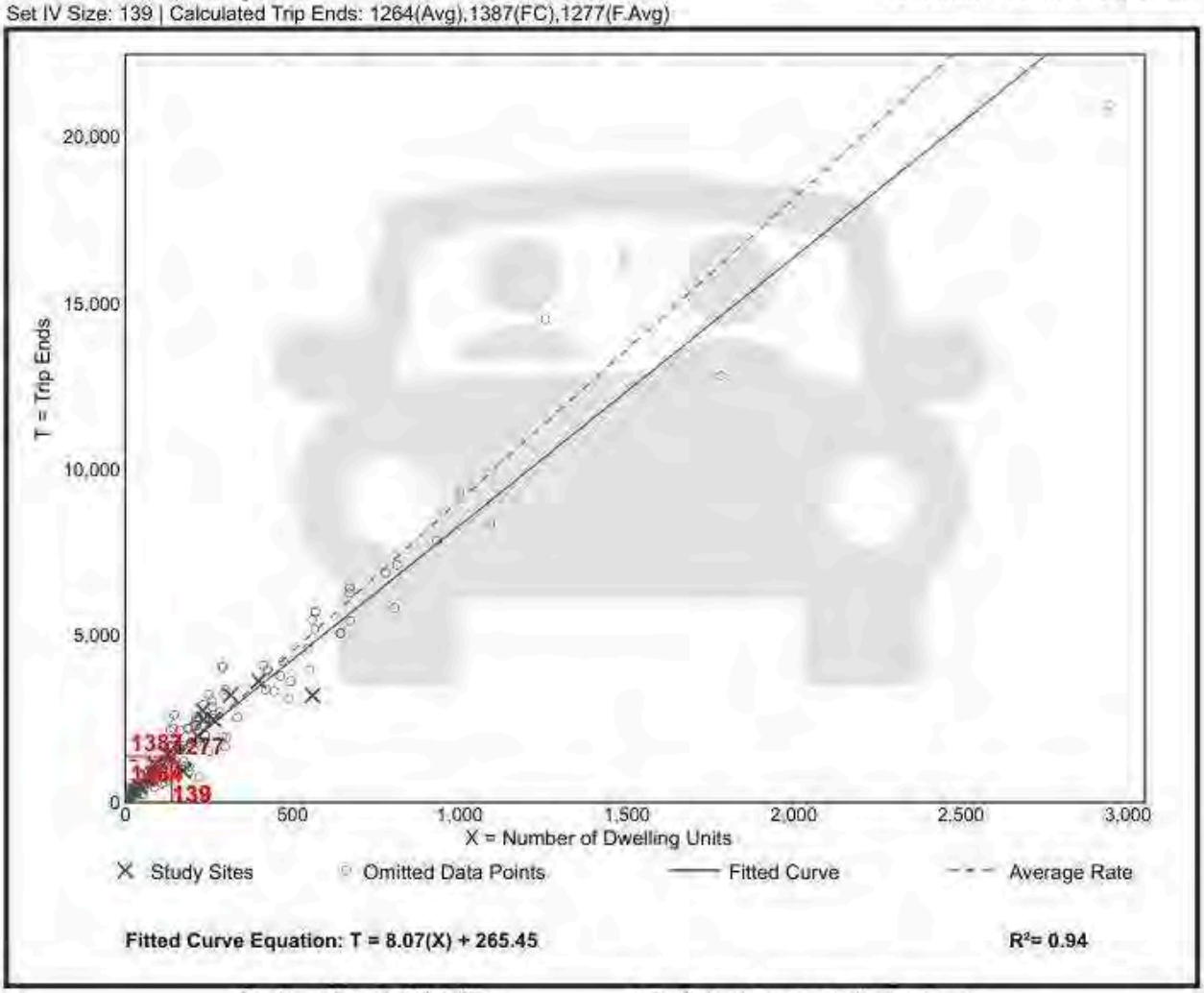
Average Rate	Range of Rates	Standard Deviation
9.19	5.44 - 12.92	2.31

Data Filtered By: [Region: Pacific Coast]

Data Plot and Equation

Caution – Filtered Data Set

Set IV Size: 139 | Calculated Trip Ends: 1264(Avg),1387(FC),1277(F.Avg)



Fitted Curve Equation: T = 8.07(X) + 265.45

R^2= 0.94

PAC 26- 21 conducted on May 6, 2026

PAC Report is not available/complete

Per directions from CDD Director Scott Ciambor via phone call on July 29, 2026, this application for zone change, and comprehensive plan amendments is submitted on July 31, 2026, and to be accepted w/out the PAC notes in order to meet the July submittal deadline for zone changes.

The application will be supplemented with PAC notes and other necessary information as needed.