

NORTHEAST CONNECTOR

Draft Final Report

Northeast Connector
Feasibility Study

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Prepared For

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Acknowledgement

The Regional Transportation Commission of Washoe County (RTC) and the Study Team would like to thank the Technical Advisory Committee, participating stakeholders, and public participants for their time and input in helping to shape this Study.

All concepts and corridor alignments herein are preliminary and subject to change and future refinement.

Introduction

Executive Summary

To be included following public review.

1 Background, Purpose, & Need



Background

The Regional Transportation Commission of Washoe County (RTC) initiated the Northeast Connector Feasibility Study (Study) to evaluate a potential new roadway connection from east Sparks/Spanish Springs in Washoe County, Nevada to the Tahoe-Reno Industrial Center (TRI Center) in Storey County, Nevada. The proposed roadway would connect residential areas in Sparks with the TRI Center regional employment center to help alleviate commuter traffic along Interstate 80 (I-80). Currently, I-80 is the only direct connection between the two areas and is often congested with no alternate route during traffic incidences. The result is recuring congestion, reduced transportation reliability, and impacts to traveler safety.

This Study evaluates the feasibility, impacts, benefits, and preliminary cost estimates of a potential connection at a planning level to determine if there is a viable corridor for potential future project development. One component of feasibility is to evaluate potential corridor alignments. Determining corridor alignments allows the Study to estimate traffic impacts to the existing road network and develop preliminary costs to determine which corridor is the most viable. In this Study, the Trimble Quantum alignment optimization software has been applied to quickly evaluate candidate corridors. The most feasible corridors are then evaluated based on several criteria developed through the Study. This report documents the processes of the Study and establishes the highest rated conceptual corridor for potential advancement.

Study Area

The Study area is in Washoe County along the northern Storey County border. Study limits include the eastern development boundary of Sparks and Spanish Springs to the west, I-80 to the south, USA Parkway to the southeast, and near La Posada Drive to the north. See **Figure 1** for the study area.

The Study area was established to provide a comprehensive yet manageable boundary that should encompass the footprint of most reasonable and feasible corridor alternatives while also ensuring data is manageable.

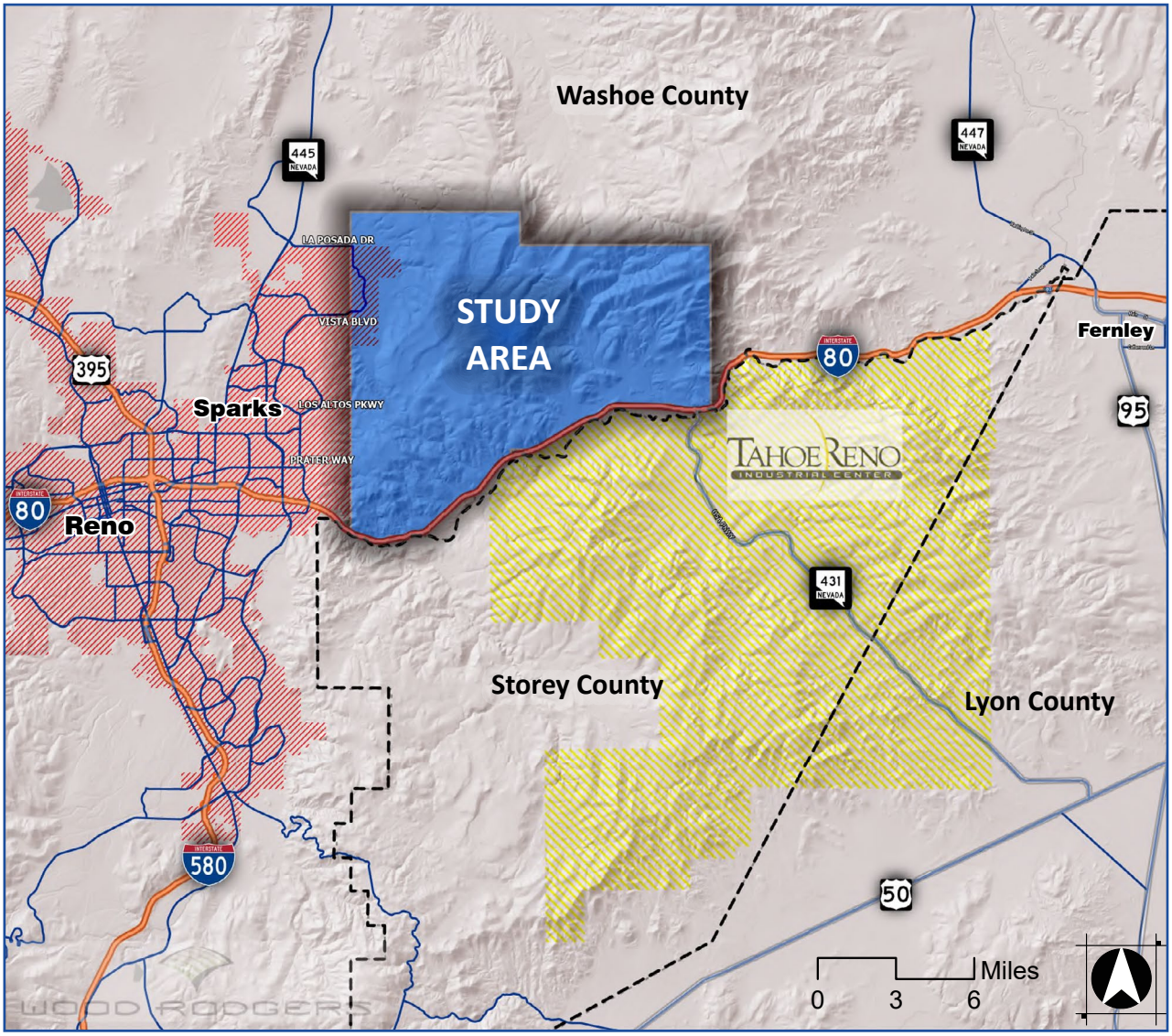


Figure 1: *Study Area*

Study Context

The population of Washoe County, the City of Reno, and the City of Sparks (Truckee Meadows) has grown significantly over the last decade, this is partly fueled by the creation of jobs from companies such as Apple, Tesla, Panasonic, Google, Walmart, and others locating manufacturing and distribution centers within TRI Center. The location and regional proximity of TRI Center, in Storey County, has allowed for a large influx of industrial and commercial growth which brings employment to the region. While there are some

opportunities to develop new residential communities in Storey and Lyon Counties, these areas are largely constrained by limited or nonexistent infrastructure and services needed to support housing. In contrast, the communities within the Truckee Meadows, which already have established services and infrastructure, have been better suited to quickly provide the housing required to accommodate much of the population growth resulting from the influx of jobs in TRI Center. Currently, Storey County does not have any proposed housing developments approved within a forty-five minute (45 min) commute time, where the City of Sparks and the surrounding Washoe County jurisdiction have a maximum of 16,684 residential units that have been approved through either a development agreement, tentative map, or Planned Unit Development (PUD) according to the Truckee Meadows Regional Planning Agency (TMRPA) Approved Future Units Map. Therefore, it is reasonable to assume that a majority of the future workforce is more likely to be located within the Truckee Meadows rather than Storey County.

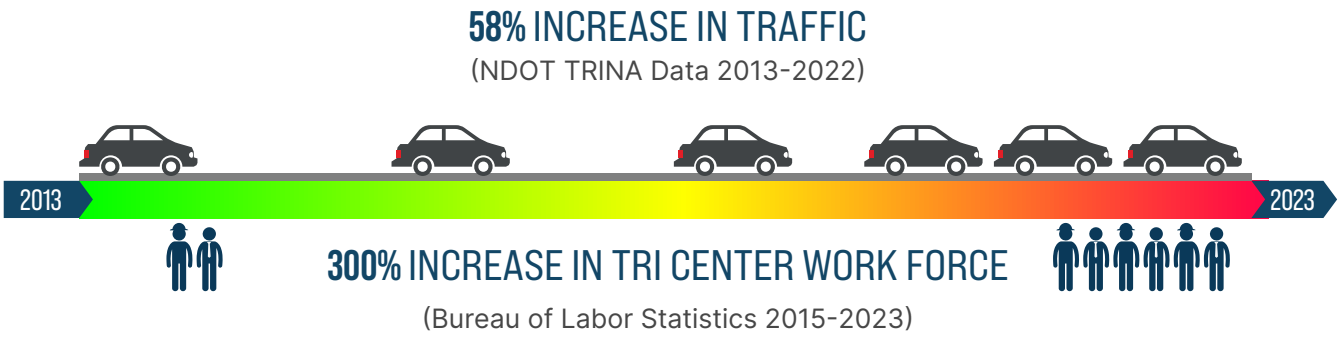


Figure 2: *Increase in Traffic and Employment Growth*

This relationship requires a majority of the workforce in TRI Center to commute from the Truckee Meadows, with I-80 providing the only east/west connection with no redundancy or alternate routes. Data collected from INRIX (a location-based device data collection company), shows that severe congestion occurs daily and an incident only extends the delay. Travelers must endure significant congestion and/or use distant routes that increase travel times by one hour or more (Nevada Department of Transportation, Traffic Records Information; 2013-2022).

Purpose and Need

Within the Truckee Meadows service area, eighty-five percent (85%) of trips to TRI Center start north of I-80 as illustrated in Figure 3. This increases demand on Vista Boulevard, Sparks Boulevard, and Pyramid Highway, the major north/south arterials in Sparks and Spanish Springs. As the area is anticipated to continue to attract businesses to locate to TRI Center combined with new housing units under construction, the area is anticipated to see additional population growth within the Truckee Meadows.

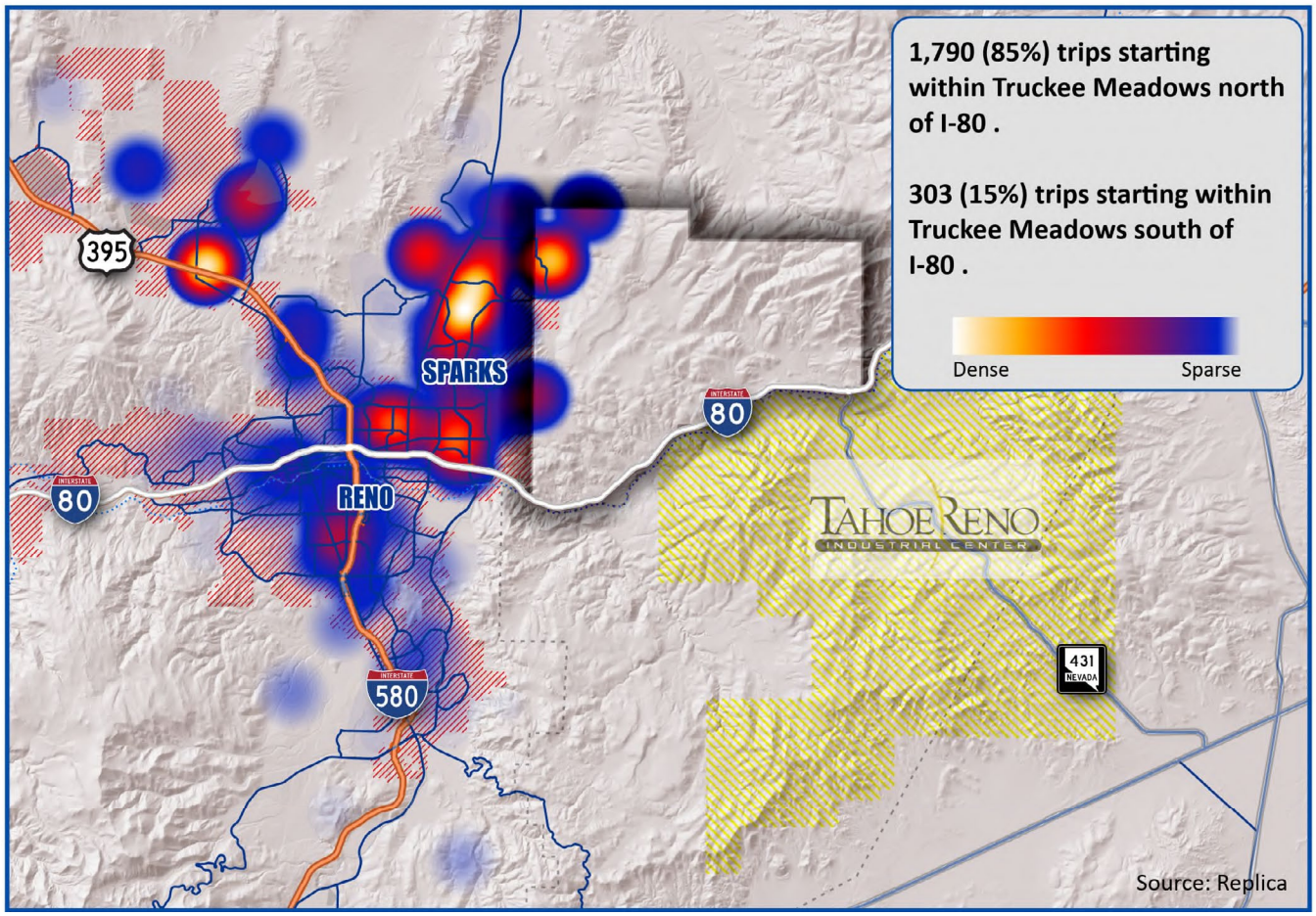


Figure 3: *Trip Origination to TRI Center Map*

This presents a significant increase in vehicle trips along I-80 heading eastbound in the AM peak hours and westbound in the PM peak hours. Therefore, during these times, it is common to see increased traffic congestion between Exit 21 (Vista Boulevard/ Gregg Street) and Exit 32 (USA Parkway). Observed weekday speeds along this area have shown an average drop by forty percent (40%) in the AM peak, and forty-six (46%) in the PM.

Along with slower commute times, increased traffic has resulted in an increase in crashes, which have led to a recorded seven traffic fatalities between 2016-2020. More common minor incidents further impact travel times. The results show an incident can cause speeds on I-80 to drop by over 90-percent or halt traffic all together.

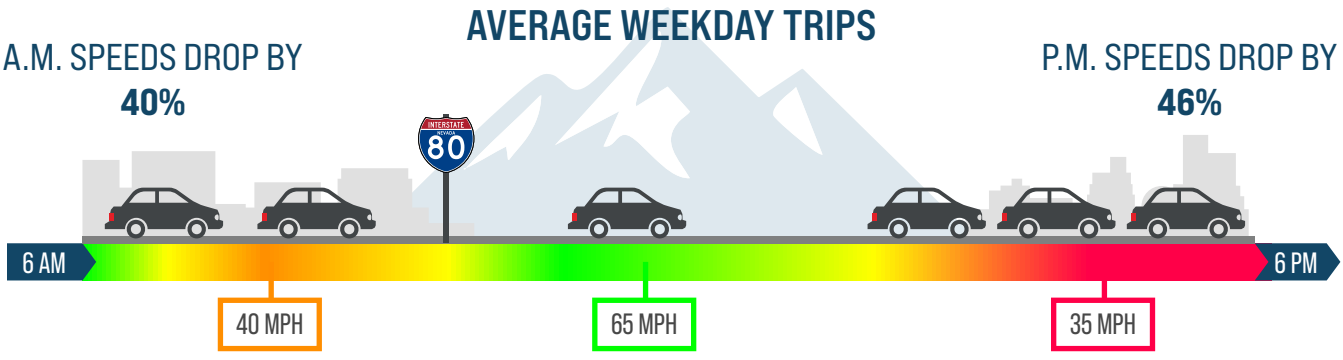


Figure 4: *I-80 Congestion Along I-80 Between TRI Center and Sparks, NV*

As I-80 is the only east/west connection between the Truckee Meadows and TRI Center, new roadway connections are needed to create an alternate route and transportation redundancy. An alternative to I-80 would help reduce I-80 congestion, increase transportation reliability, provide an alternate route during incidents and closures, and improve traveler safety. Without a new transportation connection, transportation reliability will continue to be poor, travelers will not have any alternate routes, especially during incidents, and regional economic growth will be negatively impacted.

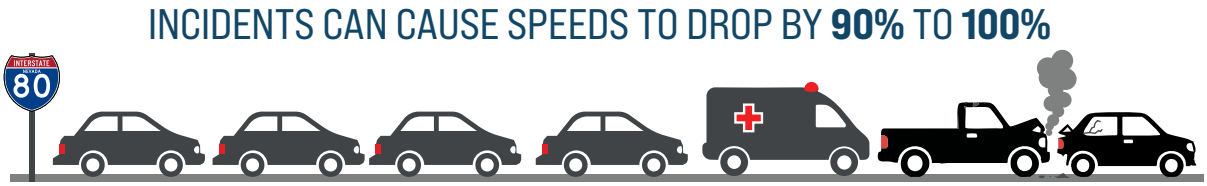


Figure 5: *Traffic Incident Impacts Along I-80*

Feasibility Study Goals

Four study goals have been established at the Study outset. The goals provide a backdrop for conducting the Study in addition to measures of success. These four goals are:

REDUCE CONGESTION

Provide an alternate route to I-80 and create additional transportation capacity between major residential and employment nodes.

SUPPORT ECONOMIC GROWTH

Reduce congestion and travel time as an impediment to employment growth.

INCREASE RELIABILITY

Improve consistency and predictability for travelers by providing choices in route.

INFORM REGIONAL DECISIONS

Provide clarity and establish feasibility to allow decisionmakers to make informed decisions.



2 Alternatives Evaluation Process

A new connection between TRI Center and the Truckee Meadows would provide relief for heavy traffic volumes currently on I-80 between Sparks and USA Parkway. Since the majority of the TRI Center workforce is north of I-80 with a majority in the Sparks area, a direct connection to northeast Sparks would help relieve congestion on I-80 and alleviate traffic along several major arterials that serve Sparks, including Vista Boulevard, Sparks Boulevard, McCarran Boulevard, and Pyramid Highway. To achieve this objective, establishing a range of alternative corridors and analyzing those corridors against available data will identify which corridor is the most feasible for a future project. This section establishes the range of alternative corridors considered and provides an overview of key opportunity and constraint data sets obtained and analyzed.

Developing Alternative Corridors

The first step in establishing alternative corridors is determining east and west termini. The range of alternatives explore different alignments, with the western terminus connecting to one or more of the existing roadways:

- **La Posada Drive**
- **Los Altos Parkway**
- **Vista Boulevard**
- **Prater Way**

The eastern terminus point includes USA Parkway. These termini will be further evaluated during future project development. To establish the alternative corridors between the east and west terminus, the Study considered the opportunities and constraints within the Study area to establish the alternative corridors.

Opportunities and Constraints

Site Features

The Study area is predominantly undeveloped land with urban to suburban development near the City of Sparks boundaries to the west and industrial/solar farm uses in the southeast near I-80. The majority of the Study area features a mix of upland vegetation and invasive weeds with portions of the area bisected by dirt roads and utility corridors. Areas with existing development should be considered a constraint where vacant undeveloped parcels should be considered as an opportunity to avoid private property and the built environment.



Environmental Resources

Being mostly undeveloped, the Study area may contain environmental resources of concern. Some environmental resources must be avoided all together while others may require mitigation and/or minimization of impacts. One key resource is a known cultural avoidance area located within the center of the Study area. This includes a 3,896-acre area identified by the Bureau of Land Management (BLM) that should be avoided. This Area of Critical Environmental Concern (ACEC) is one of several environmental resource constraints considered. These resources are further described in the Environmental Due Diligence Report in Appendix A and in Section 5 of this report.



Slopes/Terrain

The Study area is mostly mountainous terrain with elevations ranging from approximately 4,500 feet to 5,500 feet throughout the Study area. Areas greater than 30-percent slopes and rocky terrain were identified as less desirable as they could add additional cost and grading to the project. Flatter areas, those under 20-percent slopes, are more desirable as they require less cut/fill and reduce costs. See Figure 6 on the following page.



Land Ownership/Easements

The entire Study area is made up of a mix of private and federal parcels with a majority of the parcels (69%) consisting of federally owned land managed by the BLM. Private parcels are mainly land located near the developed portions of the City of Sparks and along I-80 near the USA Parkway intersection. See Figure 6 for land ownership. While a roadway on a private parcel does not exclude it from the potential corridor alignment, it does add additional costs and time to negotiate with private property owners and puts a burden on the owner. Ideally, a corridor within public land is more of an opportunity.



Utility Corridors

Several utility corridors bisect the Study area. Utilities include electric, gas, and fiber optic. These areas may be considered an opportunity or constraint as a potential corridor could run parallel to an existing easement, providing improved access for utility maintenance, however, it can be a constraint if utilities need to be relocated to accommodate the roadway alignment.

Geotechnical

The Study area geology can have a significant impact on construction methods, materials, and duration, all of which significantly affect costs. The geology can be a constraint when poor materials or rock requiring blasting are encountered. Geology can also be an opportunity when quality materials are encountered that can be used for construction, eliminating the need to import. A high-level geotechnical evaluation was conducted, the results of which are in **Appendix B.**

Drainageways

Terrain within the Study area is mostly steep and undeveloped with numerous canyons and washes. Areas within the Federal Emergency Management Agency (FEMA) flood zones are typically located in washes and gulleys and will need to provide infrastructure including culverts or in the most extreme cases, bridges to safely cross and accommodate flows. Opportunities in terrain where slopes are under 20-percent are more suitable for corridor alignments. FEMA flood zones and drainageway crossings requiring culverts or bridges can add significant costs and should be minimized where possible. A Technical Drainage Report in **Appendix C** provides more detail to address areas where these cannot be avoided. The report focuses on a southern corridor given this part of the Study area tends to be downstream and provides a conservative look at drainage feasibility.

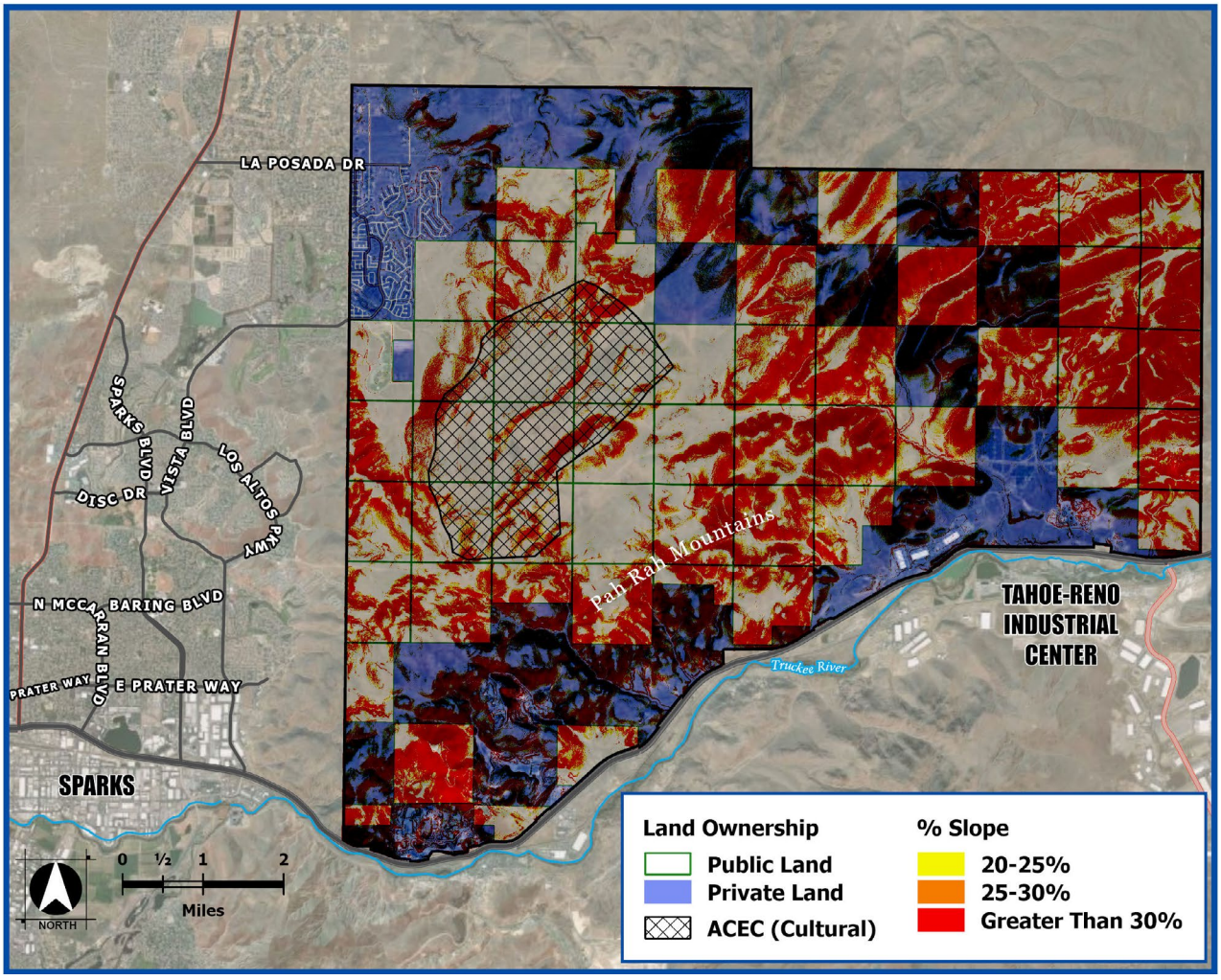


Figure 6: *Opportunities and Constraints Map*

All the proposed corridor alternatives have a common eastern terminus point at the existing I-80 undercrossing west of USA Parkway (IH-643) with the exception of one corridor alternative which looks at a connection to I-80 near the Lockwood on/off ramps (Exit 23). As noted, all termini will be further evaluated in the future.

Through this process a total of six (6) potential alternatives were provided:

1. La Posada Drive to USA Parkway
2. Vista Blvd. at Golden Eagle to USA Parkway
3. Vista Blvd. S. of Red Hawk to USA Parkway
4. Los Altos Parkway to USA Parkway
5. Prater Way to USA Parkway
6. La Posada Drive to I-80 at Lockwood

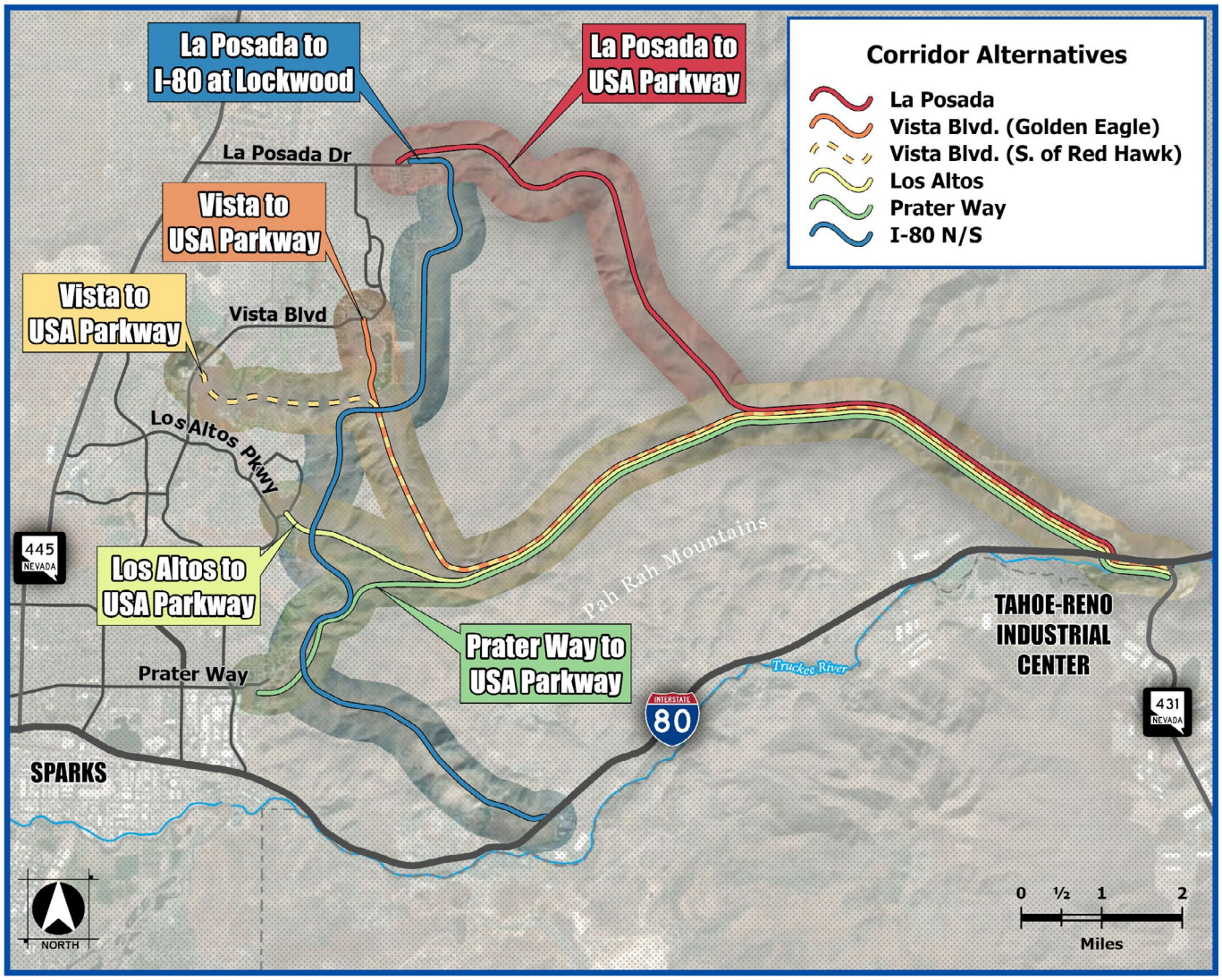


Figure 7: *Alternative Corridors Map*

Corridor Alignments And Analysis

Corridor Cross-Section

The proposed corridor will accommodate a two-lane roadway with a posted speed limit of 45 miles per hour (mph). The roadway consists of two 12-foot-wide travel lanes, 10-foot-wide shoulders, and an open drainage system. The road will not exceed six percent (6%) maximum vertical grade when accommodating the change in elevation. The typical roadway cross-section is shown in Figure 8 below and detailed geometric criteria provided in Appendix D.

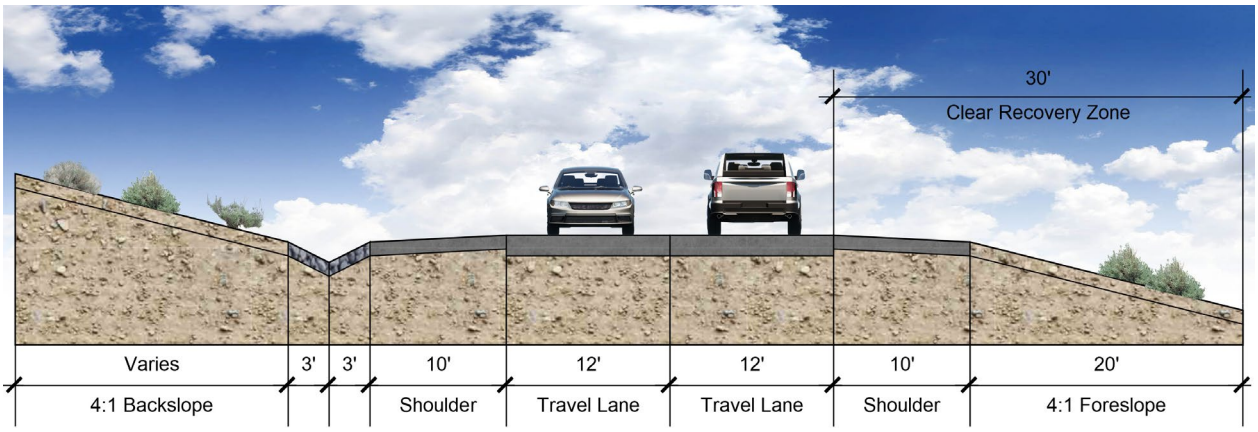


Figure 8: *Proposed Roadway Cross-Section*

Corridor Evaluation (Quantm)

The proposed corridors were evaluated based on several data inputs. The data inputs considered include:

- **Terrain (e.g. USGS topo, and Lidar data)**
- **Costs (cut, fill, bridges, tunnels, walls, etc.)**
- **Geometric criteria**
- **Proposed cross-sections**
- **Constraints and avoidance areas**
- **Waypoints and preference areas**

These inputs were applied to each potential corridor to generate a preliminary cost associated with each corridor alignment. The top corridors were then applied to determine overall feasibility and support the alternative corridor screening process. Trimble's Quantum alignment optimization software was used to quickly identify and evaluate corridors.

Alternative Corridor Screening Process

A two-level corridor screening process was established to provide a methodical approach for eliminating (screening) alternative corridors and identifying a single recommended corridor for potential future project development. This process is illustrated in **Figure 9** on the following page and further detailed in Section 4 and Section 5.

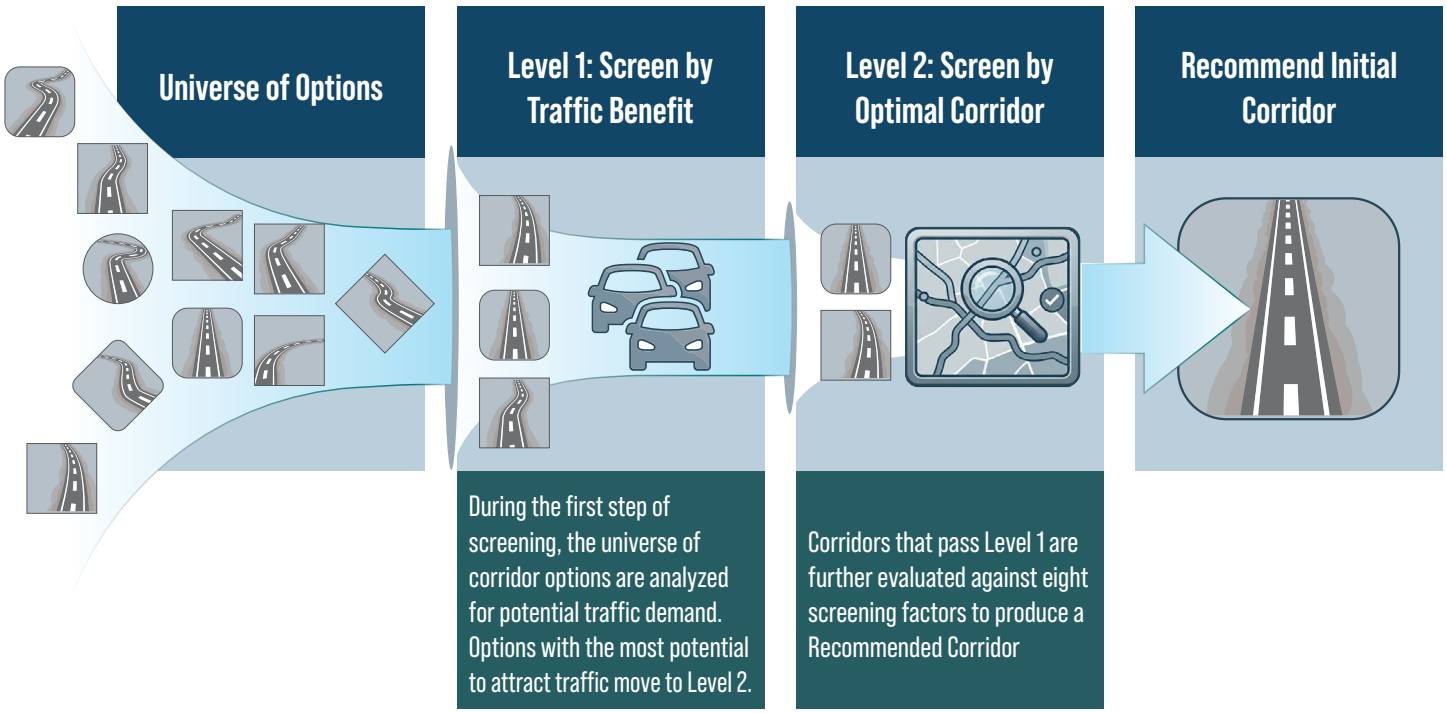


Figure 9: *Corridor Screening Process*

Level 1 Alternative Corridor Screening

During the first step of screening, the universe of corridor options are analyzed for potential traffic demand. Those corridors that show the most potential to attract traffic are carried forward to Level 2, while those that show little potential to attract traffic are screened out from further consideration.

Level 2 Alternative Corridor Screening

The alternative corridors that pass Level 1 screening are further evaluated against seven screening factors in Level 2. The results of the evaluation, combined with consideration of conceptual costs support the identification of a single initial corridor recommendation for potential future project development.



3 Coordination & Outreach Summary

Agency Coordination

Technical Advisory Committee
The active involvement of agency stakeholders is critical to ensuring a successful and comprehensive Study. Key stakeholders were engaged throughout the Study via the Technical Advisory Committee (TAC). The TAC met three times throughout the Study to coordinate inputs, review outputs and recommendations, and share information. In addition, TAC members reviewed available materials, including this report, and provided feedback throughout. The three TAC meetings held consisted of:

TAC MEETING 1
Kickoff
February 2025

TAC MEETING 2
Level 1 Screening
July 2025

TAC MEETING 3
Level 2 Screening
October 2025

PUBLIC OUTREACH
December 2025

Meeting materials and summaries can be found in **Appendix E.**

Public Outreach Summary

To be completed following December 2025 public meeting with Public Outreach Summary (Appendix F).



4 Level 1 Alternative Screening Summary

Methodology

Level 1 corridor alternative screening is based on projected 2050 traffic forecasts. Those alternatives that are projected to carry the most traffic have a higher likelihood of achieving the Study goals and warrant further evaluation. Those alternatives that are projected to carry less traffic are less likely to meet the Study goals and are screened out in Level 1 so effort in Level 2 is focused on the most promising alternative corridors.

The model used to forecast anticipated traffic along the alternatives is the RTC Washoe Travel Demand Model (TDM). Key roadway segments that are part of the Study area include I-80 between Pyramid Way and USA Parkway, Pyramid Way and Vista Boulevard between I-80 and La Posada Drive, and other major arterial connections such as McCarran Boulevard and Sparks Boulevard.

A memorandum outlining the process of calibrating and validating the RTC Washoe TDM at a project-level is in **Appendix G**. This process verified that the model provided accurate traffic modeling for the Study area using the Base Year 2022 scenario, and that the results were within the allowed statistical limits established in The Nevada Department of Transportation (NDOT) Traffic Forecasting Guidelines. Model forecasts were generally found to reasonably estimate existing conditions and, in turn, future conditions.

Modeling

Several factors are considered to ultimately determine the feasibility of a project of this magnitude. The traffic modeling serves to provide traffic forecasts to predict how impactful a new connection between the Truckee Meadows and USA Parkway could be for commuters. Several alternatives need to be evaluated using the model to determine the optimal alignment that will provide the most benefit to the community.

As previously mentioned, the Base Year 2022 scenario was used to calibrate and validate the model. Similar changes were then applied to the Future Year 2050 TDM scenario, which is what the Northeast Connector alternatives were studied under. Each alternative was

run separately through the model, and the results provided metrics such as Annual Daily Trips (ADT), Average Speed, and Average Travel Time. For more details, refer to **Appendix G.**

Traffic Forecasts

Initially, six corridor alternatives were studied using the RTC Washoe 2050 TDM. Each alternative provides a forecasted traffic estimate, which can give insight into how much traffic will be diverted away from the highly congested I-80, between USA Parkway and the Truckee Meadows. While it is not graphically represented on the images provided in this analysis, congestion at the I-80 on/off ramps and surface streets within the Truckee Meadows will also likely be reduced if more drivers choose to take the connector when traveling to and from TRI Center. Lower peak-hour traffic volumes will benefit the community as a whole, not just the USA Parkway commuters. The six alternatives that were modeled, projected ADT for each alternative, and a possible alignment are outlined below in **Figure 10.**

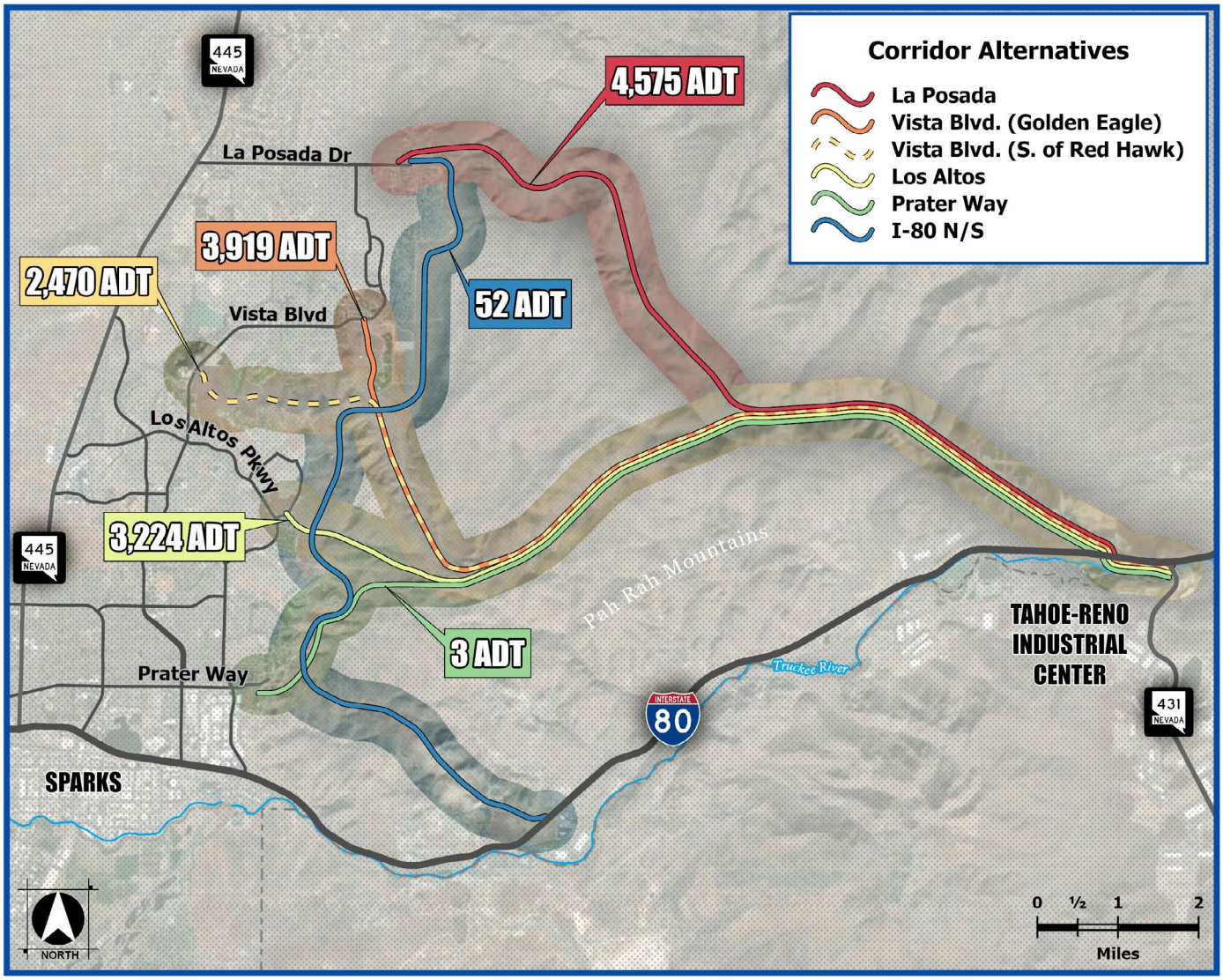


Figure 10: *Level 1 Corridor Alternatives Map*

Level 1 Alternative Screening Results

The Level 1 screening projected ADTs are summarized in **Table 1** below.

Corridor Alternative	2050 ADT	% from Max
La Posada	4,575	N/A
Vista Blvd. (Golden Eagle)	3,919	14%
Vista Blvd. (S. of Red Hawk)	2,470	46%
Los Altos	3,224	30%
Prater Way	3	100%
I-80 N/S	52	99%

Table 1: *Level 1 Corridor Screening Results; ADT 2050*

As shown in **Table 1**, in general, the closer the corridor is to I-80, the less traffic it attracts. This is likely due to limited or no travel time benefits associated with more southerly corridors. With this understanding, those corridors projecting less than 25-percent of the maximum ADT were screened from further consideration. The result is that the La Posada and Vista Blvd. (Golden Eagle) corridor alternatives rise to the top and the remaining corridor alternatives are screened out in Level 1 as shown in **Figure 11.**

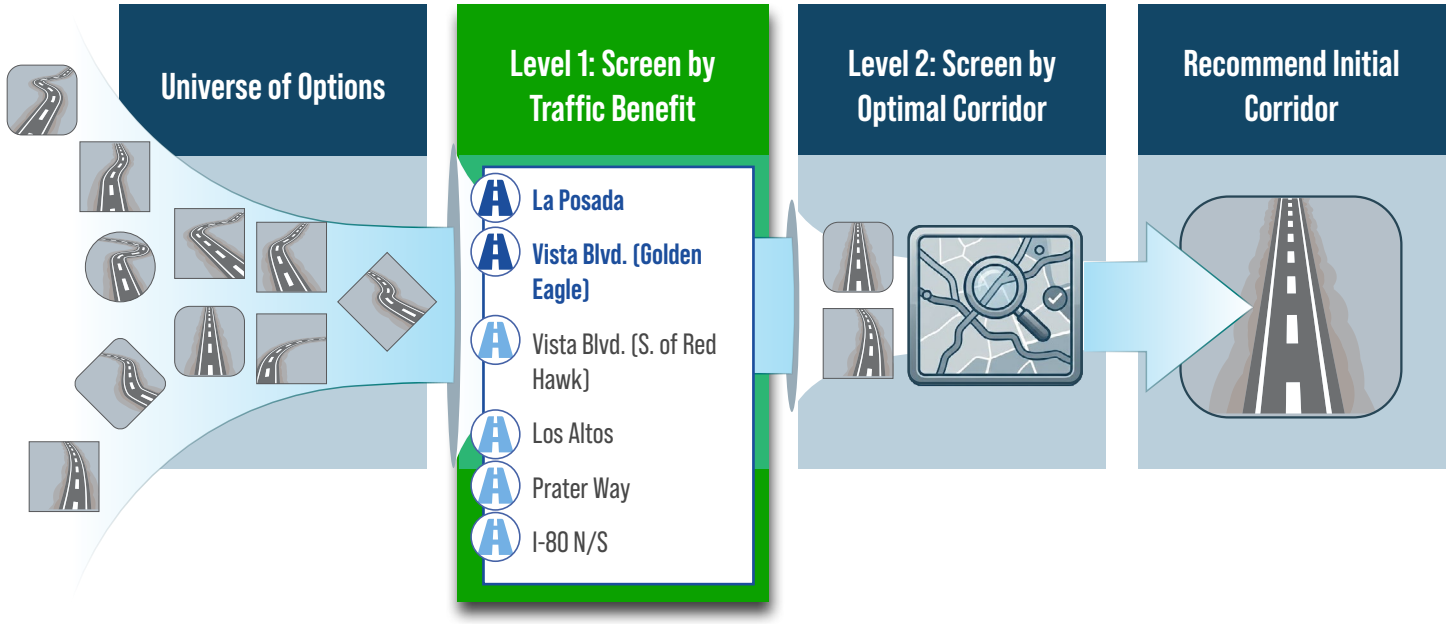


Figure 11: *Level 1 Screen by Traffic Benefit*

Based on the results of the level one screening and in consultation with the TAC, the La Posada and Vista Blvd. (Golden Eagle) corridor alternatives advance to Level 2 screening and further evaluated across additional screening factors.

5 Level 2 Alternative Screening Summary



Level 2 Corridor Screening

Following Level 1 screening, Level 2 evaluates a range of factors to ensure the remaining two corridor alternatives are thoroughly considered and compared. The intent of Level 2 screening is to identify an initial corridor recommendation for future consideration and project development and achieve the Study goal of *Informing Regional Decisions*.

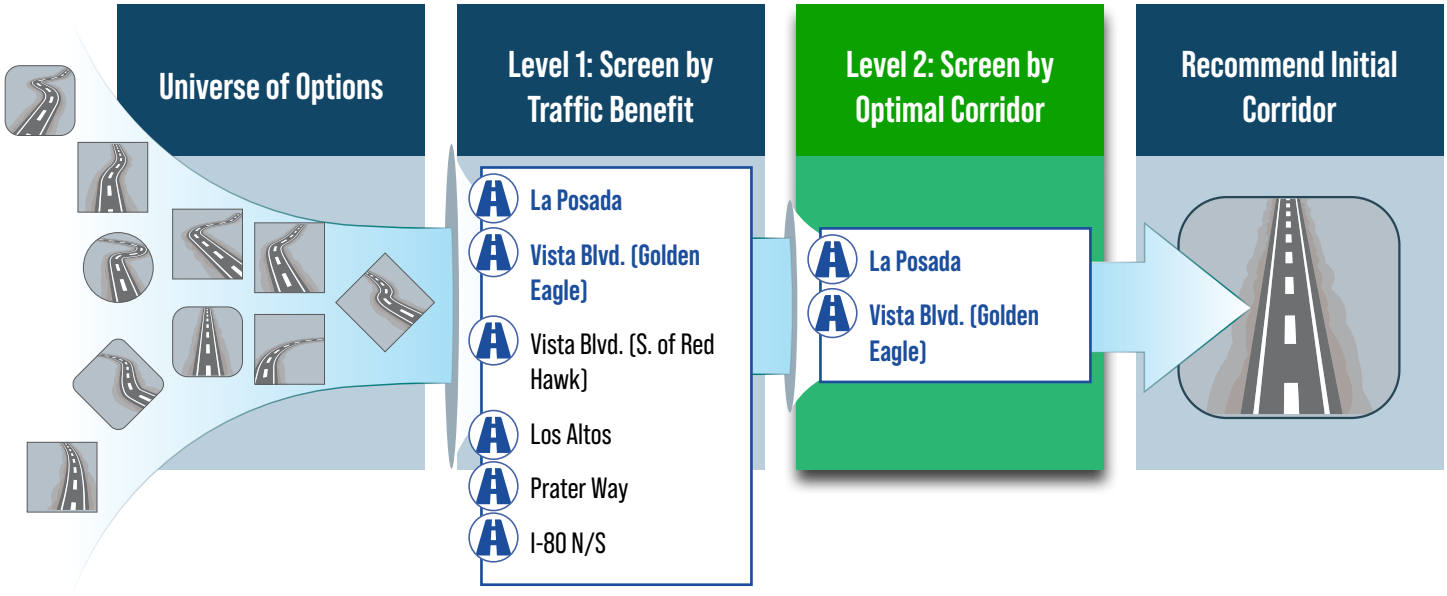


Figure 12: *Level 2 Screen by Optimal Corridor*

Seven (7) screening factors were established for Level 2. These factors and the criteria by which each is measured are shown in **Figure 12**. Note, cost is a separate factor and considered as part of Level 2 screening but evaluated separately from the seven factors.

Screening Factor	Screening Criteria
Environmental Impact	Does the corridor have numerous and/or sizeable impacts to natural resources?
Travel Time & ADT	Estimated travel time and ADTs based on the 2050 travel demand model
Right-of-Way Impact	Total corridor impact (acres) to privately owned property
Utility Impacts	Total number of utility impacts and to what degree?
Construction	Qualitative evaluation of construction ease including Geotech, access, drainage, MOT, etc.
Maintenance	Qualitative evaluation of maintenance ease including structures, drainage, roadsides, etc.
Community Impact & Stakeholder Preference	Qualitative evaluation of impacts to neighborhoods and general stakeholder sentiment.

Figure 13: *Screening Factors and Criteria*

For Level 2 screening, each of the screening criteria were measured quantitatively or qualitatively against a rating scale of one to three, with three representing good performance, two representing average performance, and one representing a poor performance. Scores for each individual screening criteria are then totaled to arrive at a Level 2 screening score. The total scores for each corridor alternative can then be evaluated against conceptual costs to determine the optimal corridor alternative. Evaluation of each factor is further described below.

Level 2 Screening Evaluation

To support the evaluation of potential route options for the Northeast Connector, an Environmental Due Diligence (EIDD) report was developed. This report provides a high-level assessment of environmental conditions within the Study area, focusing on biological and ecological features that could be affected by construction or long-term operation of the proposed corridor. The EIDD draws upon existing data sources and desktop research to identify environmental constraints relevant to the project.

The information compiled in the EIDD served as the foundation for a comparative environmental analysis of the two proposed corridor alternatives.

Resources Considered

The environmental resources selected for review were chosen based on their likelihood of occurring within the project area and their potential to be impacted by construction or use of the connector. Priority was given to resources that are ecologically sensitive, regulated, or otherwise significant to the BLM. Additionally, resources were included if available data could help distinguish the relative environmental impacts between the two corridor options.

Because the majority of land within the project boundary is managed by the BLM, robust datasets were available to support this analysis. The following resource categories were evaluated:

- **Waters of the United States**
- **Sensitive vegetation, wildlife, and species**
- **Greater Sage-Grouse habitat**
- **Natural springs**
- **FEMA-designated flood hazard zones**
- **Grazing lands**
- **Groundwater allotments**
- **Visual resource sensitivity and inventory**
- **Active mining claims**
- **Wild horse and burro herd management areas**
- **Cultural and historic resources**

Detailed resource descriptions and mapping outputs are provided in **Appendix A: Environmental Due Diligence Report**. Supporting data, including methodologies, source references, and tabulated impact metrics, are available in **Appendix H: Environmental Analysis Methodology Memorandum.**

Qualitative Impact Evaluation

To assess the environmental implications of each corridor alternative, a qualitative scoring system was applied to every resource category. This approach allowed for a comparative understanding of potential impacts and mitigation potential. Each resource received a score based on the following criteria: Score of 3: Minimal or no anticipated impact; Score of 2: Moderate impact that could be effectively mitigated; or Score of 1: Significant or multiple impacts with limited or complex mitigation potential.

Each corridor alignment was evaluated across all resource categories, and the resulting scores were used to characterize the overall environmental footprint of each alternative. The scoring reflects both the sensitivity of the resource and the level of potential impacts, balanced against the likelihood of effective mitigation.

Level 2 Screening Factors And Scoring

The following seven screening factors below were evaluated and scored based on the screening criteria above in **Figure 13.**

Environmental Impact

The environmental screening process revealed that both corridor alternatives—La Posada and Vista—exhibit similar levels of impact across most evaluated resource categories. Of the 12 environmental measures considered, 10 resulted in identical scores for both routes, indicating comparable environmental footprints. A detailed description and analysis of the environmental impact factors and scoring are more thoroughly explained in **Appendix H.**

Both alternatives received a score of 3 (indicating minimal or no significant impact) for the following

resources: waters of the United States, sensitive vegetation, wildlife, and species, springs, FEMA-designated flood hazard areas, mining claims, and wild horse and burro herd management areas.

These findings suggest that neither route poses potential significant impact to these resources.

Three resources, grazing allotments, visual resource inventory, and visual resource sensitivity, were scored at 1 for both alternatives, reflecting the presence of potential impacts that would be difficult to mitigate. These resources are distributed throughout the entire Study area, and while they contribute to the overall environmental impact, they do not help distinguish between the two corridor options.

The number of groundwater wells affected differs slightly between the alternatives: four wells are impacted by the La Posada route and five by the Vista route. However, both received a score of 2, indicating moderate impacts that are likely manageable. This minor variation did not influence the comparative scoring.

Two resource categories provided meaningful differentiation between the alternatives:



Greater Sage-Grouse Habitat: Habitat for the Greater Sage-Grouse is classified into four priority levels, with Priority Habitat Management Areas (PHMA) and PHMA+ representing the most critical zones. The La Posada route intersects approximately 89 more acres of priority habitat than the Vista route. As a result, La Posada received a score of 1, while Vista was assigned a score of 3, indicating significantly lower impact to this sensitive species habitat.



Cultural Resources: Due to the confidential nature of cultural resource locations, impacts were assessed based on the percentage of each corridor that overlaps with existing cultural resource survey boundary areas. The Vista route showed a higher degree of overlap with potentially sensitive cultural sites and was therefore scored at 1. La Posada, with a lower percentage of overlap, received a score of 2.

The results of the environmental resource evaluation and scoring are summarized in **Table 2** on the following page.

Environmental Scoring Criteria:

SCORE 1: SEVERE IMPACT	SCORE 2: MODERATE IMPACT	SCORE 3: NO SIGNIFICANT IMPACT
1 ✕	2 ⚖	3 ☑
Numerous impacts and/ or sizeable impacts to resources	Some impacts and/ or sizeable impacts to resources	No sizeable or relatively numerous impacts to resources

Level 2 Screening by Environmental Resource			
Screening Factor	Evaluation	Corridor Alternatives	
		Vista	La Posada
Waters of the US	Number of regulated waterways crossed	18	20
Sensitive Vegetation/ Wildlife/Species	Sensitive Habitat Area Impacted (acres)	55	54
Sage Grouse Habitat	Area of priority/priority+ habitat impacted (acres)	13.6	102.8
Springs	Number of springs impacted	0	0
FEMA Flood Hazard	Area of regulated floodway impacted (linear ft)	950	950
Grazing Allotments	Area of livestock grazing allotment impacted (acres)	306	252
Wells	Number of wells impacted	5	4
Visual Resource Inventory	Area of Class II-IV VRI impacted (acres)	306.8	356.4
Visual Resource Sensitivity	Area of moderate or high value impacted (acres)	307.1	356.4
Mining Claims	Number of claims impacted	0	0
Herd Management Areas	Area of herd management area impacted (miles)	3.3	1.29
Cultural Resources	Risk of impact to sensitive sites (percent)	23.4%	15.5%
	Environmental Resource Score	2	2

Table 2: *Level 2 Scoring of Corridor by Environmental Resource*

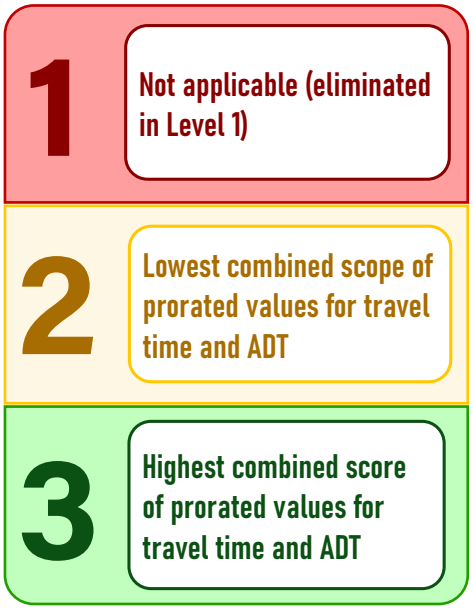
When viewed collectively, the environmental screening scores suggest that both corridor alternatives are largely similar in their potential impacts. However, the two measures, Sage-Grouse habitat and cultural resources, exhibit differences.

Travel Time and ADT

Following Level 1 screening, refinements were made to the project-specific TDM, including incorporating the latest alignments. For the La Posada corridor alternative, the optimal alignment developed following Level 1 screening was longer than Vista, resulting in lower projected ADT since travel times increased. Conversely, TDM refinements resulted in higher ADTs for the Vista Boulevard corridor alternative versus those developed for Level 1 screening.

For Level 2 screening, travel time and ADT screening criteria were measured using the combined score of prorated values for travel time and ADT. In other words, the lowest travel time was given a value of three and the percent difference between the lowest and highest travel time multiplied by three to arrive at a lower relative score. The same was done for ADT with the higher ADT given the full three points. Totals were calculated by adding the two factors together to arrive at a total score for each corridor alternative.

Travel Time & ADT Scoring Criteria:



The highest total score received three points and the lowest received two points for the travel time and ADT screening factor as shown in **Table 3**.

Level 2 Screening by Travel Time & ADT		
Screening Factor	Corridor Alternatives	
	Vista	La Posada
Average Daily Trips	4,478	2,597
Travel Time (min)	19.7	21.6
Travel Score	3	2

Table 3: *Level 2 Scoring of Corridor by Travel Time and ADT*

Right-of-Way Impacts

To evaluate right-of-way impacts of the two corridor alternatives, a 200-foot corridor width was assumed for both alignments. This width helps account for variations and contingency during the design phase. Portions of the project may ultimately be less than 200-feet, while large cut/fill locations may be wider. Additionally, impact evaluation focuses on the corridor proper with minor right-of-way impacts at termini locations omitted. Finally, right-of-way impacts were calculated based on the total corridor impact in acres to privately owned property. Public land was not included as it does not require acquisition through the Uniform Relocation Act of 1970 and is negotiated between public agencies.

Right-of-Way Scoring Criteria:

1	More than 100.1 acres of private land impacted & more than 10 private landowners
2	50.1 to 100 acres of private land impacted & 5 to 10 private landowners
3	0 to 50 acres of private land impacted & less than 5 private landowners

Level 2 Screening by Right-of-Way Impacts		
Screening Factor	Corridor Alternatives	
	Vista	La Posada
Private Parcels/Owners	5	24
Private Parcel Acreage	51.1	225.5
ROW Score	2	1

Table 4: *Level 2 Scoring of Corridor by Right-of-Way Impacts*

Therefore, right-of-way impacts should only consider private parcels, as the total private parcels impacted, which would require coordination with multiple property owners, and total acres of private property impacted which would add significant cost to acquire that land. The private land impacts are scored and summarized in **Table 4** and illustrated in **Figure 14** on the following page. It should be noted; **all right-of-way impacts are conceptual and subject to revision**.

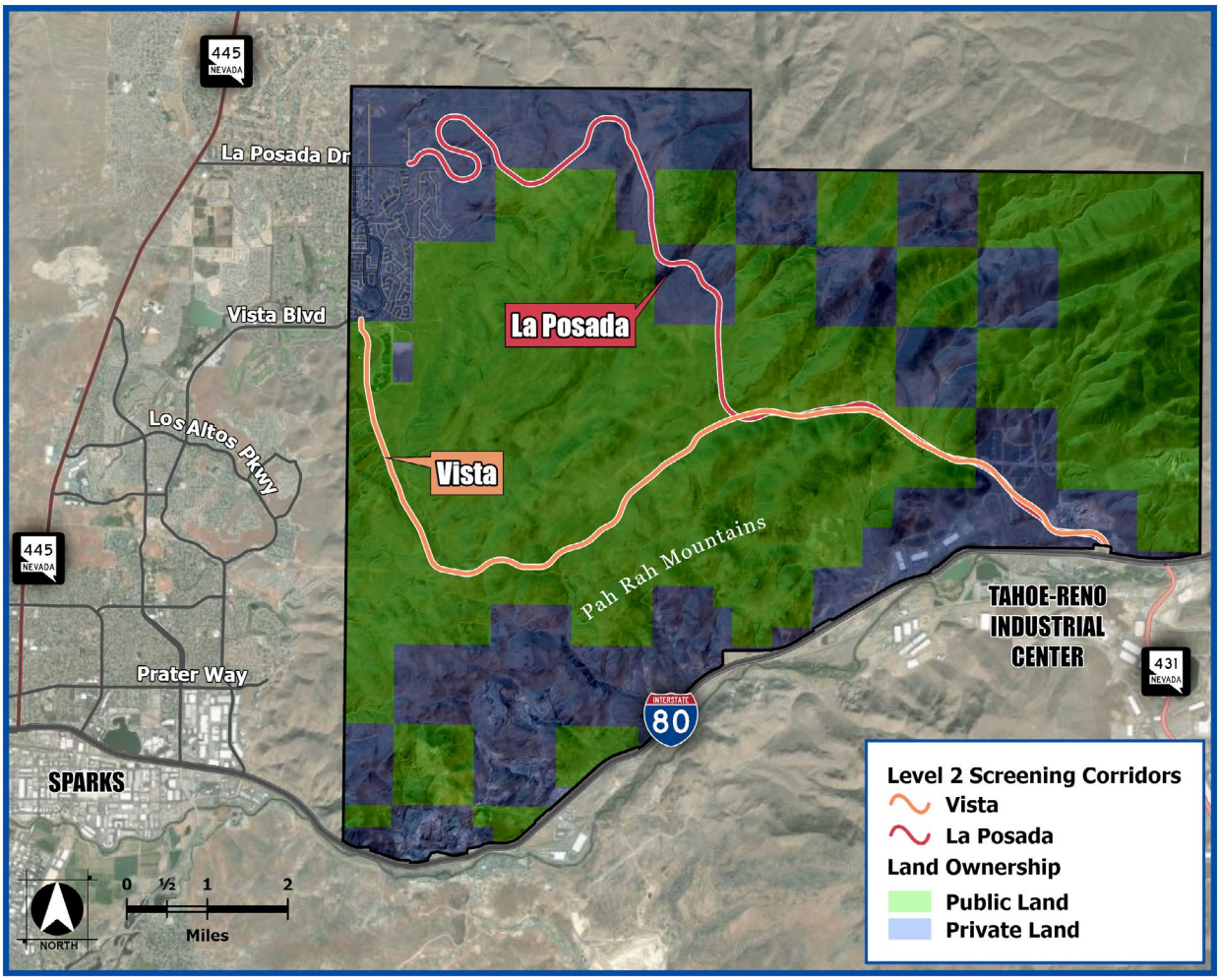


Figure 14: *Public Lands and Level 2 Alternatives Map*

Utility Impacts

Conceptual impacts to utilities were evaluated using the corridors to access the total number of impacts and degree of intensity. There are three main utilities located between the western termini and the Apple property to the east. This segment is the focus of this evaluation as utility impacts will likely be similar between the two corridors otherwise. The existing utilities are NV Energy, Vero Fiber Optic, and Great Basin Gas. The degree of intensity is evaluated based on the conceptual costs for utility impacts used in the conceptual cost estimate provided later in this chapter.

Utility Impacts Scoring Criteria:

1	More than 10 utilities impacted and/or $2M or more in utility impacts
2	6 to 10 utilities impacted and/or $1M-$2M in utility impacts
3	Fewer than 5 utilities impacted and/or fewer than $1M in utility impacts

Level 2 Screening by Utility Impacts		
Screening Factor	Corridor Alternatives	
	Vista	La Posada
Number of Utilities	3	3
Estimated Cost	$1.5M	$1M
Utility Score	3	3

Table 5: *Level 2 Scoring Corridor by Utility Updates*

The results of the utility impact evaluation are shown in **Table 5** Both corridors impact that same utilities with the Vista corridor at a higher risk of more intense impact.

Construction Impacts

Construction impacts, or constructability, refer to the ability and ease by which a project can be built. The more risks associated with a construction project, the less constructable it becomes. While most projects can ultimately be built, constructability helps consider the overall risk profile of a project. For this Level 2 screening, constructability is the qualitative evaluation of construction ease including geotechnical, construction access, drainage, maintenance of traffic (MOT), and special features, namely bridge structures and retaining walls. Each of these constructability factors are qualitatively evaluated to determine an overall constructability screening score as shown in **Table 6**. The quantities for structures and retaining walls reflect the quantities used in the conceptual cost estimate later in this chapter.

Construction Impacts Scoring Criteria:

1 — Sizeable challenges to construction requiring creative approaches

2 — Some impediments but readily mitigated

3 — No major obstacles to construction

Level 2 Screening by Construction Impacts		
Screening Factor	Corridor Alternatives	
	Vista	La Posada
Geotech Report (Appendix B)	No significant differences	No significant differences
Construction Access	Open land with good access	Open land with good access
Drainage Crossings	18	20
Maintenance of Traffic	Minor required at termini	Minor required at termini
Structures (sq. ft.)	25,600 ft2	46,900 ft2
Retaining Walls (sq. ft.)	22,600 ft2	5,600 ft2
Construction Impact Score	3	2

Table 6: *Level 2 Scoring of Corridor by Construction Impacts*

Maintenance

Looking beyond initial construction, long-term maintenance is an important factor for agencies to consider as building the project creates an ongoing maintenance commitment. For Level 2 screening, maintainability consists of a qualitative evaluation of maintenance ease including structures, drainage, and roadside features (e.g., guardrail). These maintainability factors were evaluated as shown in **Table 7** to determine an overall maintainability score.

Maintenance Scoring Criteria:

1	Unique conditions or features that create an undue burden
2	Some unique conditions or features but not an undue maintenance burden
3	No unique or maintenance-heavy conditions or features

Level 2 Screening by Maintenance		
Screening Factor	**Corridor Alternatives**	
	Vista	**La Posada**
Snow Removal (max elevation)	5,470 ft	5,886 ft
Roadway Length (linear ft)	66,689 ft	77,459 ft
Number of Drainage Crossings	18	20
Structures (sq. ft.)	25,600 ft2	46,900 ft2
Retaining Walls (sq. ft.)	22,600 ft2	5,600 ft2
Guardrail (linear ft)	17,000 ft	27,200 ft
Maintenance Score	2	2

Table 7: *Level 2 Scoring of Corridor by Maintenance*

Community Impact & Stakeholder Preference

New roadway connections change travel patterns, which, given the mostly residential context of the western termini, can impact adjacent neighborhoods. The community impact screening factor is a qualitative evaluation of impacts to adjacent neighborhoods.

Community Impact & Stakeholder Preference Scoring Criteria:

1	Sizeable physical impacts and disruptions that require modification or further analysis to gain stakeholder support
2	Some physical impacts and disruptions, split of support/non-support among stakeholders
3	Minor, generally non-physical impacts and generally positive stakeholder support

This evaluation is described below:

2 **Vista** – For Study purposes, the western terminus ties into existing Vista Boulevard, which is designated as an arterial. More specially, there is an existing signalized intersection serving Golden Eagle Regional Park and nearby development. This location provides a logical connection to the regional road network. Access points to Golden Eagle Regional Park would need to be modified to tie into the new roadway with little to no impact on the park's existing circulation, parking, or use. There would be no foreseeable impact to existing homes or private property. Stakeholders did note some concern with induced trips through neighborhoods to the north and east to access the new roadway and the scoring established to reflect this concern.

2 **La Posada** – For Study purposes, the western terminus ties into the eastern end of La Posada Drive. While La Posada Drive west of Cordoba Boulevard is designated a collector, east of there where the La Posada corridor alignment ties into existing La Posada Drive, it is designated as a local road, with driveways directly accessing the road. In addition, the Highlands neighborhood fronts this terminus area and some private right-of-way acquisition required north of the Highlands. Given this context, a new roadway would impact the character of the adjacent community. No stakeholder preference was noted for or against the La Posada corridor alternative.

It should be noted that this Study evaluates overall corridor feasibility. Future project development will further consider roadway termini and there are opportunities to mix and match tie-in locations (e.g. La Posada terminus with the Vista Boulevard corridor).

Level 2 Screening Factor Summary

The seven screening factors and scoring outlined above are summarized in **Table 8.** As shown, the Vista corridor alignment scores better when evaluated against all seven Level 2 screening factors.

Total Level 2 Overall Corridor Scoring		
Screening Factor	**Corridor Alternatives**	
	Vista	**La Posada**
Environmental Impact	2	2
Travel Time & ADT	3	2
Right-of-Way Impact	2	1
Utility Impacts	3	3
Construction	3	2
Maintenance	2	2
Community Impact & Stakeholder Preference	2	2
Overall Score	**17**	**14**

Table 8: *Level 2 Total Scoring*

Conceptual Cost Estimates

The Level 2 corridor alternatives were developed to a conceptual design level and, along with quantities extracted from the Quantum program, conceptual cost estimates were prepared. These estimates are shown in detail in Appendix I. Conceptual cost estimates are intended to depict the relative order of magnitude costs between the two corridor alternatives and inform Level 2 screening. It is acknowledged that cost estimates will continue to be refined during subsequent project development. The conceptual costs are shown in **Figure 15** below.



Figure 15: *Conceptual Cost Estimates*

Level 2 Alternative Screening Results

Based on the results of the Level 2 screening evaluation and the estimated 64-percent higher cost for the La Posada corridor alternative, the Vista Boulevard (Golden Eagle) corridor alternative is the recommended corridor to be considered for potential future project development, and the La Posada corridor alternative is screened out as shown in **Figure 16.**

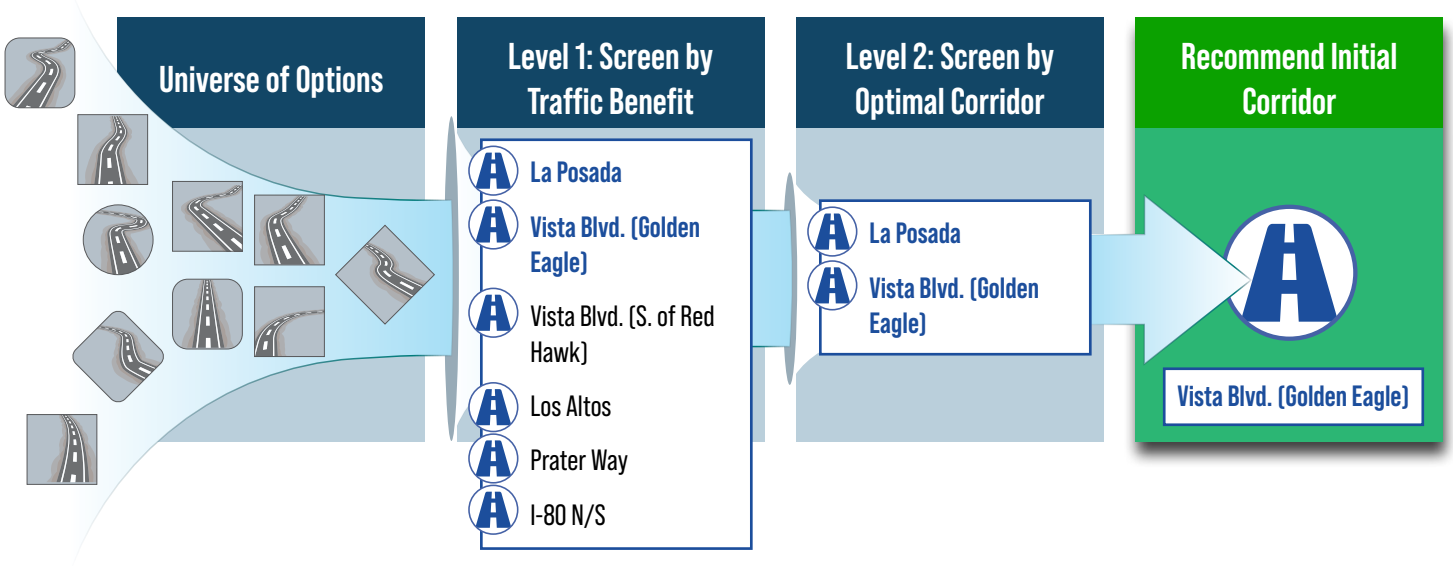


Figure 16: *Level 2 Screening Results*

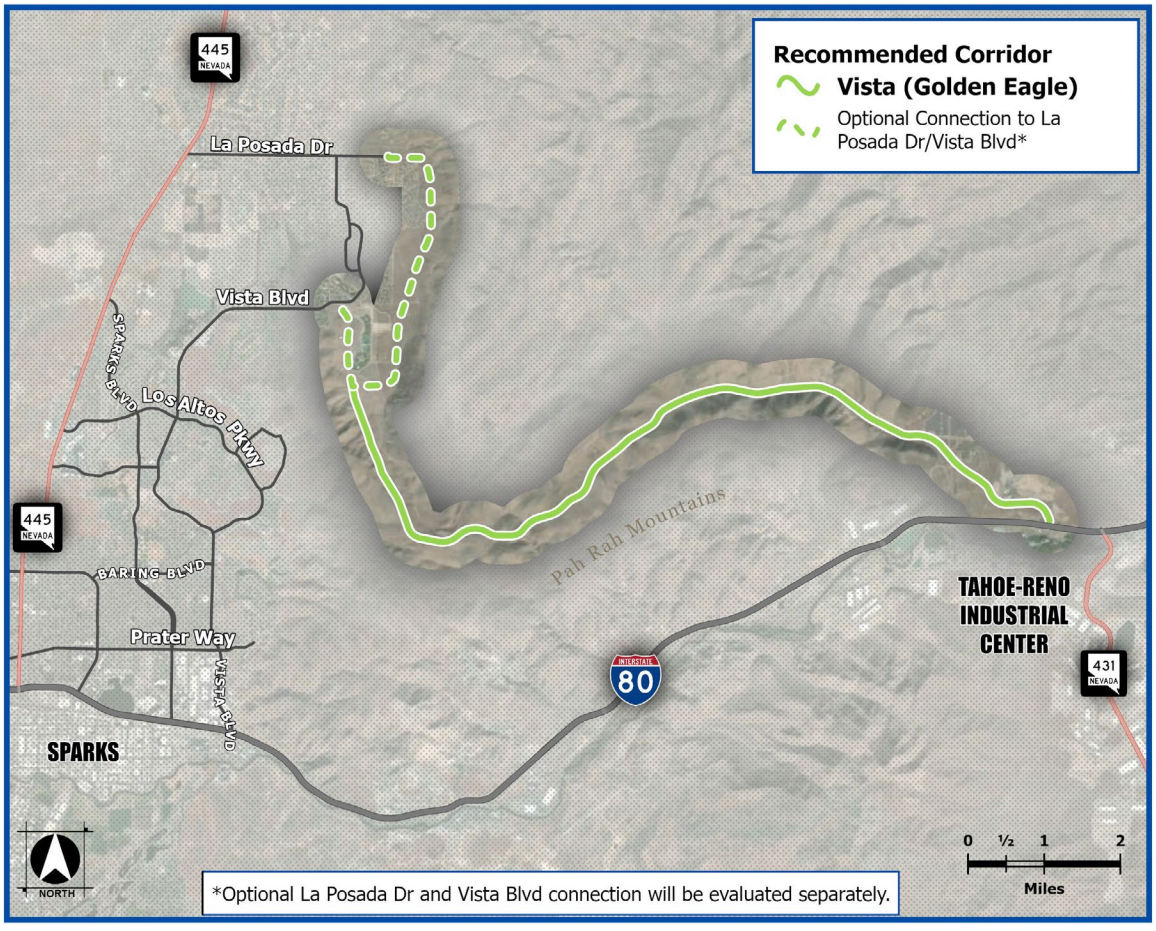


Figure 17: *Vista Blvd. (Golden Eagle) Recommended Corridor Map*

Conclusions And Next Steps

A new roadway connection between Sparks and TRI Center would help reduce congestion along I-80, increase traveler safety/reliability, and support economic development. The Vista Boulevard (Golden Eagle) corridor is the recommended feasible alternative to consider for potential future project development. This Study was completed at a high level to establish feasibility and inform regional decisions. If the project were to advance, a more detailed engineering analysis and required environmental review will need to be conducted to recommend for National Environmental Policy Act (NEPA) review and submittal to the BLM for approval to acquire the necessary right-of-way to construct the road. This includes further consideration and refinement of exact terminus and associated improvements, including consideration of the optional connection from Vista Boulevard to La Posada Drive as shown in **Figure 17.**

Any project advancement is pending available funding, and construction funding would require a regional/multi-county approach for a project of this magnitude.

APPENDIX A:
ENVIRONMENTAL DUE DILIGENCE REPORT



Sparks-TRIC Connection Feasibility Study

Final Environmental Initial Due Diligence Report

October 2025

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Appendix A: Washoe and Story County Parcels Contained Within the Project Area
Appendix B: NNHP Data Request Response
Appendix C: NDOW Standard Data Request Response
Appendix D: USFWS List of Threatened, Endangered, Proposed, and Candidate Species
Appendix E: Land Survey Records and Master Title Plats
Appendix F: Interim Class I Cultural Resources Review

1.0 INTRODUCTION

The Tahoe Reno Industrial Center (TRIC) is a large industrial development located about 13 miles east of Sparks, Nevada, along State Route (SR) 439 (USA Parkway). USA Parkway can be accessed from two existing routes: (1) Interstate 80 (I-80) from the north and (2) U.S. 50 from the south. Since residential development is not permitted within TRIC, its workforce commutes from surrounding cities and counties. Approximately 80-percent of TRIC commuters travel from the Reno/Sparks area, primarily using I-80. Additionally, about 80-percent of this traffic originates from north of I-80 in the Truckee Meadows.

As TRIC continues to grow, traffic congestion and safety concerns along the I-80 corridor have increased. The proposed Sparks to TRIC Connection would establish an alternative route, improve regional connectivity, help alleviate congestion on I-80 between Reno/Sparks and TRIC, and improve reliability. This project is included in the 2050 Regional Transportation Plan, Unfunded Projects category.

The purpose of this study is to assess the feasibility of the Sparks to TRIC Connection by evaluating potential corridors, coordinating with key stakeholders, estimating preliminary costs, identifying potential risks and impacts, and determining overall feasibility.

The study consists of three major phases:

Step 1 – Alignment Evaluation and Traffic Analysis
Step 2 – Alignment Evaluation
Step 3 – Alignment Refinement, Cost Assessment, and Performance Evaluation

This three-step process will provide an initial screening of potential roadway connections, estimate traffic demand, evaluate corridor alignment options, conduct a preliminary traffic and funding study, and identify costs to inform future planning. The study is conducted at a planning level and is pre-NEPA. The final deliverable is a Feasibility Study Report.

This study is being carried out in collaboration with local jurisdictions, including the City of Sparks (CoS), Washoe County (WC), Storey County (SC), the Nevada Department of Transportation (NDOT), the public, and other key stakeholders.

1.1 Purpose

Wood Rodgers, Inc. has prepared this report to summarize the findings from desktop research regarding environmental resource constraints pertinent to the proposed Project area located in Washoe and Storey Counties. The project area is defined by the following boundaries:

- **Northern boundary:** Extends east from La Posada Drive in Sparks, NV.
- **Eastern boundary:** Ends just east of USA Parkway.
- **Southern boundary:** Runs just south of I-80.
- **Western boundary:** Extends north to the terminus of La Posada Drive, just west of Lockwood, NV.

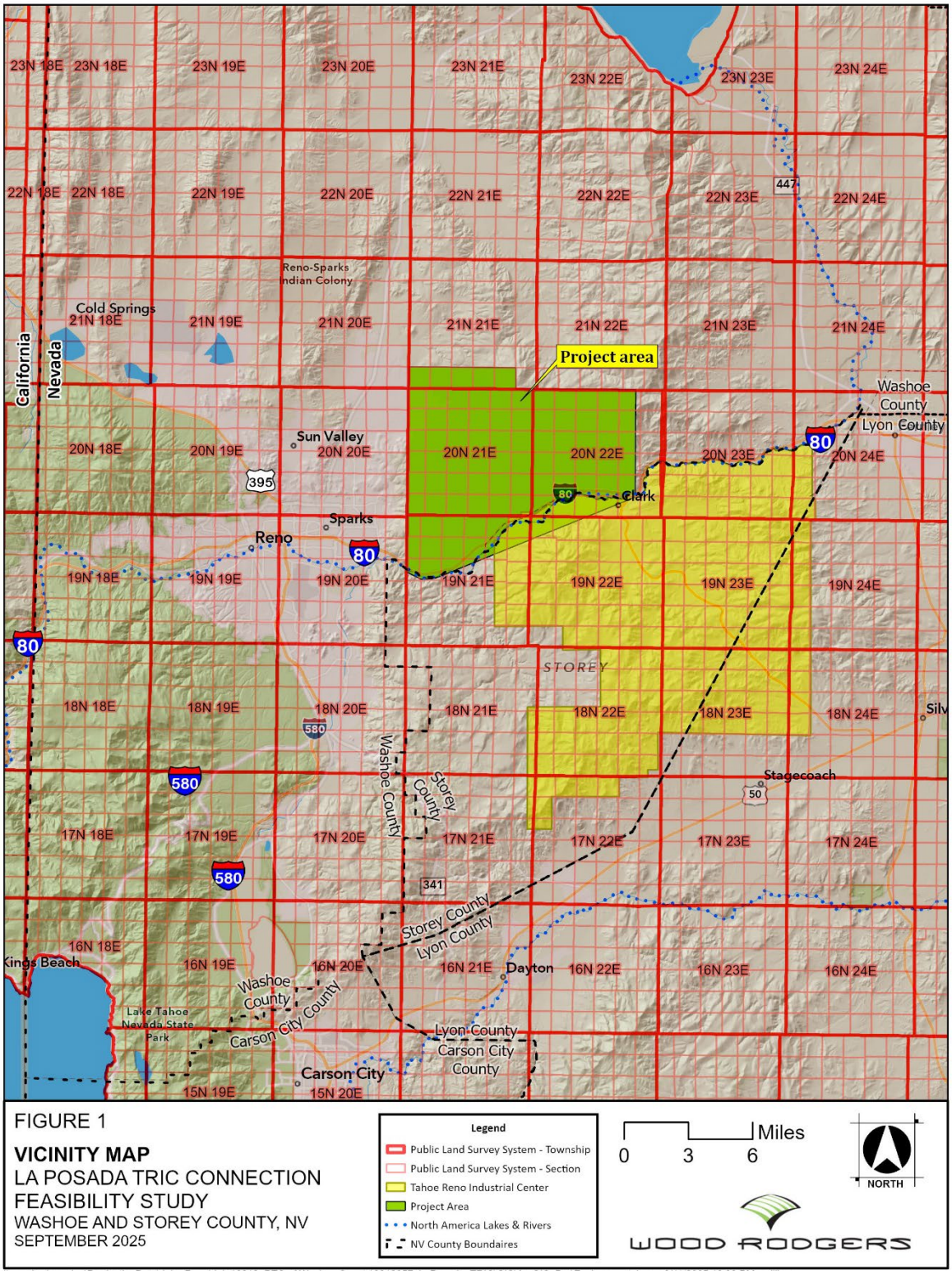
The proposed Project area spans across T.20N. R.21E., T.20N. R.22E., T.19N. R.21E., and T.19N. R.22E. (**Figure 1, Vicinity Map**). See **Appendix A** for a full list of parcel numbers associated with the Project area in Washoe and Storey counties. The designated Project area contains approximately 43,015 acres **[Figure 2, Project Area]** and is composed of a patchwork of both public BLM, BOR, and Federal rights-of-way] and private property (**Figure 3**). Should construction be deemed feasible, the RTC or other lead agency will commence the permitting process with the BLM and fulfill all necessary environmental review obligations.

The information provided herein represents a summary of the following environmental resource constraints with their associated source and reference within the report:

1. Land Ownership [**Figure 3**]
2. National Wetlands Inventory; U.S. Fish &Wildlife Service (USFWS); [**Figure 4, Appendix D**]
3. Sensitive Vegetation and Wildlife Species and Habitats; Nevada Natural Heritage Program (NNHP) [**Figure 5, Appendix B**]
4. Sensitive Vegetation and Wildlife Species and Habitats; Nevada Department of Wildlife (NDOW) [**Appendix C**]
5. Greater Sage Grouse Habitat, Sagebrush Ecosystem Technical Team (SETT) Habitat Management Areas (HMS); (**Figure 6**)
6. List of Threatened and Endangered Species; USFWS; (**Appendix D**)
7. Springs and Seeps; U.S. Geological Survey (USGS) Quad maps; (**Figure 7**)
8. Flood Hazard Zones; Federal Emergency Management Agency (FEMA); (**Figure 8**)
9. Livestock Grazing Areas; Bureau of Land Management (BLM); (**Figure 9**)
10. Well Driller Reports; Nevada Division of Water Resources (NDWR); (**Figure 10**)
11. Visual Resource Inventories (Classes, Scenic Quality Rating Unit, Visual Distance Zones, Sensitivity Level Rating Unit); BLM; (**Figure 11, Figure 12, Figure 13, Figure 14**)
12. Mining Claims; Nevada Division of Minerals (NDOM); (**Figure 15**)
13. Herd Areas; BLM; (**Figure 16**)
14. Herd Management Areas; BLM; (**Figure 17**)
15. Areas of Critical Environmental Concern; BLM; (**Figure 18**)
16. Wilderness Areas and Wilderness Study Areas; BLM; (**Figure 19**)
17. Lands and Realty; BLM; (**Appendix E**)
18. Class I Cultural Resources Review; CDM Smith; (**Appendix F**)

2. LOCATION

The project is located in Washoe and Storey counties in Nevada.



3. STUDY AREA

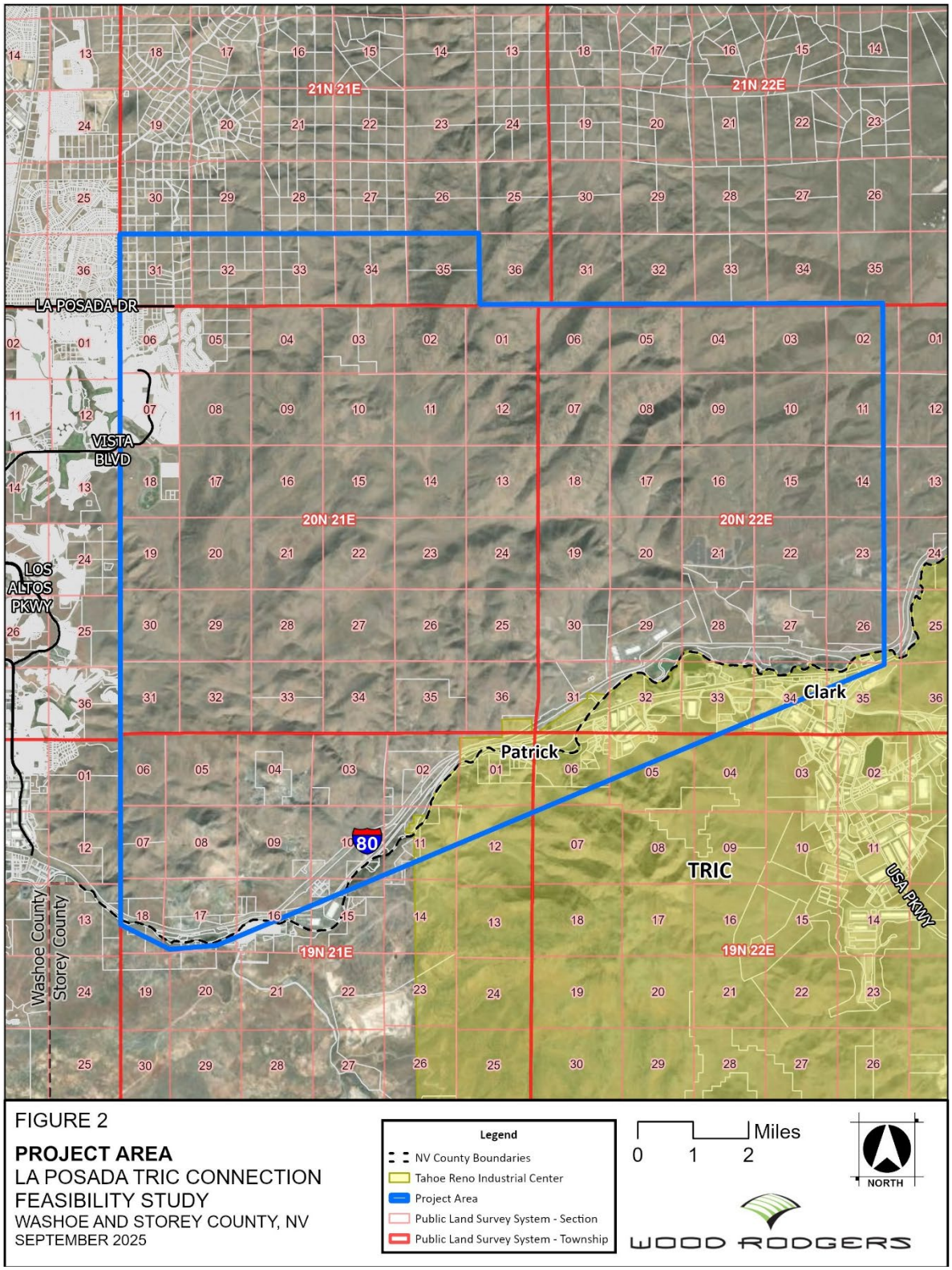
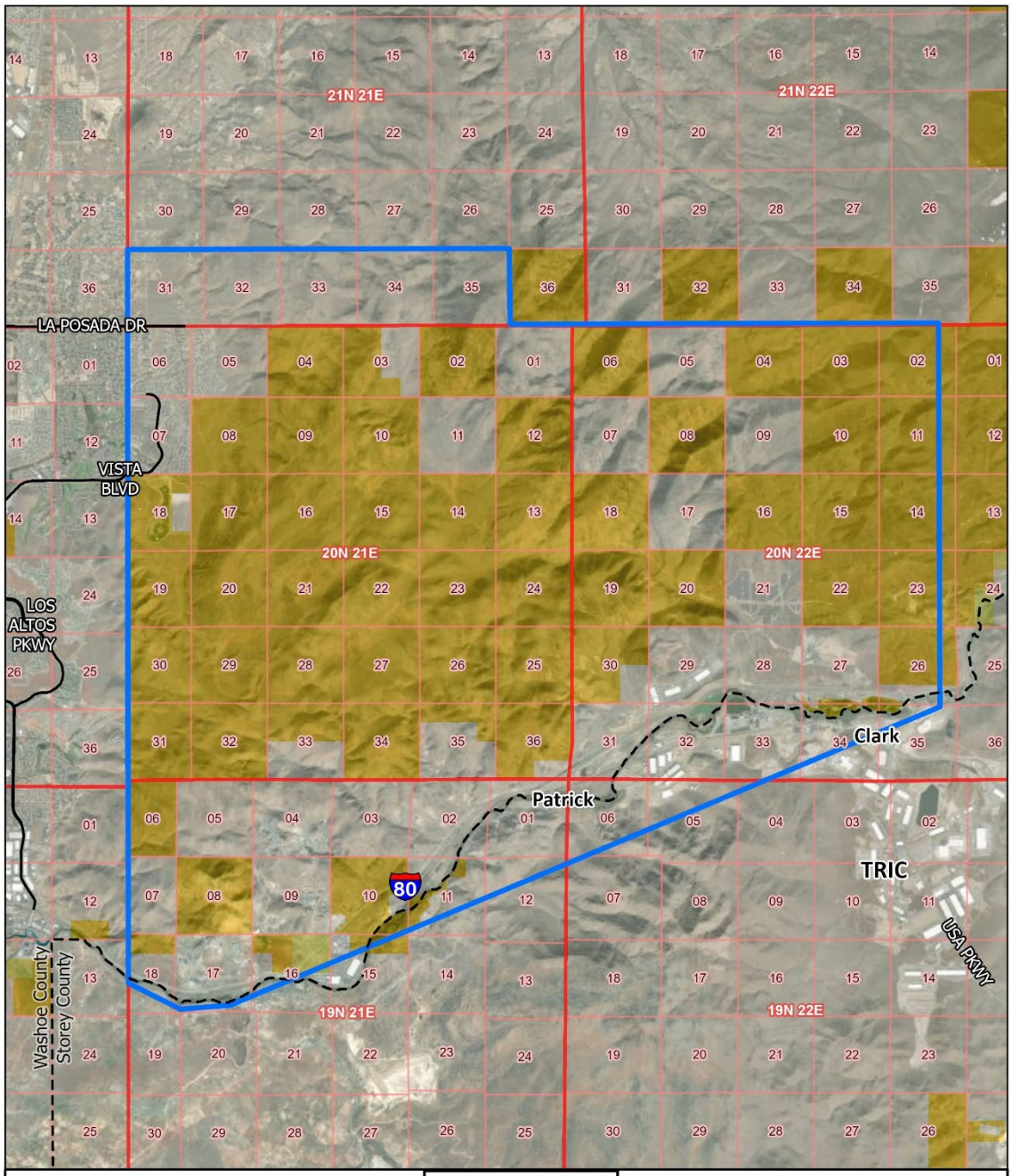


FIGURE 2

PROJECT AREA
LA POSADA TRIC CONNECTION FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

4. LAND OWNERSHIP

The designated project area contains approximately 43,015 acres and is composed of a patchwork of both public BLM, BOR, Federal rights-of-ways] and private property (**Figure 3**).



5. NATIONAL WETLANDS INVENTORY (NWI)

The proposed project are may contain NWI wetlands and other aquatic habitats that may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

The following wetlands as identified by USFWS NWI data contained within the project area are as follows:

Table 1: La Posada TRIC Connection Feasibility Study National Wetlands Inventory

Freshwater Pond	Riverine	Lake	Freshwater Emergent Wetland	Freshwater Forested/Shrub Wetland
PUSC	R4SBJ	L1UBHx	PEM1C	PSS1C
PUSJ	R4SBC	L1UBHh	PEM1A	PSS1/USC
PUBFx	R3UBF	L1UBH	PEM1/SS1C	PFO1A
PUBHx	R4SBAx		PEM1/SS1A	PSS1/EM1A
PUBF	R4SBJx			PFO1C
PUBFh	R4SBA			PSS1A
PUBH	R3UBH			PSS1Ax
	R3USC			PFO1/SS1A

Source: USFWS IPaC Species List

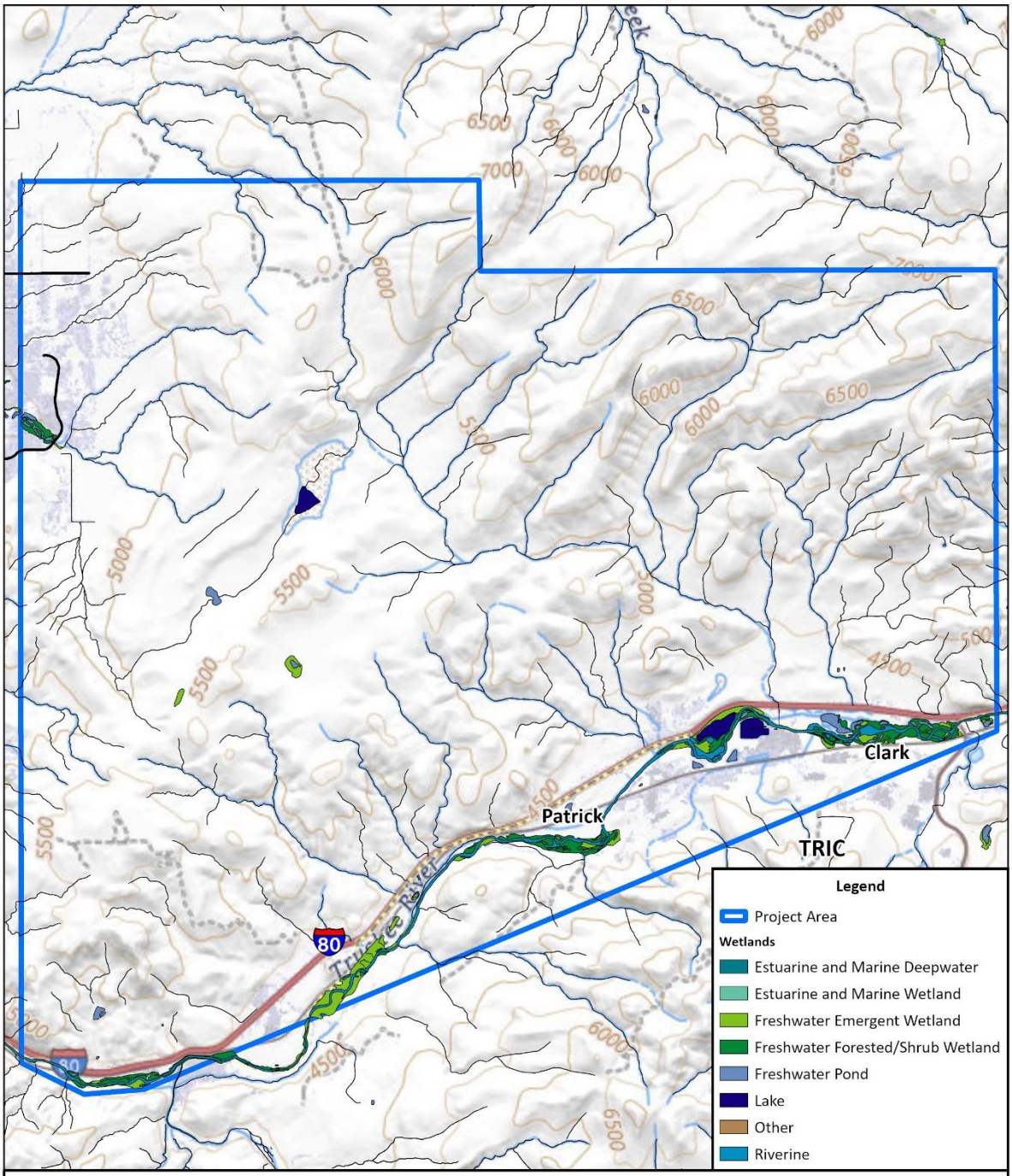


FIGURE 4

NATIONAL WETLANDS INVENTORY
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

6. SENSITIVE VEGETATION & WILDLIFE SPECIES & HABITATS (NNHP)

A data inquiry submitted to the Nevada Division of Natural Heritage revealed that there are nine endangered, threatened, candidate, and/or at-risk plant and animal taxa recorded within or near the project area (See **Appendix B** NNHP Data Request Letter). The Nevada Department of Wildlife (NDOW) manages, protects, and restores Nevada's wildlife resources and associated habitat. The project proponent would coordinate with NDOW to address potential adequate avoidance and minimization measures to ensure conservation and protection of wildlife and their associated habitats.

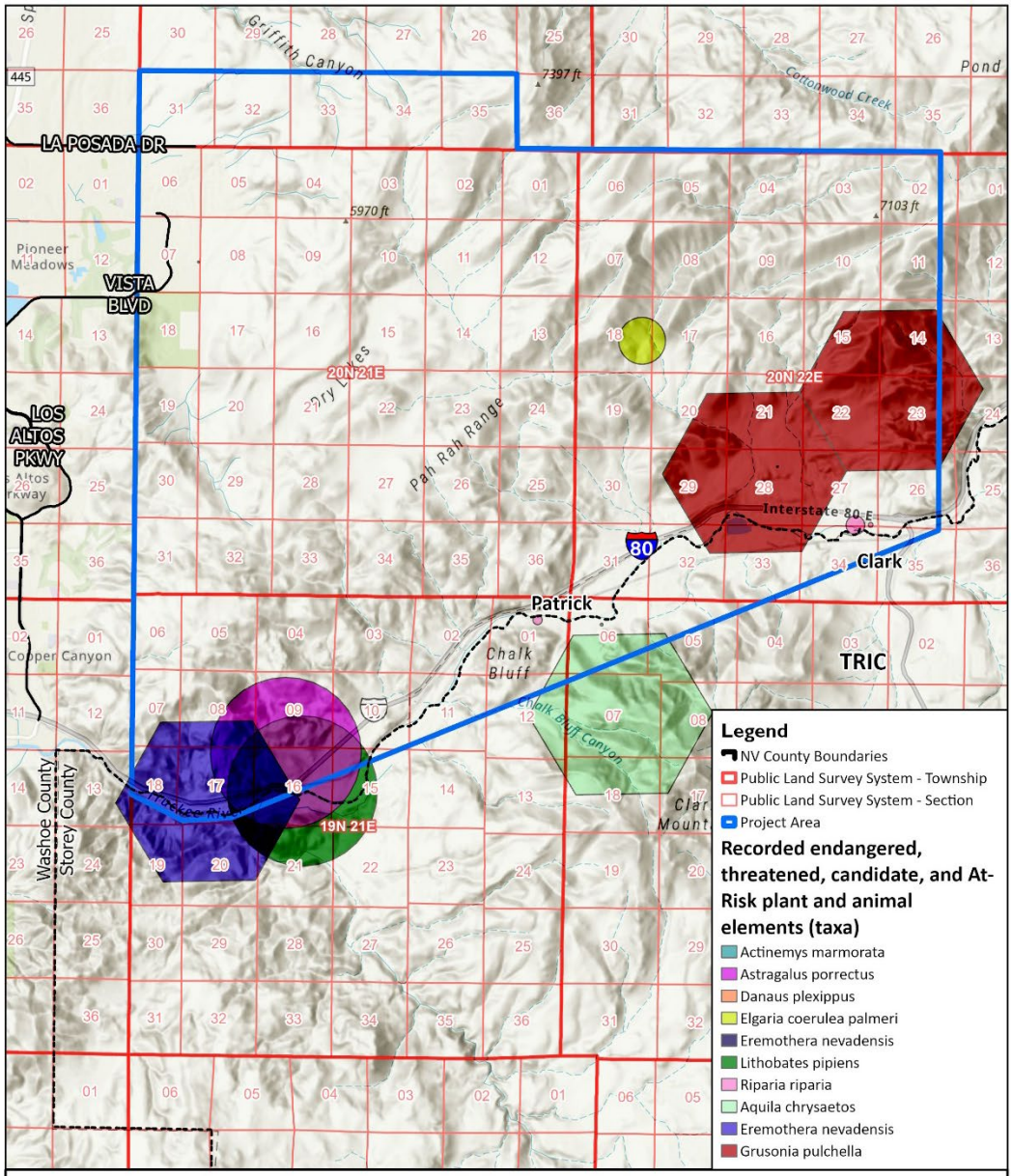


FIGURE 5
SENSITIVE VEGETATION AND WILDLIFE SPECIES AND HABITATS
LA POSADA TRIC CONNECTION FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

7. SENSITIVE VEGETATION & WILDLIFE SPECIES & HABITATS (NDOW)

A summary of the NDOW data requests can be found below. The full response to the NDOW Standard Data Request and Conservation Credit System Data Request can be found in **Appendix C**.

- Big Game – Occupied mule deer, pronghorn antelope, and bighorn sheep distributions exist within the project area. Please refer to the maps in **Appendix C** for details regarding big game distributions relative to the proposed project area.
- Greater Sage-Grouse – Greater sage-grouse habitat within the project area has been classified as other, general, and priority habitat by the Nevada Sagebrush Ecosystem Program (https://sagebrusheco.nv.gov/). As stipulated by Nevada State Regulation NAC 232.400 – 232.480, direct and indirect impacts to greater sage-grouse habitat must be mitigated using the Nevada Conservation Credit System. This process is started by visiting sagebrusheco.nv.gov to contact the NV Sagebrush Ecosystem Technical Team. There are no recorded tracking locations generated by radio-marked birds within the project area. There are no recorded sage-grouse leks within the project area.
- Raptors – Various species of raptors, which use diverse habitat types, may reside in the vicinity of the project area. American kestrel, Cooper's hawk, Swainson's hawk, bald eagle, barn owl, burrowing owl, ferruginous hawk, flammulated owl, golden eagle, great horned owl, long-eared owl, merlin, northern goshawk, northern harrier, northern saw whet owl, osprey, peregrine falcon, red-tailed hawk, rough-legged hawk, sharp-shinned hawk, short-eared owl, turkey vulture, and western screech owl have distribution ranges that include the project area.

The following raptor species have been directly observed within the project area.

Table 2: Raptor Species Common Name		
American kestrel	Barn owl	Osprey
Bald eagle	Golden eagle	Peregrine falcon

Raptor species are protected by State and Federal laws. In addition, bald eagle, burrowing owl, California spotted owl, ferruginous hawk, flammulated owl, golden eagle, northern goshawk, peregrine falcon, prairie falcon, and short-eared owl are NDOW species of special concern and are target species for conservation as outlined by the Nevada Wildlife Action Plan. Per the *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (United States Fish and Wildlife Service 2010).

NDOW queried their raptor nest database to include raptor nest sites within ten miles of the proposed project area. There is 1 known raptor nest within the project area.

Table 3: Raptor Nests					
Type	**Probable Origin**	**Occupied Species**	**Township, Range, Section**	**Last Visit**	**Status**
Stick nest	Eagle/buteo		21 0200N 0220E 023	2014	Unoccupied

- Other Wildlife Resources – There are 2 big game water developments within the project area. There are 5 small game water developments within the project area. Lahontan cutthroat trout (LCT) wastershed(s) are present within the project area.

See **Appendix C** for wildlife species that have been observed directly within the project area.

The proposed project area may also be in the vicinity of abandoned mine workings, which often provide habitat for state and federally protected wildlife, especially bat species, many of which are protected under NAC 503.030. To request data regarding known abandoned mine workings in the vicinity of the project area contact the Nevada Division of Minerals (http://minerals.state.nv.us/).

8. GREATER SAGE GROUSE HABITAT (BLM)

The proposed project is currently within Greater Sage Grouse General Habitat Management Areas, Other Habitat Management Areas, Priority Habitat Management Areas, and Priority Habitat Management Areas+ (as per the 2024 HMA maps) [**Figure 6**]. The project would consult with the Sagebrush Ecosystem Technical Team (SETT) and adhere to State Mitigation Regulations NAC 232.400-232.480. The project proponent would also coordinate with appropriate agencies (such as NDOW) to address potential adequate avoidance and minimization measures to ensure conservation and protection of wildlife and their associated habitats.

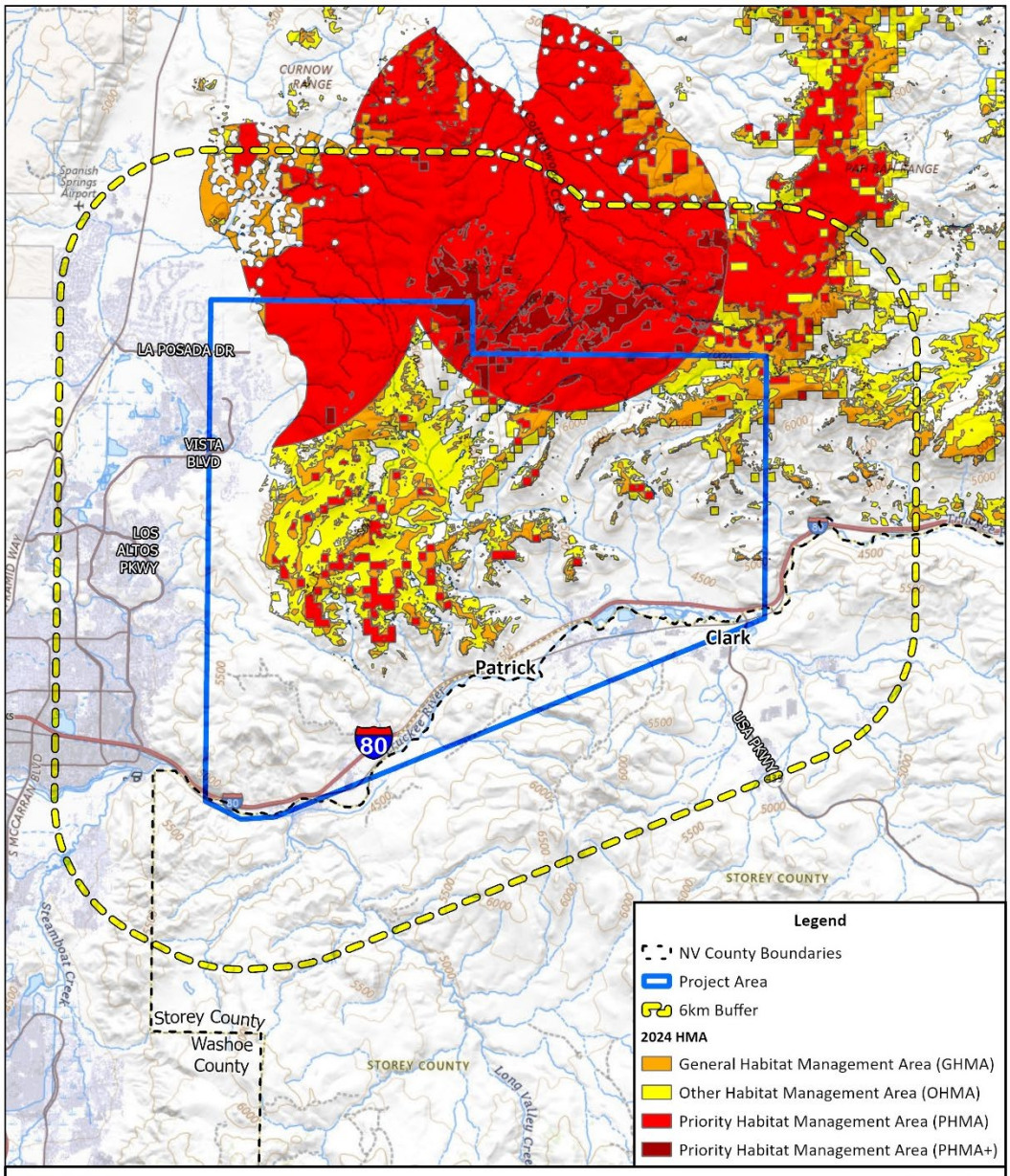


FIGURE 6
GREATER SAGE GROUSE HABITAT
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

9. LIST OF THREATENED & ENDANGERED SPECIES (USFWS)

The species list below identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the project area and/or may be affected by the proposed project (See **Appendix D** for the official USFWS list). The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.)

Table 4: List Of Threatened And Endangered Species (USFWS)

Endangered Species Act Species

Organism	Name	Status	Notes
Birds	California Condor *Gymnogyps californianus*	Experimental Population, NonEssential	No critical habitat has been designated for this species.
Reptiles	Northwestern Pond Turtle *Actinemys marmorata*	Proposed Threatened	No critical habitat has been designated for this species.
Fishes	Cui-ui *Chasmistes cujus*	Endangered	No critical habitat has been designated for this species.
	Lahontan Cutthroat Trout *Oncorhynchus clarkii henshawi*	Threatened	No critical habitat has been designated for this species.
Insects	Carson Wandering Skipper *Pseudocopaeodes eunus obscurus*	Endangered	No critical habitat has been designated for this species.
	Monarch Butterfly *Danaus plexippus*	Proposed Threatened	There is proposed critical habitat for this species. Your location does not overlap the critical habitat.

*There are no critical habitats within the Project Area under USFWS – Reno's jurisdiction

USFWS National Wildlife Refuge Lands and Fish Hatcheries

There are no refuge lands or fish hatcheries within the Project Area

Bald and Golden Eagles

Name	Breeding Season	Notes
Bald Eagle *Haliaeetus leucocephalus*	Dec 1-Aug 31	This is not a Bird of Conservation Concern (BCC) in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
Golden Eagle *Aquila chrysaetos*	Jan 1 – Aug 31	This is not a Bird of Conservation Concern (BCC) in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Migratory Birds		
Name	**Breeding Season**	**Notes**
American Avocet *Recurvirostra americana*	Apr 21-Aug 10	This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
American White Pelican *Pelecanus erythrorhynchos*	Apr 1-Aug 31	This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
Bald Eagle *Haliaeetus leucocephalus*	Dec 1-Aug 31	This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
California Gull *Larus californicus*	Mar 1-Jul 31	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Cassin's Finch *Haemorhous cassinii*	May 15-Jul 15	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Clark's Grebe *Aechmophorus clarkii*	Jun 1-Aug 31	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Evening Grosbeak *Coccothraustes vespertinus*	May 15-Aug 10	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Forster's Tern *Sterna forsteri*	Mar 1-Aug 15	This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA.
Golden Eagle *Aquila chrysaetos*	Jan 1-Aug 31	This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
Lewis's Woodpecker *Melanerpes lewis*	Apr 20-Sep 30	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Northern Harrier *Circus hudsonius*	Apr 1-Sep 15	This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA.
Olive-sided Flycatcher *Contopus cooperi*	May 20-Aug 31	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Pinyon Jay *Gymnorhinus cyanocephalus*	Feb 15-Jul 15	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Rufous Hummingbird *Selasphorus rufus*	Apr 15-Jul 15	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Sage Thrasher *Oreoscoptes montanus*	Apr 15-Aug 10	This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
Western Grebe *Aechmophorus occidentalis*	Jun 1-Aug 31	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Willet *Tringa semipalmata*	Apr 20-Aug 5	This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

10. SPRINGS & SEEPS (USGS Quad)

There are no water resources (springs or wells), as identified by USGS topo quad maps and data, within the project area.

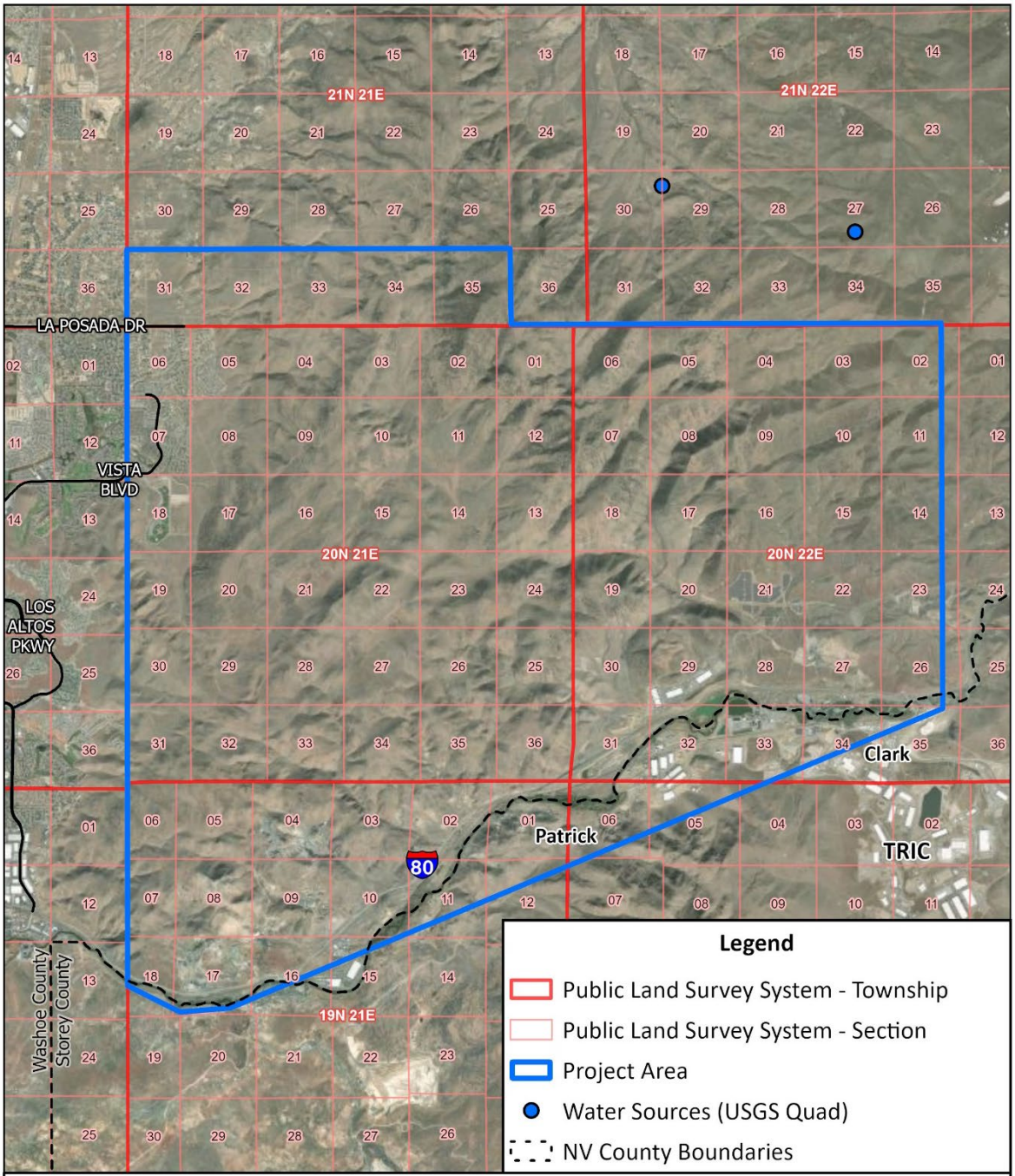


FIGURE 7
SEEPS AND SPRINGS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

11. FLOOD HAZARD ZONES (FEMA)

The project area contains FEMA Flood Zones X (0.2% Annual Chance Flood Hazard), A, AE, and A0 (1% Annual Chance Flood Hazard), and AE (Regulatory Floodway). Development activities, if any, would comply with floodplain regulations and standards.

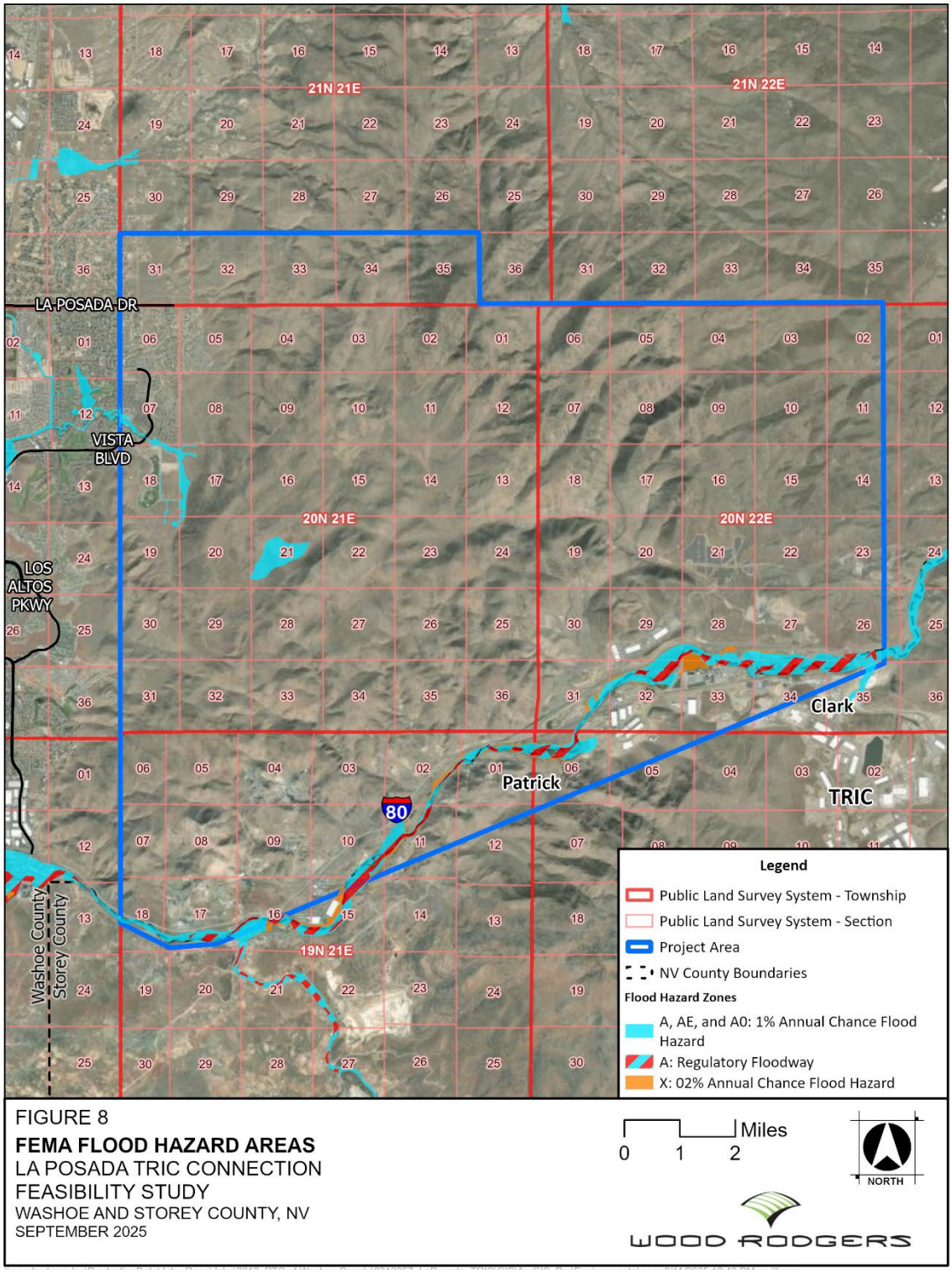
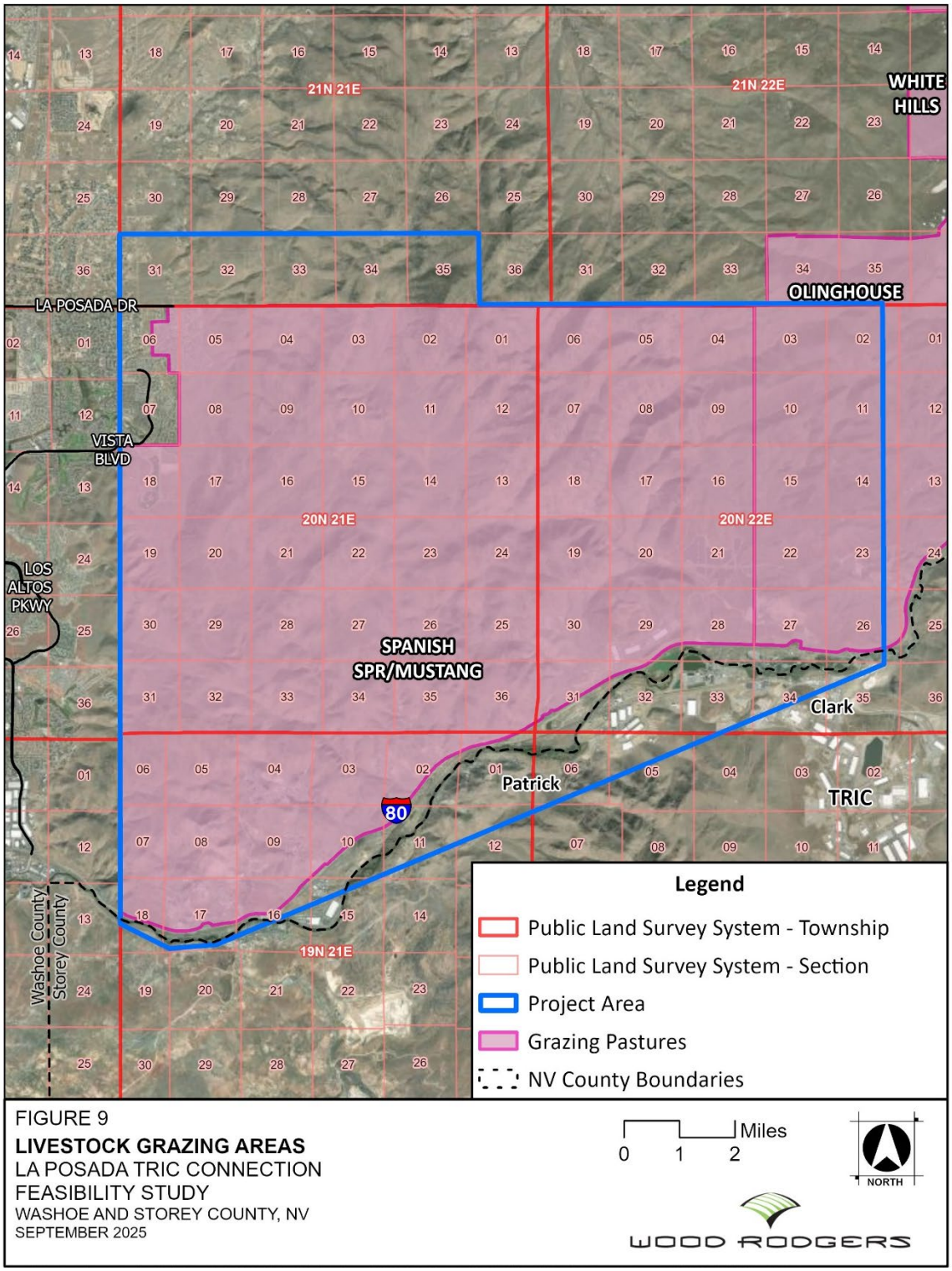


FIGURE 8
FEMA FLOOD HAZARD AREAS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

12. GRAZING PASTURES (BLM)

There are two livestock grazing allotments, the Spanish Spring/Mustang and Olinghouse, as identified by the BLM within the Project Area. Development activities, if any, would need to verify with the BLM if livestock grazing allotment permittees exist within the project area and negotiate usage if necessary.



13. WELLS (NDWR)

There are 218 wells within the project area, as permitted by NDWR. The development of a road through this area could impact existing wells in several ways. Construction activities, including grading, excavation, and compaction, may temporarily disrupt groundwater flow patterns or impact well infrastructure if proper precautions are not taken. Additionally, changes in surface water drainage due to the road could affect groundwater recharge rates. If the land is further developed or sold to private entities in the future, increased water demand could lower the water table and reduce groundwater availability for existing well owners.

Note that wells mapped by NDWR may not be plotted in the correct locations; well logs and other information can help confirm well locations. The presence of a well does not necessarily mean that a water right exist at that well.

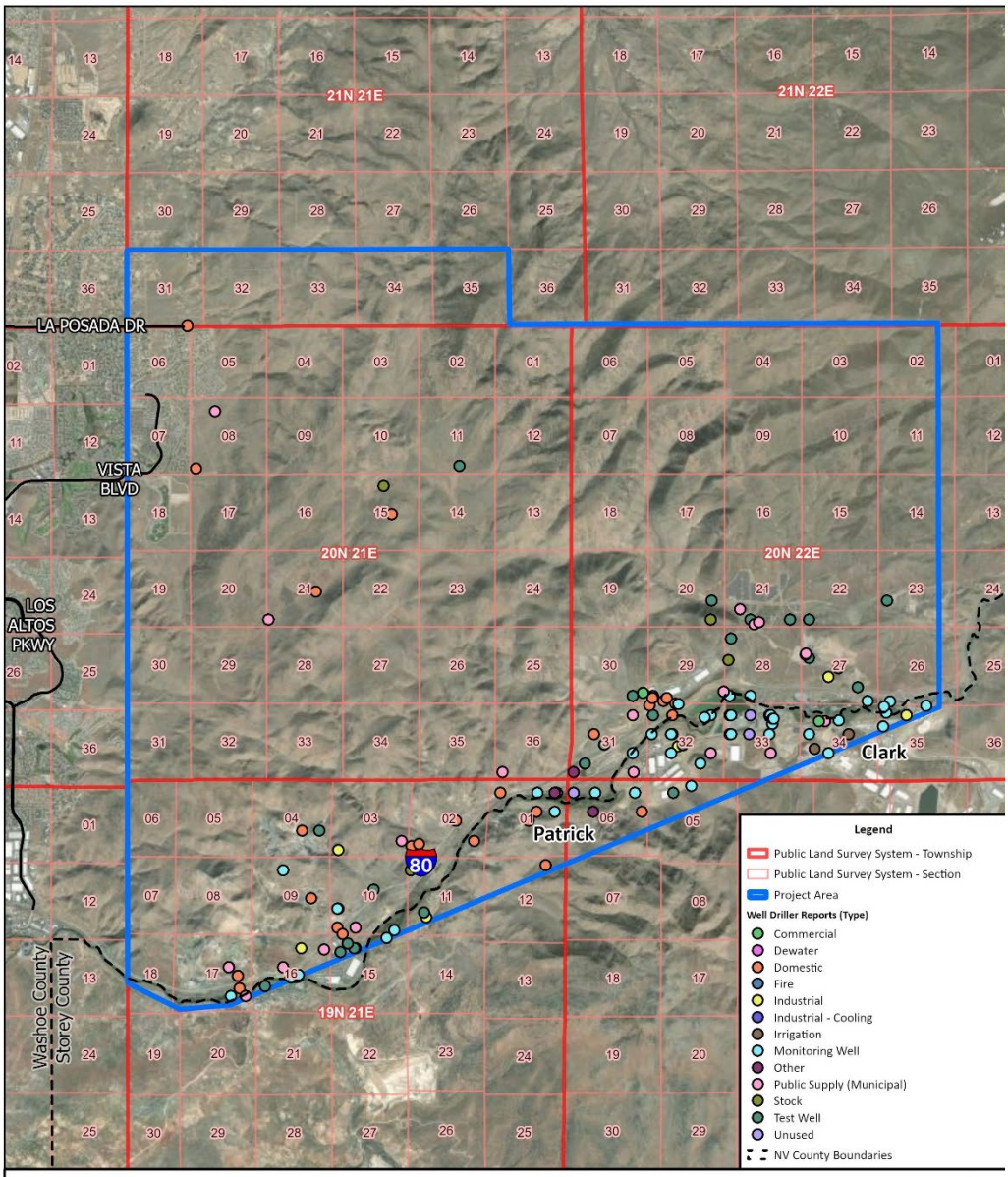


FIGURE 10
WELL DRILLER REPORTS (TYPE)
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

13.1 Visual Resource Inventory Classes (BLM)

Visual resource classes are categories assigned to public lands, which serves two purposes: (1) an inventory tool that portrays the relative value of the visual resources, and (2) a management tool that portrays the visual management objectives. There are four classes (I, II, III, and IV).

13.2 Objectives for Visual Resource Classes Within the Proposed Project Area

The proposed project area contains Class II, III, and IV objectives (**Figure 11**), which are described as follows:

Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III Objective: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV Objectives: The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Potential future development would adhere to BLM guidelines for visual resources.

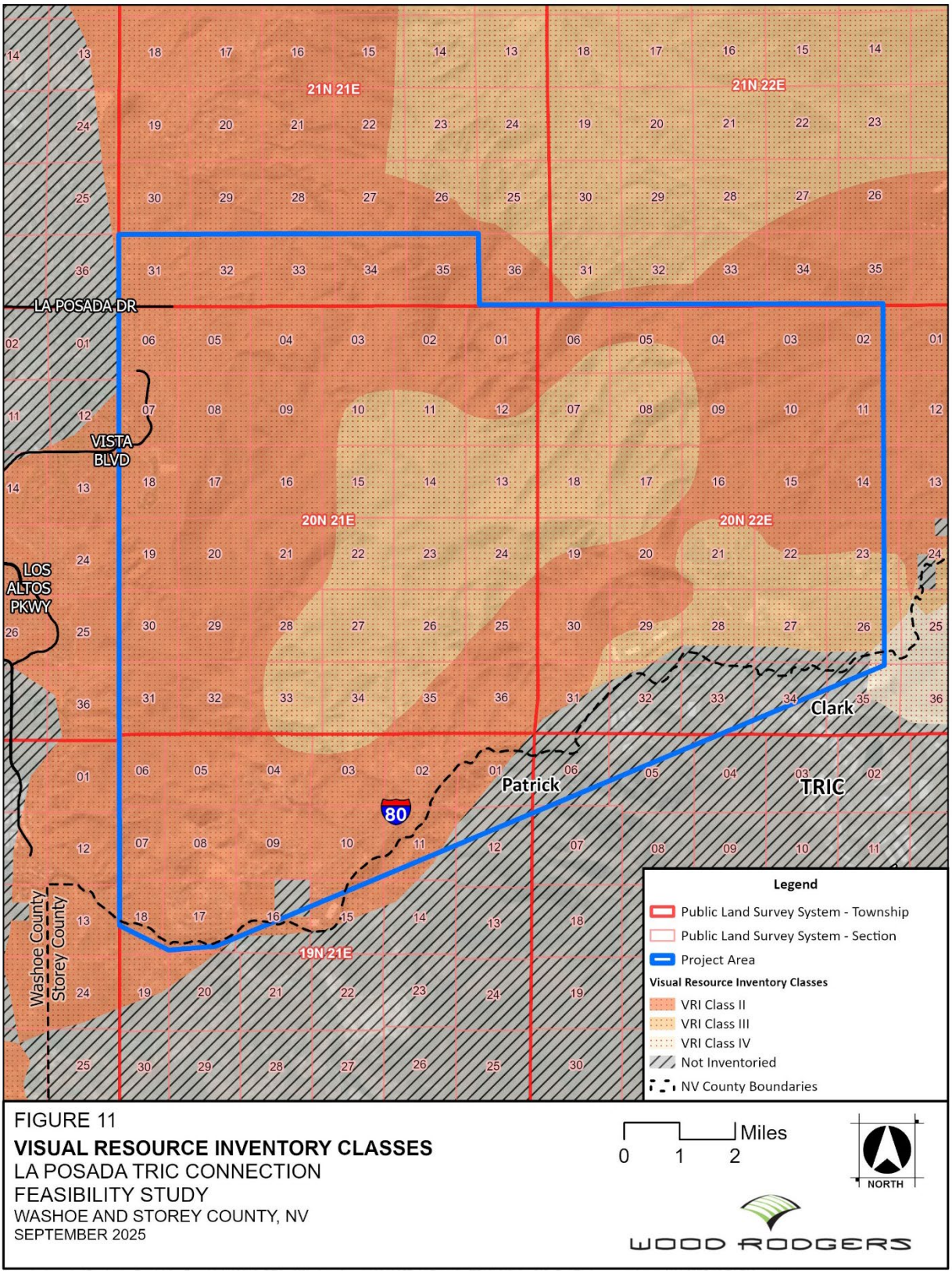


FIGURE 11
VISUAL RESOURCE INVENTORY CLASSES
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

14. VISUAL RESOURCE INVENTORY SCENIC QUALITY RATING UNIT (BLM)

Within the VRI process, public lands are evaluated with regard to their scenic quality, defined as the visual appeal of a particular tract of land. Scenic quality is determined systematically by:

1. Dividing the landscape into Scenic Quality Rating Units (SQRUs) based on conspicuous changes in physiography or land use, and
2. Ranking scenic quality within each SQRU based on the assessment of seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications.

The ratings are made in the field by trained observers who evaluate the landscape view from inventory observation points, which are either important viewpoints or points with views that are representative of the SQRU. Based on the outcome of this assessment, lands within each SQRU are assigned a scenic value rating of A (high scenic value), B (moderate scenic value), or C (low scenic value). Generally, those areas with the most variety and most harmonious composition have the highest scenic value ratings, while areas with less variety and greater levels of disturbance from human activities have the lowest scenic value ratings.

The proposed project area contains a B rating and areas not inventoried (**Figure 12**). The explanation provided for the B rating is that it contains, “Interesting outcrops, pinyon juniper, color variety in rock, adjacent mountains and river, somewhat distinctive, I-80. It is very large hilly / mountainous unit that borders 1-80 to the south, Spanish Springs Valley to the west, Pyramid Lake and reservation to the E / NE. The Warm Springs Valley bisects the unit generally from east to west. Vegetation is mostly short brown grass with sagebrush and juniper more visible on the east side of unit. Texture varies from smooth in the rolling areas to rougher in areas where rock outcrops are exposed from erosion.”

Potential future development would adhere to BLM guidelines for visual resources.

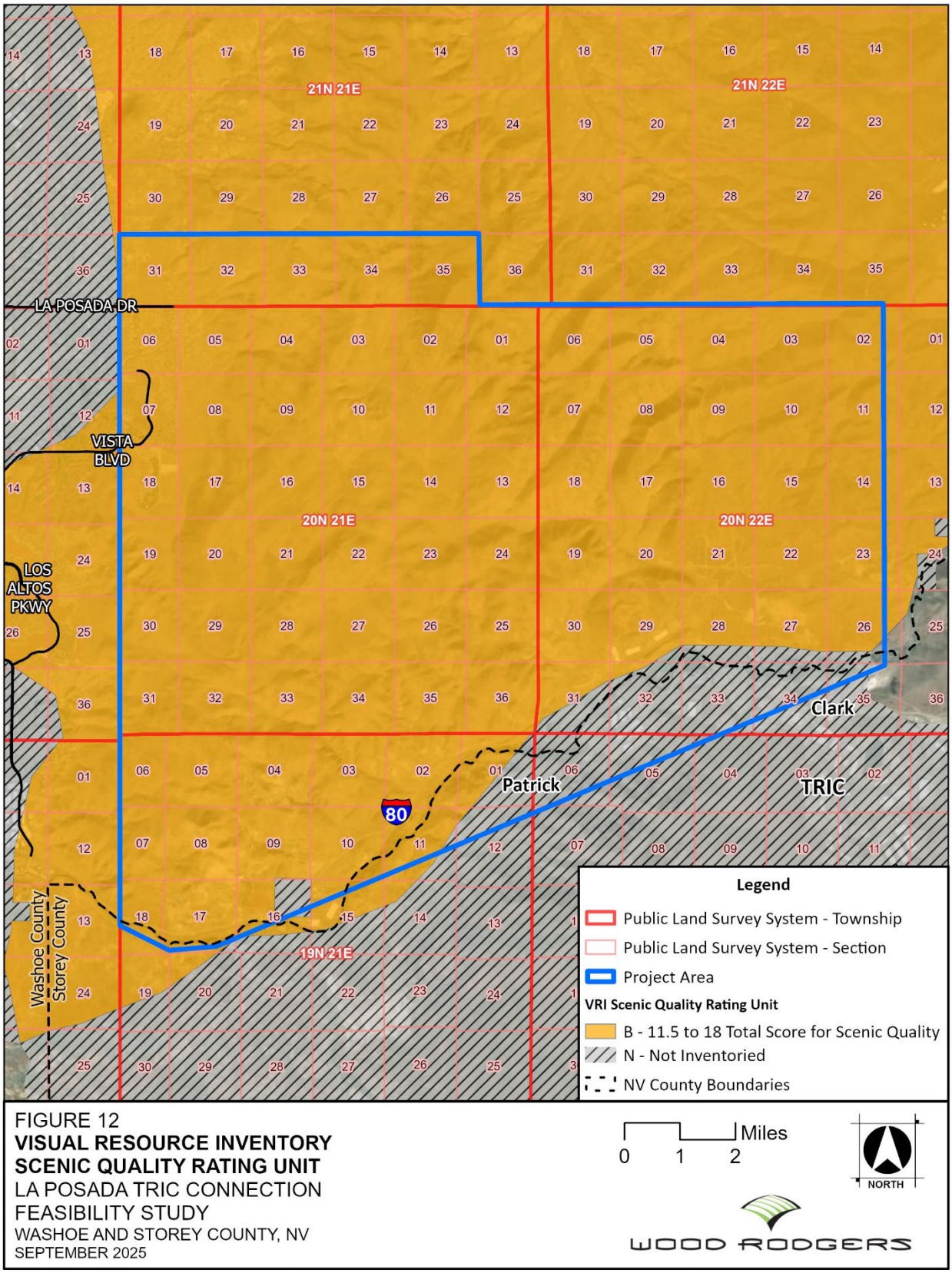


FIGURE 12
VISUAL RESOURCE INVENTORY
SCENIC QUALITY RATING UNIT
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

15. VISUAL RESOURCE INVENTORY VISUAL DISTANCE ZONES (VDZ) [BLM]

Within the VRI process, distance zones are assigned based on the distance of lands from places where people are known to be present on a regular basis, such as highways, waterways, trails, or other key locations. They include the following:

- **Foreground-middle ground** – This zone includes visible areas from 0 to 5 mi.
- **Background** – This zone includes visible areas from 5 to 15 mi.
- **Seldom seen** – This zone includes lands visible beyond 15 mi or lands hidden from view from key locations.

These distance zones are for use in conducting VRIs only. While distance is an important factor in the perception of visual contrast in the landscape, BLM distance zones as defined here are not used in visual contrast or impact analyses, or to identify appropriate mitigation. The effects of distance are highly dependent on the size and other characteristics of the facility and the landscape, and must be incorporated into the contrast and impact analyses and mitigation efforts on a case-by-case basis, as discussed in the Contrast Rating process.

The following distance zones are contained within the proposed project area (**Table 5, Figure 13**):

Table 5: Visual Distance Zones

VDZ Unique Identifier	Visual Distance Zone Code	Narrative Text about the VDZ
DZNVC00000020	Not Inventoried	Other Federal Agencies or Private Land
DZNVC00000006	Seldom Seen. Hidden from view, or not in foreground/middleground or background visibility zones	Areas more than 15 miles from selected viewing platforms or a non-visible viewshed result from the viewing platforms
DZNVC00000005	Foreground-Middleground. Visibility generally up to 5 miles.	Areas from 0-5 miles from selected viewing platforms

Potential future development would adhere to BLM guidelines for visual resources.

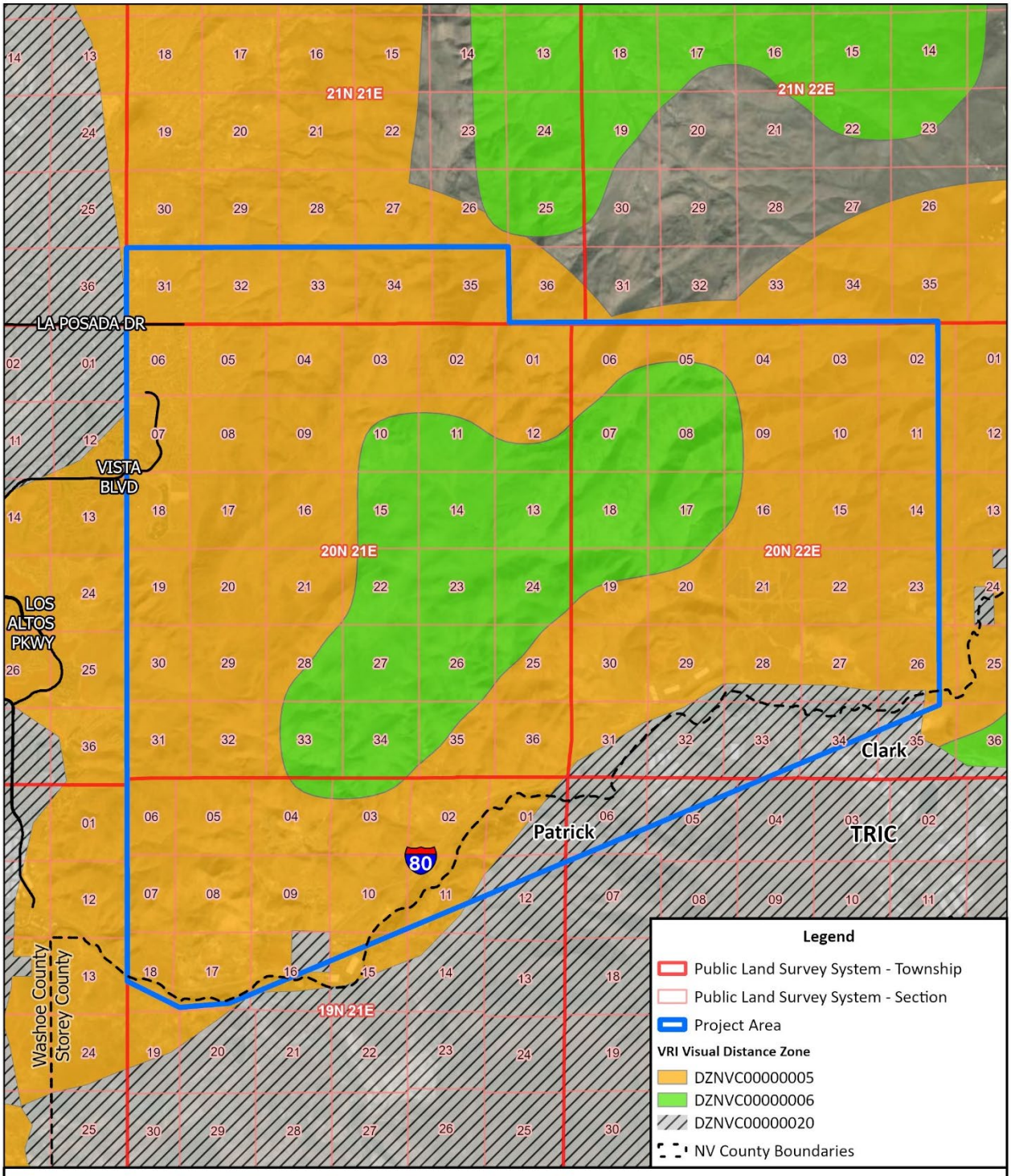


FIGURE 13
VISUAL RESOURCE INVENTORY
VISUAL DISTANCE ZONE
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

16. VISUAL RESOURCE INVENTORY SENSITIVITY LEVEL RATING UNIT (BLM)

Visual sensitivity is defined as a measure of public concern for scenic quality. Sensitivity is determined by evaluating the types and numbers of potential viewers of a specified area (this area is referred to as a Sensitivity Level Rating Unit or SLRU), the level of public interest in the SLRU, adjacent land uses, and the presence of special areas. The Sensitivity Level Analysis (SLA) is completed in two steps:

1. Delineation of SLRUs, and
2. Rating visual sensitivity within each SLRU. Public sensitivity is determined through analyzing various indicators including user types, amount of use, public interest, adjacent land uses, special areas and other factors unique to the SLRU.

Determining the level of sensitivity requires familiarity with the tracts of lands being evaluated, and with the people who use them. Sensitivity is generally determined by BLM staff most familiar with the users of the areas, and can be supplemented by direct input from other agencies, interest groups/stakeholders, and the general public.

Sensitivity levels are described as high, medium, or low within the VRI process. Scenic byways, wilderness areas, and lands adjacent to national parks are examples of lands that often have high sensitivity.

The proposed project area contains VRI areas that have high and moderate sensitivity ratings (**Figure 14**). Potential future development would adhere to BLM guidelines for visual resources.

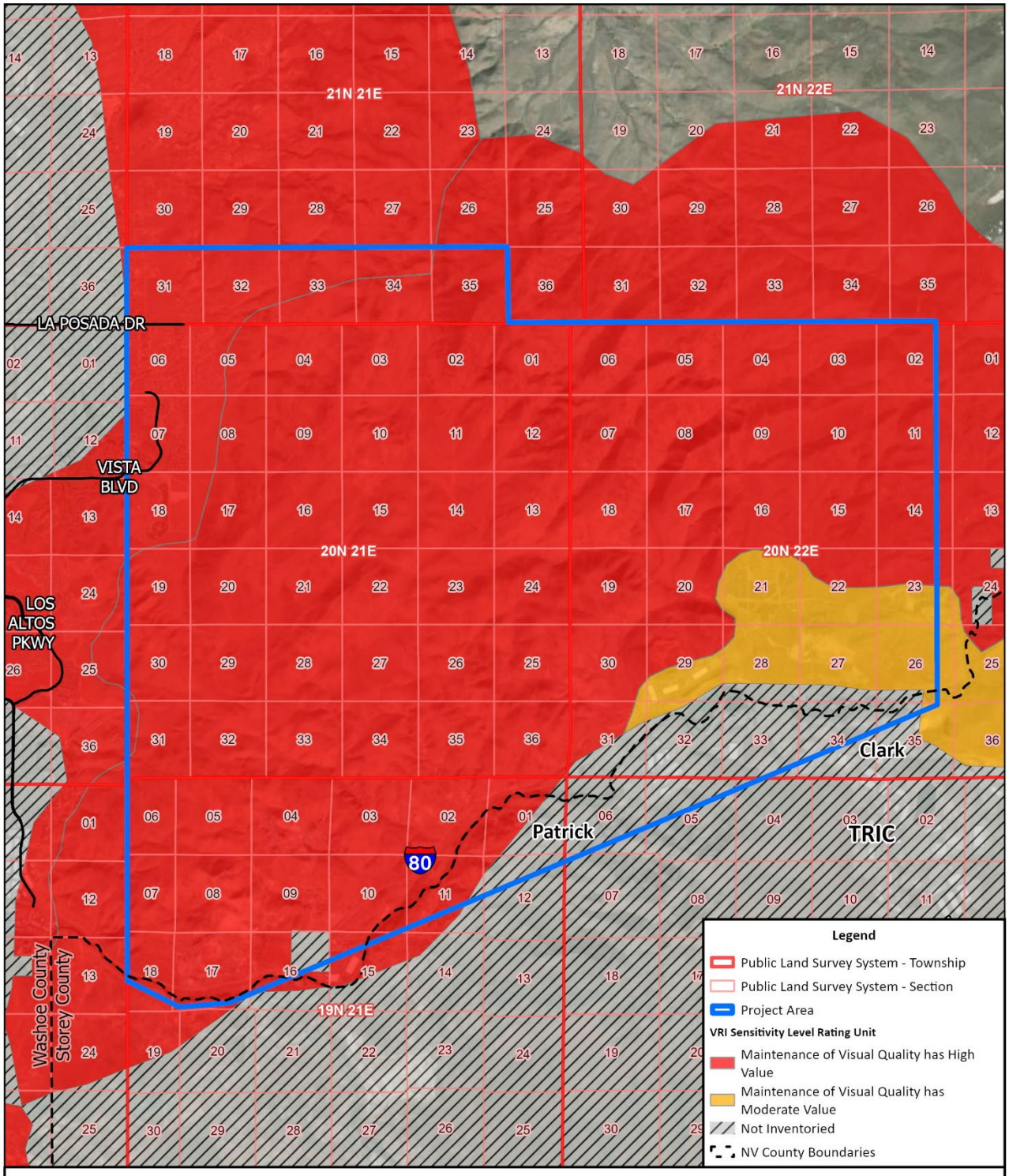


FIGURE 14
VISUAL RESOURCE INVENTORY SENSITIVITY LEVEL RATING UNIT
LA POSADA TRIC CONNECTION FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

17. MINING CLAIMS (NDOM)

Two mining claims are located within the proposed project area. Any future development would need to consider and address the claimants' valid existing mineral rights through negotiation or other appropriate processes.

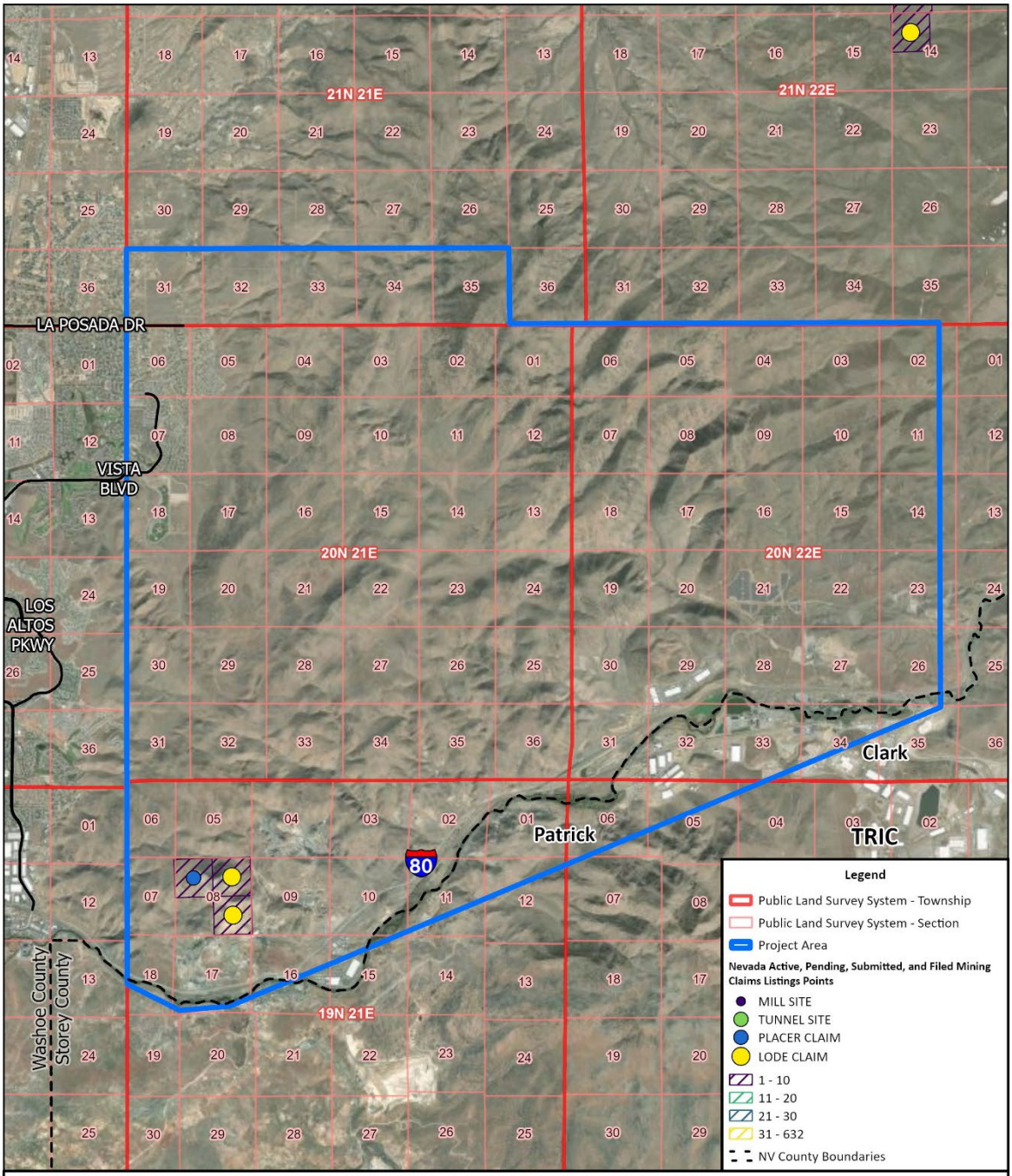


FIGURE 15

NV MINING CLAIMS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

18. HERD AREAS (BLM)

The project area contains a portion of the Pah Rah Mountains Herd Area. Potential future development would adhere to BLM guidelines for herd area resources.

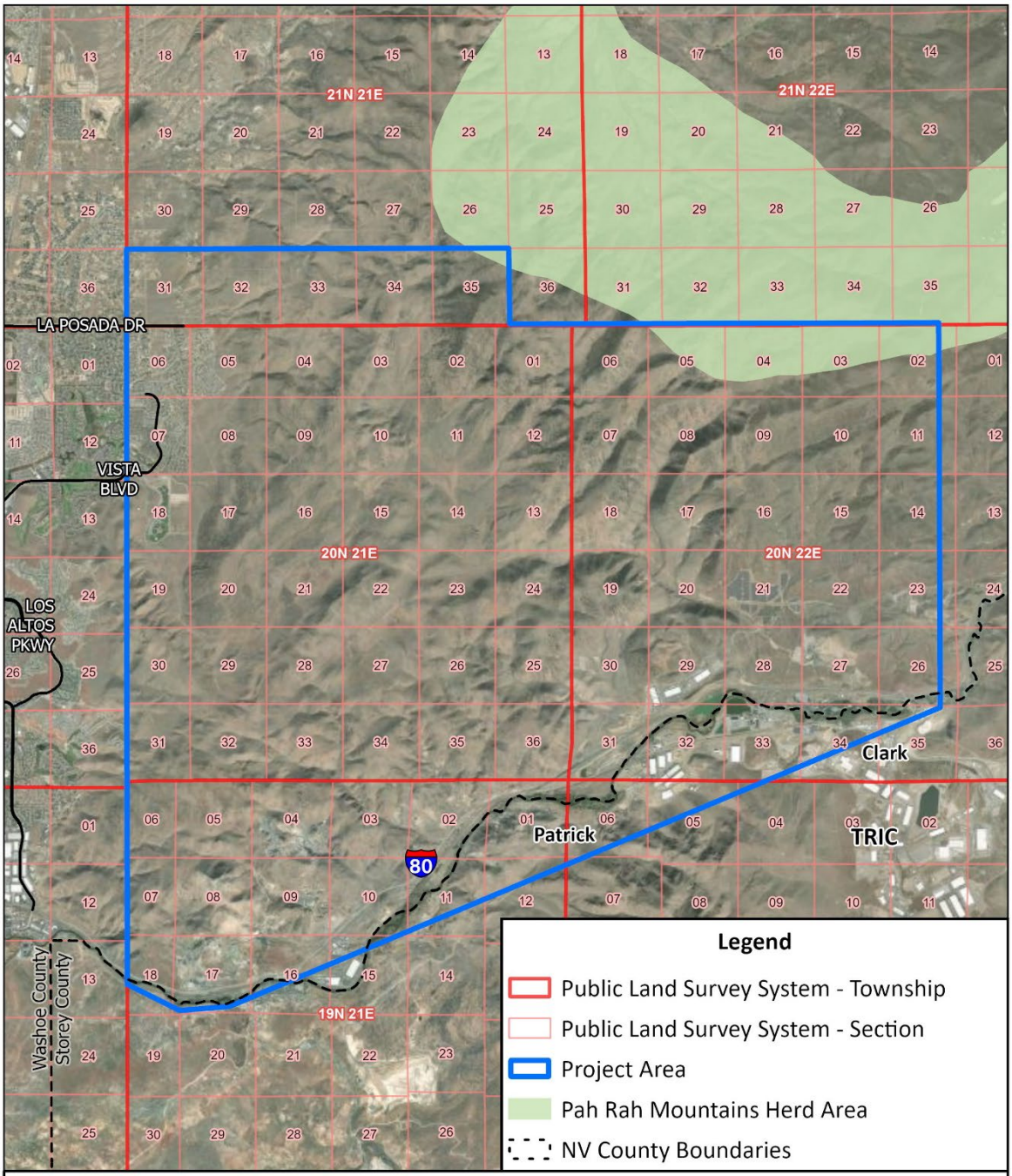


FIGURE 16

HERD AREAS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

19. HERD MANAGEMENT AREAS

None exist within the proposed project area. This resource is not present and therefore would not be further analyzed.

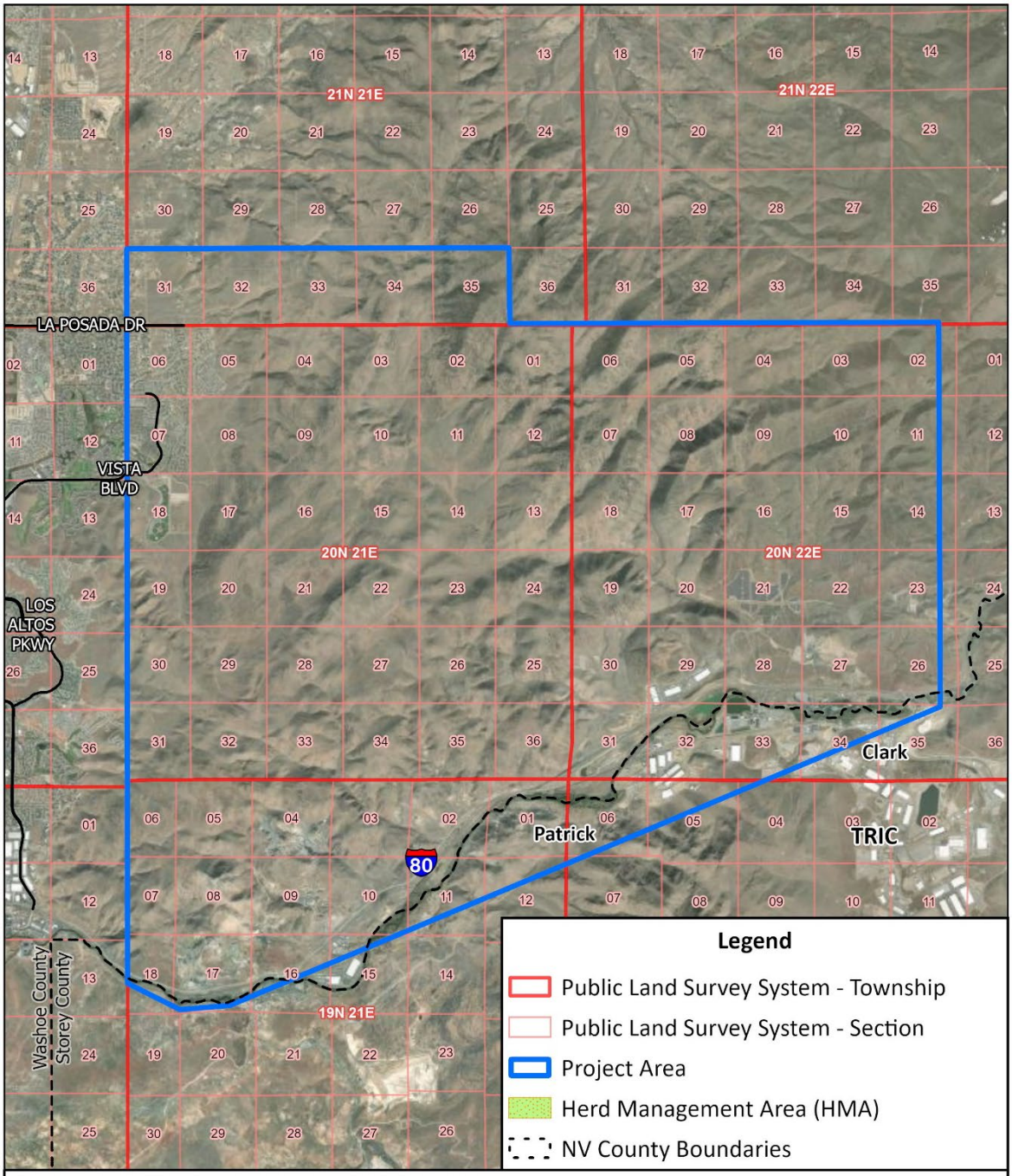


FIGURE 17

HERD MANAGEMENT AREAS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
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20. AREAS OF CRITICAL ENVIRONMENTAL CONCERN (BLM)

The Pah Rah Basin Petroglyph Area of Critical Environmental Concern (ACEC) exists within the proposed project area. Potential future development would adhere to BLM guidelines for ACEC resources.

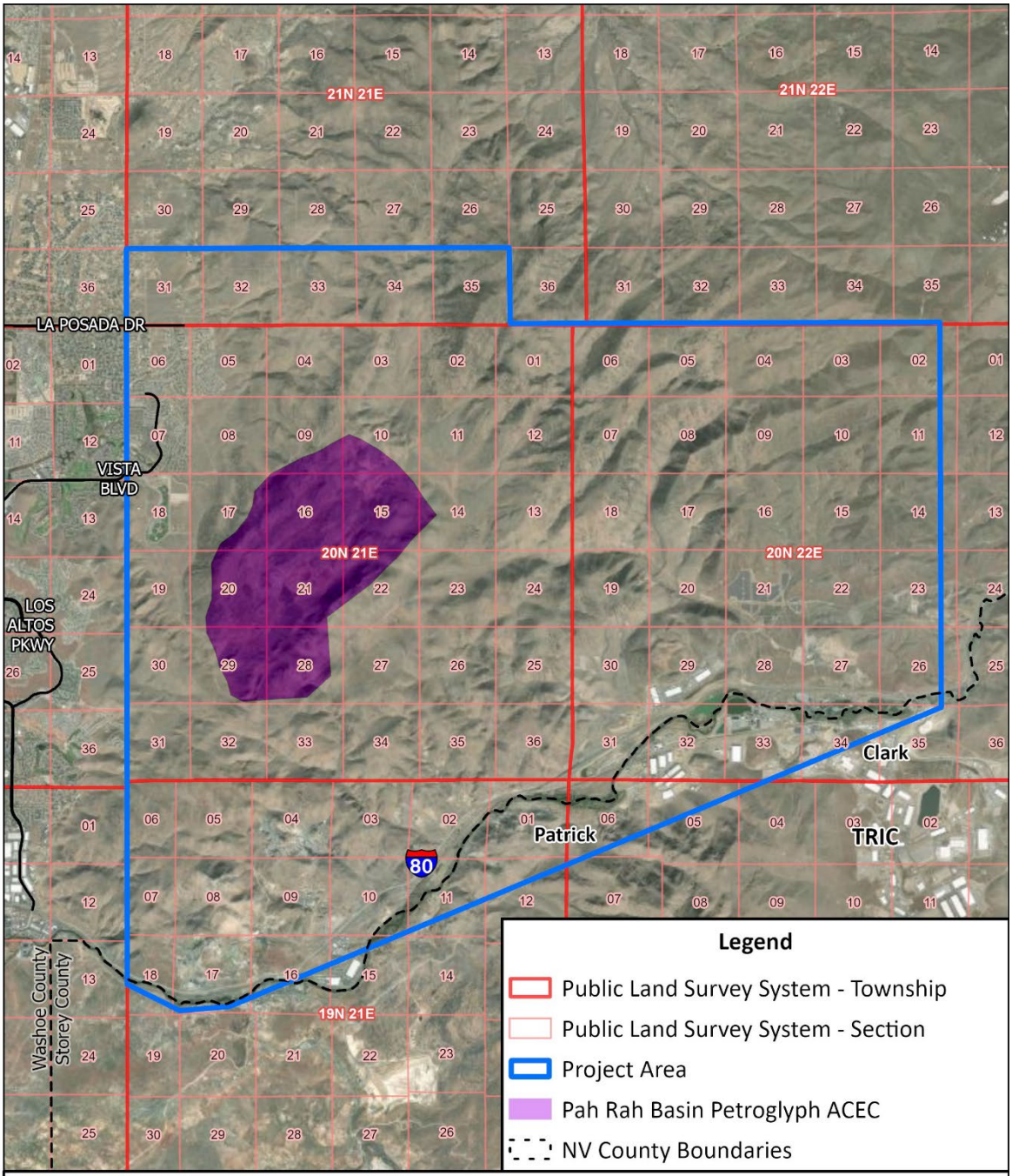

FIGURE 18

ACEC
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

21. WILDERNESS & WILDERNESS STUDY AREAS (WSA) [BLM]

The BLM requires that projects within half a mile of any WSA be defined. There are no Wilderness or Wilderness Study Areas within a half mile radius of the Project Area (**Figure 19**). This resource is not present and therefore would not be further analyzed.

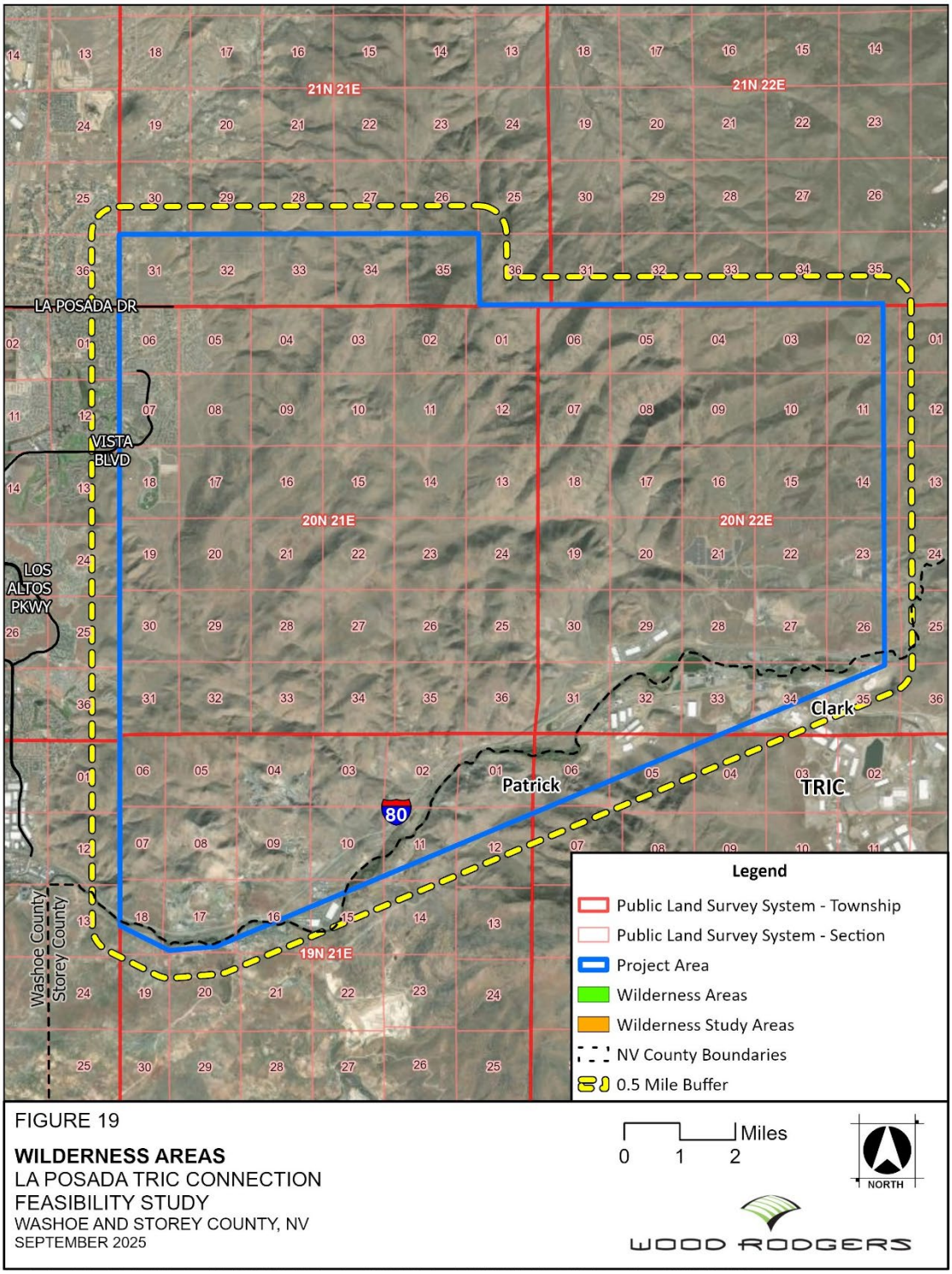

FIGURE 19

WILDERNESS AREAS
LA POSADA TRIC CONNECTION
FEASIBILITY STUDY
WASHOE AND STOREY COUNTY, NV
SEPTEMBER 2025

22. LANDS AND REALTY

The proposed project may impact realty and land resources. In coordination with the BLM, Carson City District Office (CCDO), further analysis is needed to evaluate the effects of road construction, access to public lands, potential impacts on valid and existing rights, and any other resources identified by the BLM. **Appendix E** provides land survey records and Master Title Plats for T.20N. R.21E., T.20N. R.22E., T.19N. R.21E., and T.19N. R.22E.

23. CULTURAL RESOURCES

An interim Class I archive search of the Nevada Cultural Inventory Resource System (NVCRIS) was completed by CDM Smith (**Appendix F**). This is an interim overview to establish a foundational understanding of the cultural context within the study area to inform project design and development. In addition, it also serves to support efforts in identifying and treating cultural resources and to facilitate ongoing compliance with Section 106 of the National Historic Preservation Act (NHPA) OF 1966, as amended. The Class I archive search will be updated with the findings of a BLM CCDO and Winnemucca District Office (WDO) archive search.

Data sources reviewed provided an interim overview of cultural resources inventories, archaeological sites, historic sites, buildings, structures, historic transportation routes and rock art in the study area. Previous cultural resource inventories covered approximately 23 percent of the study area, and there have been four rural architecture, and three urban architectural inventories previously conducted in the study area. The largest and most important cultural resource in the study area is the Pah Rah High Basin Petroglyph ACEC managed by the BLM. The site is significant primarily for its precontact cultural resources but also includes historical and scenic values.

Overall, the study area has relatively high sensitivity for precontact archaeological resources and relatively low sensitivity for historic archaeological resources. The study area is located within an area that contains a number of drainages, granitic and volcanic rock outcrops suitable for stone toll use and includes likely travel corridors that would be used for trade and journeys to exploit the resources of Pyramid Lake, Lake Tahoe and the Truckee River. The study area is also known for its importance to Native American groups for spiritual significance and the presence of many petroglyphs in areas within concentrations of basalt. Previously un-surveyed areas in the study area include areas where many basalt boulders and outcrops are likely exposed, and these areas may also have sensitive tribal and archaeological resources.

Large portions of land within the proposed study area have not been subject to formal cultural resource investigations, leaving limited knowledge of the prehistoric and historic uses of these specific areas. However, a review of completed studies in adjacent and surrounding regions provides a general understanding of land use patterns, chronological frameworks, and the intensity of both prehistoric and historic occupation. Additional studies within the study area will help refine these findings and contribute to a more comprehensive understanding of the cultural resources present. This information will be instrumental in guiding project design and balancing historic preservation with development goals.

APPENDIX A

Washoe and Story County Parcels Contained Within the Project Area

APPENDIX B

NNHP Data Request Response

APPENDIX C
NDOW Standard Data

APPENDIX D

USFWS List of Threatened, Endangered, Proposed, and Candidate Species

APPENDIX E

Land Survey Records and Master Title Plats

APPENDIX F

Interim Class I Cultural Resources Review

APPENDIX B:
GEOTECHNICAL DESIGN AND HAZARDS MEMO



Sparks-TRIC Connection Feasibility Study

Geotechnical Design and Hazards Memo

September 2025

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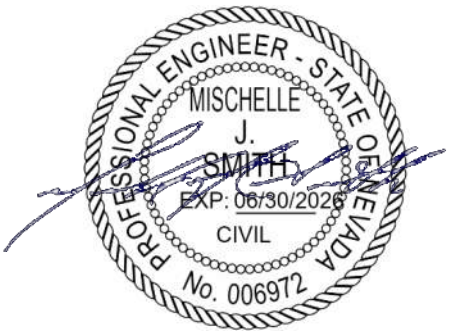


1.0 INTRODUCTION

BACKGROUND

This report (Study) is in support of the Regional Transportation Commission of Washoe County (RTC) continuing to vet potential new roadway connectors between the east Sparks (Vista Alignment) and Spanish Springs (La Posada Alignment) areas of Washoe County, Nevada with the Tahoe-Reno Industrial Center (TRIC) in Storey County, Nevada. Each connector alternative is approximately 13 miles in length and will offer 2 travel lanes with 1 direction each way. Preliminary assessments place AADT on the order of 5,000 vehicles per day.

Interstate 80 (I-80) is currently the only direct connection between the two communities and within the last 20 years, I-80 has seen a significant increase in congestion and resulting safety issues. The proposed alignments would connect residential areas in the Truckee Meadows with the employment centers in TRIC.

PURPOSE

This Study is to present high-level views of geotechnical conditions with a focus on potential and constraints associated with each alignment alternative. Therefore, this report presents observations, photos, geologic mapping, USDA-NRCS soil survey summaries, and identified seismic hazards along each alignment. As appropriate, this report also identifies areas where more critical geotechnical constraints have been identified and may benefit from further investigation.

STUDY LIMITS

Figure 1 presents the primary alternatives for the Vista and La Posada Alignments. Each alignment will be discussed separately. Figures 2-V and 2-LP present alignments and stationing references for the Vista and La Posada alternatives, respectively. Roadway cuts along each alignment have been assumed to be limited to 20 feet.

EXPLORATION METHODS

Reconnaissance surveys were performed for each of the alignments. Each alignment was marked in 2,000 ft increments (i.e. 20+00 stations) and site surveys performed intermittently on approximately 2,000 ft centers. Each survey recorded and photographed: survey date, ground condition, cobble/boulder float, vegetation, and proximity to outcrops. The surveys also indicate surrounding topography with 10 ft contours. (Reconnaissance surveys are presented in Appendix B).

2. GEOLOGIC, SOIL, AND GROUNDWATER CONDITIONS

PHYSIOGRAPHIC PROVINCE

The project area is in the western extreme of the Basin and Range Physiographic Province. The physiographic province gets its name from its series of north-south trending mountain ranges (horsts) separated by alluvial valleys (grabens) – a region once characterized as an army of caterpillars marching toward Mexico (Pew Charitable Trust, 2015). The ranges are typically 5 to 15 miles wide separated by similarly spaced basins (Price, 2002, Stewart, 1980). Created by extensional tectonism and block faulting, the resulting alternating horst and graben structures began in the middle Tertiary and continues today. The Pah Rah range is typically considered the western bounding mountain range.

REGIONAL GEOLOGY

Tertiary and Quaternary rock forms approximately 90 % of the surface area of Washoe and Storey Counties (NBMG, 1969). (Figure 3) The tertiary rocks (Tab) are primarily of volcanic origin and present complex interfingering, piles and sheets formed from flows and rhyolitic to basaltic pyroclastics. Hydrothermally altered zones are also present in the rock. Depending on the degree of alteration, these hydrothermally altered zones can consist almost entirely of expansive montmorillonite clays. Typically confined to the Truckee Canyon, the younger Quaternary (Qal, Ql) deposits consist predominantly of poorly consolidated alluvial (Qal) and lacustrine (Ql) sediments. (NBMG, 1969).

LOCAL GEOLOGY

The bulk of both alignments extend across the southern limit of the Pah Rah Range. (Figure 3). The Pah Rah Range consists of the previously mentioned basalt flows most of which is medium to dark gray, becoming dark gray-brown with weathering. Individual flows average between 15 and 20 feet thick with total basalt flows reaching thicknesses more than 1,000 feet. The flows have dips up to 30° and are cut by older faults with up to 1,000 feet vertical displacement. Both the dips and flows are structural features that may influence siting and alignment of any larger structures such as bridges.

Entering the Truckee Canyon from the north and the Pah Rah Range, the Pyramid sequence is exposed. The Pyramid sequence (Tsv) consists mostly of basalt, basaltic andesite and andesite flows intercalated with sedimentary lenses. The sedimentary lenses consist mostly of rhyolitic tuffs and tuff breccias.

RECONNAISANCE

Both alignments begin near the eastern limits of the City of Sparks. **The La Posada** alignment is farther to the north. Vegetation is relatively sparse consisting mostly of cheat grass and small shrubs. Beginning at near station 30+00 minor outcrops are visible and cobble and boulder float are prevalent. Near Station 38+00 rock structure, presenting ridge lines and linear outcrops, become more notable. Limited aeolian (wind blown sand) deposits are a significant feature near Station 85+00 reverting back to the basaltic moonscape of the high arid Nevada desert. Juniper, cedar, and pinion trees, although scattered, begin to dot the landscape as the alignment continues eastward. Mature sage becomes more prevalent near Station 240+00 decreasing near Station 320+00.

Until reaching the Truckee Canyon, the remainder of the alignment consists of alternating zones of aggressive outcrops and scree to grasses and thin layers of overlying clay.

The **Vista** alignment begins at the base of the western flank of the Pah Rah range along the eastern limits of the Golden Eagle Regional Park. Vegetation along the initial portions of the alignment is relatively sparse consisting mostly of cheat grass and small shrubs. Road cuts indicate limited depth of soil cover (near Station 80+82) and notable outcrops begin to show near Station 90+00. Near the upper reaches show platy scree and near surface rock. Surface rock is visible as fractured rock as cobble float near Station 150+00. Roadways still continue to indicate little to no soil cover as the alignment trends east. Boulder float, rock outcrops, increase to Station 270+00 then discontinue across the upper reach of the Pah Rah range. The ancient Pah Rah moon scape begins to show near Station 330+10 extending east toward Station 450+00. Change along the remainder of the alignment shifts between desert grass, boulder float, and low lying basaltic ridges and flows.

SOIL SURVEY (USDA)

The Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. These soil surveys are available for general planning to be supported by onsite investigations to assess soil quality and engineering applications. Table 1 presents a summary of available characteristics with indicated percentages of the unit area for that characteristic. It should be highlighted that these ratings are typically based on the surface 5 to 6 feet of the soil profile.

TABLE 1 - NRCS - WEB SOIL SURVEY CONDITIONS & AREA PERCENTAGES

ALIGNMENT	LA POSADA			VISTA		
[1]DEPTH TO BEDROCK	>2 m	1 - 2 m	<1 m	>2 m	1 - 2 m	<1 m
% OF ALIGNMENT	**45**	4	51	53	21	26
[2]ROADFILL SOURCE	GOOD	FAIR	POOR	GOOD	FAIR	POOR
% OF ALIGNMENT	1	1	**97.5**	< 2.5	< 2.5	95
[3]CORROSION TO CONCRETE	LOW	MOD	HIGH	LOW	MOD	HIGH
% OF ALIGNMENT	69	31	0	56	**44**	0

[1]**Depth to Bedrock (FT)** - From the Web Soil Survey, depth to bedrock is recorded as three separate values. If no bedrock is described in a map unit, the depth is represented as greater than 7 ½ feet (> 200 cm).

[2]**Roadfill Source** - is soil material that is excavated from one place and used in road embankments in another place. The rating is for the whole soil profile, representing mass grading, from ground surface to a depth of about 5 feet. Soil ratings are based on the amount of suitable material and on soil properties that affect the face of excavation and performance of the material after it is in place due to normal construction practices.

[3]**Corrosion to Concrete** - pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete, i.e. based mainly on the sulfate and sodium content, texture, moisture content, and soil acidity. No further refinement nor insights to rating are provided.

Based on the characteristics presented by the NRCS it can be represented that both alignments are reasonably similar with approximate 50 % of the project area presenting a depth to bedrock greater than 2 meters, 95 % of the alignments present soil that will not meet the requirements typical to structural fill for roadways and/or roadway embankments, and 60 % of each alignment present a relatively low potential for concrete corrosion. The less favorable value of the two alignments are indicated in bold burgundy. It should be reiterated these assessments are typically limited to the surface 5 to 6 feet of the soil profile and do not reflect the potential benefits of mass grading with appropriately sized construction equipment.

GROUNDWATER

No well records are indicated proximate to the alignments as they trend across the southern limits of the Pah Rah Range. Due to the elevation and description of near surface bedrock it is anticipated that except for the limited potential for isolated springs, depth to groundwater would be significantly lower than that level which would influence construction or design considerations.

3. GEOLOGIC HAZARDS

QUATERNARY FAULTS AND FOLDS

Within the western extents of both alignments, multiple parallel trending faults extend along the western flank of the Pah Rah Range. These faults have been assigned to the Spanish Springs Fault Zone. The Spanish Springs Fault Zone is within the northern portion of the Walker Lane. Based on lidar-derived hillshade images, aerial photography, satellite imagery, and field observations, all these faults associated within the North Valleys area express Quaternary deformation and studies indicate the faults are capable of extension rates on the order of 1 to 2 mm/year.

It should be noted that most recent activity associated with the Spanish Springs Fault Zone is typically limited to the western limits of Spanish Springs Valley. Faulting proximate to the proposed alignments are undifferentiated and likely present a lower level risk of rupture than the more active zone on the western perimeter of Spanish Springs Valley.

Near the southern-eastern end of the alignments, the Olinghouse Fault extends off to the east. Research by Briggs and Wesnousky (Briggs, 2005) indicates the Olinghouse Fault has been the source of multiple latest Pleistocene and Holocene surface-rupturing earthquakes. A recent earthquake (late 1800's), approaching a magnitudes of 6.7, has been attributed to the Olinghouse area. (NBMG, 1992) It should be noted neither of the alignments are currently mapped coincidental with the Olinghouse fault area.

SURFACE RUPTURE

Due to the characterization of fault structures along the western flank of the Pah Rah Range and the preliminary nature of this report, it is our opinion that the fault structures present a limited to no risk for surface rupture. Alternate opinions may developed with more comprehensive studies to be performed as the project progresses.

LIQUEFACTION

Due to proximity to bedrock, the potential for liquefaction does not exist.

SEISMIC SETTLEMENT

Limited Holocene soils are present along the alignments and therefore the potential for seismic settlement does not exist.

4. CONSTRUCTION AND PROJECT DEVELOPMENT CONSIDERATIONS

DESIGN AND CONSTRUCTION SUMMARY

The following comments present considerations specific to project development and construction based on the findings of this study.

- Vegetation is relatively limited and vegetation can likely be blended with soil and placed in non-structural fills.
- Cuts deeper than 6 ft will likely present difficulty. Except where grading can accommodate large dozers (D-10, or D-11) with the ability to modify the number of shanks, excavation difficulty should be anticipated.
- Extending mass grading to elevations deeper than design roadbed grade may be required to accommodate any utilities.
- Bedrock cuts will likely yield material meeting the definition of rock fill. Deeper cuts may produce materials large enough to require screening or crushing
- Blasting may be required in areas of deeper cuts.
- Keying and benching will be required for fills placed adjacent to slopes steeper than 5H:1V.
- Slopes can be graded 2H:1V or flatter. Steeper slopes may be approved for limited cuts within localized zones especially where the steeper cuts serve to shorten the reach of an otherwise long slope. Based on the soil survey data, approximately 50 percent of the alignments should be anticipated to be shallow rock.
- Contemporary rock cut approaches consider achieving the steepest stable cut slope for a continuous slope, without intermediate slope benches (Caltrans, 2021). As a result, slope stabilization and rockfall protective measures may be required to minimize localized or small-scale instabilities within the overall cut (Caltrans, 2021). The benefit of shorter slope reach due to the elimination of benches and incorporation of specific stabilization zones can help lead to a more aesthetic and safe approach to rock slope design. However, catchment areas (approaching approximately 1/3 slope height for unimproved slopes) would still be required for toe and shoulder maintenance.
- Structural fill quality materials (rock fill) can likely be developed from cuts. Screening of oversize will be required within portions of the alignment.
- Material graded and blasted from the bedrock will likely need to be processed to develop a uniformly graded rock fill. Rock cuts can present unique scaling and dressing challenges to achieve a stable condition without loose spalls or loose rock.
- With appropriate grading considerations and workmanship capabilities on the part of the contractor, larger size rock (i.e. 3 ft maximum) can typically be accommodated in deeper embankments.

- Processing, such as crushing, may prove to be an important consideration depending on final design grades.
- Overexcavation due to altered rock is anticipated to be limited.
- It is anticipated City of Sparks/RTC minimum structural pavement sections will be suitable for the design roadway.

5. SUMMARY

When considering geotechnical potential and constraints, no significant difference was noted between the two alignments at this stage of vetting and design.

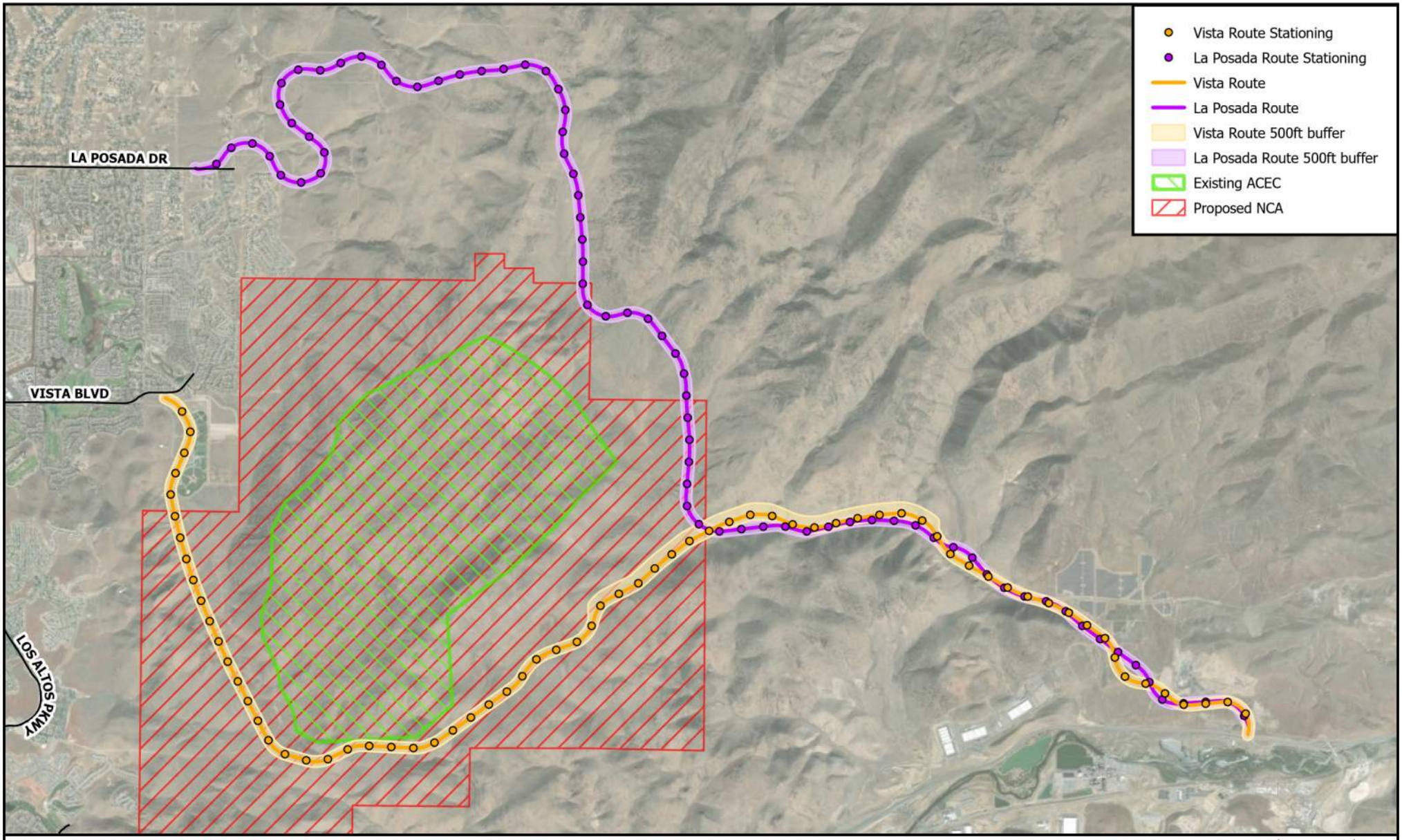
6. REFERENCES

Bonham, Harold F., Geology and Mineral Deposits of Washoe and Storey Counties, Nevada. Nevada Bureau of Mines and Geology, Bulletin 70, 1969

Briggs, Richard W., Steven G. Wesnousky, *Late Pleistocene and Holocene Paleoearthquake Activity of the Olinghouse Fault Zone, Nevada,* Bulletin of the Seismological Society of America (2005)

NBMG Nevada Geology, *Seismic Hazards in the Reno-Carson City Urban Corridor,* Spring 1992, Quarterly Newsletter of the Nevada Bureau of Mines and Geology.

APPENDIX A
GEOTECHNICAL PLATES



VISTA AND LA POSADA ROUTES

LA POSADA TO TRIC

WASHOE COUNTY, NV

SEPTEMBER 2025

FIGURE 1 - OVERALL PROJECT ALIGNMENT

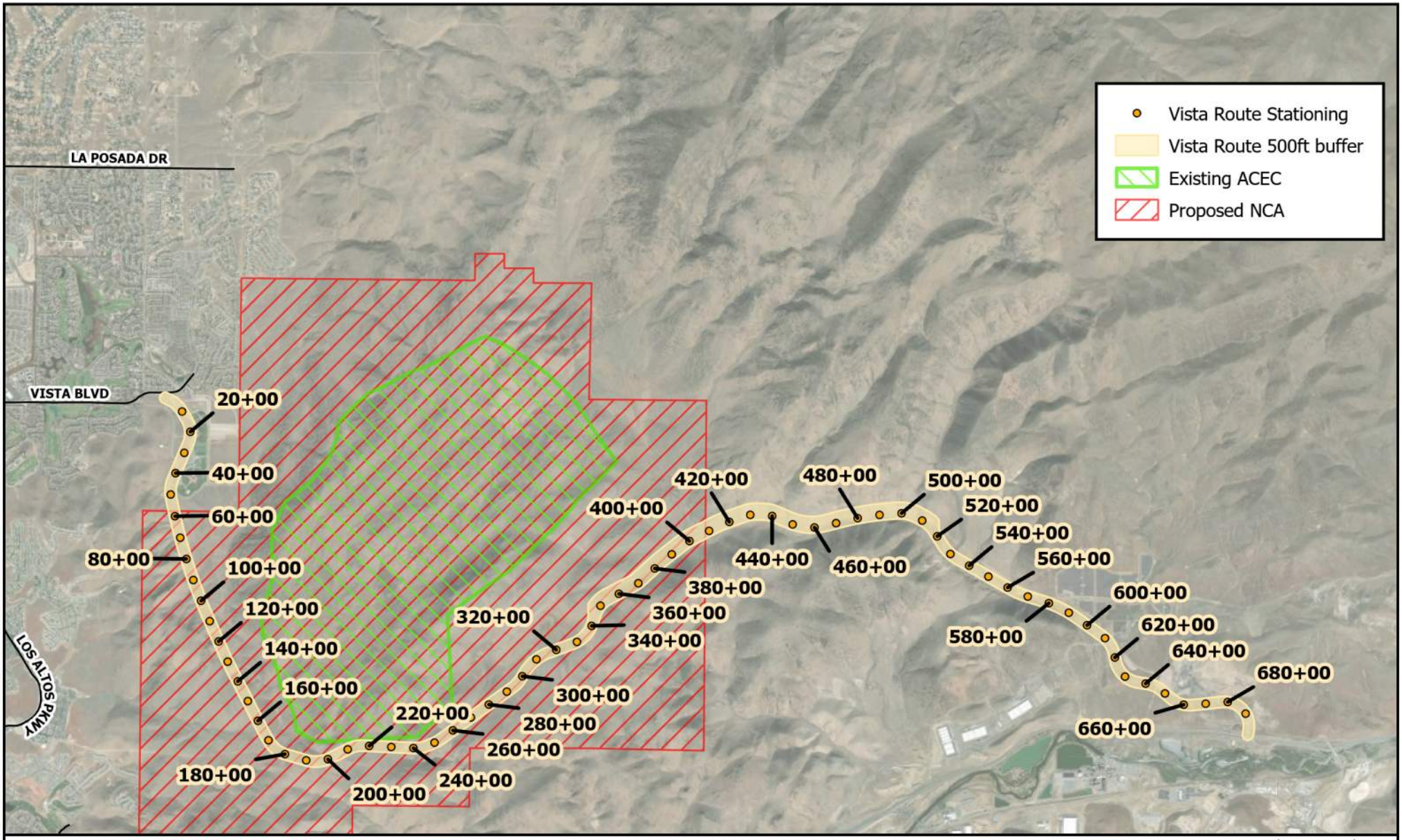
0 0.5 1 2

Miles

NORTH

WOOD RODGERS

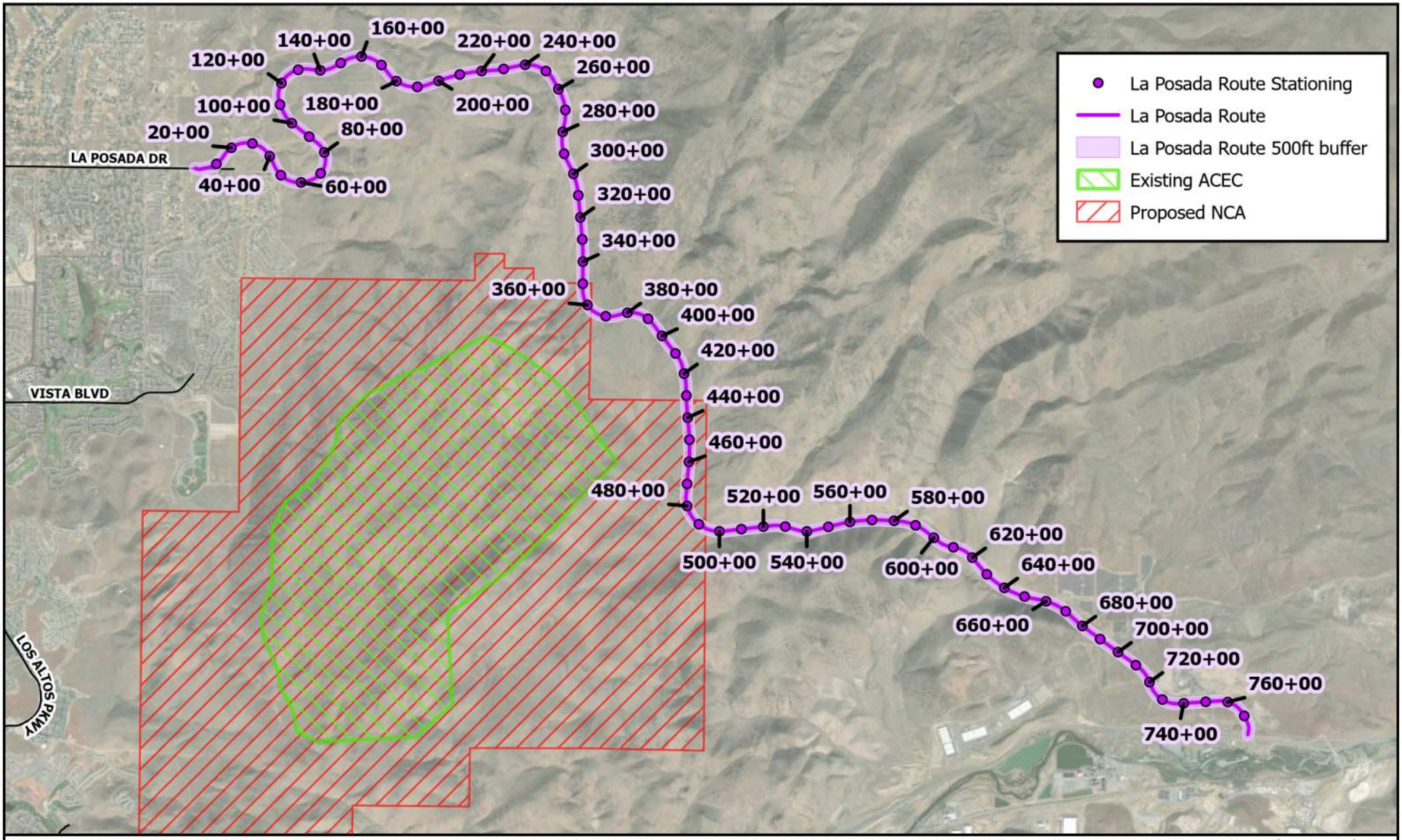
\\woodrodgers.loc\ProductionData\Jobs-Reno\Jobs\8312_RTC of Washoe County\8312057_LaPosada_TRIC\GIS\ArcGIS_Pro\La_Posada_Tric_Geotech\La_Posada_Tric_Geotech.aprx 9/11/2025 10:47 AM sbarrow



VISTA ROUTE
LA POSADA TO TRIC
WASHOE COUNTY, NV
SEPTEMBER 2025

FIGURE 2V - VISTA ALIGNMENT

WOOD RODGERS



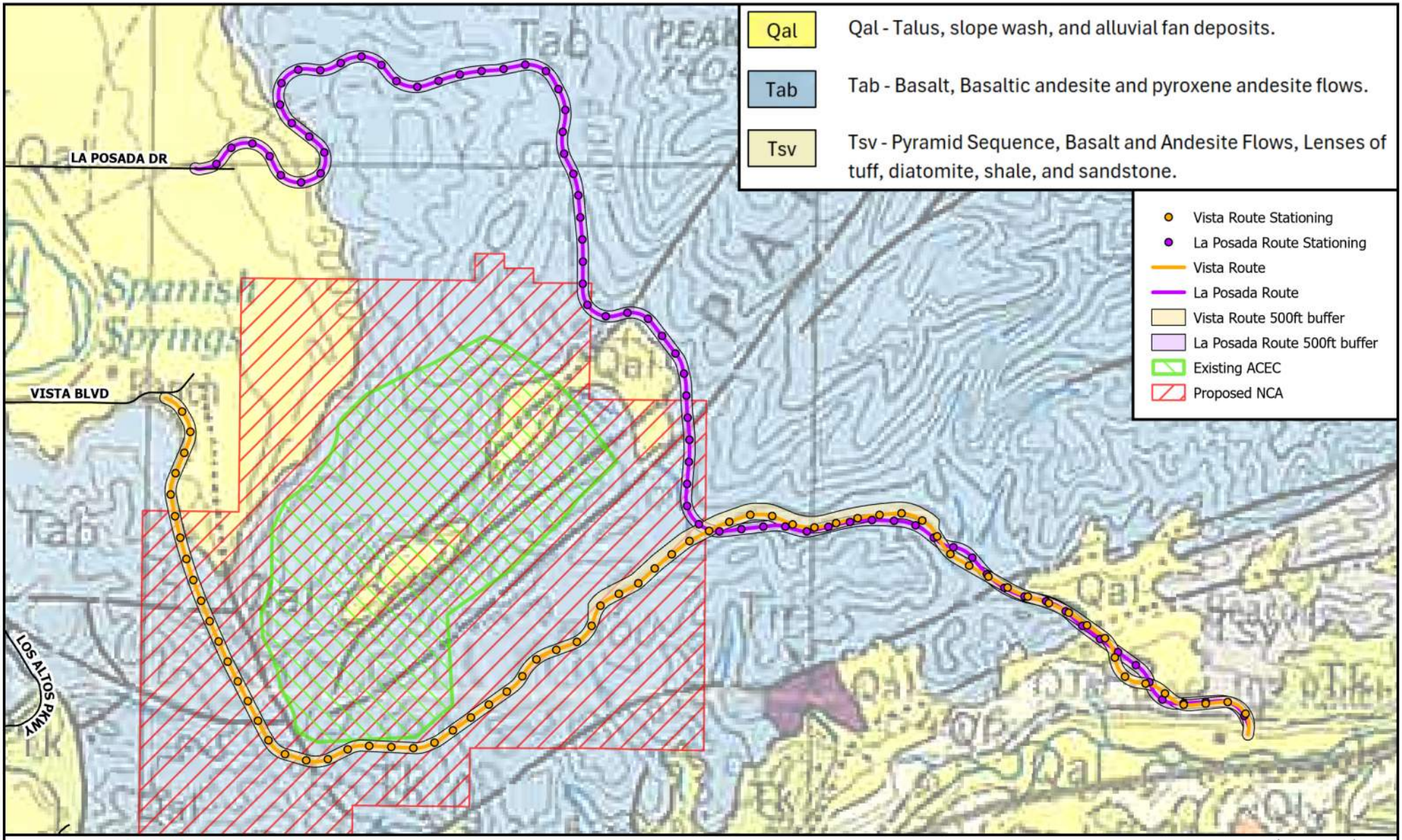
LA POSADA ROUTE
LA POSADA TO TRIC
WASHOE COUNTY, NV
SEPTEMBER 2025

FIGURE 2LP - LA POSADA ALIGNMENT

0 0.5 1 2
Miles

NORTH

WOOD RODGERS



VISTA AND LA POSADA ROUTES
LA POSADA TO TRIC
WASHOE COUNTY, NV
SEPTEMBER 2025

FIGURE 3 - GEOLOGIC MAP (NBMG)

0 0.5 1 2
Miles

NORTH

WOOD RODGERS

APPENDIX B
WOOD RODGERS' RECONNAISSANCE SURVEYS

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 31+53

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW QREEOH IORDW ZLWK PRXQGV RI DHROLDQ

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH OLJKW
5RFN 7\SH \SQHRXV
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQW DVVHV ZLWK OLJKW EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
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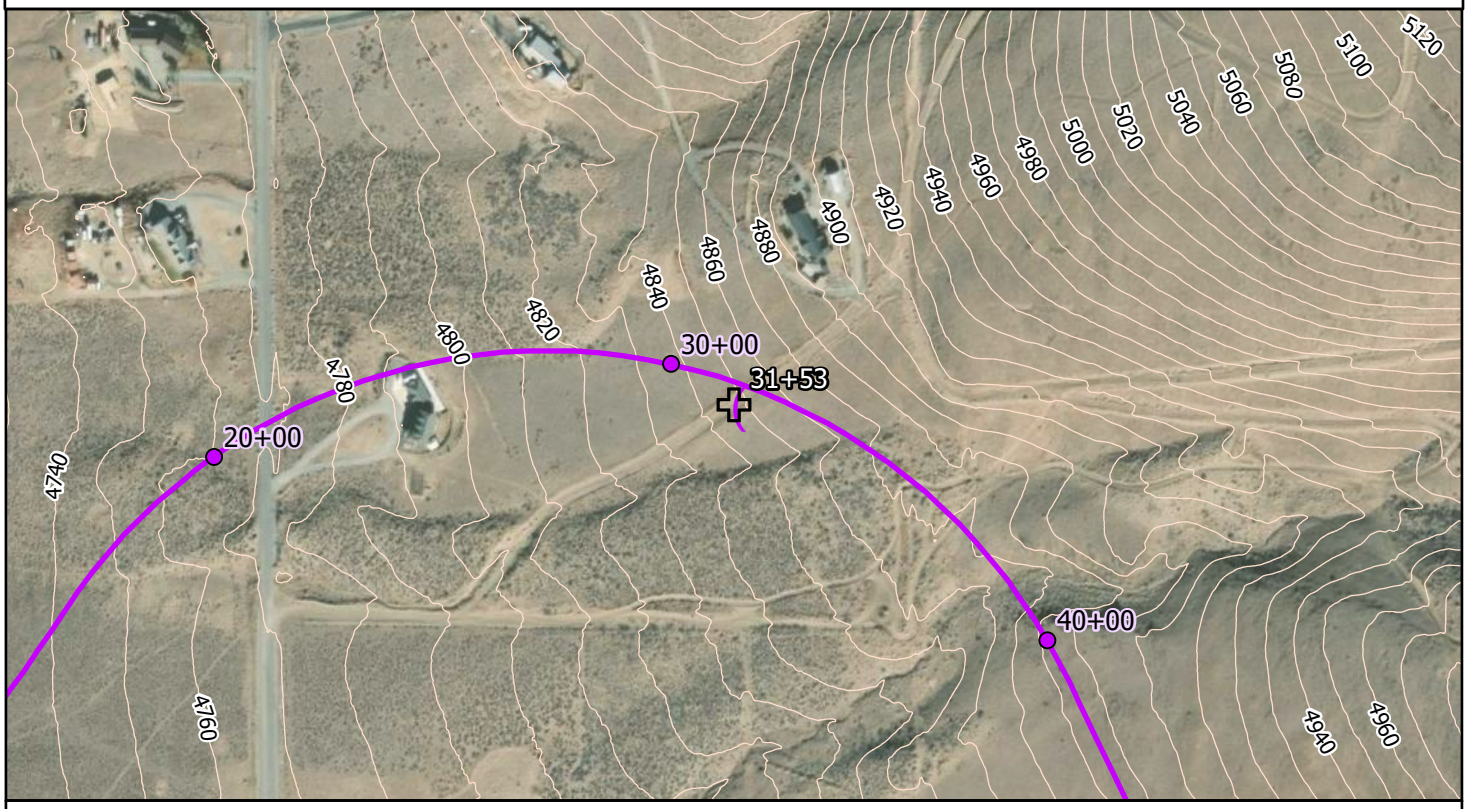
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 31+53

Looking to La Posada.



Photo 2.



No Photo

No Photo

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 38+10

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

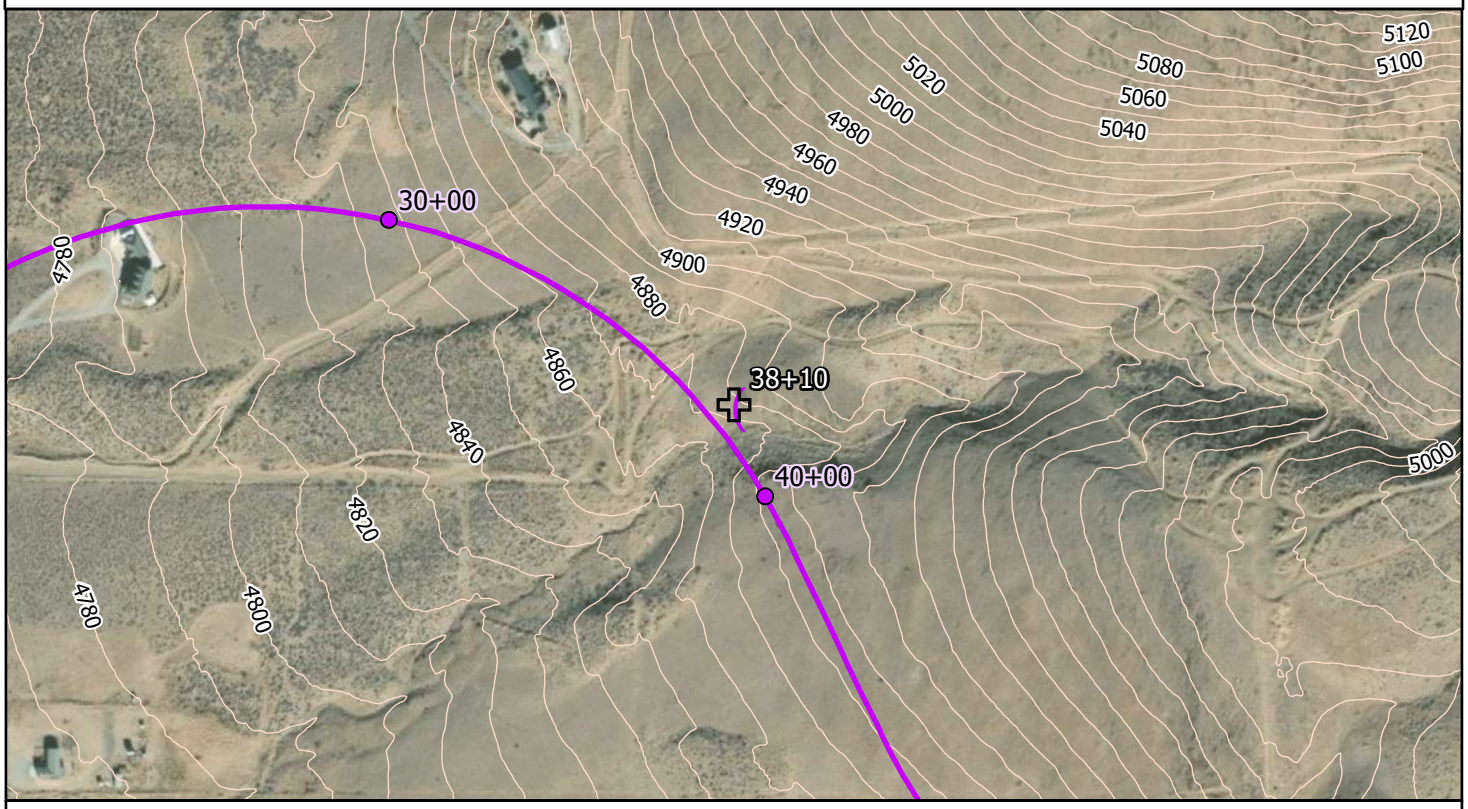
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW UDLQDJH

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ PRGHUDWH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH %DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK VWURQJ ERXQFH
:HDWKHULQJ PRGHUDWH
&RPPHQWV 2XWFURSV RQ ERWK VLGHV RI GUDLQDJH

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 38+10

Looking down drainage.



Looking towards La Posada.



Looking towards TRIC.



Looking up drainage.



WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 55+23

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW QWDOORZ EHGURFN DSSDUHQW LQ URDG FXW XSKLOO

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
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9HJHWDWLRQ
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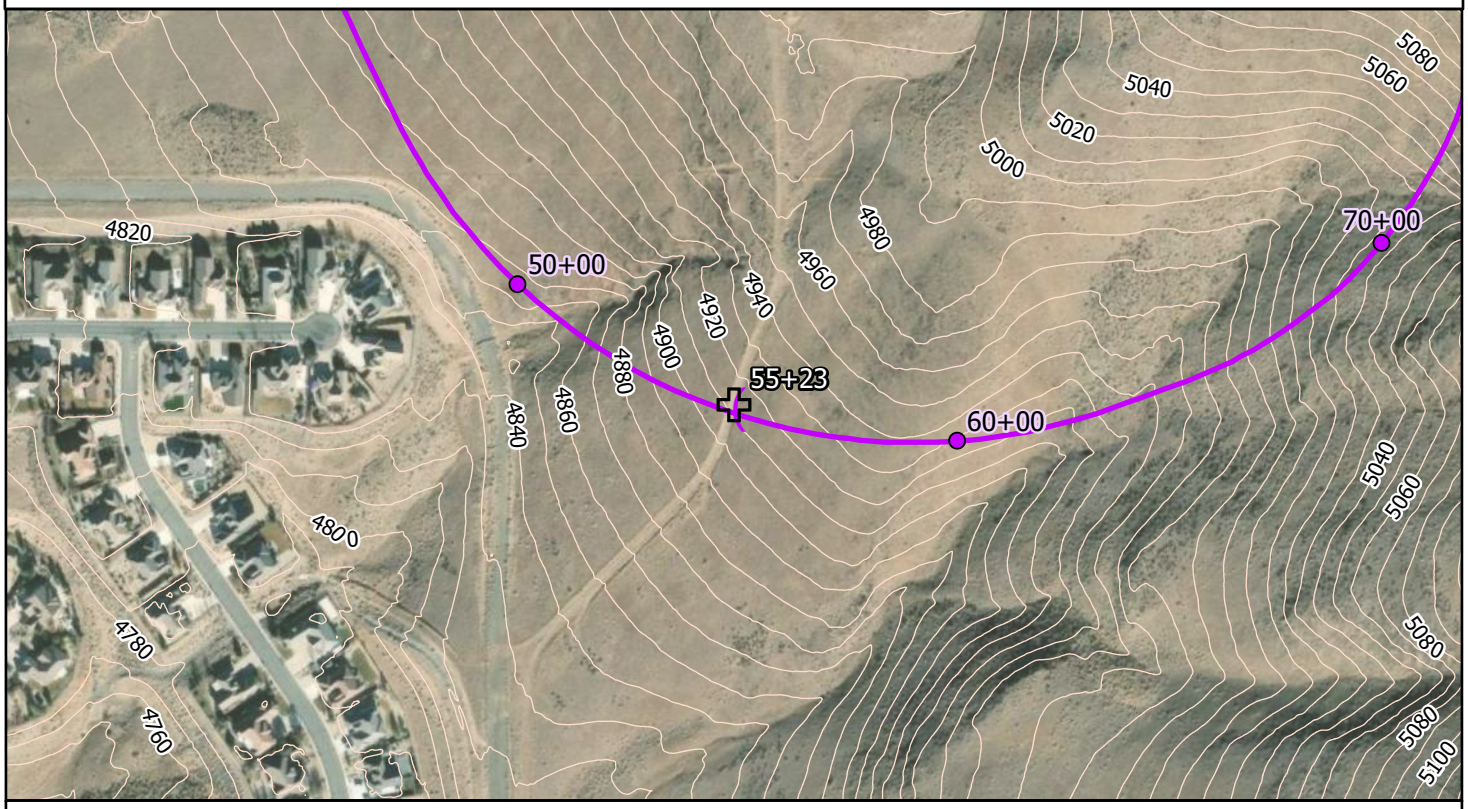

1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 55+23

Looking towards La Posada.



Looking towards Tric.



No Photo

No Photo

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 69+85

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ
7\SH 6FUHH
&RPPHQW QFUHH ZLWK EHGURFN

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH ^ˇ
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQW *UDVVHV ZLWK OLJKW EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH %DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
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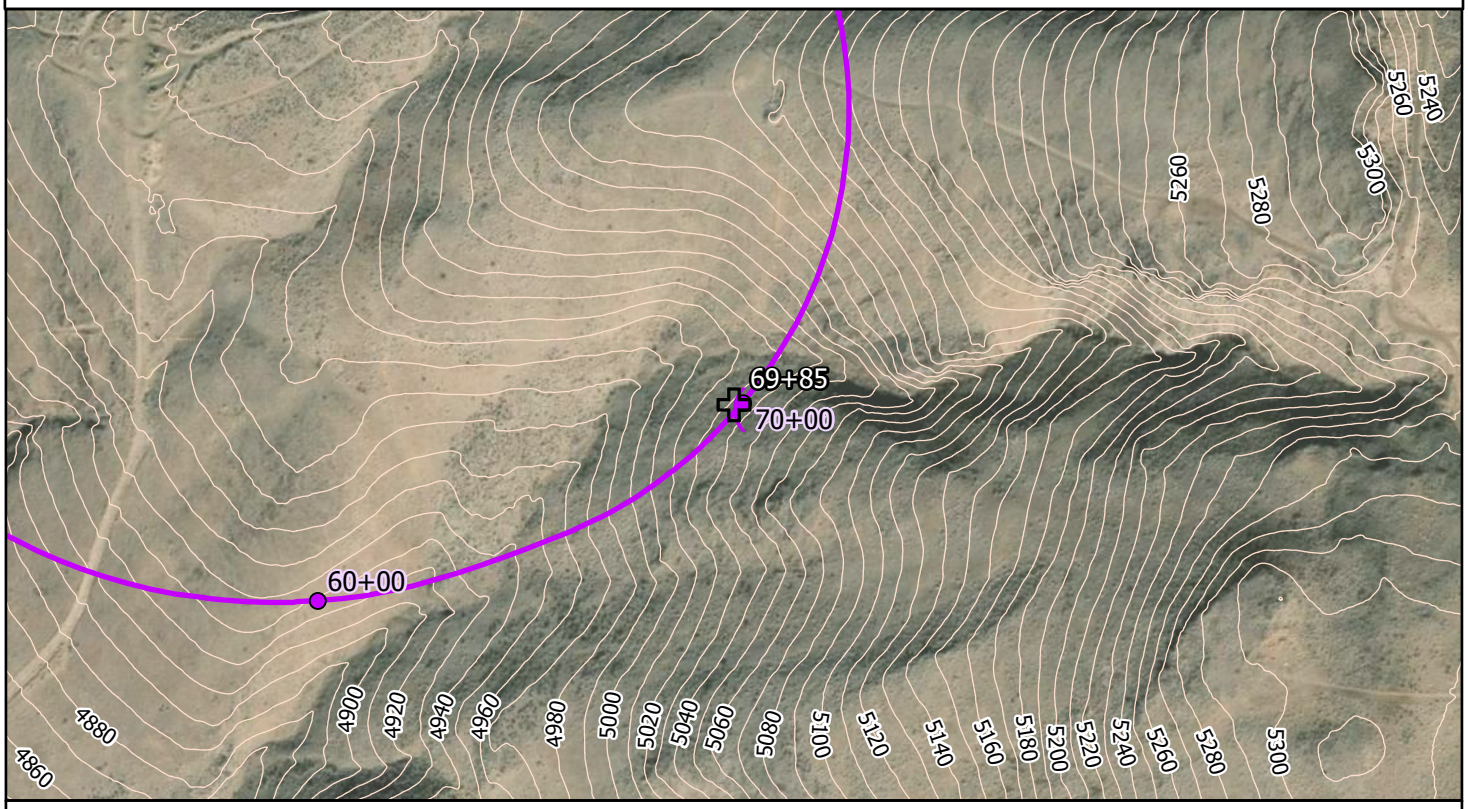
*HQHUDO &RPPHQWV



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86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 69+85

Looking towards La Posada along alignment. Shallow bedrock conditions..



Looking towards TRIC. Note Scree across slope.



Looking up drainage.



No Photo

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 84+88

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW 6FUHH WRZDUGV 75,&

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH %DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
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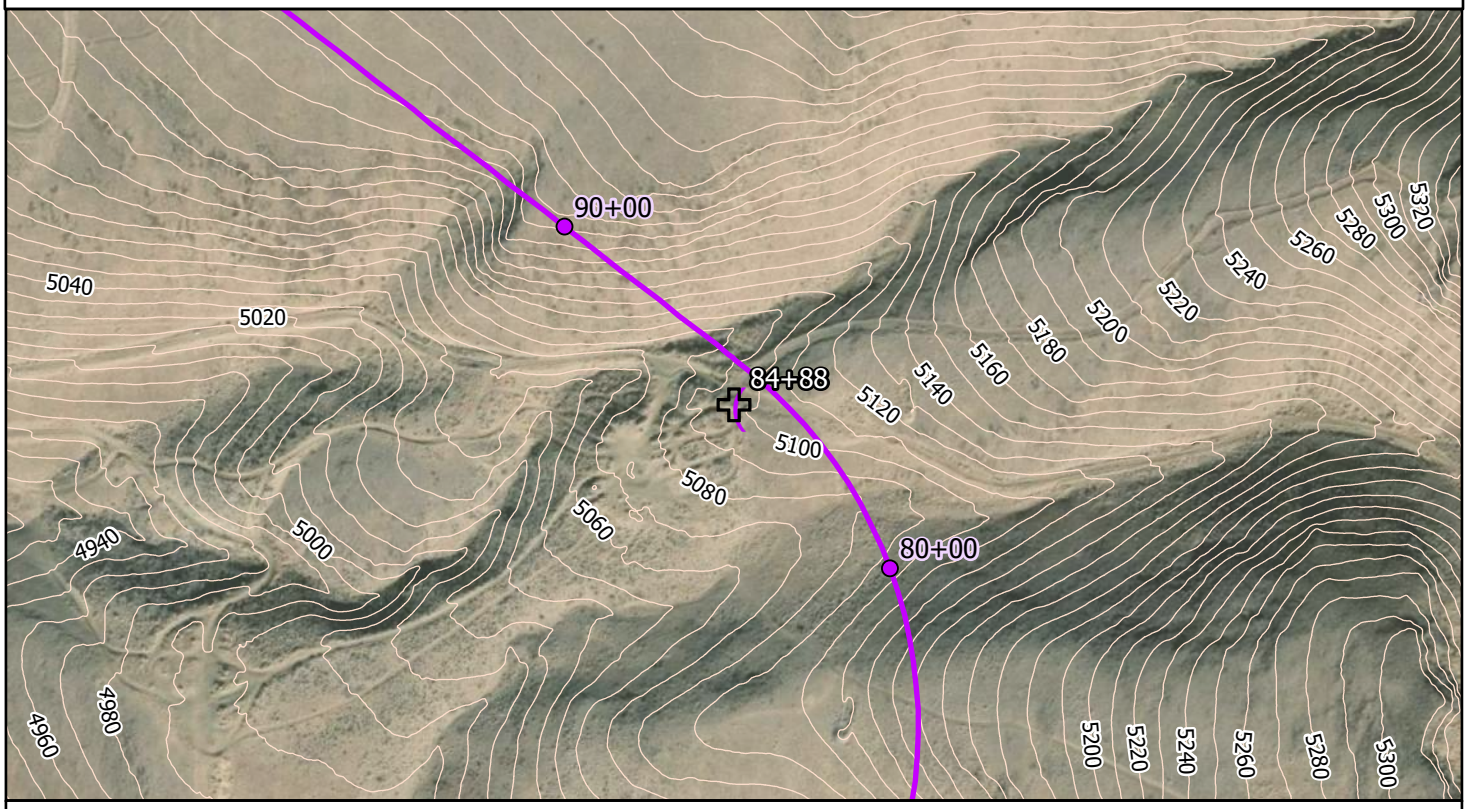
:HDWKHULQJ PRGHUDWH
&RPPHQWV 2XWFURS LV XSKLOO WRZDUGV 75,&

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 84+88

Looking towards La Posada along alignment. Note sand dunes..



Looking towards TRIC. Note shallow bedrock and scree.



No Photo

No Photo

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 102+56

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW DYHU LQ FRYHUDJH LQ GUDLQDJH WRZDUGV 75,&

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

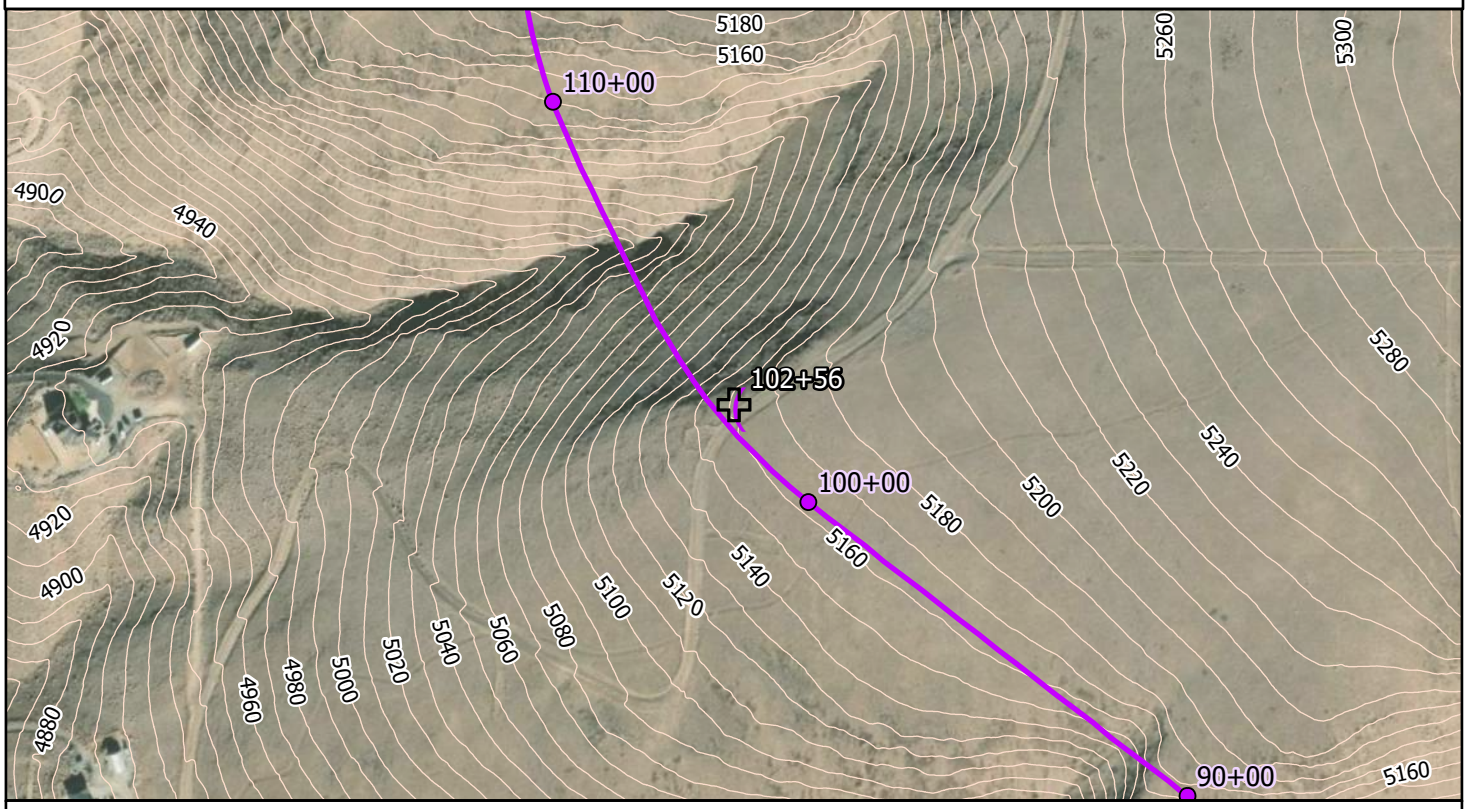
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 102+56

Looking towards La Posada along alignment.



Looking towards TRIC along alignment. Drainaged rimmed wit outcrop and scree.



No Photo

No Photo

WOOD RODGERS

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Project Name: La Posada Geotechnical Investigation Station Name: 114+92

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW &REEOH LQ %RXOGHU IORDW GHFHQW VRLO FRYHUDJH

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

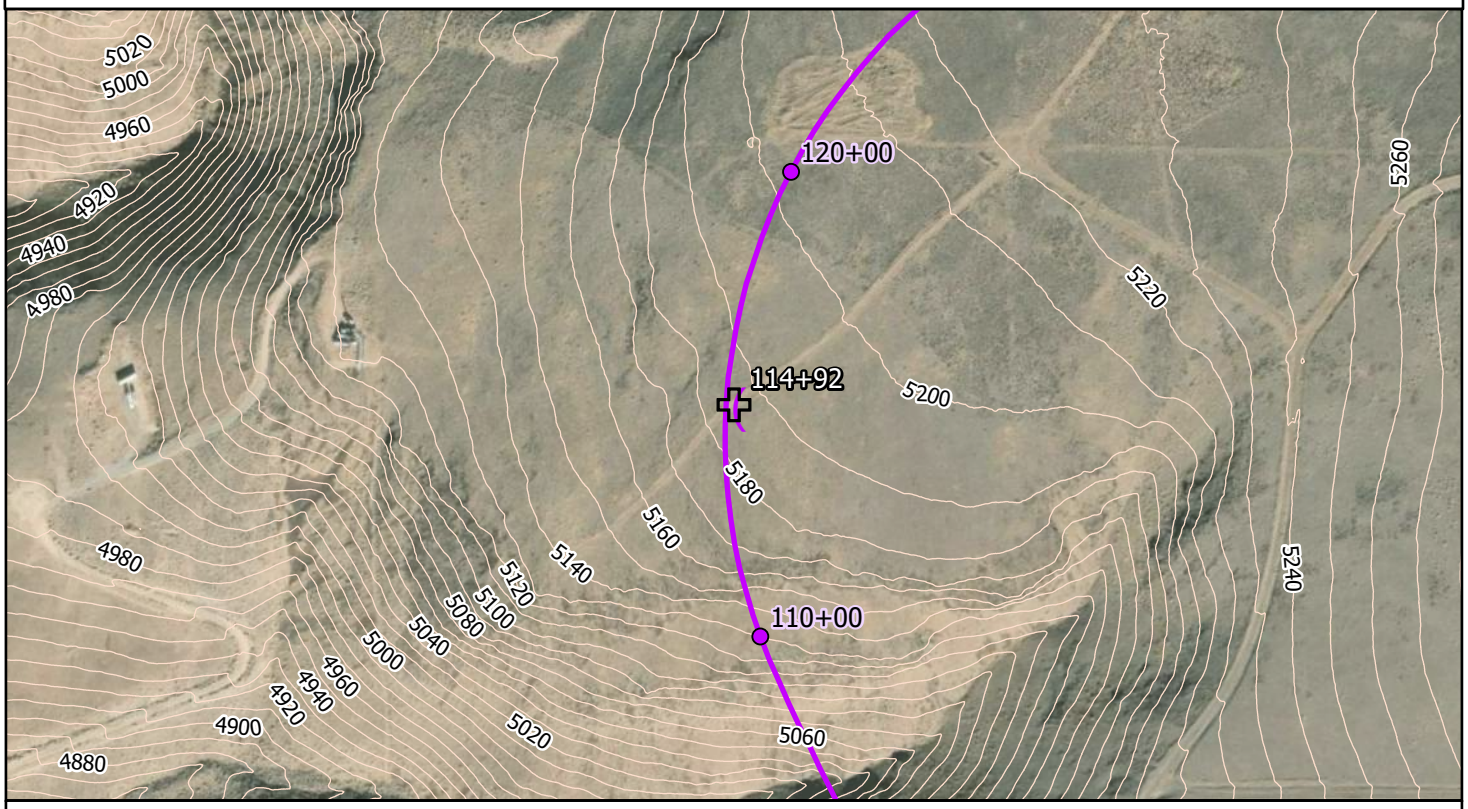
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV 5RFN RXWFURSSLQJ¶V SUHVHQW DQG GUDLQDJH KHDGLQJ WRZDUGV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 114+92

Looking towards La Posada along alignment.



Looking towards TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ/ł … Œ … −//Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 130+30

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

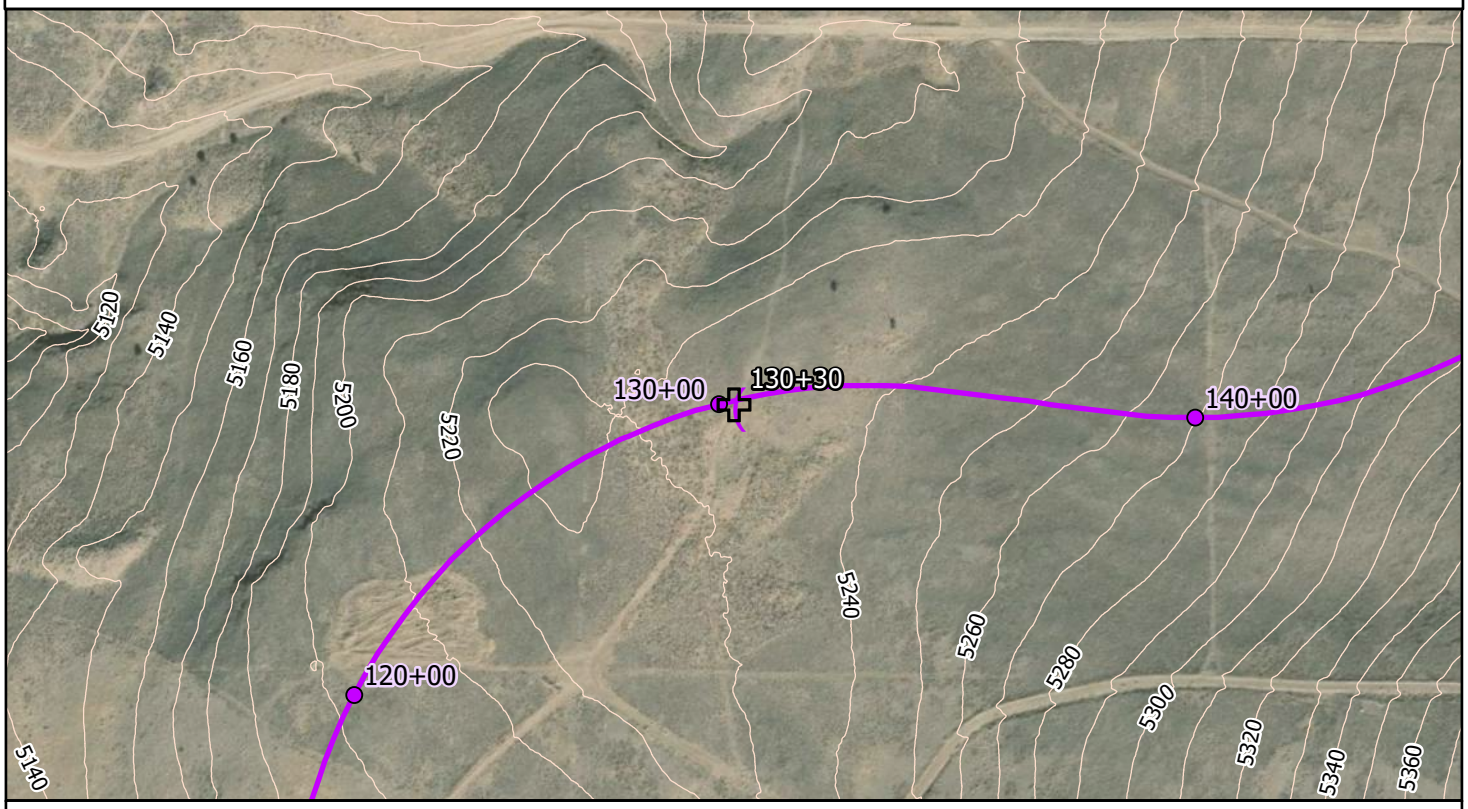
*URXQG &RQGLWLRQ
7\SH‚ 6RLO
&RPPHQW‚ 6WPH FREEOH IORDW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ ‚
*URXQG &RYHUDJH‚
5RFN 7\SH‚
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ EUXVK
'HQVLW\‚ PRGHUDWH
&RPPHQWV‚ 6WDOO WR PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 130+30

Looking towards La Posada along alignment.



Looking towards TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 140+13

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQWV 3RWHQWLDO IRU VKDOORZ EHGURFN

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH PRGHUDWH

5RFN 7\SH %DVDOW RU DQGHVLWH

&RPPHQWV

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ PRGHUDWH

&RPPHQWV 6PDOO VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

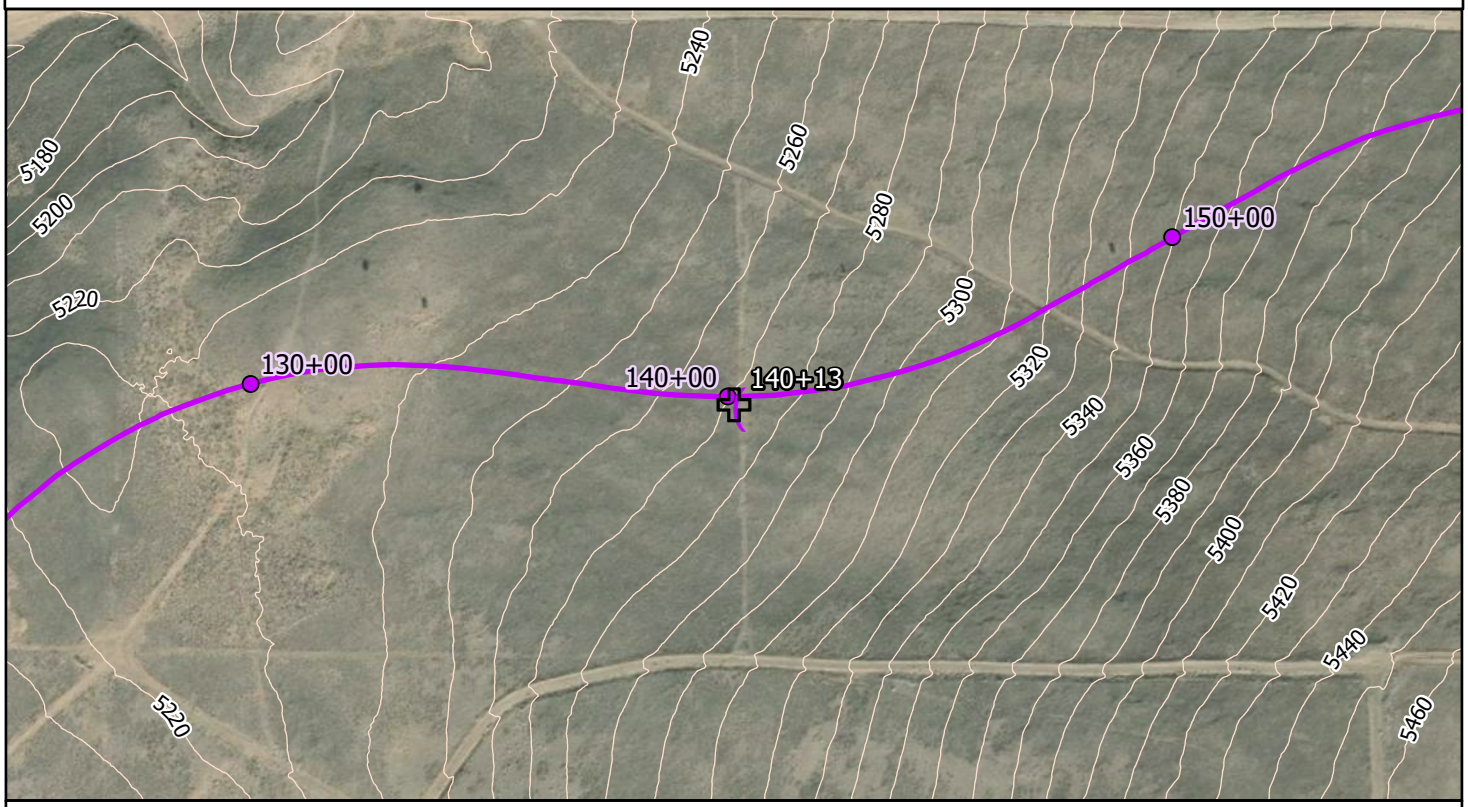
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 140+13

Looking to La Posada along alignment.



Looking to TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 157+25

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH%UXVK

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

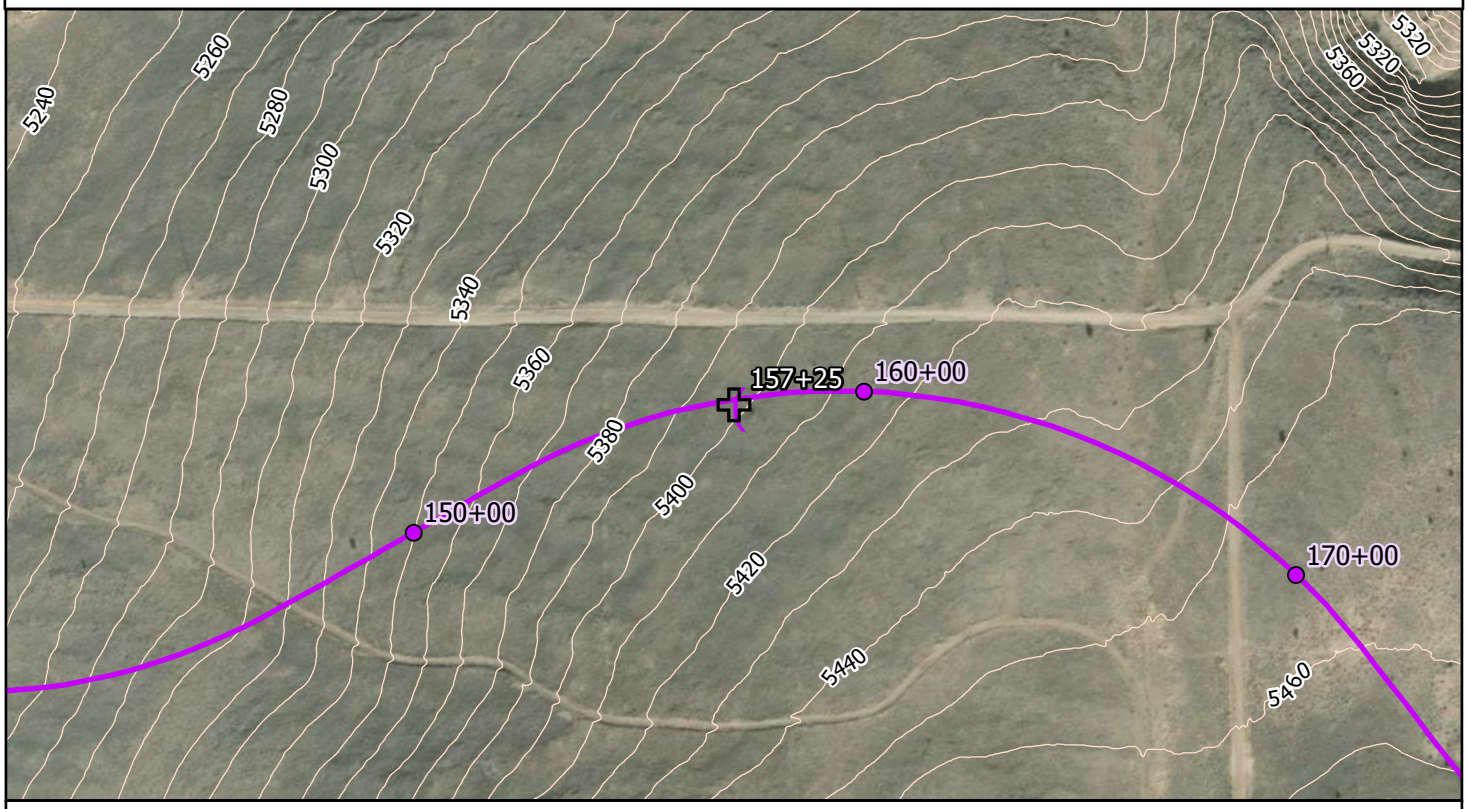
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 157+25

Looking to la Posada along alignment.



Looking to TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 168+29

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%ODV

&RPPHQW

9HJHWDWLRQ

7\SHEUXVK

'HQVLW\PRGHUDWH

&RPPHQWVOO 6DJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

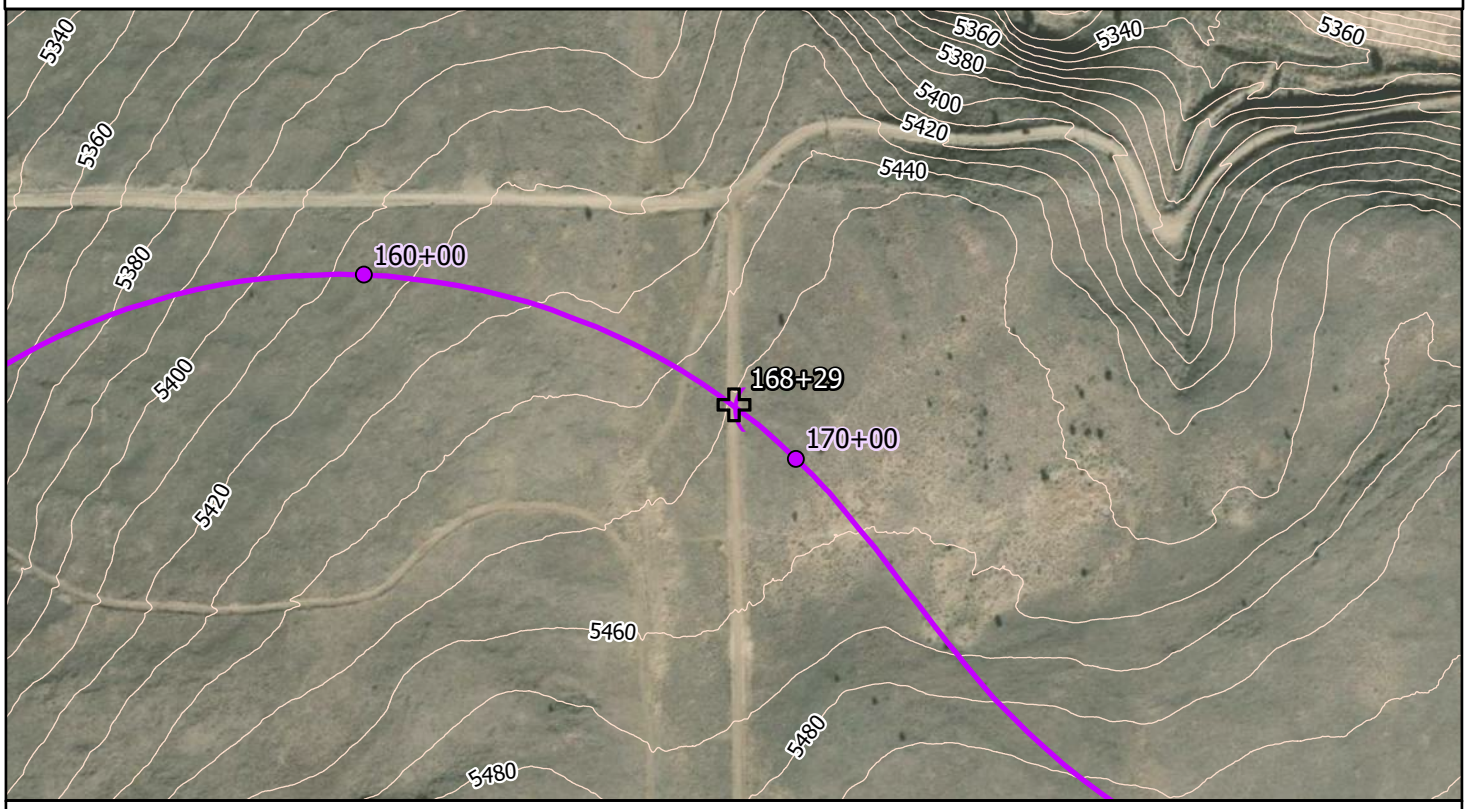
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point

La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 168+29

Looking to la Posada along alignment.



Looking to TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 182+96

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

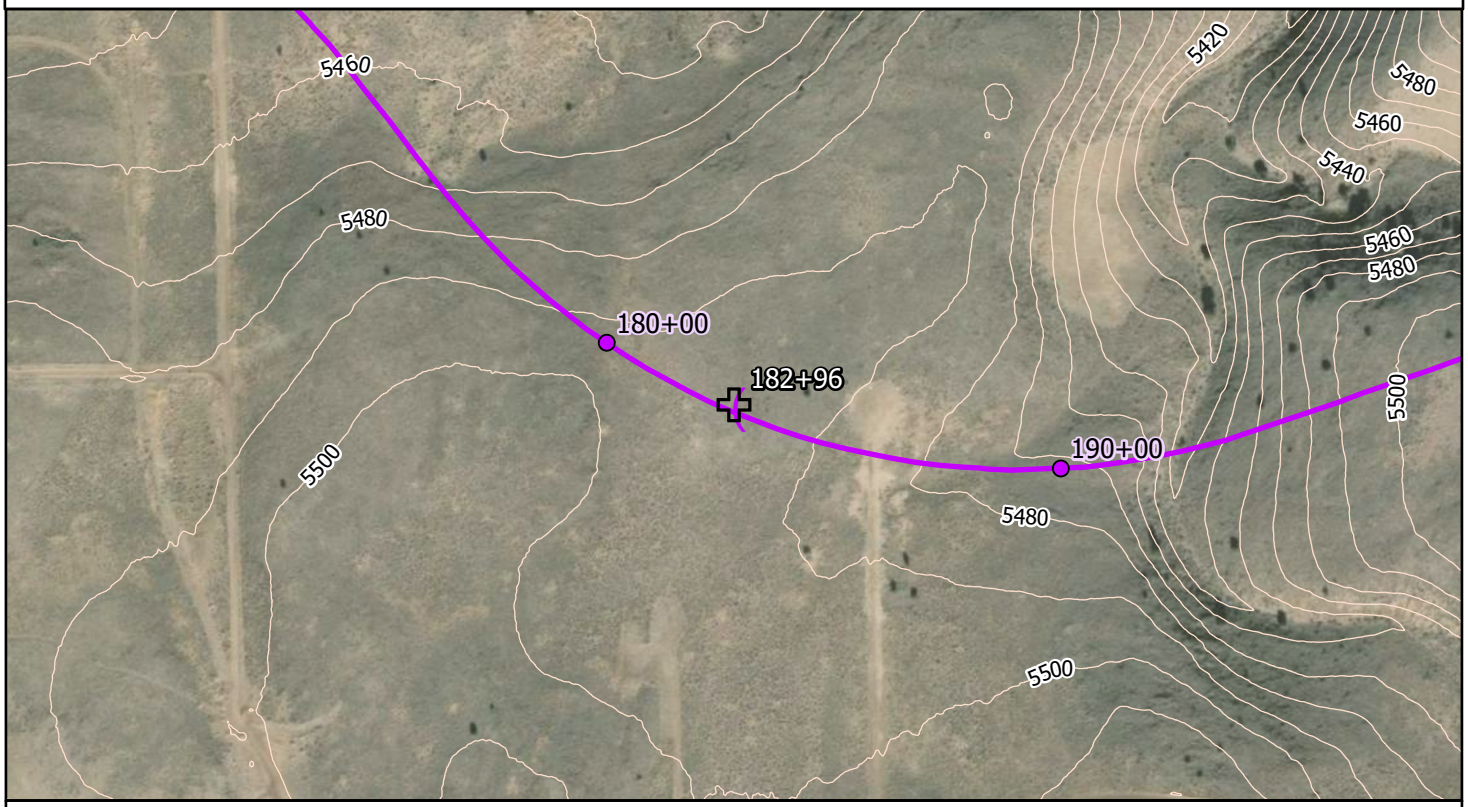
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 182+96

Looking to la Posada along alignment.



Looking to TRIC a along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 200+86

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQWV DUJH FRXSOHV DQG ERXOGHUV WR VPDOO RXWFURSSLQJV

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RQGLWLRQ PRGHUDWH

5RFN 7\SHV DOW

&RPPHQWV

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ PRGHUDWH

&RPPHQWV VPDOO VDJH EUXVK ZLWK MXQLSHU WUHHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH %DVDOW

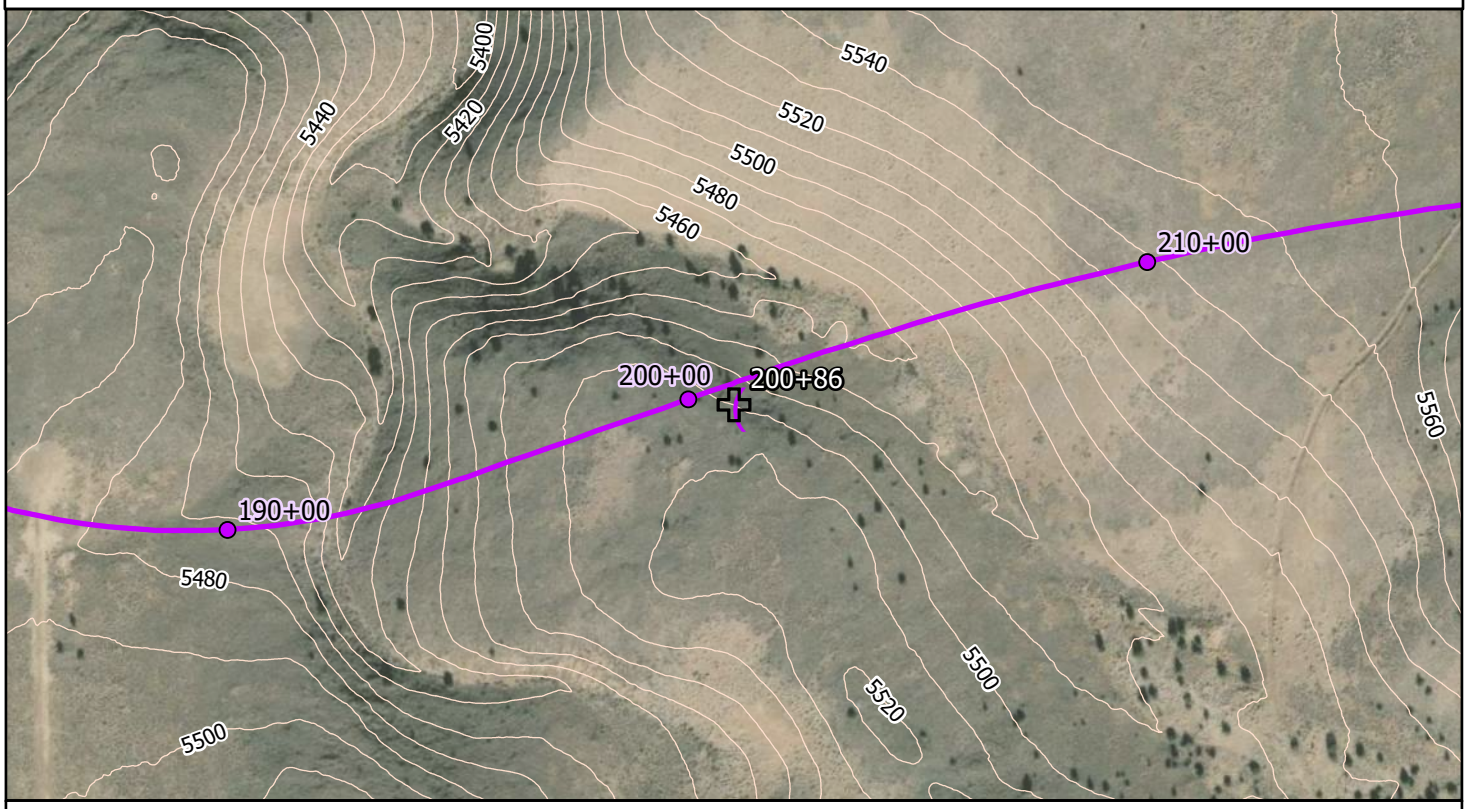
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV FURS LQGLFDWHV VKDOORZ EHGURFN

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 200+86

Looking to la Posada along alignment.



Looking to TRIC. Outcrop..



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 220+14

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ PRGHUDWH

5RFN 7\SH %DVDOW

&RPPHQW QR GHUDWH WR KHDY\ JURXQG FRYHUDJH

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ PRGHUDWH

&RPPHQW 6PDOO 6DJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

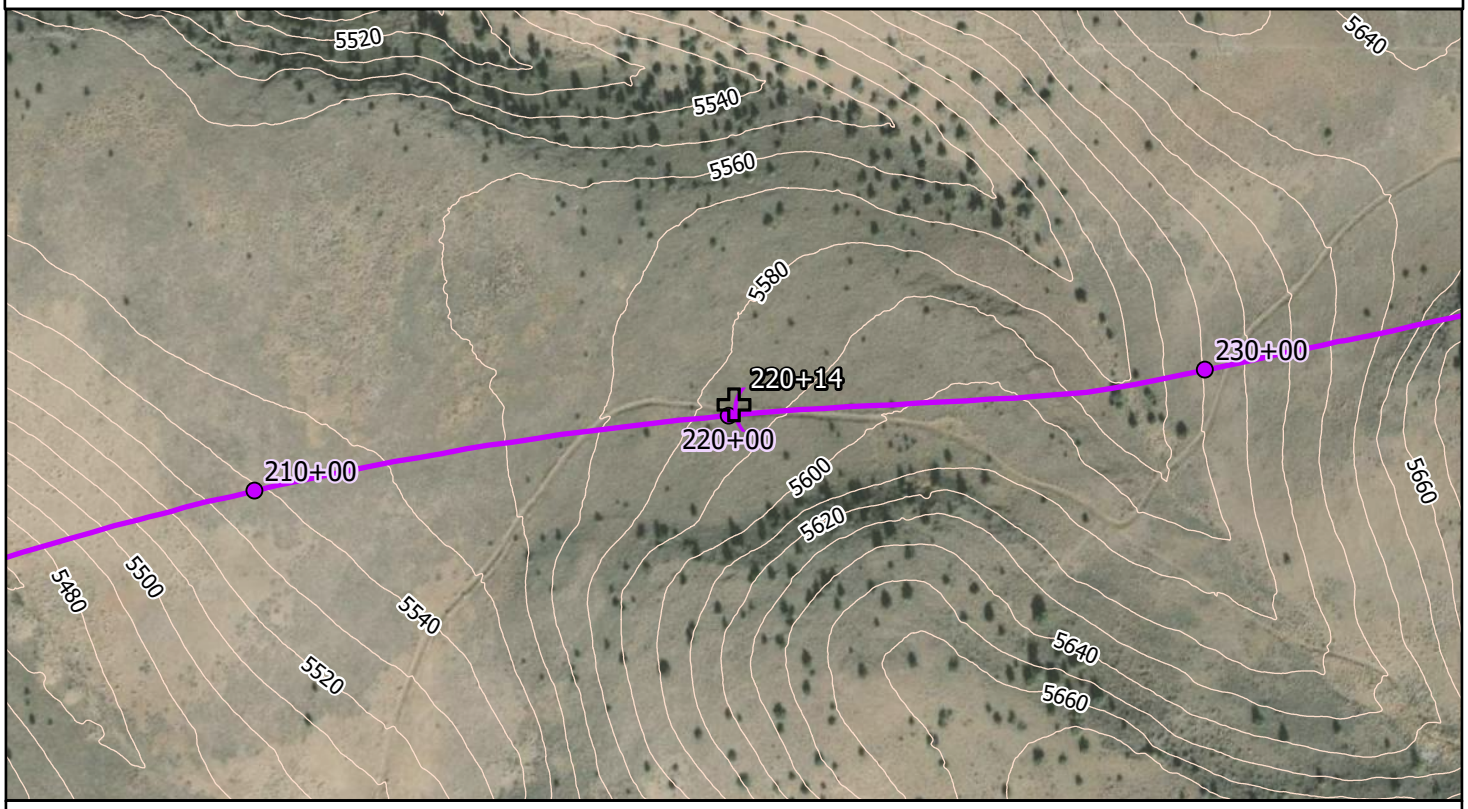
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 220+14

Looking to la Posada.



Looking to TRIC along alignment.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 230+41

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH%UXVK

'HQVLW\PRGHUDWH

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

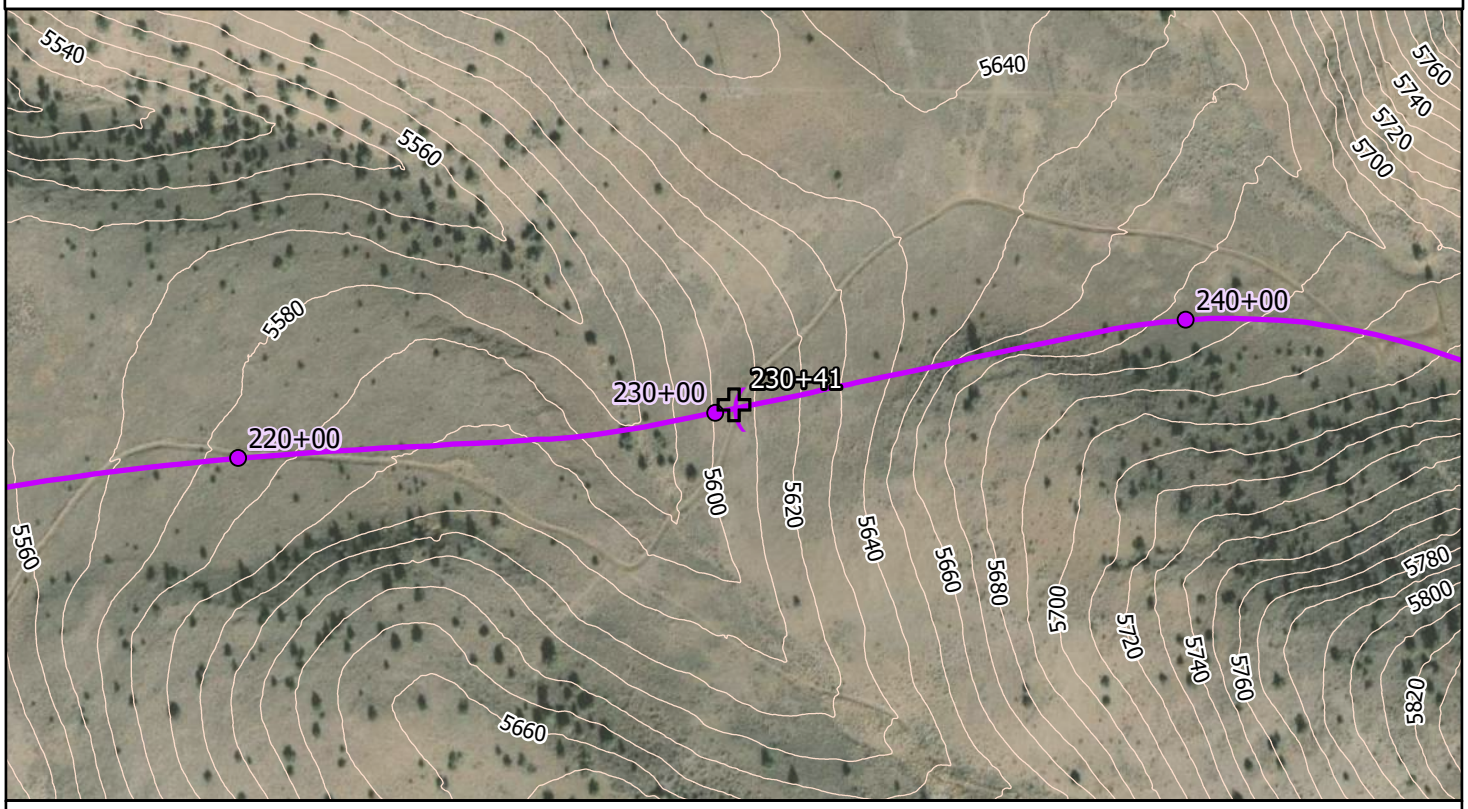
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 230+41

Looking to la Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 243+83

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6RLO

&RPPHQWV/LWKRORJ\ FOD\ FDS VRLO

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHEUXVK

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

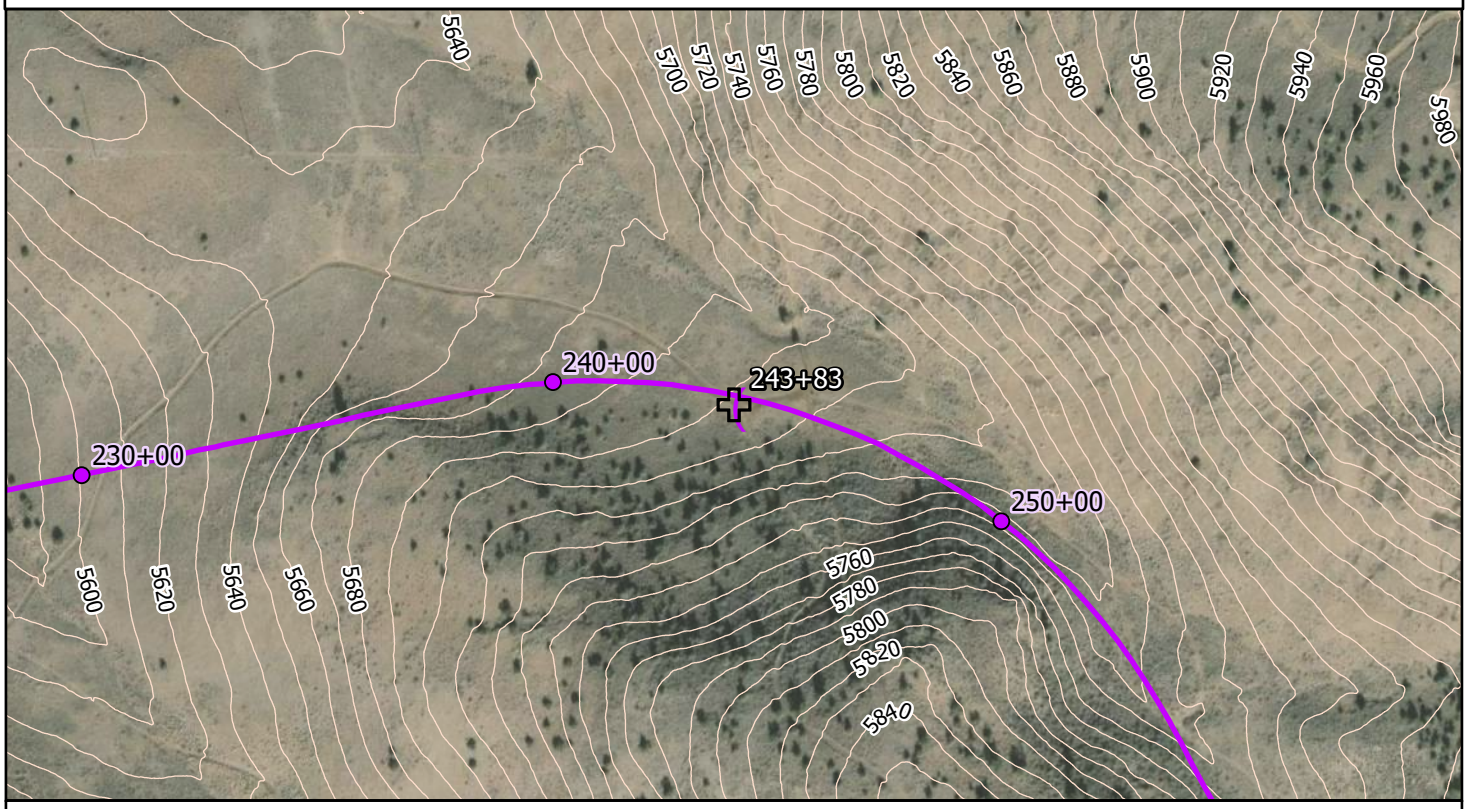
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 243+83

Looking to La Posada.



Looking to TRIC.



Photo 3.



Photo 4.



WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 251+42

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

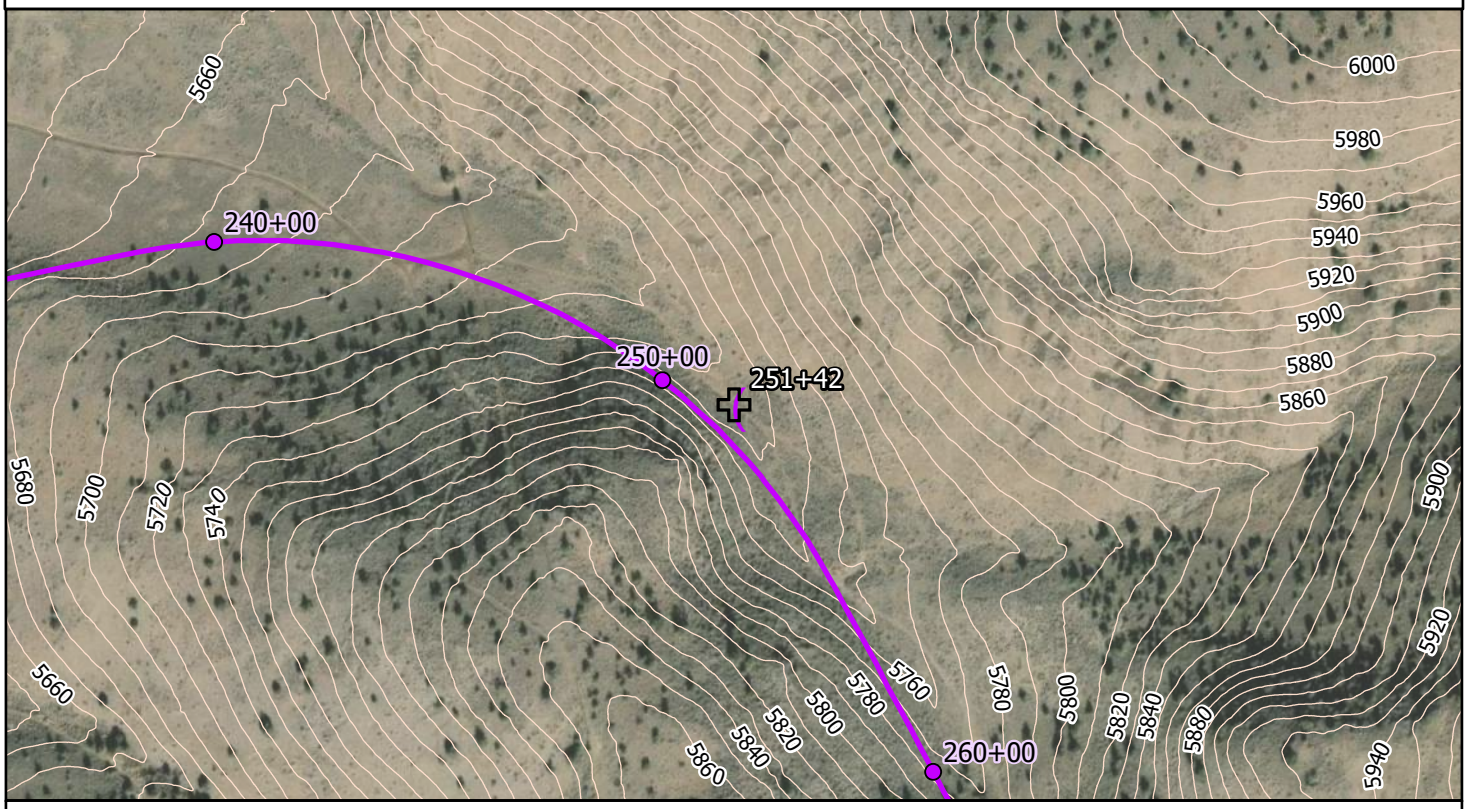
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ PRGHUDWH
&RPPHQWV 0HGLXP VDJHEUXVK DQG JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH %DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK VWURQJ ERXQFH
:HDWKHULQJ PRGHUDWH
&RPPHQWV 2XWFURSSLQJ LV SRWHQWLDOO\ RXW RI URDGZD\ DUHD &RXOG EH L

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 251+42

Looking to La Posada.



Looking to TRIC.



Rock out cropping in Hillside.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 264+32

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

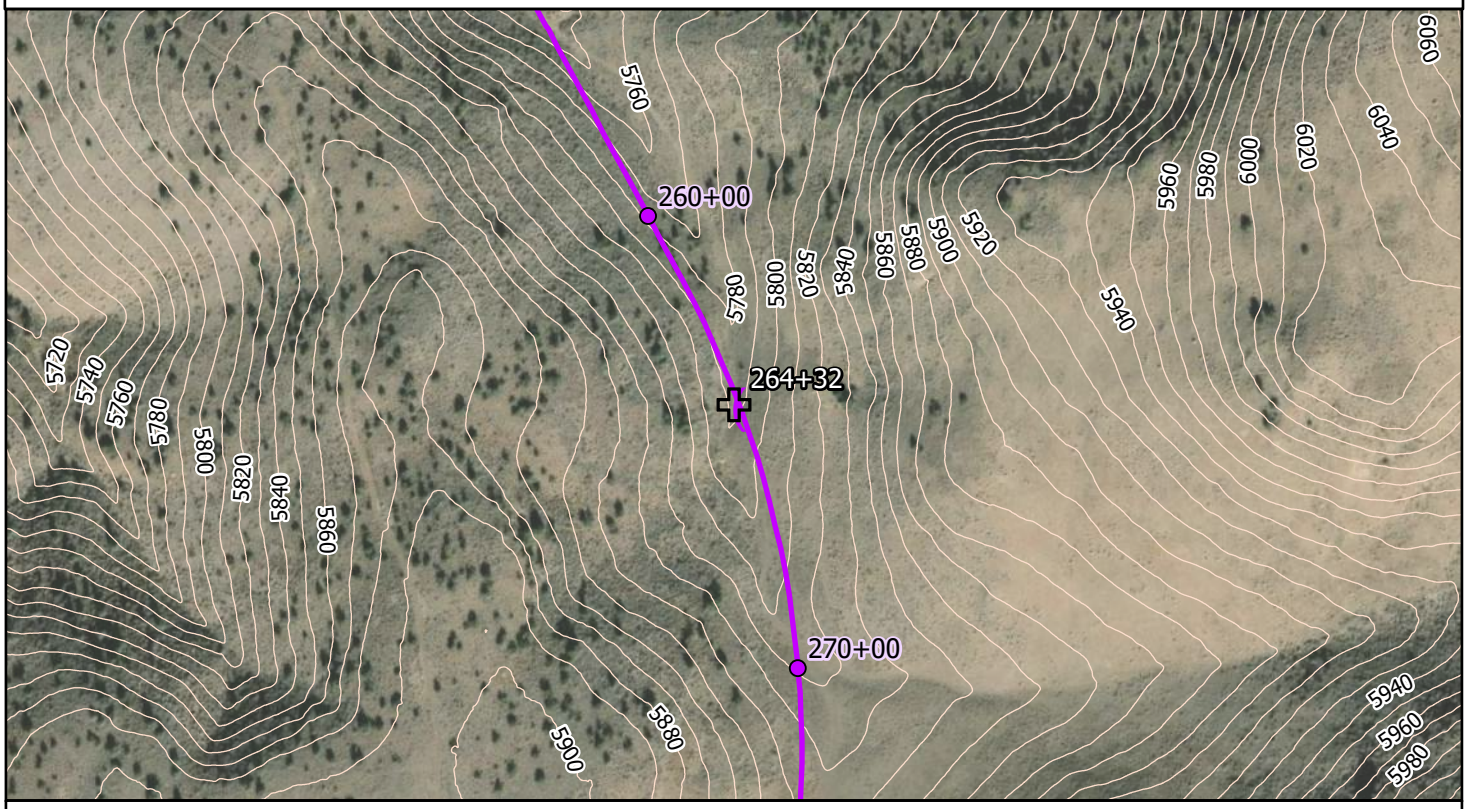
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ ‚
*URXQG &RYHUDJH‚ KHUDYJH! ^˘
5RFN 7\SH‚ %DVDOW
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ EUXVK
'HQVLW\‚ PRGHUDWH
&RPPHQWV‚ 0HGLXP VDJHEUXVK DQG MXQLSHU WUHHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 264+32

Looking towards La Posada.



Looking towards TRIC.



Photo 2.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 275+86

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

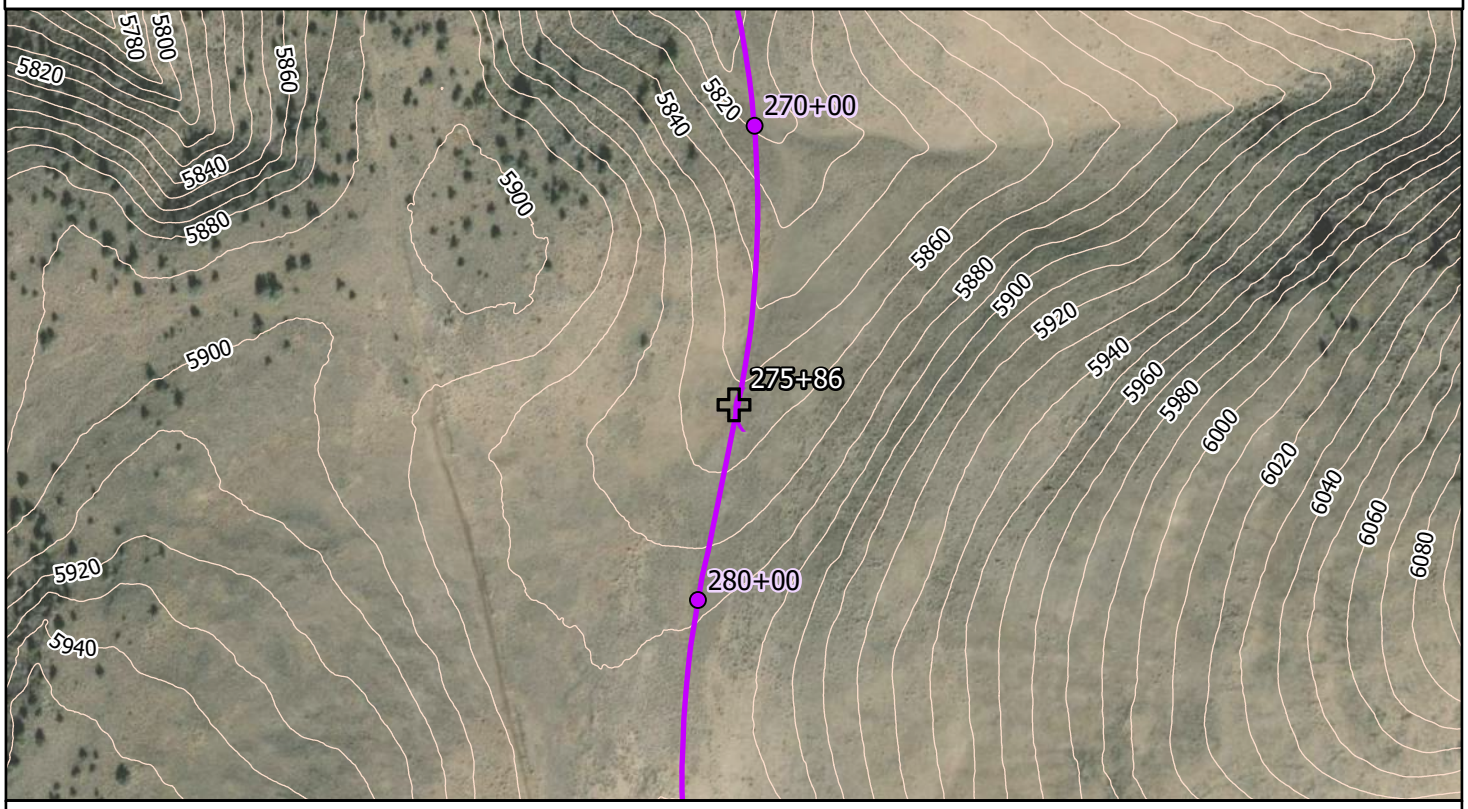
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQWV 6WDOO VDJH EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 275+86

Looking towards La Posada.



Looking towards TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 289+89

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

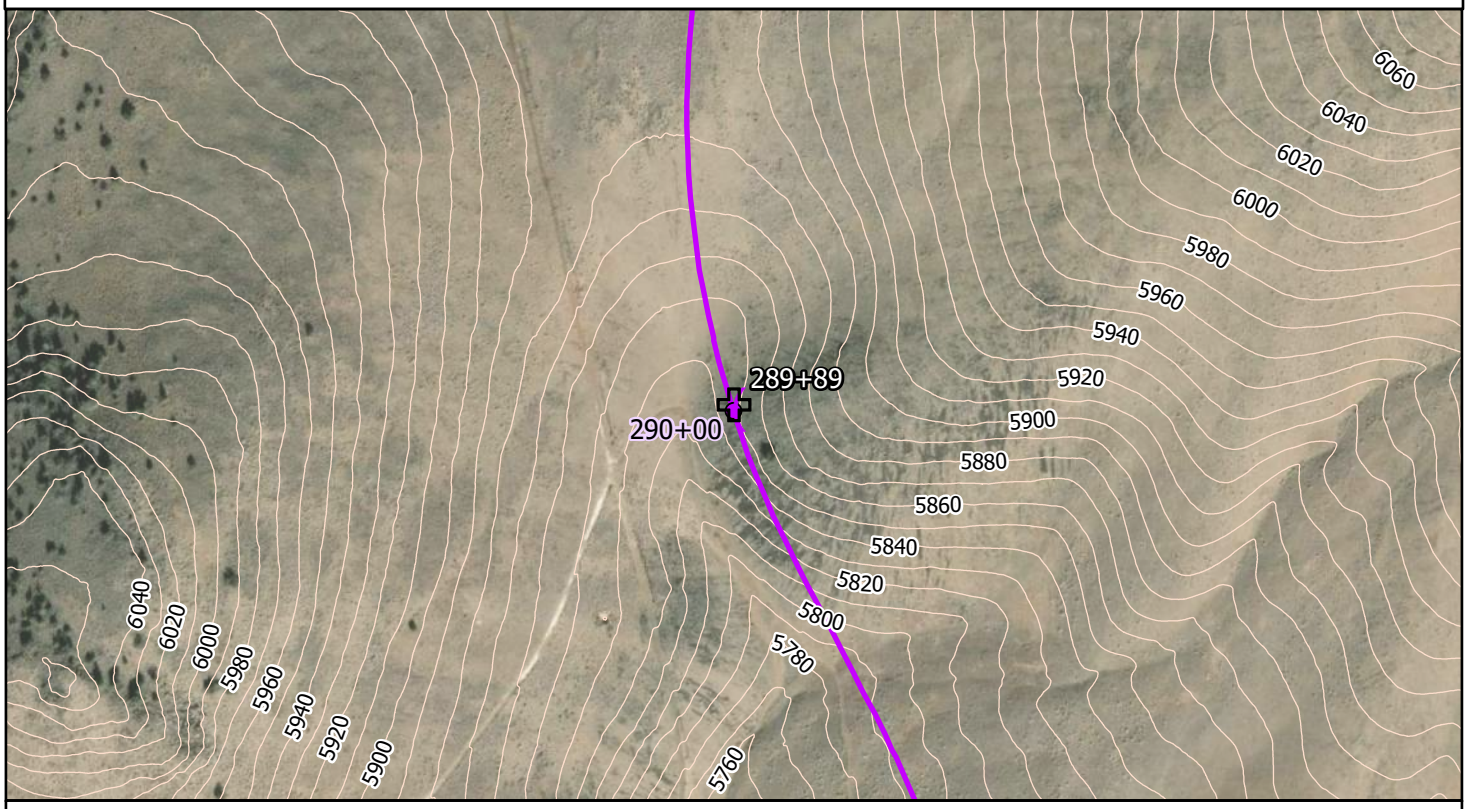
*URXQG &RQGLWLRQ
7\SH 6FUHH
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH KHUDYJH ^ˇ
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQW 0HGLXP 6DJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

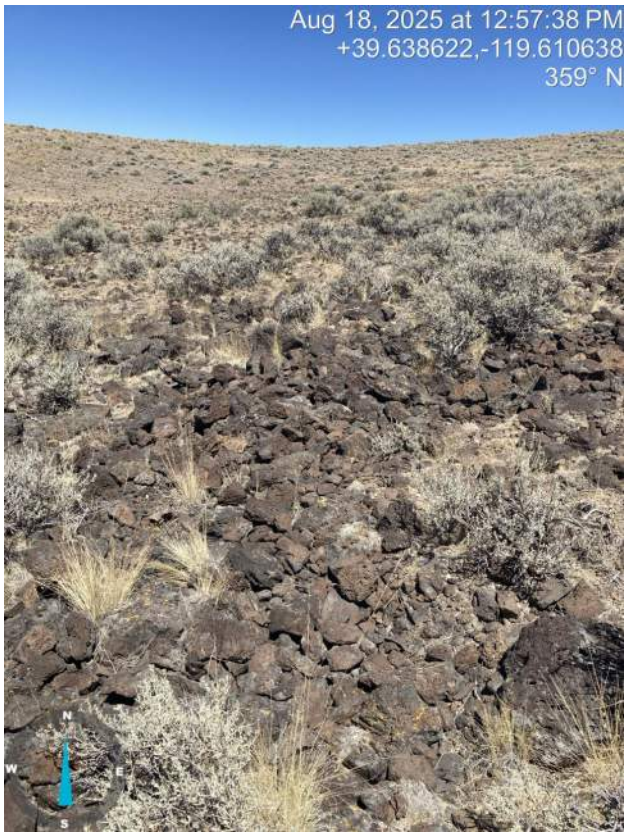
La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 289+89

Less rocky altwrnative down hill..



Looking towards La Posada.



Looking towards TRIC.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 300+53

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

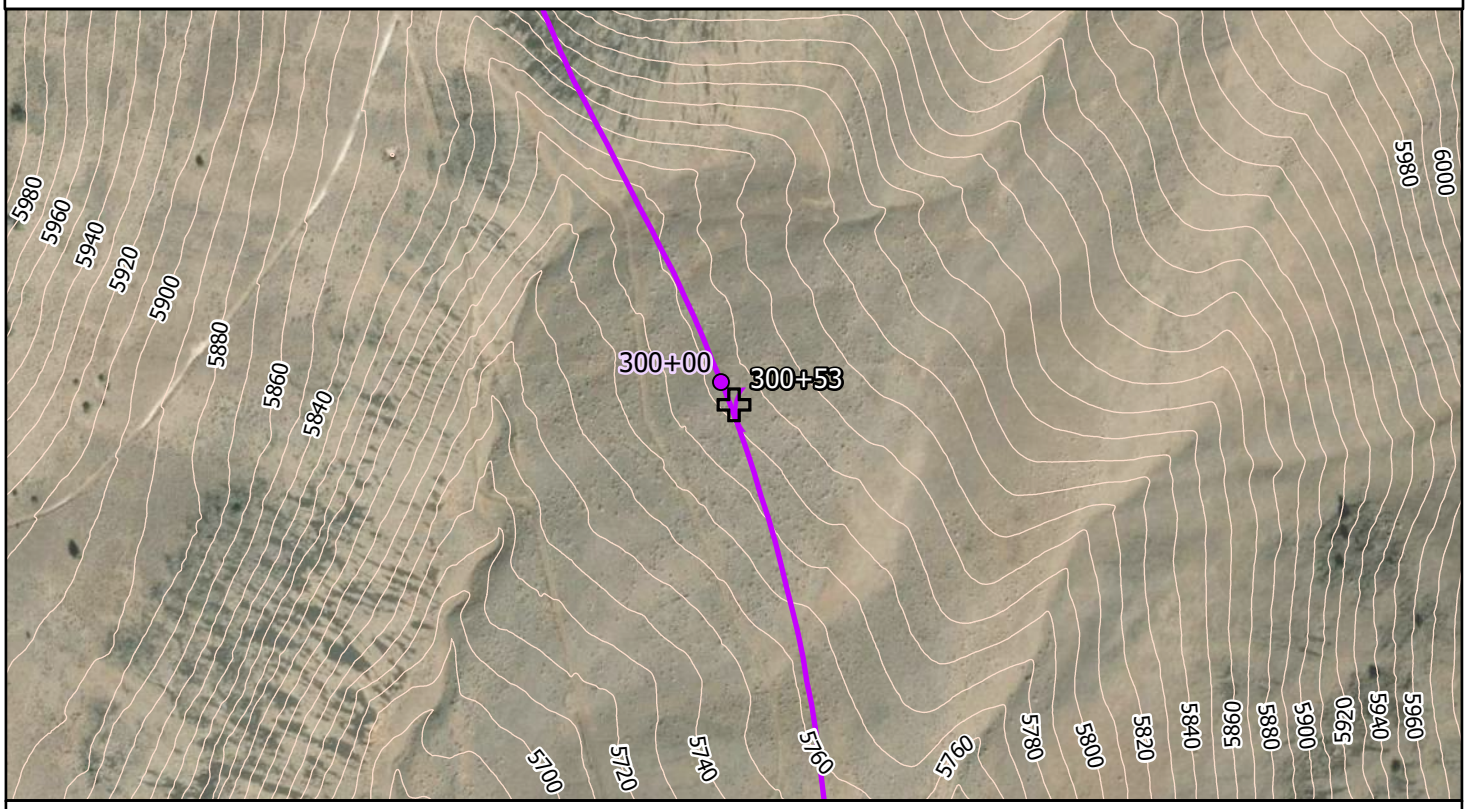
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQWV 0HGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 300+53

Looking to la Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 310+87

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%DVDOW

&RPPHQW

9HJHWDWLRQ

7\SHEUXVK

'HQVLW\VSDUVH

&RPPHQWVVOO WR PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

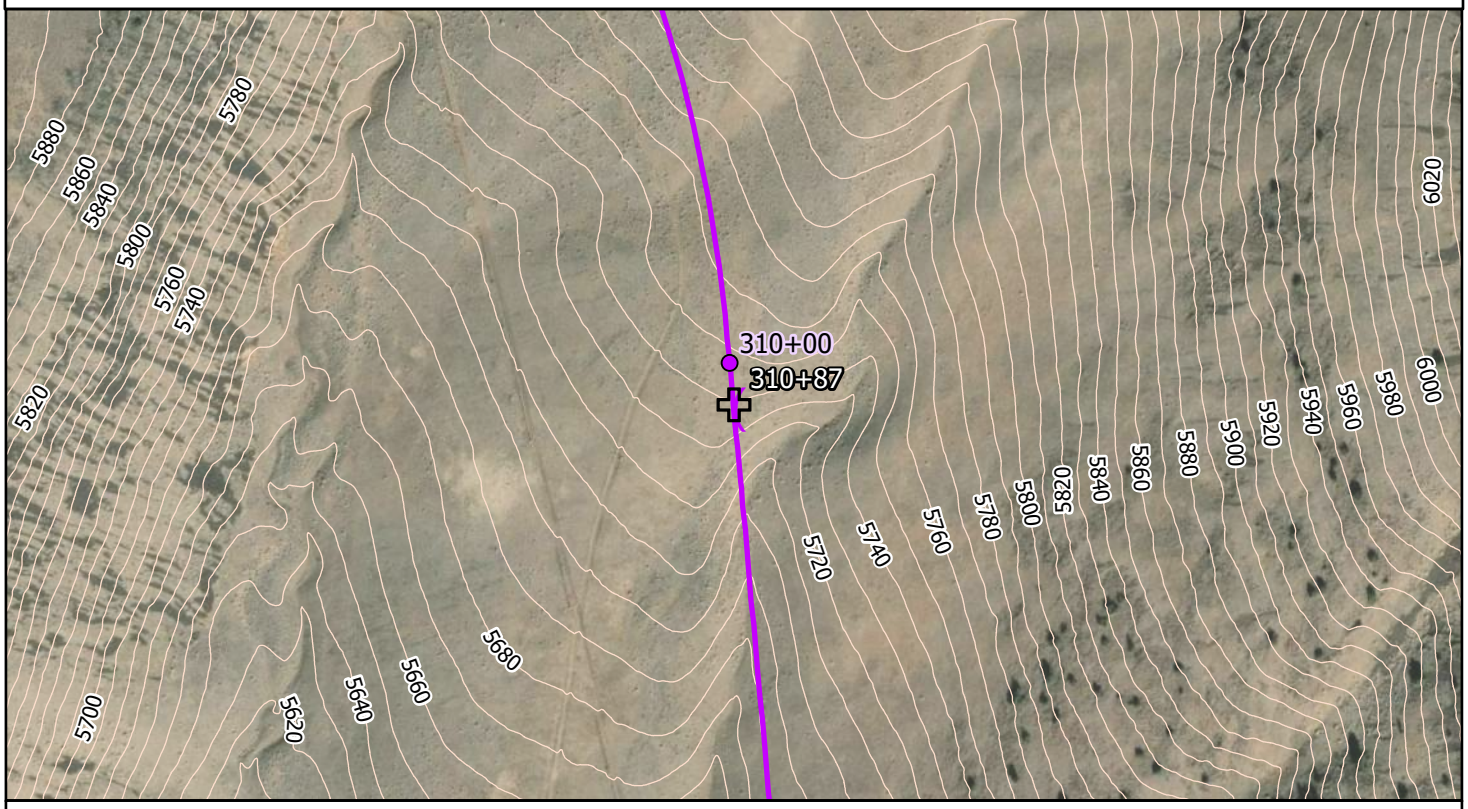
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 310+87

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 319+97

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

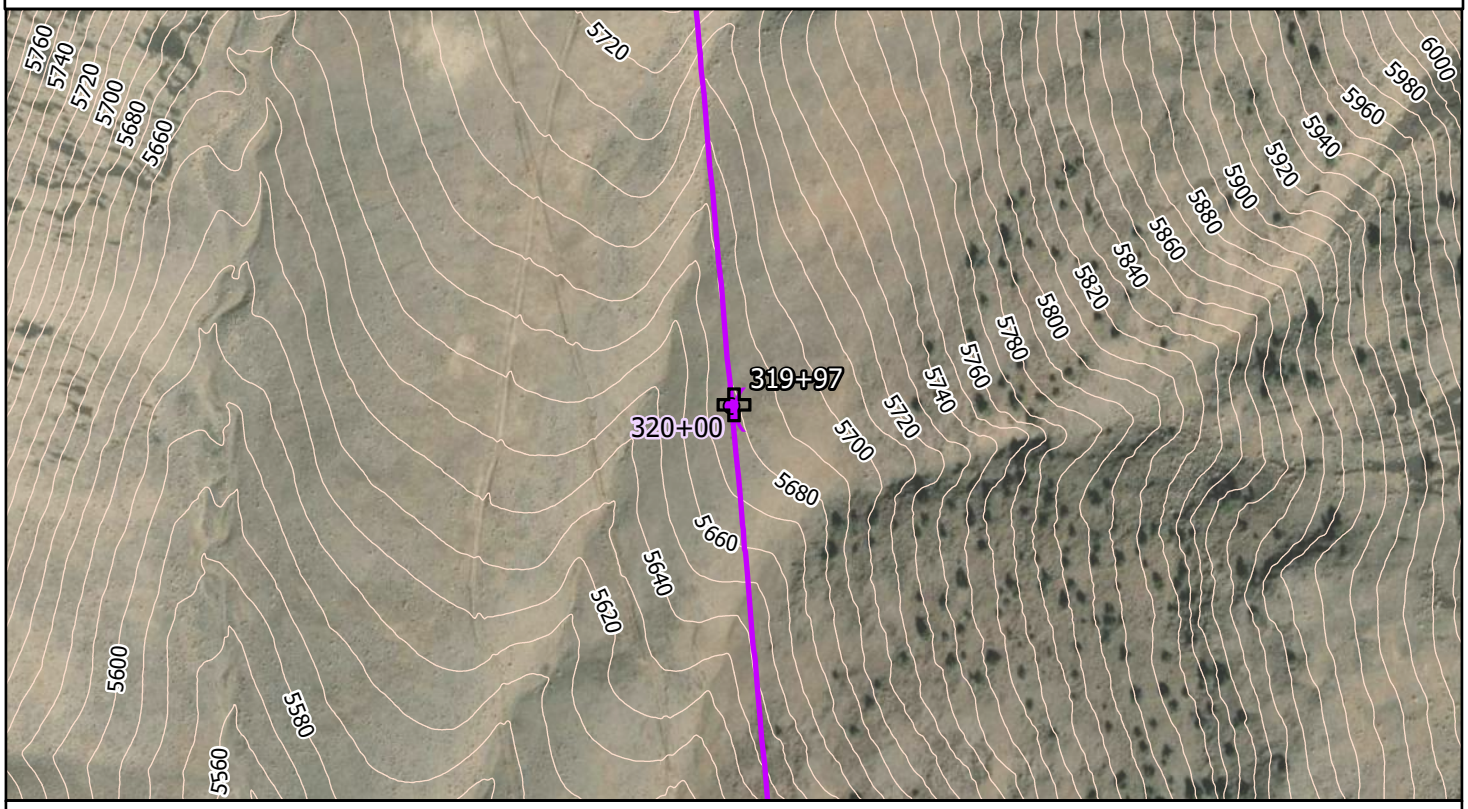
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ %DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 319+97

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 332+94

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

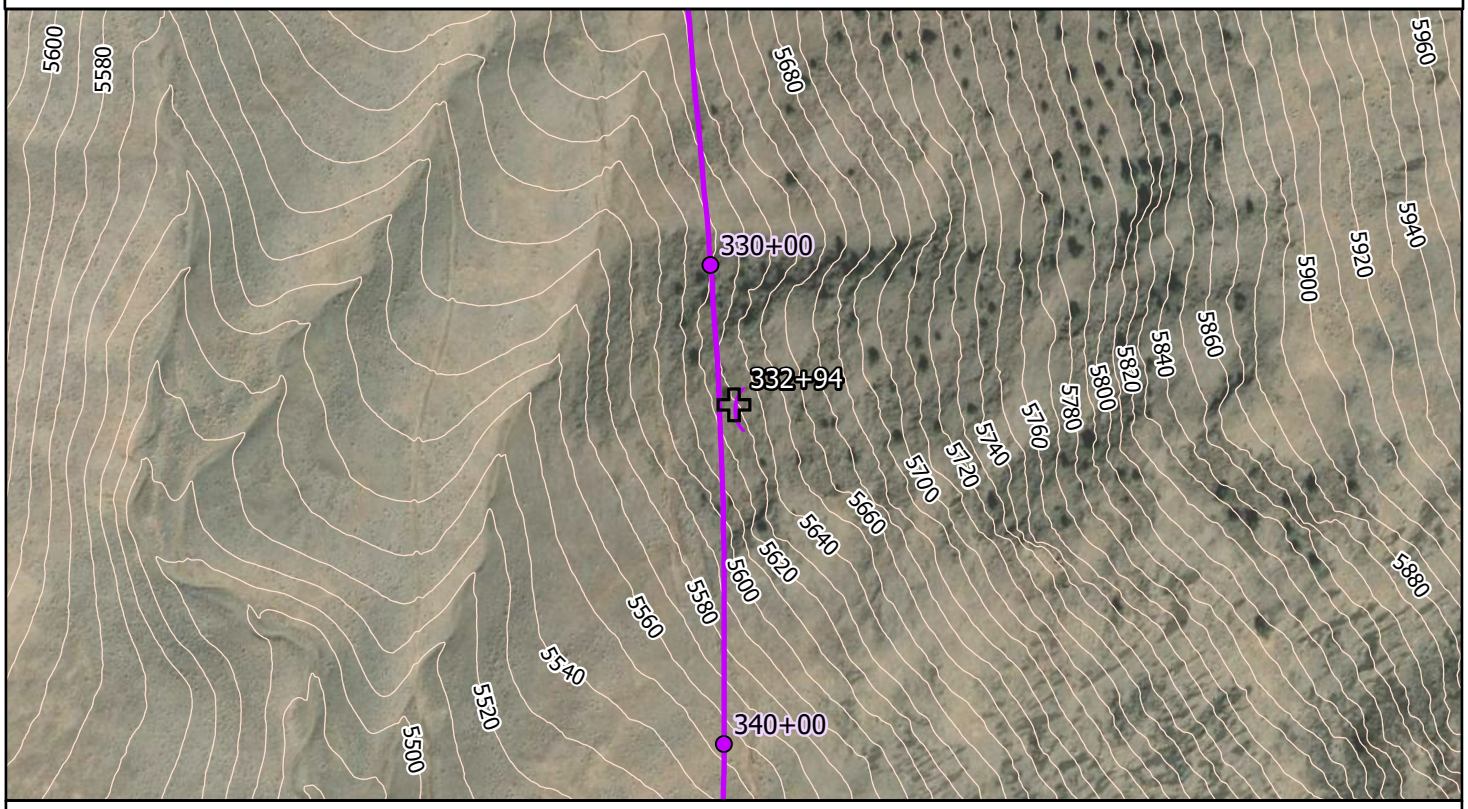
*URXQG &RQGLWLRQ
7\SH½ HGURFN
&RPPHQW¸

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ ¸
*URXQG &RYHUDJH¸
5RFN 7\SH¸
&RPPHQW¸

9HJHWDWLRQ
7\SH¸ JUDVVHV
'HQVLW\ 6\ DUVH
&RPPHQWV¸ 6WDOO VDJH EUXVK DQG MXQLSHU WUHHV SUHVHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH½ DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸
6WUHQJWK¸ PRGHUDWHO\ VWURQJ FKLSV
:HDWKHULQJ¸ PRGHUDWH
&RPPHQWV¸ 0RGHUDWHO\ VWURQJ WRR VWURQJ 2XWFURSV FRYHULQJ +LOOVLGH

*HQHUDO &RPPHQWV



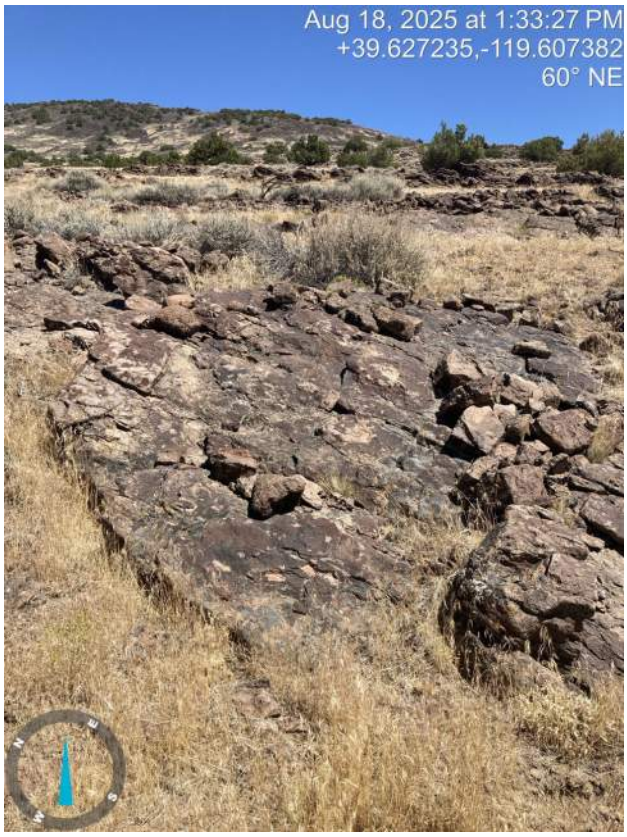
1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 332+94

Bedrock.



Looking to La Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 340+88

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

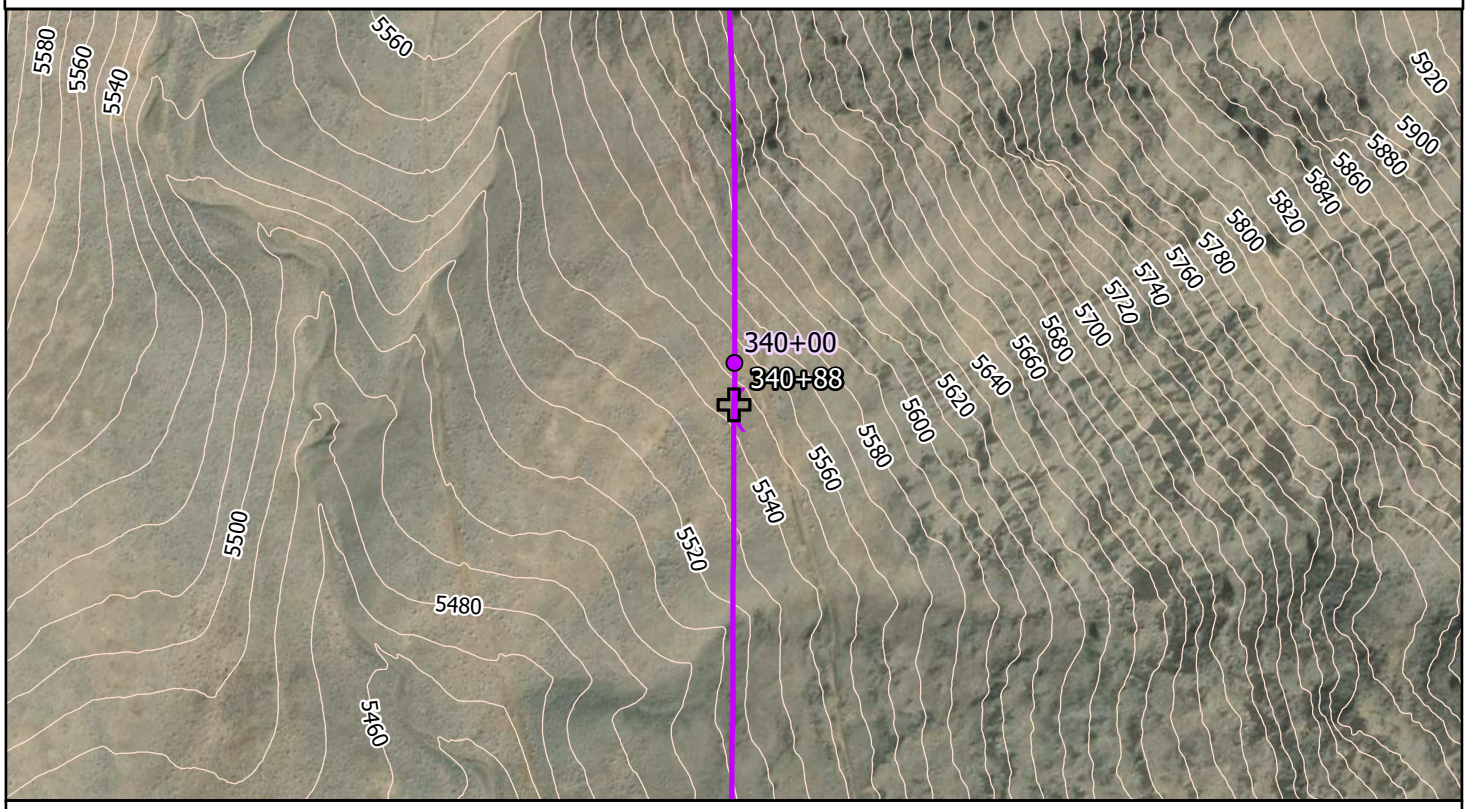
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQW QHGLXP VDJHEUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV
/LNHO\ FDSSLQJ FOD\ VRLOV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 340+88

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 349+64

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH %DVDOW

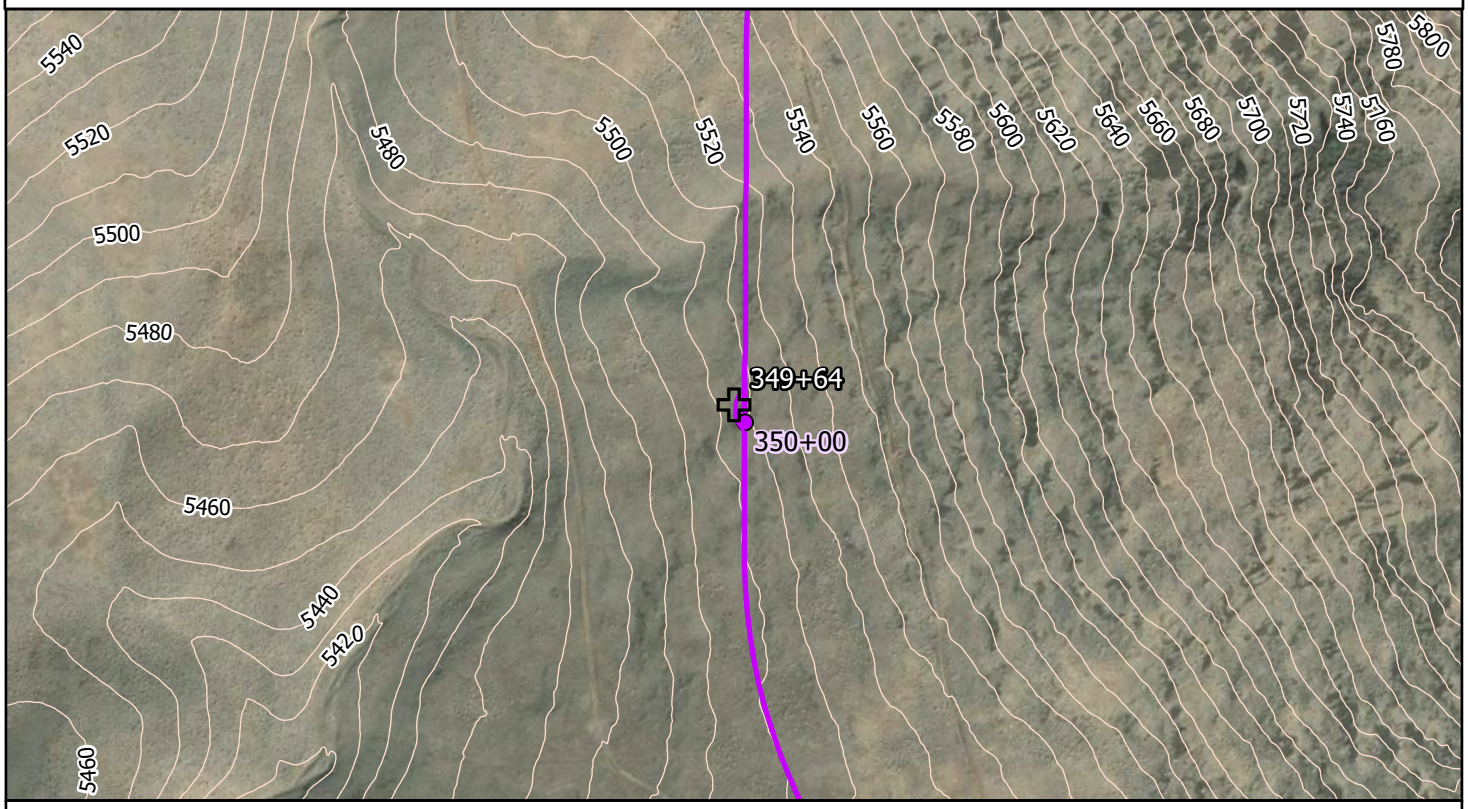
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK RQ ERXQFH

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 349+64

Looking to La Posada.



Looking to TRIC. Outcropping..



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 360+07

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

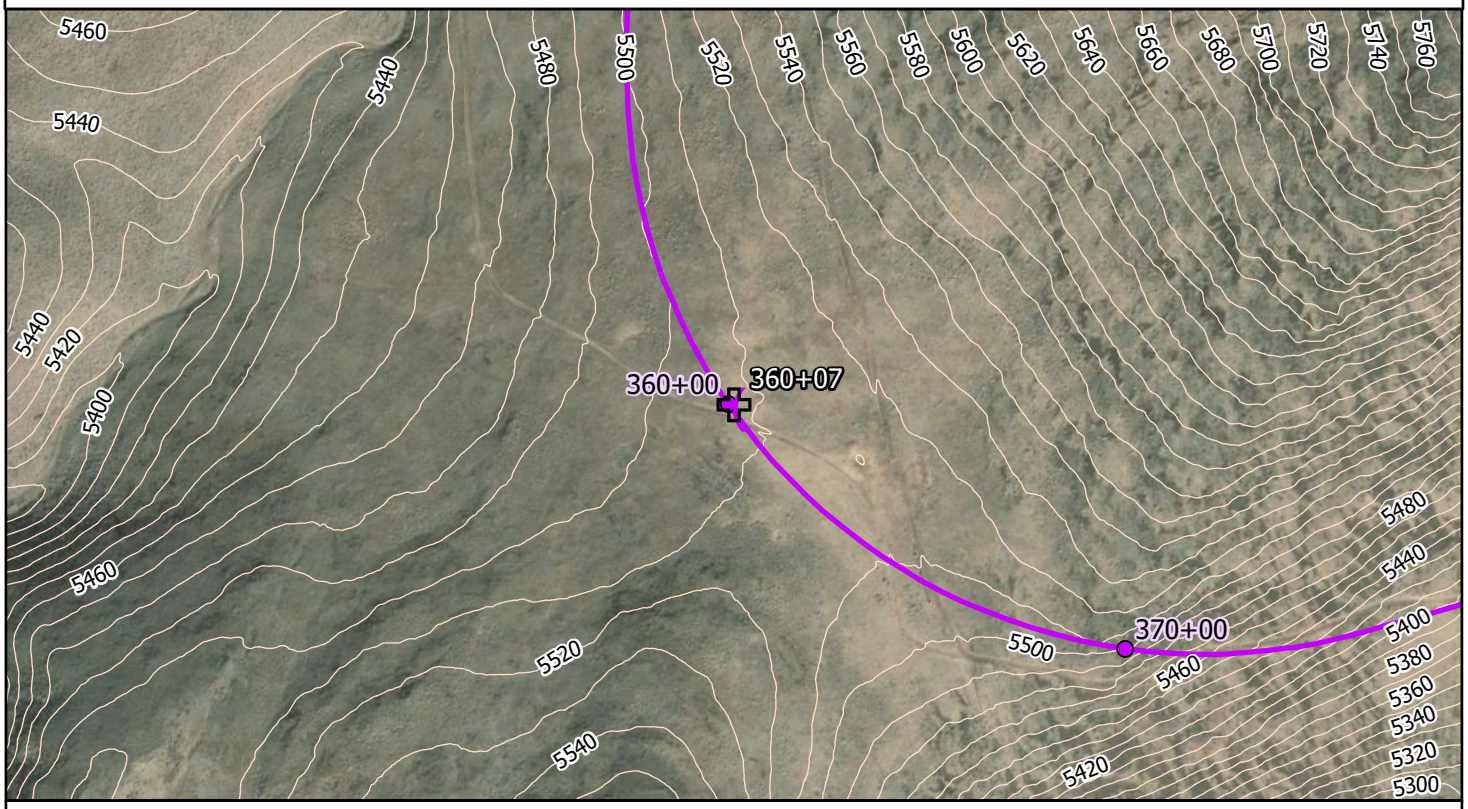
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 360+07

Looking to la Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 369+90

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

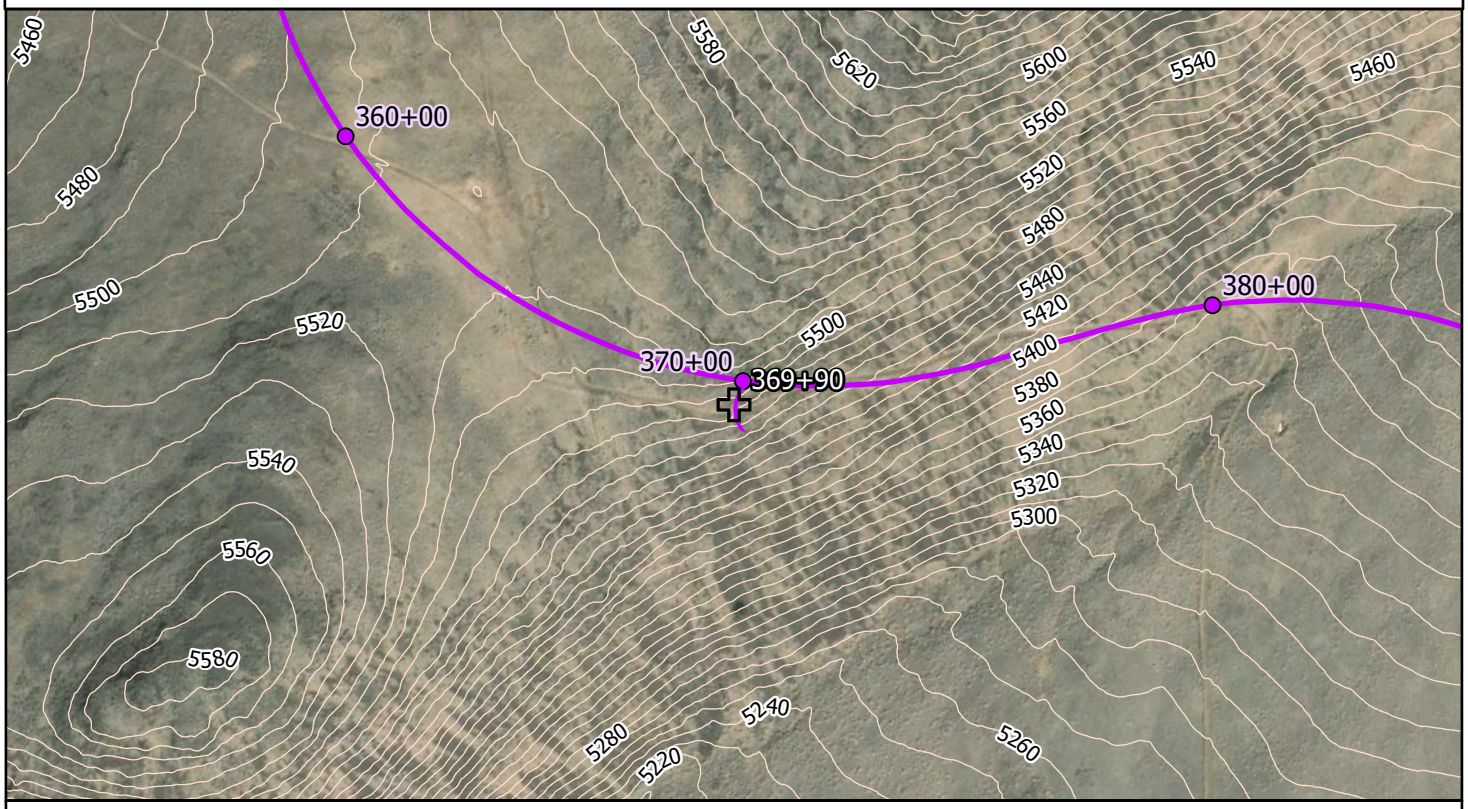
*URXQG &RQGLWLRQ
7\SH6FUHH
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH! ^ˇ
5RFN 7\SH%DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ PRGHUDWH
&RPPHQWV WHGLXP VDJH EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH%DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK VWURQJ ERXQFH
:HDWKHULQJ PRGHUDWH
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 369+90

Looking to La Posada.



Looking to TRIC.



Outcrop.



Talus scree slope.



WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 380+52

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

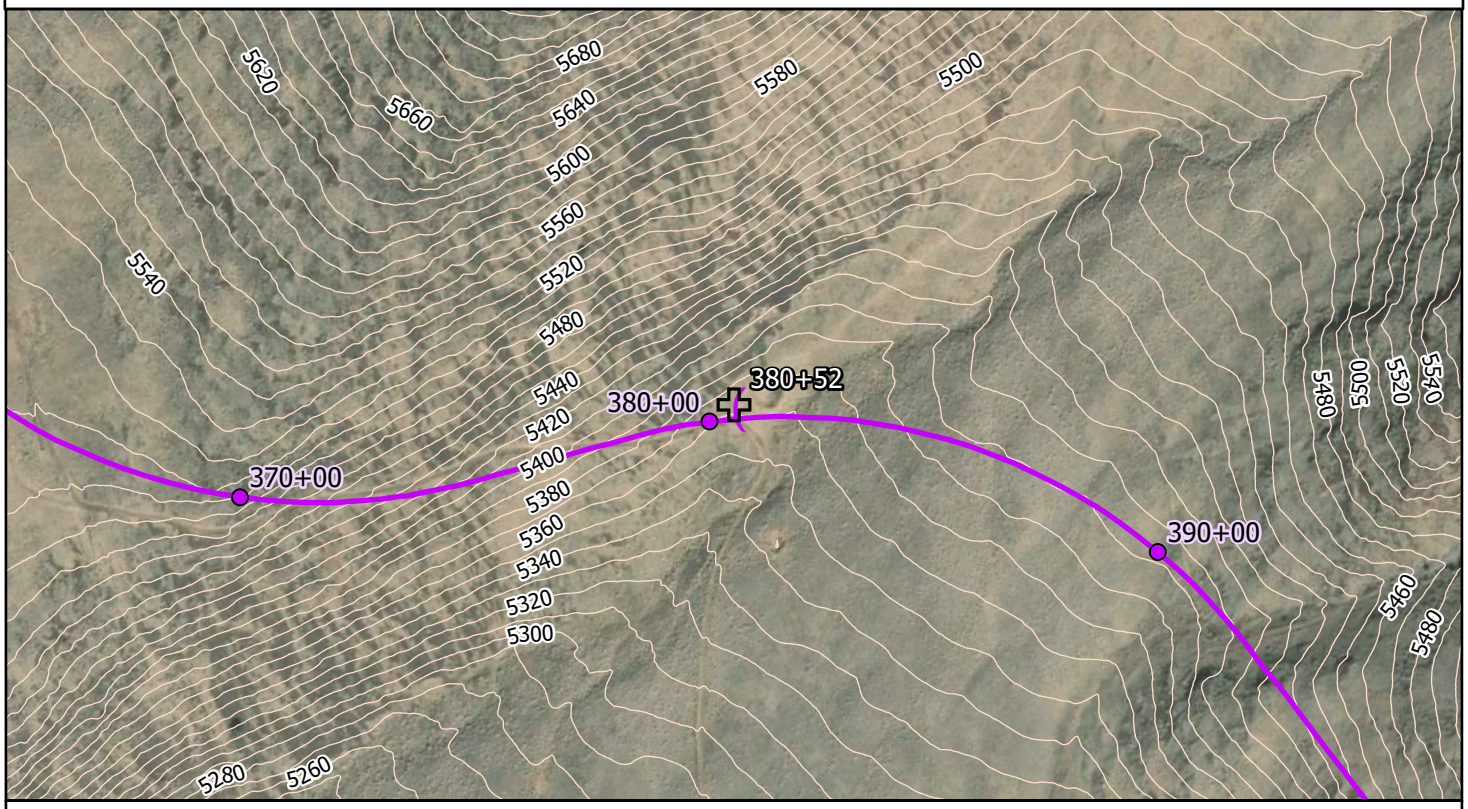
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 380+52

Looking to La Posada. Scree slope..



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 391+45

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH %DVDOW

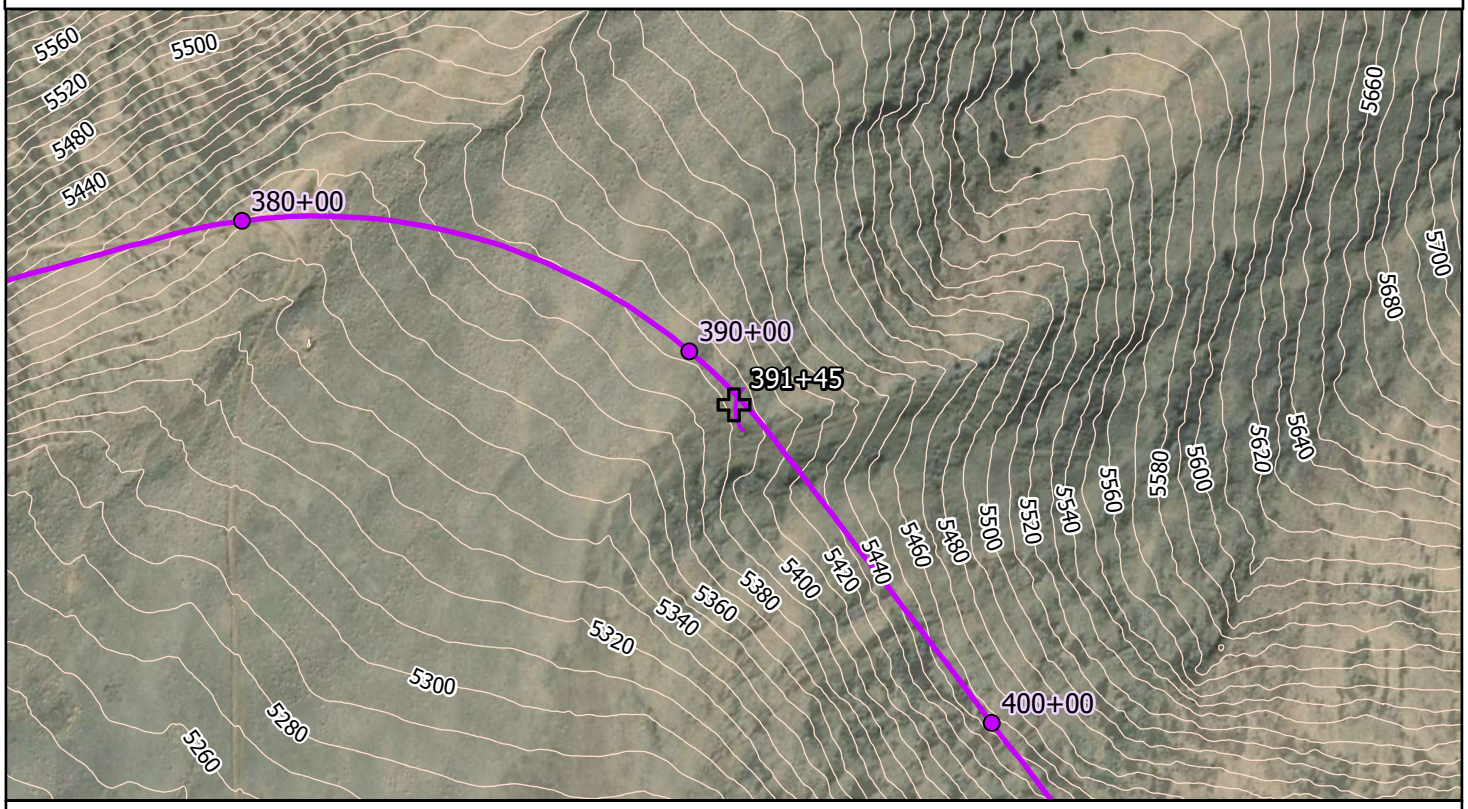
%HGGLQJ LI VHGLPHQWDU\

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 391+45

Looking to La Posada.



Looking to TRIC. Rock outcrop..



Scree slope from last two data points.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 400+69

Project Number: 8312057 Survey Date: 08/18/2025 Survey By: J. Beadell

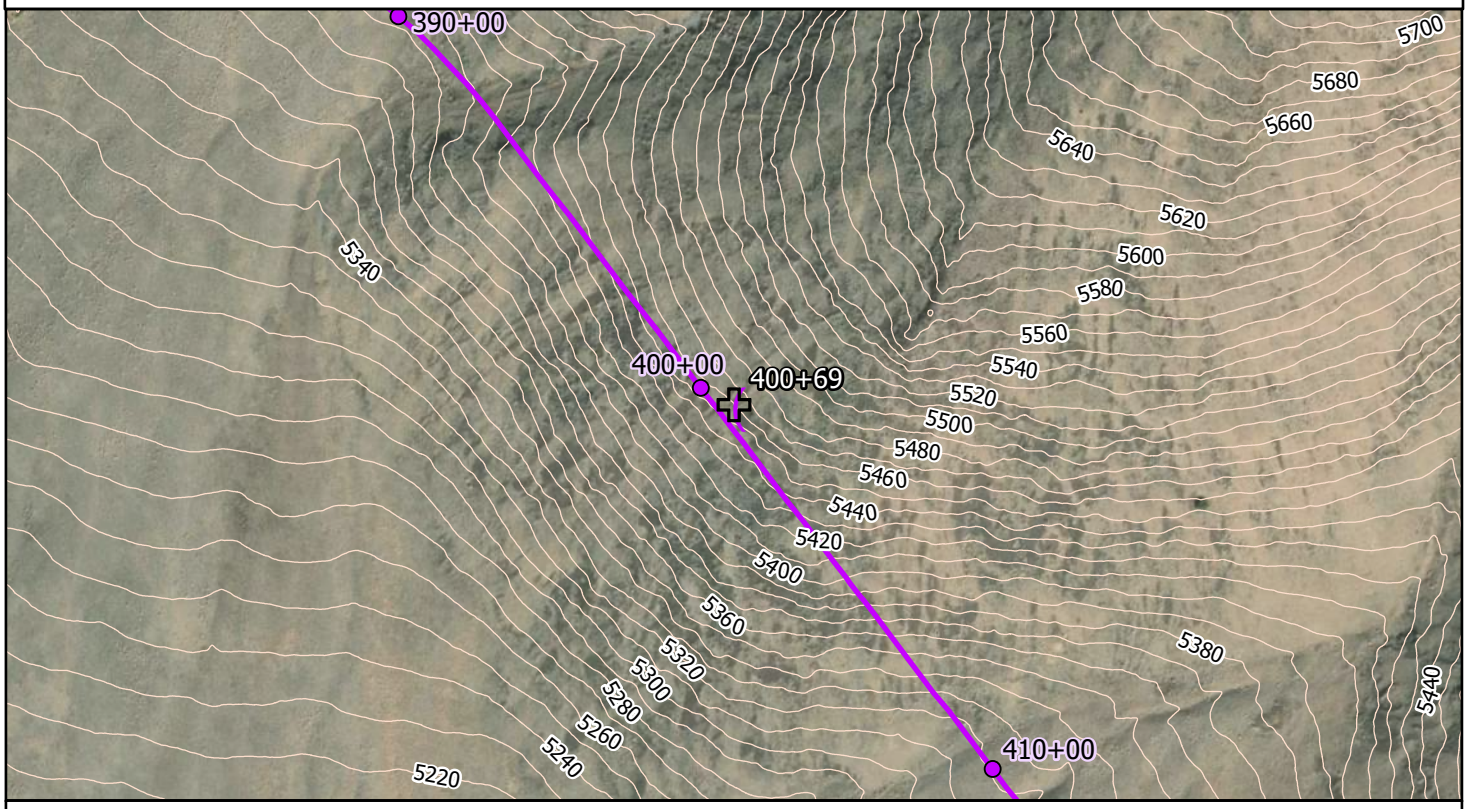
*URXQG &RQGLWLRQ
7\SH 6FUHH
&RPPHQW VLNHO\ VKDOORZ EHGURFN $Q\ VRLO ZLOO EH FOD\ RLO

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH KHUDYJH!
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 400+69

Looking to La Posada.



Looking to TRIC. Scree slope..



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 410+13

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

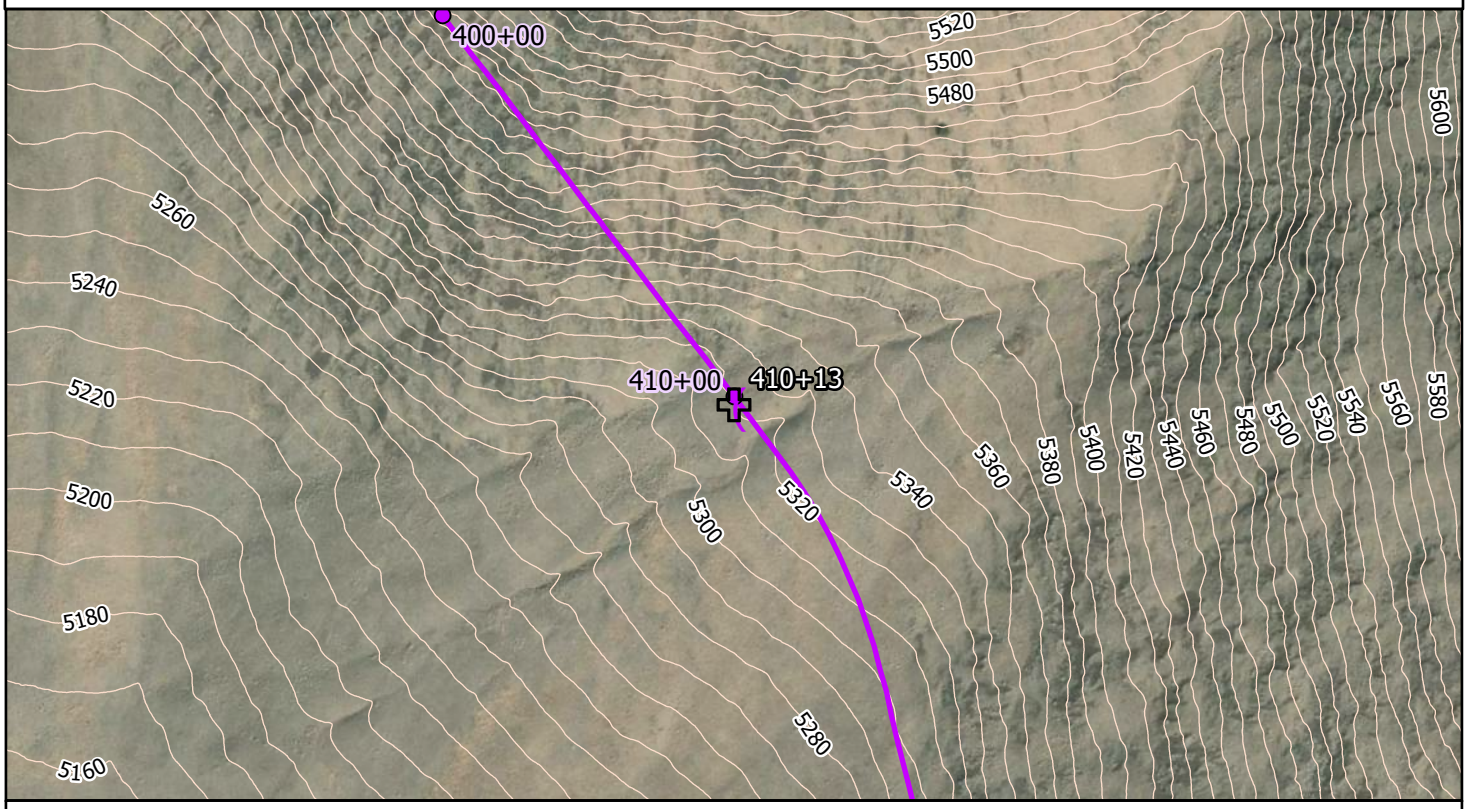
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW QWDOORZ EHGURFN OLNHO\ RU JUDYHO GHSRVLWV LQ GUDLQDJHV

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH KHUDYJH!
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV 6WUVK JUDVVHV ZLWK D IHZ VPDOO WR PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

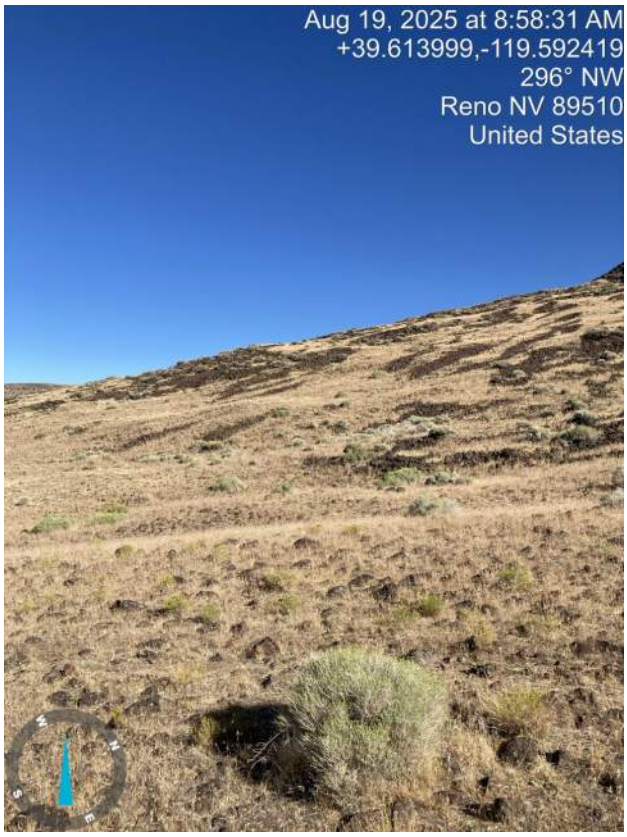
La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 410+13

Cobble float.



Looking to La Posada. Scree slope.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 419+99

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQW *UDVVHV ZLWK D IHZ VPDOO WR PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

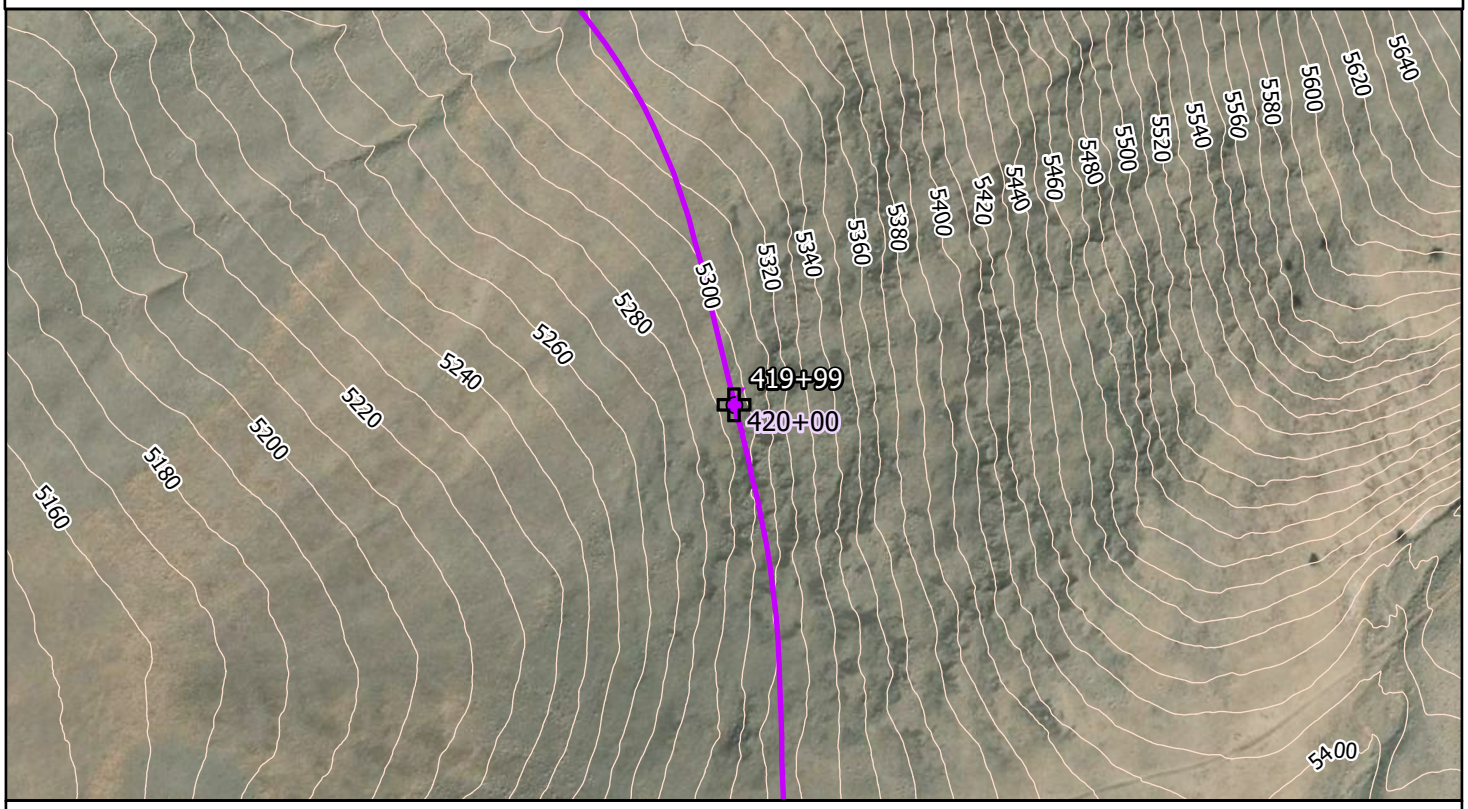
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 419+99

Looking to La Posada.



Looking to TRIC.



Scree slope.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 429+90

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQW JUDVVHV ZLWK VPDOO EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

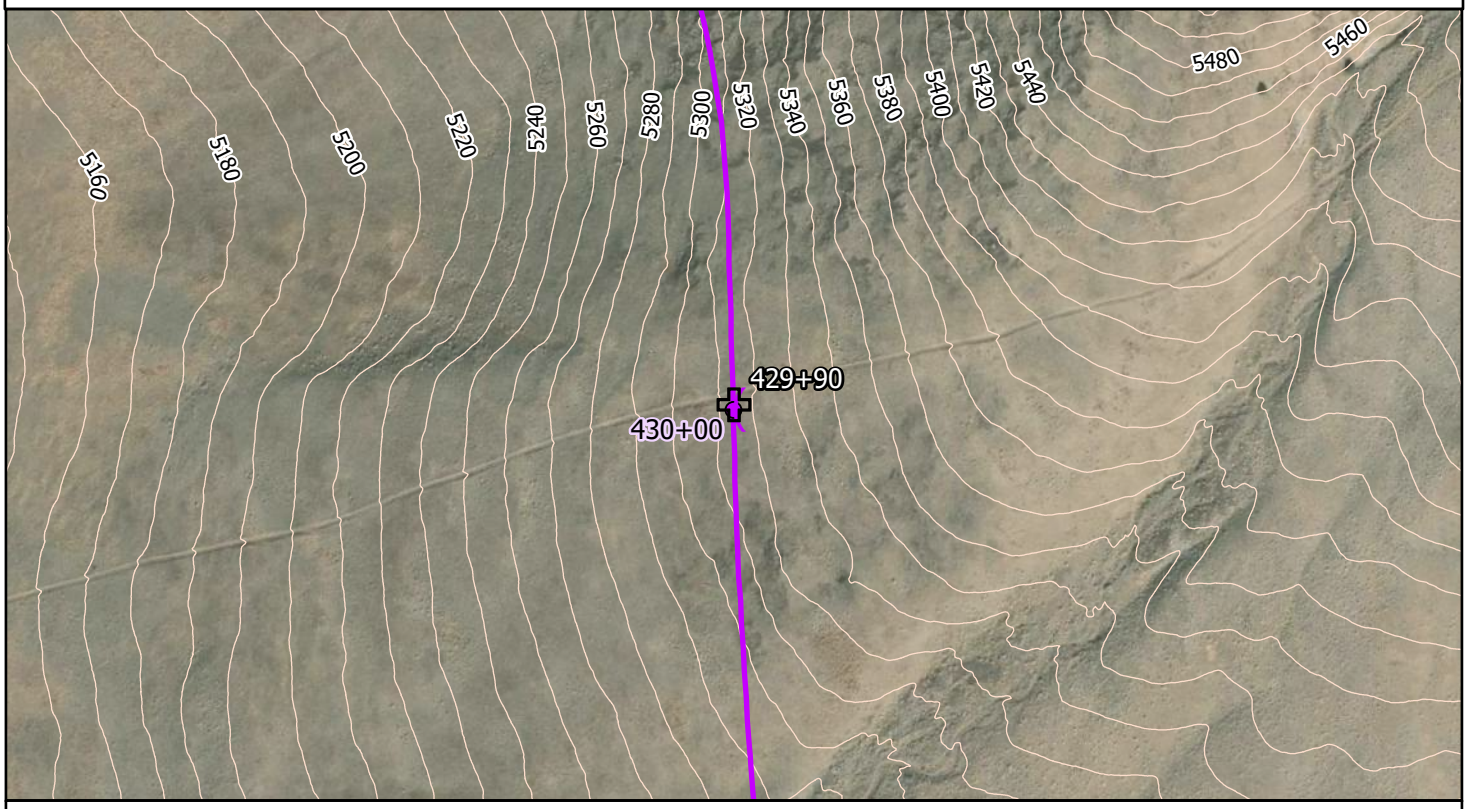
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 429+90

Heavy cobble float.



Looking to La Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 433+13

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH½HGURFN

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH½DVDOW

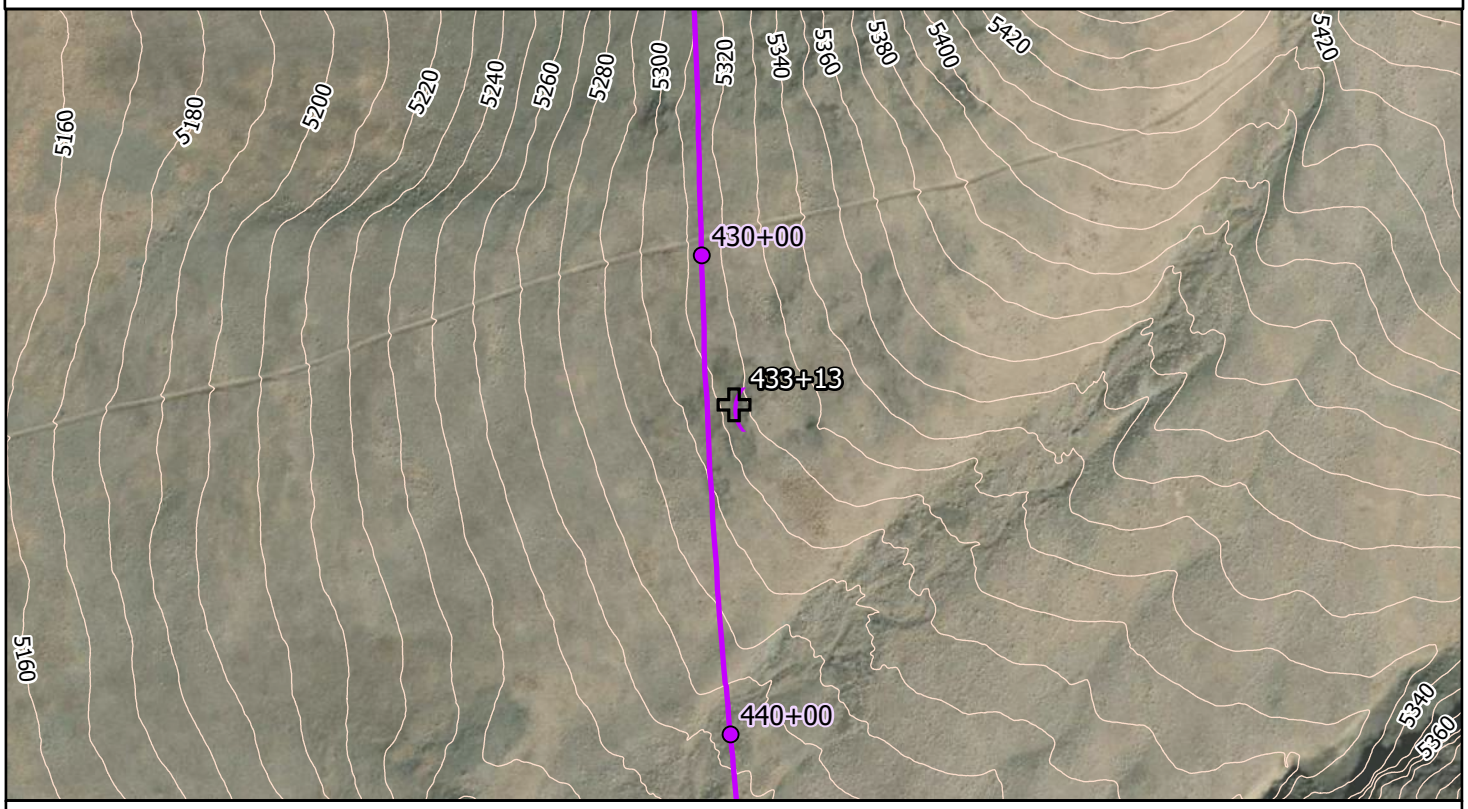
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 433+13

Bedrock.



No Photo

No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 440+01

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

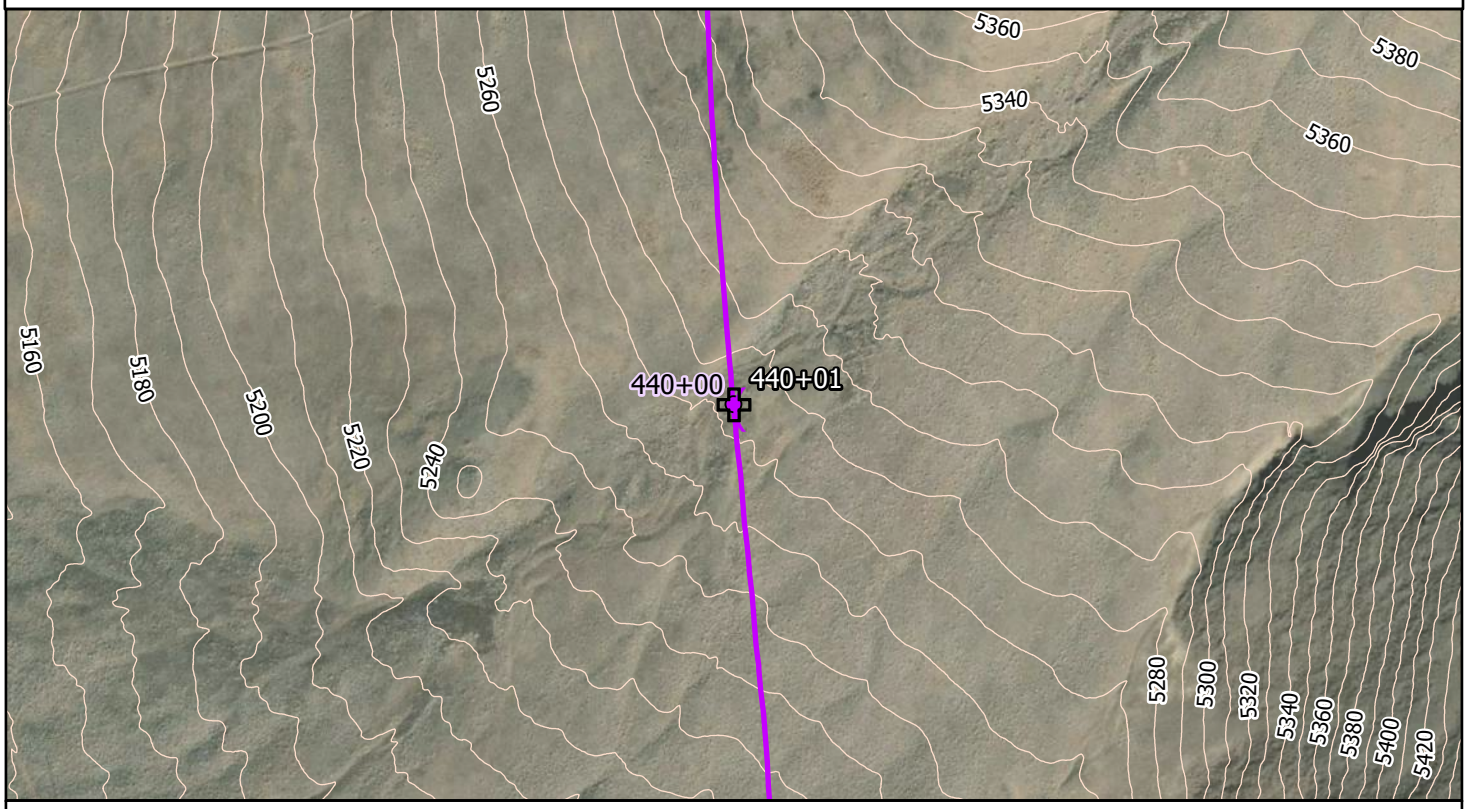
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH ^ˇ
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 440+01

Heavy large cobble float. Borderline scree..



Looking to La Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 449+99

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH¸ &REEOH)ORDW

&RPPHQW¸ QR GHUDWH WR KHDY\ FRXSOH IORDW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ˙LQ ¸

*URXQG &RQGLWLRQ PRGHUDWH ˘ ^˘

5RFN 7\SH %DVDOW

&RPPHQW¸

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ VSDUVH

&RPPHQW¸ DW ¸LXP VDJHEUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH¸

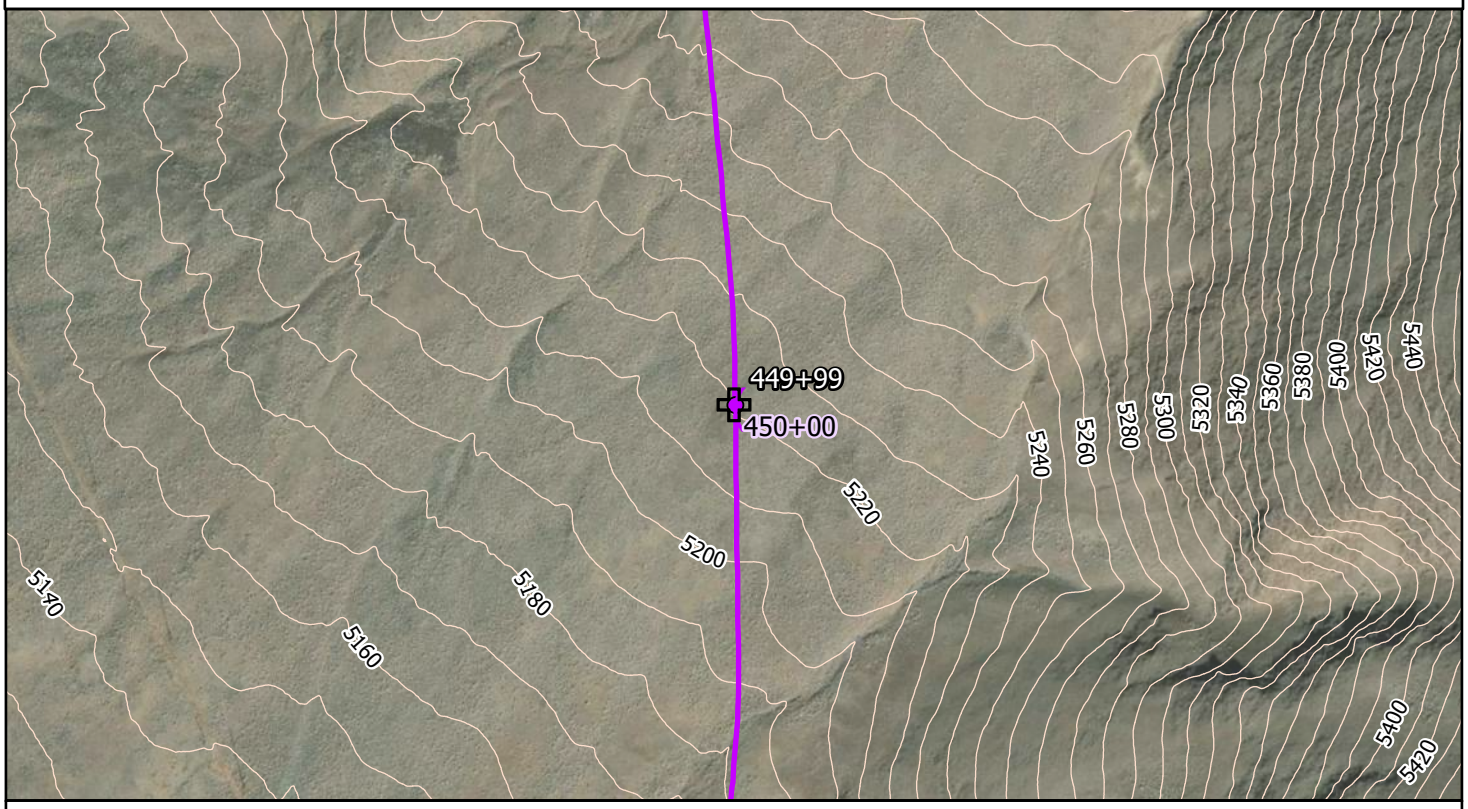
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸

6WUHQJWK¸

:HDWKHULQJ¸

&RPPHQWV¸

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 449+99

Looking to La Posada.



Looking to TRIC.



Moderate to heavy couple float.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 460+01

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

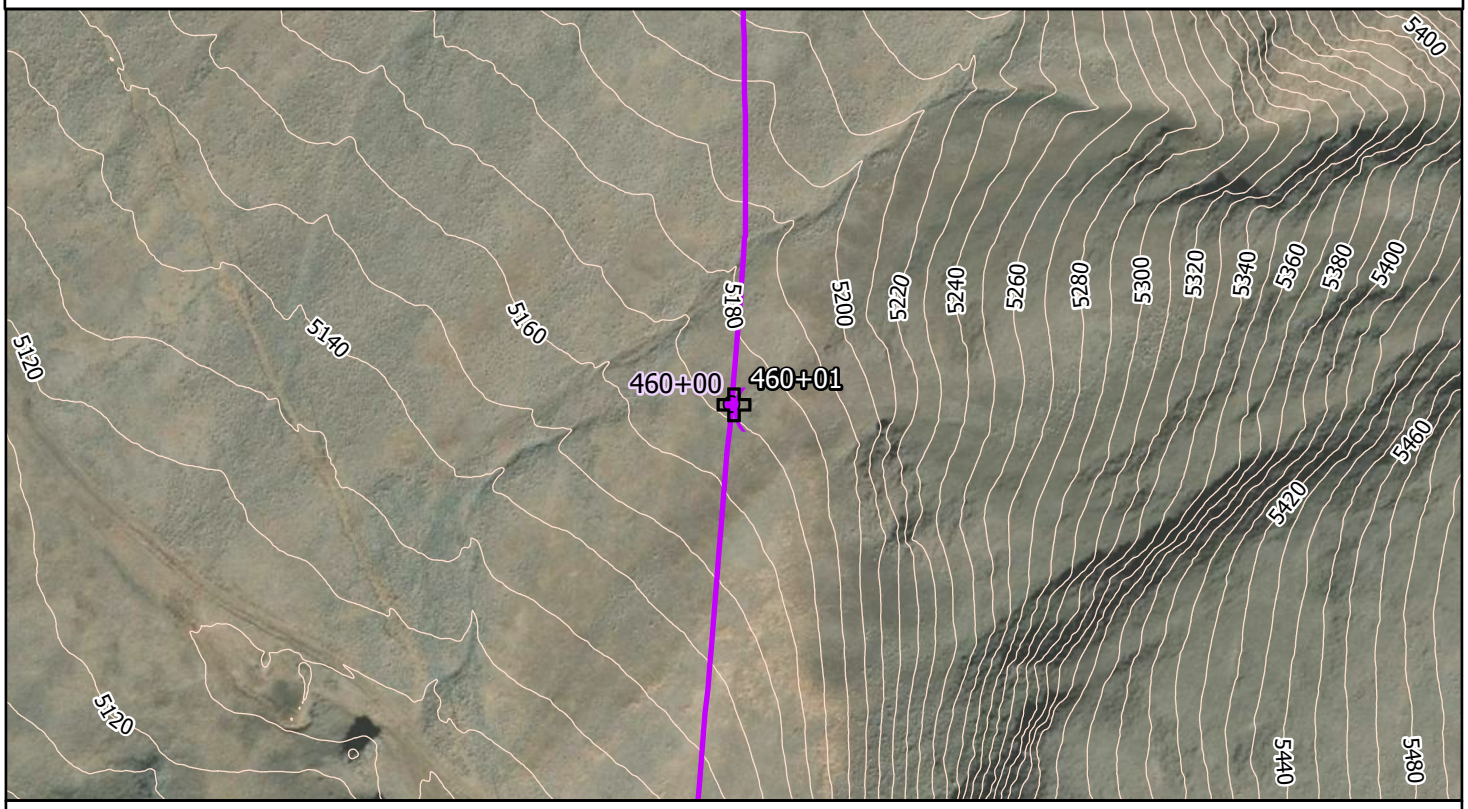
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 460+01

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 470+48

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

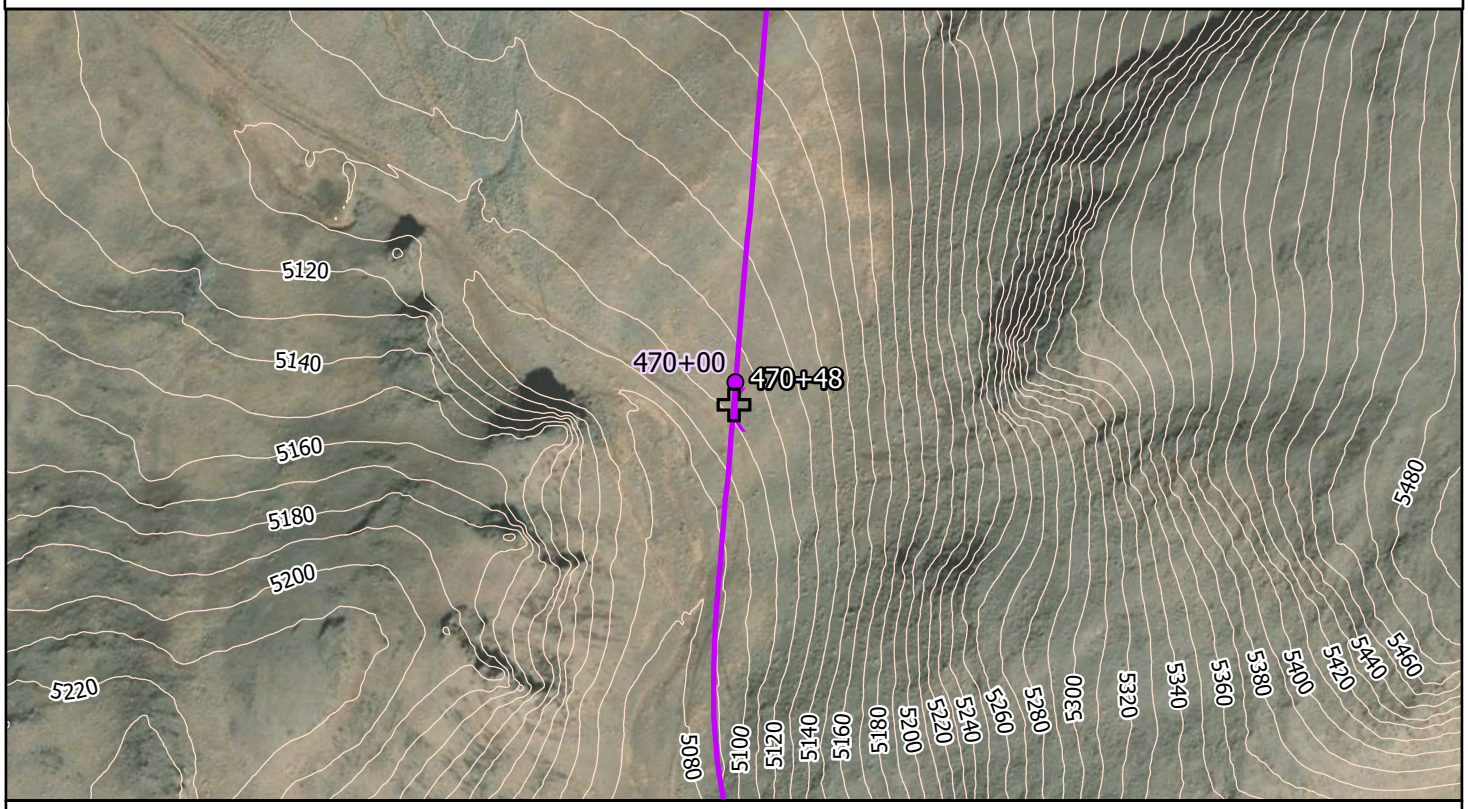
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 470+48

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 481+09

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! L Q

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

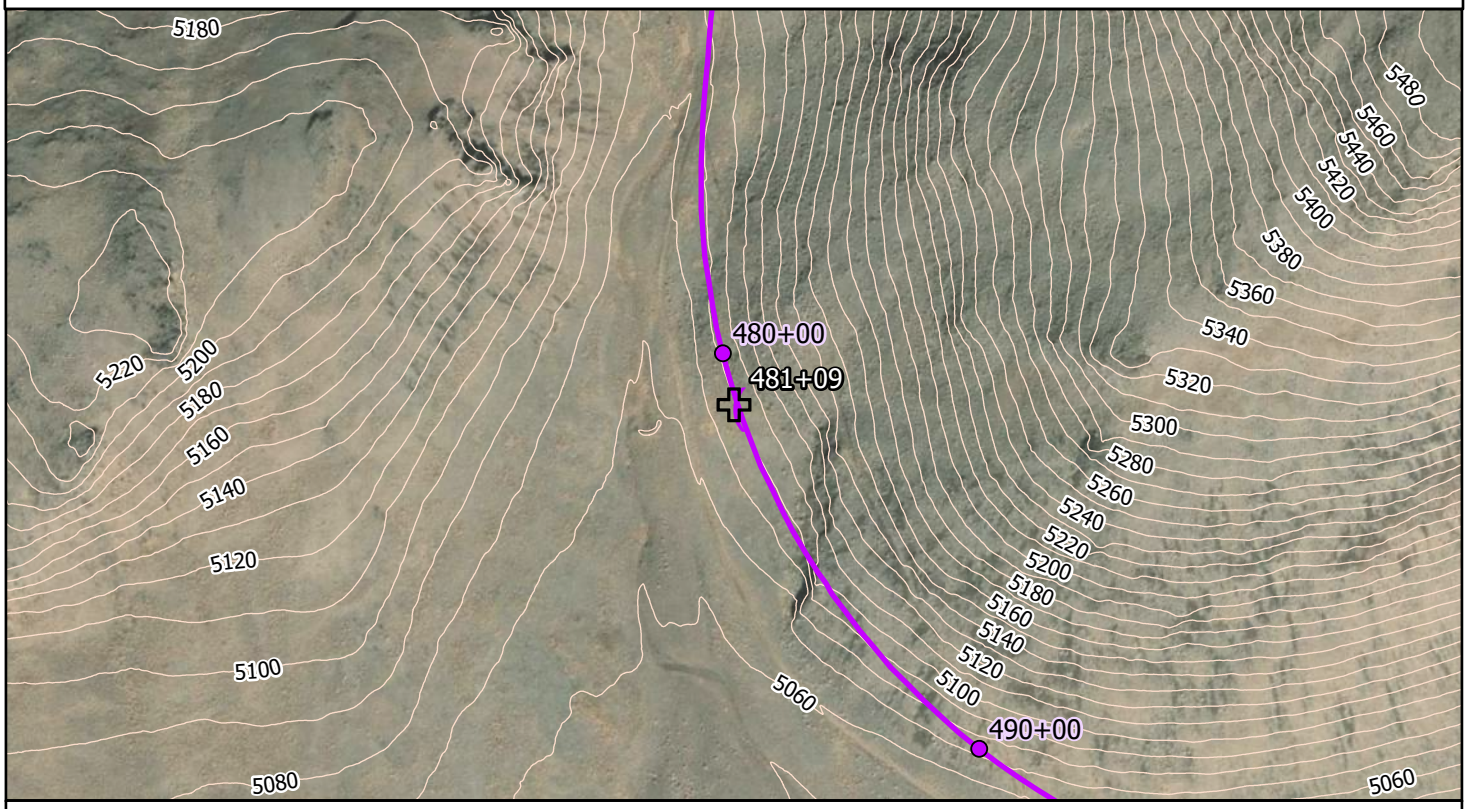
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 481+09

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 484+50

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH%DVDOW

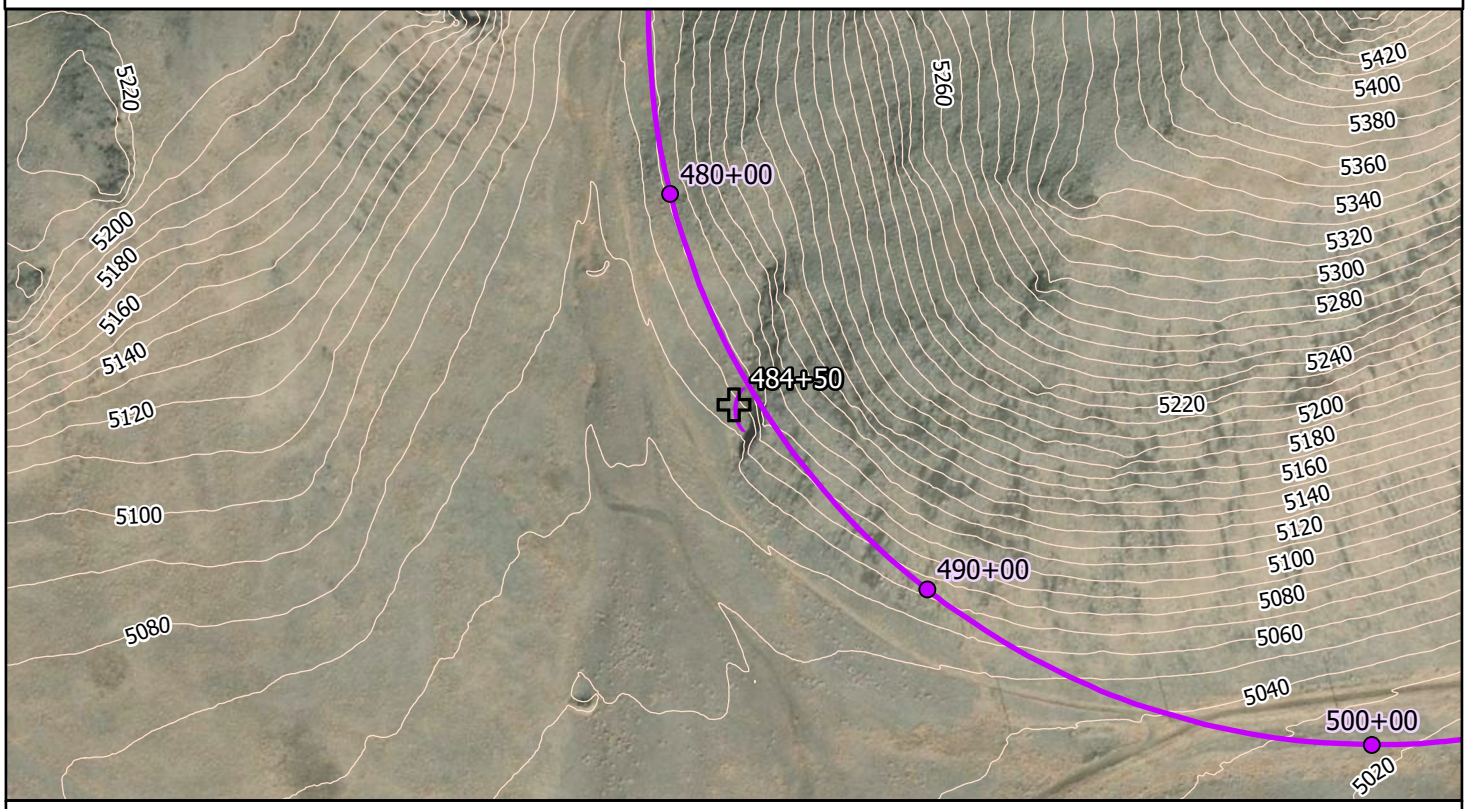
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point

La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 484+50

Outcrop with scree.



Outcrop.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 489+99

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

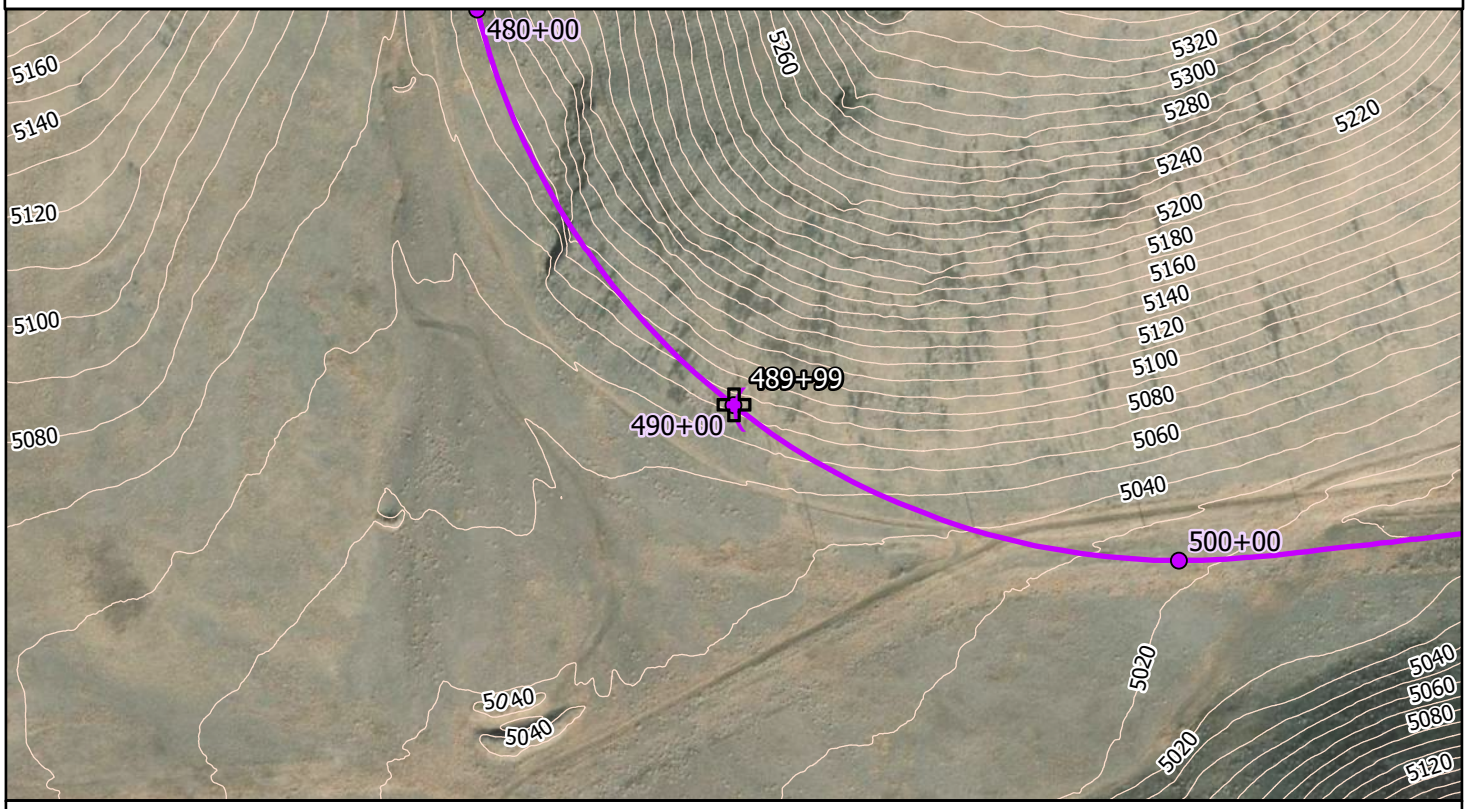
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 489+99

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 500+04

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

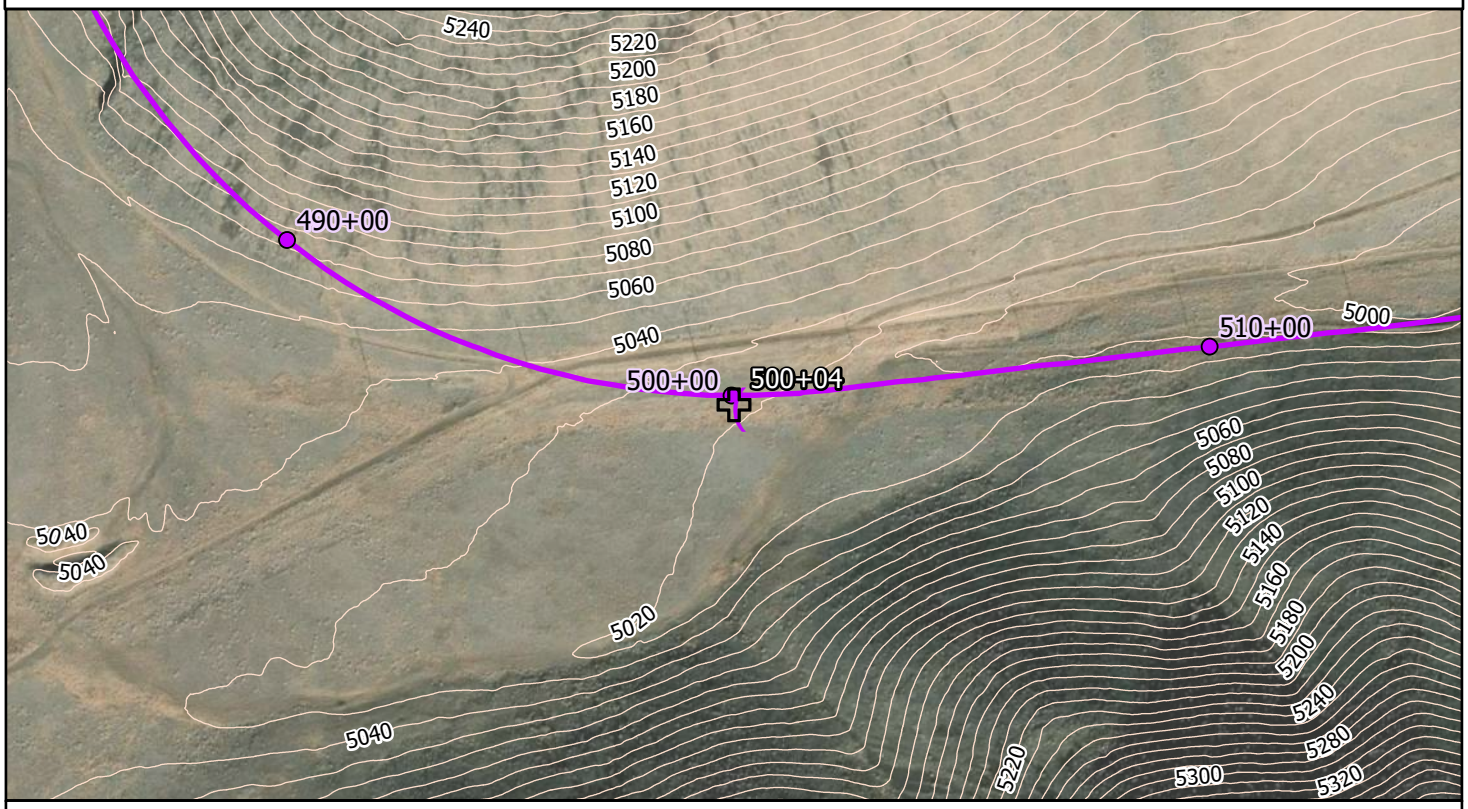
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 500+04

Light cobble float.



Looking to la Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 509+93

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQW *UDVVHV ZLWK PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

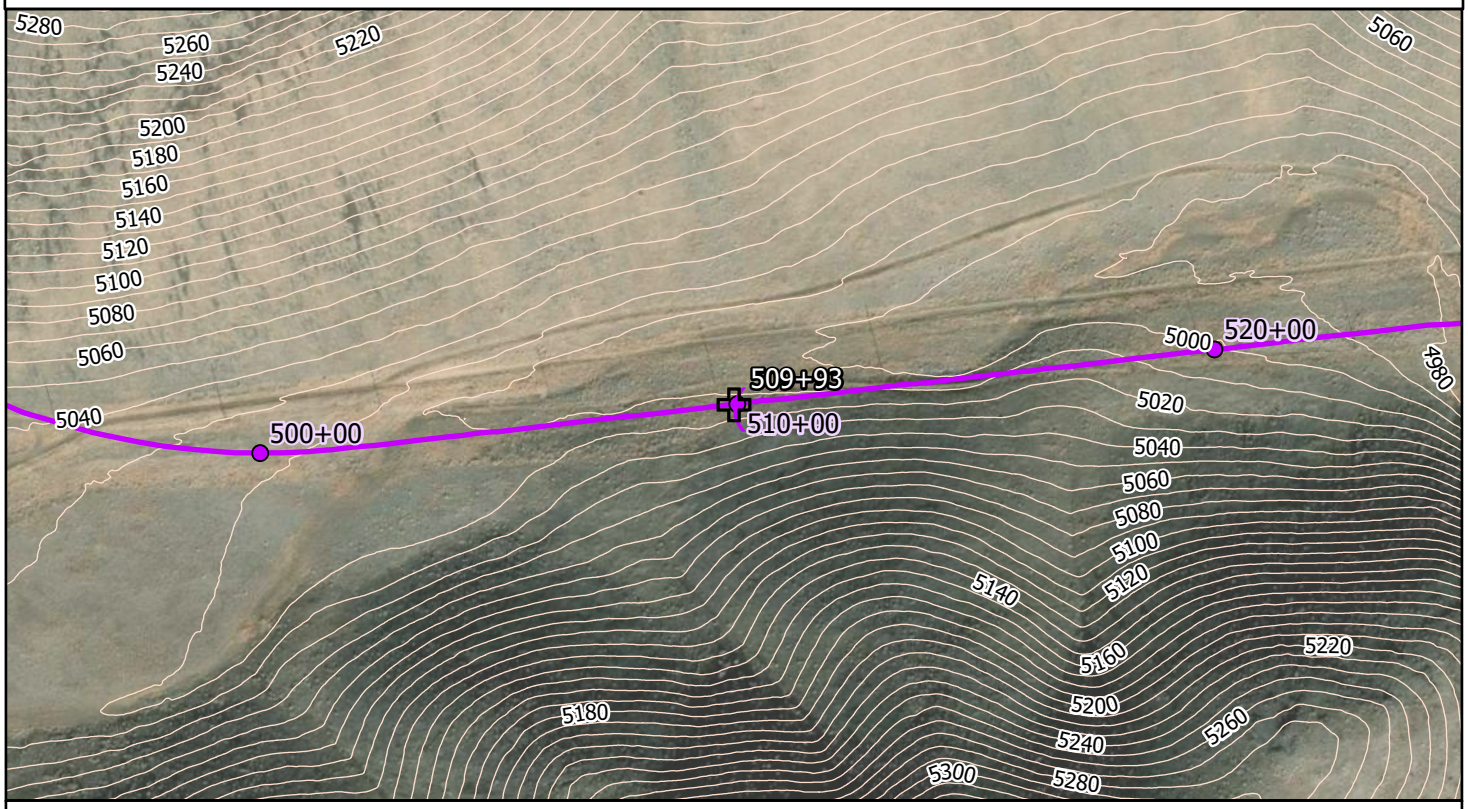
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 509+93

Looking to a TRIC.



Looking to La Posada.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 520+13

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

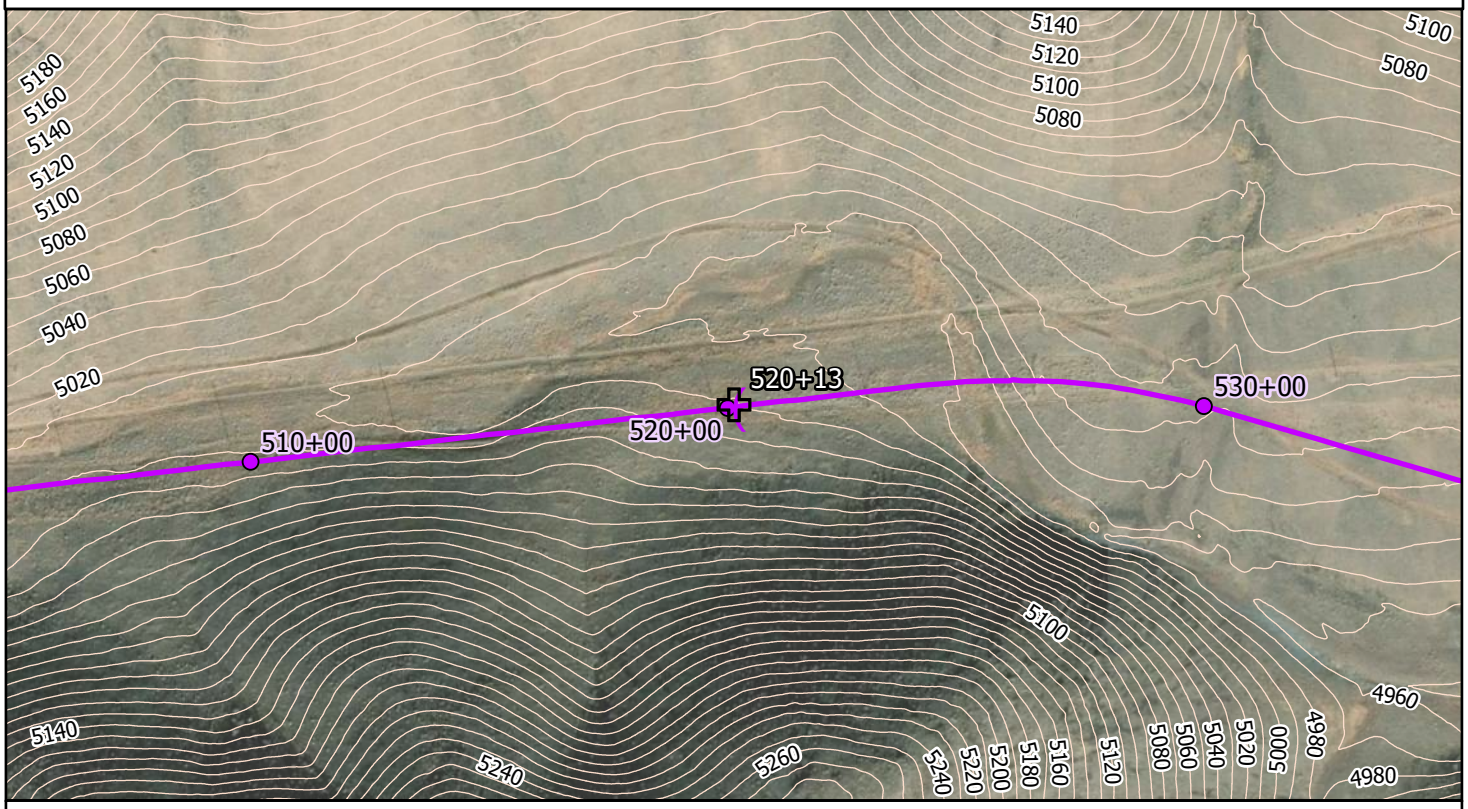
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ ‚
*URXQG &RYHUDJH‚ CLUDW ˜ ˘
5RFN 7\SH‚
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ JUDVVHV
'HQVLW\‚ 6DUVH
&RPPHQWV‚ 7XPEOHZHHG LQWHUPL[HG

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 520+13

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

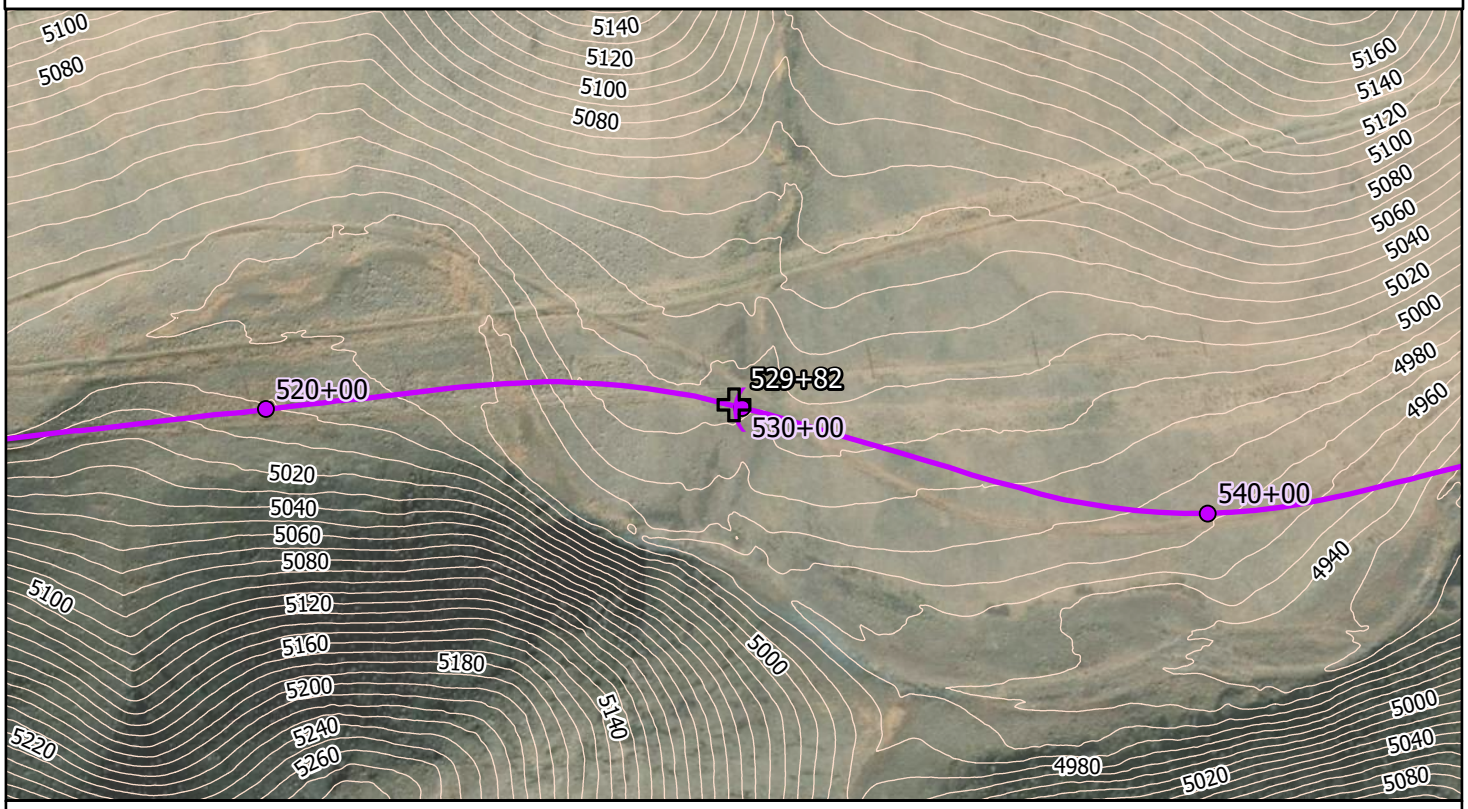
WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 529+82

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ 7\SH &REEOH)ORDW &RPPHQW
&REEOH)ORDW 6FUHH LI HQFRXQWHUHG 0D[6L]H LQ *URXQG &RYHUDJH 5RFN 7\SH &RPPHQW
9HJHWDWLRQ 7\SH JUDVVHV 'HQVLW\ SDUVH &RPPHQW JUDVVHV ZLWK VRPH PHGLXP VDJHEUXVK
5RFN 2XWFURSSLQJV LI HQFRXQWHUHG 7\SH %HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV 6WUHQJWK :HDWKHULQJ &RPPHQWV
*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 529+82

Heavy cobble float toscree.



Looking to La Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 540+26

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 540+26

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 550+67

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

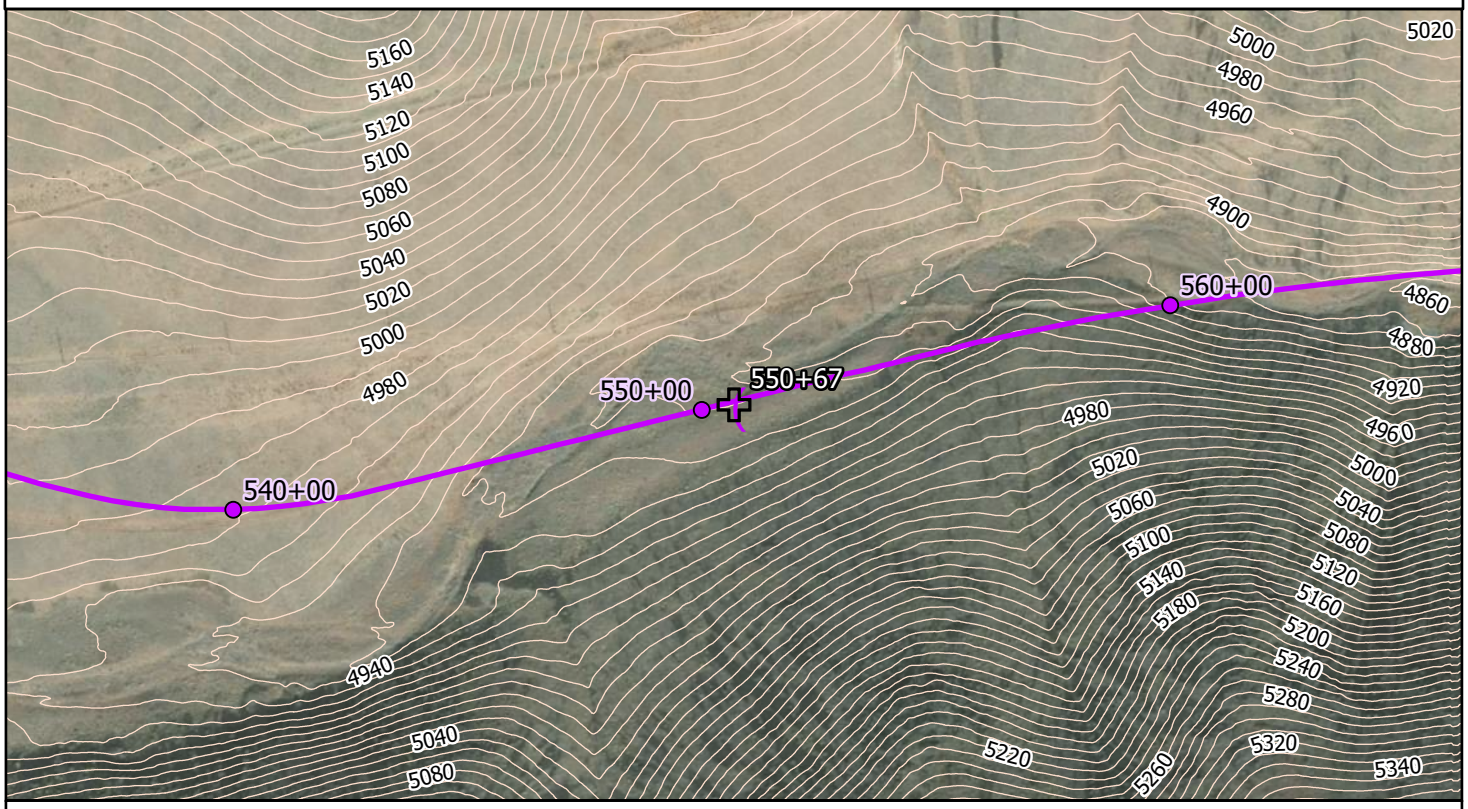
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

'DWD SRLQW WDNHQ DW HGJH RI GUDLQDJH FKDQQHO



Project Name: La Posada Geotechnical Investigation Station Name: 550+67

Looking to La Posada.



Looking to TRIC.



Scree.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 560+11

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

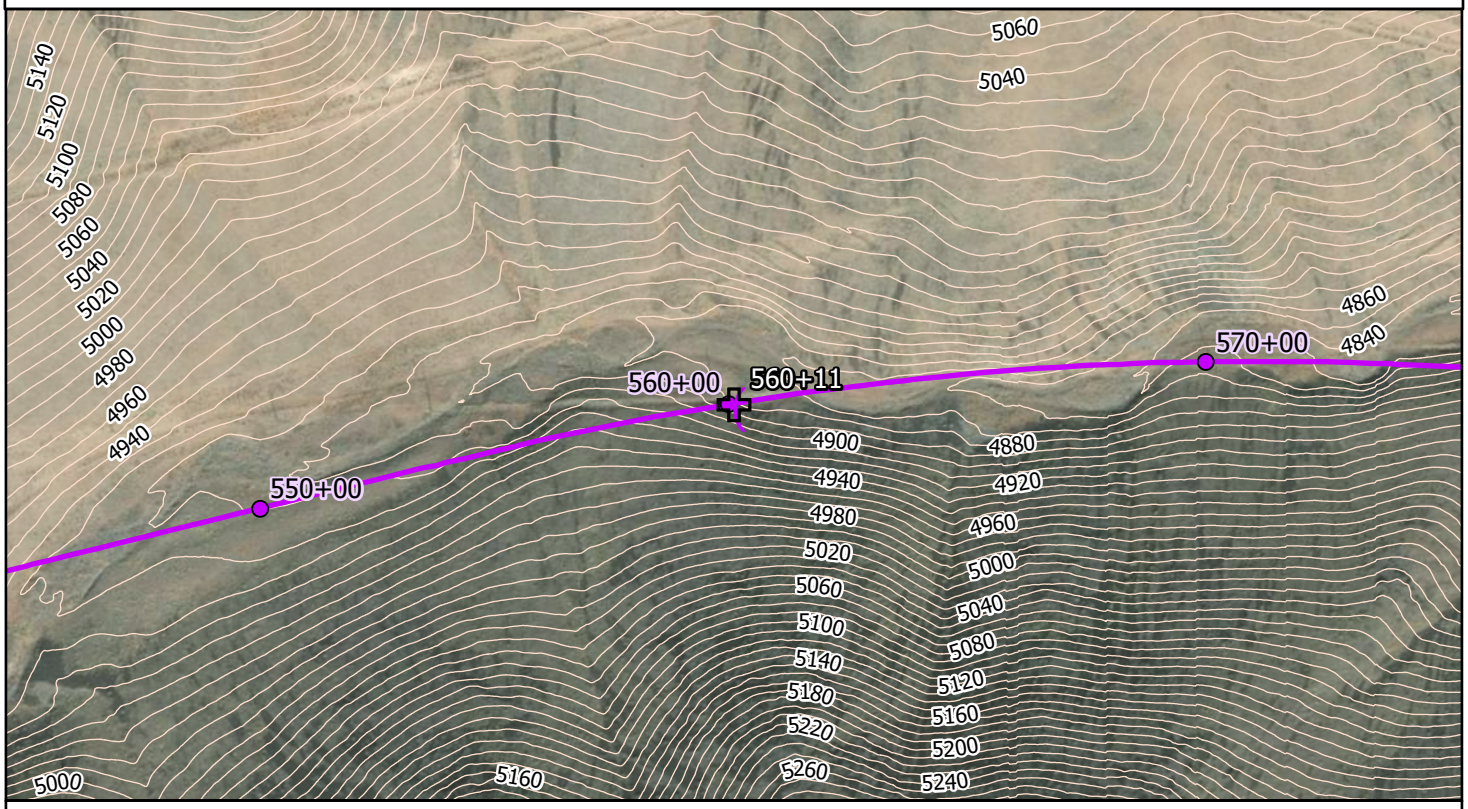
*URXQG &RQGLWLRQ
7\SH6FUHH
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH! ^ˇ
5RFN 7\SH%DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 560+11

Looking to La Posada.



Looking to TRIC. Scree..



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 570+45

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

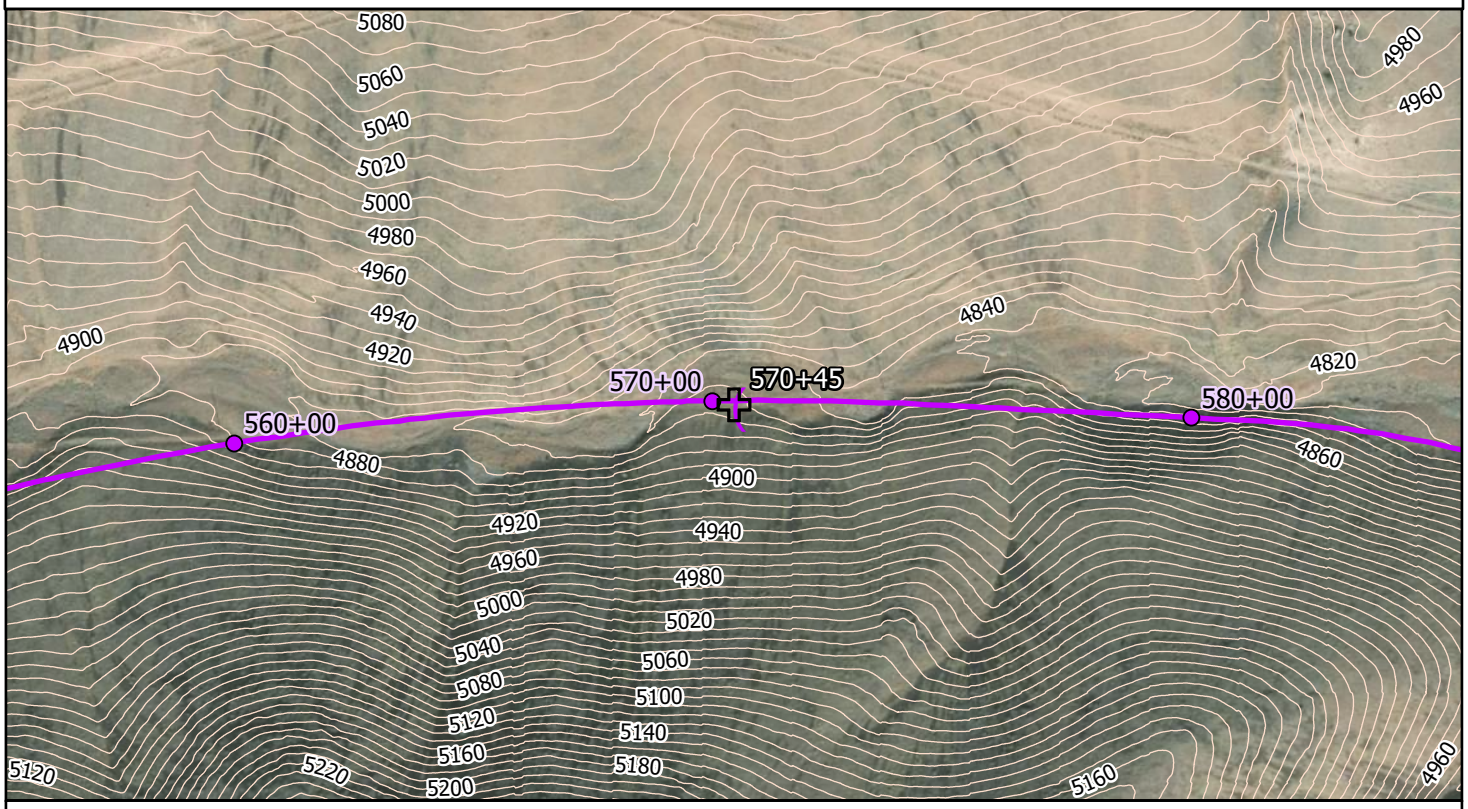
*URXQG &RQGLWLRQ
7\SH6FUHH
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 570+45

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 580+84

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW UHH LQ VLGH VORSHV

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH ^^

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH%DVDOW

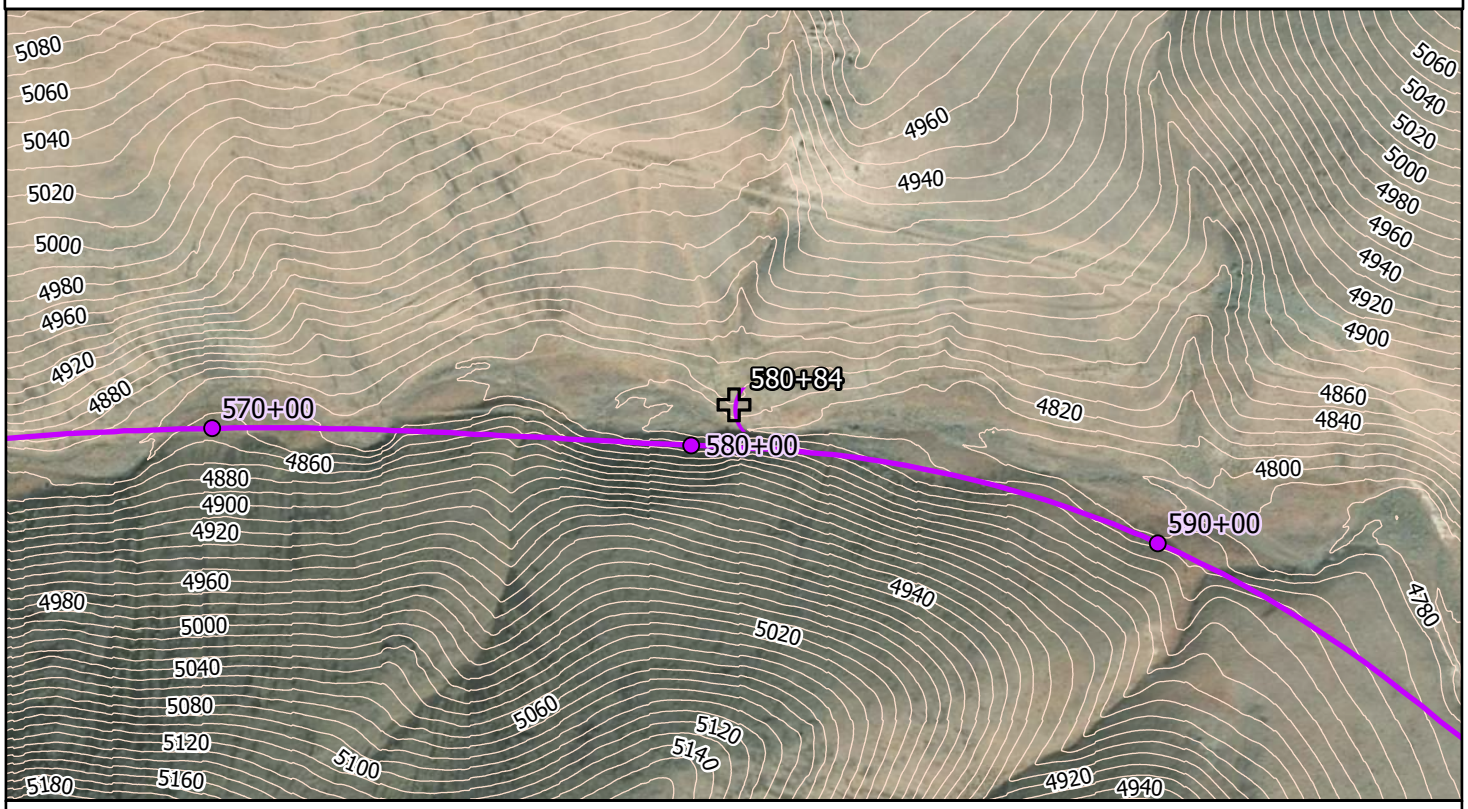
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK5RFN UDWHO\ VWURQJ FKLSV

:HDWKHULQJ UDWH

&RPPHQW5RFN UDWHO\ VWURQJ WR VWURQJ

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 580+84

Looking to La Posada.



Looking to TRIC.



Outcrop.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 590+98

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

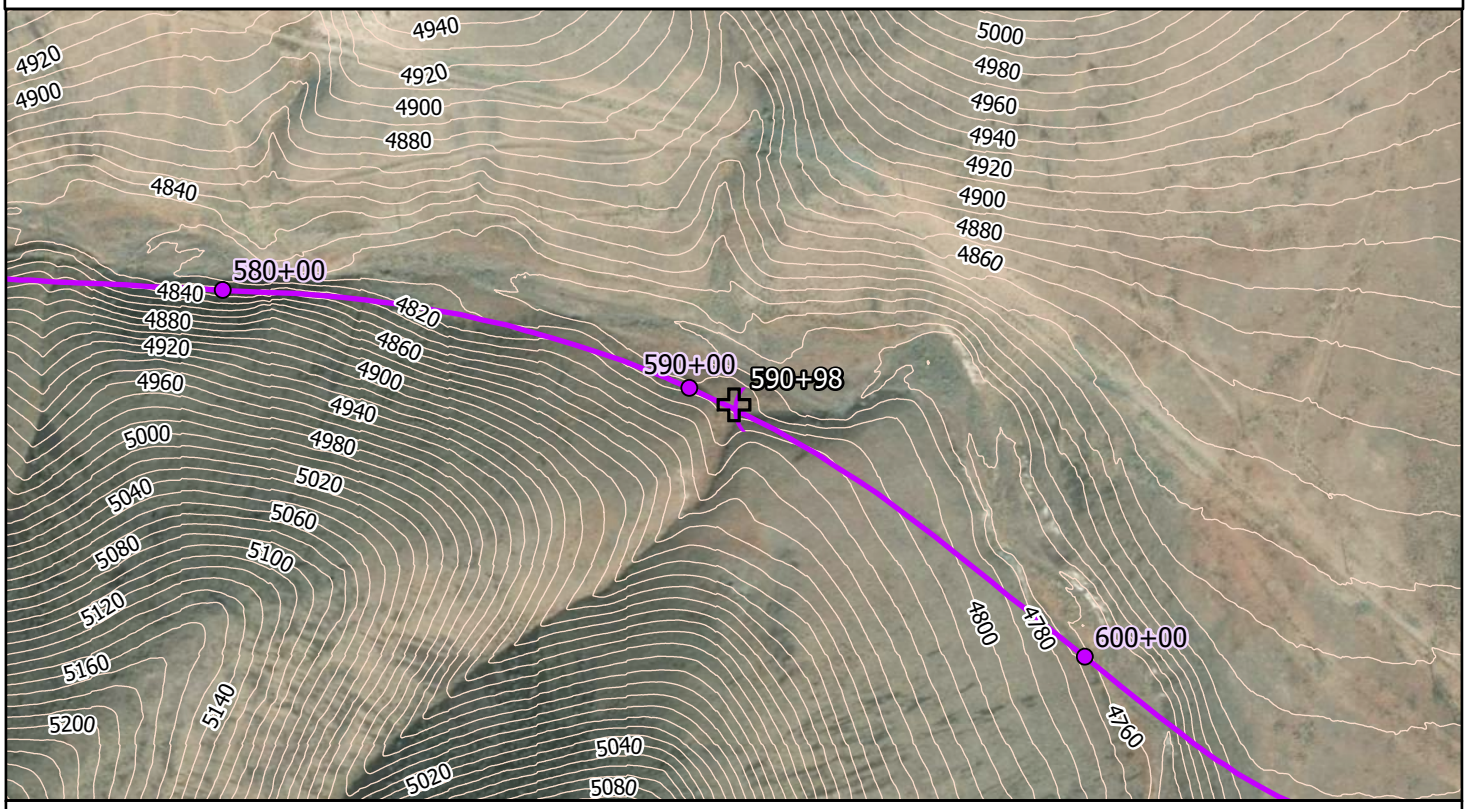
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

'DWD SRLQW WDNHQ LQ GUDLQDJH FKDQQHO



1257+

86)HHW

La Posada Data Point — La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 590+98

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 599+52

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

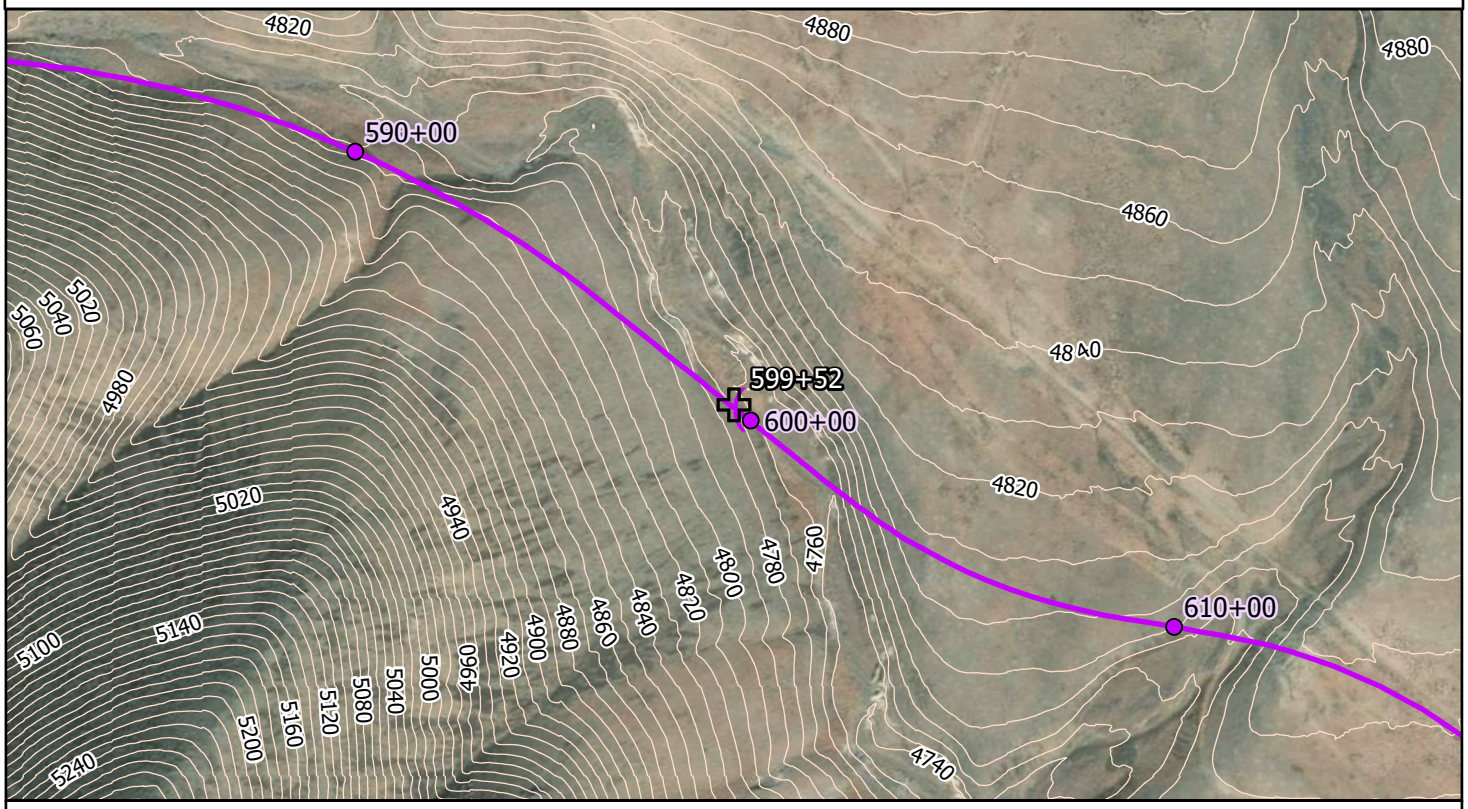
%HGGLQJ LI VHGLPHQWDU\

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 599+52

Bedrock in drainage.



Bedrock in drainage 1.



Looking to La Posada.



Looking to TRIC.



WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 611+40

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

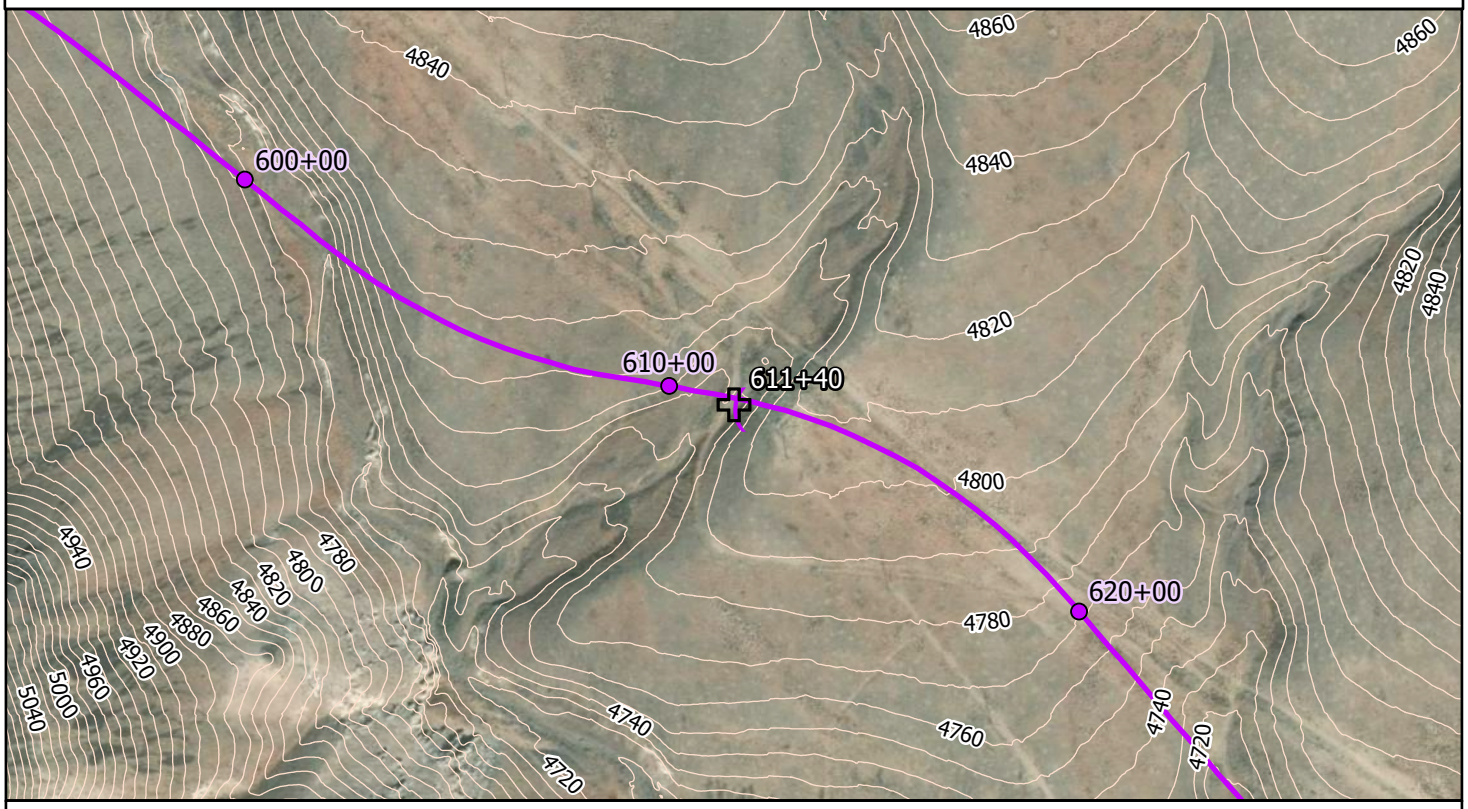
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚ QWPH VFUHH LQ GUDLQDJH VLGHZDONV

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ ‚
*URXQG &RYHUDJH‚ PRGHUDWH ˘ ^˘
5RFN 7\SH‚
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ JUDVVHV
'HQVLW\‚ 6DUVH
&RPPHQWV‚

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 611+40

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 619+71

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

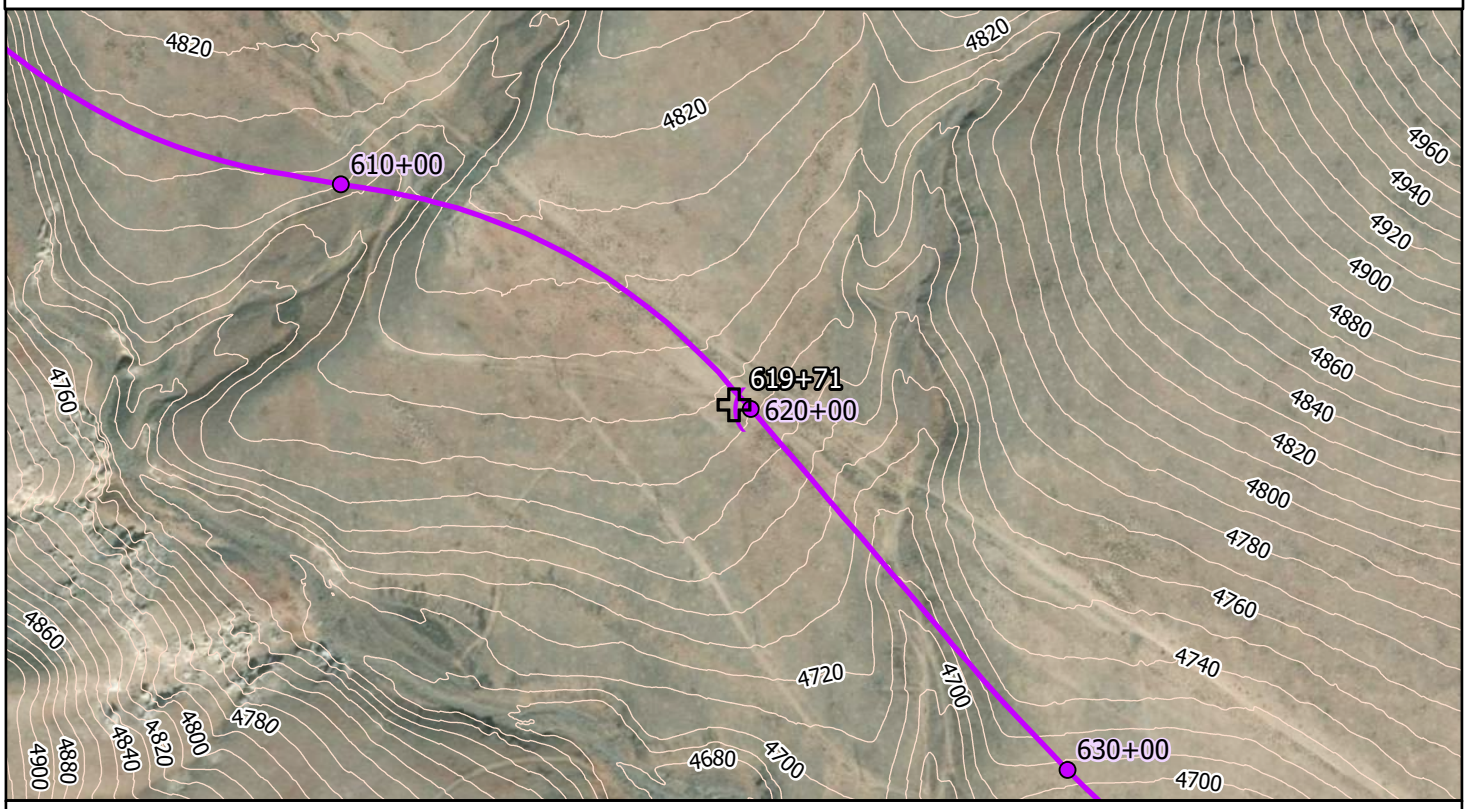
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV *UDVVHV ZLWK VPDOO EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 619+71

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 639+67

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

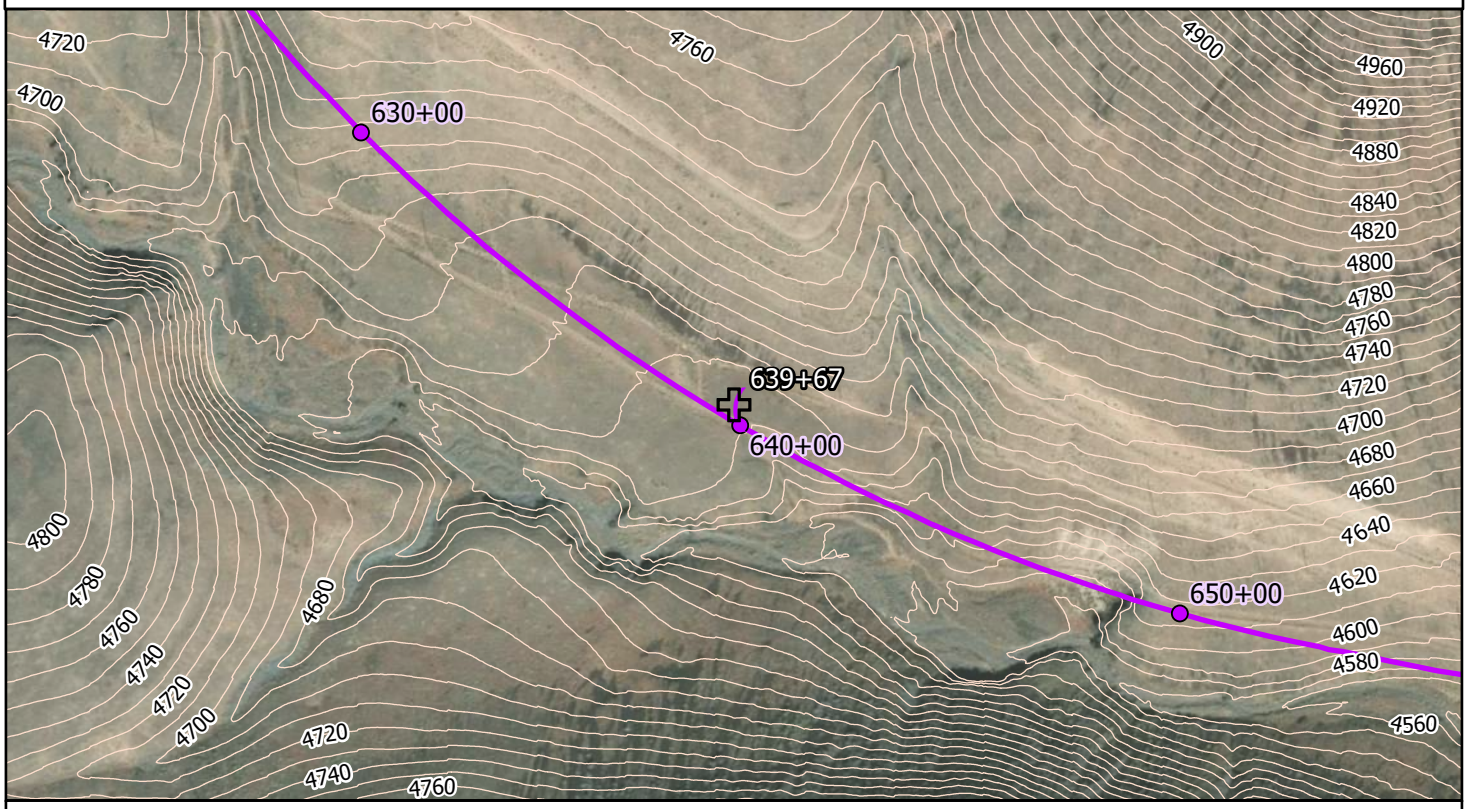
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW QWDOORZ EHGURFN OLNHO\

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ˙LQ
*URXQG &RYHUDJH KHUDY\H!
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV 6WUVH JUDVVHV ZLWK VPDOO EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

La Posada Data Point La Posada Route

Project Name: La Posada Geotechnical Investigation Station Name: 639+67

Heavy cobble float.



Looking to La Posada.



Looking to TRIC.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 661+08

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW QR GHUDWH WR KHDY\ FRYHUDJH

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

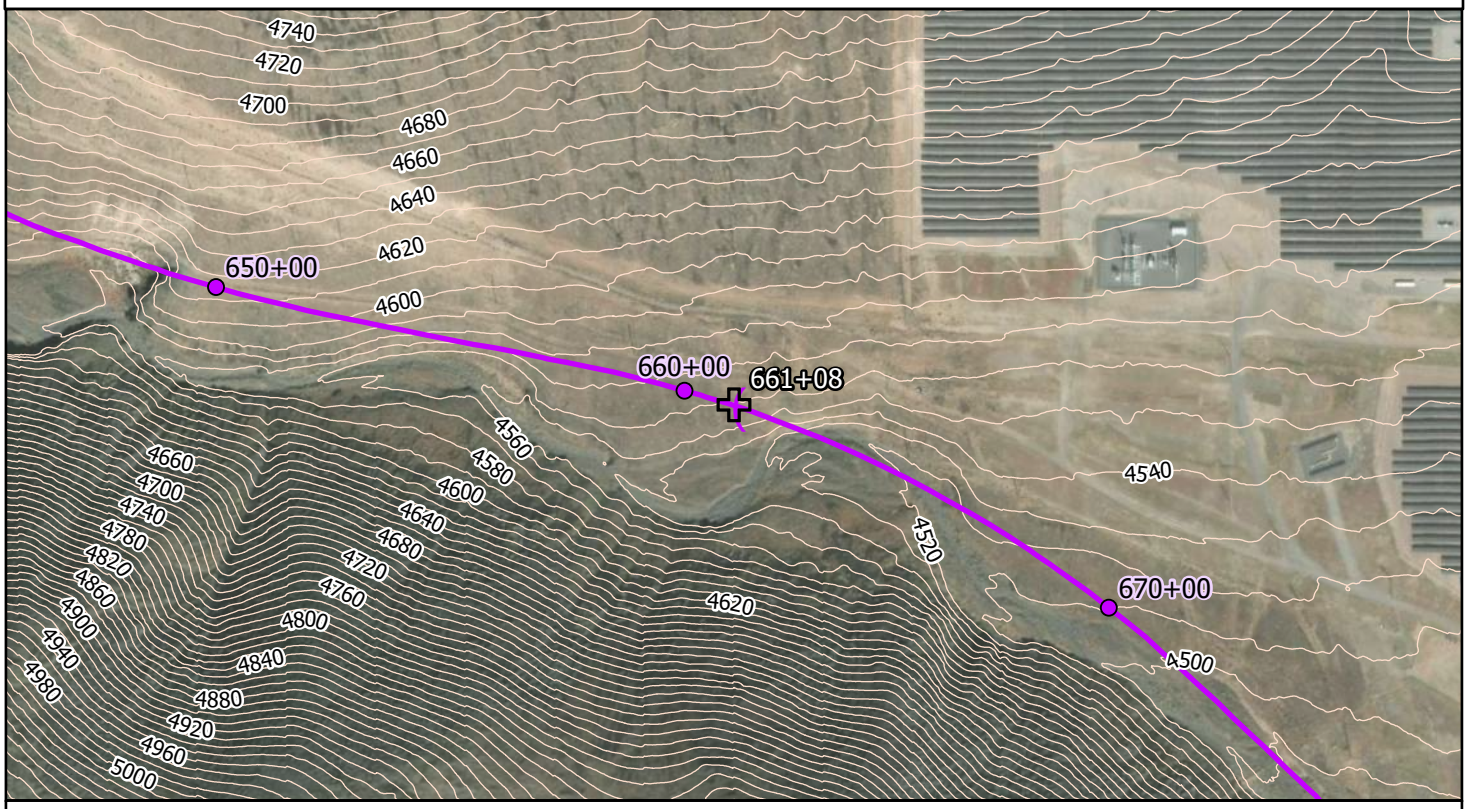
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 661+08

Looking to La Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ/ł … Œ … −//Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 51+29

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

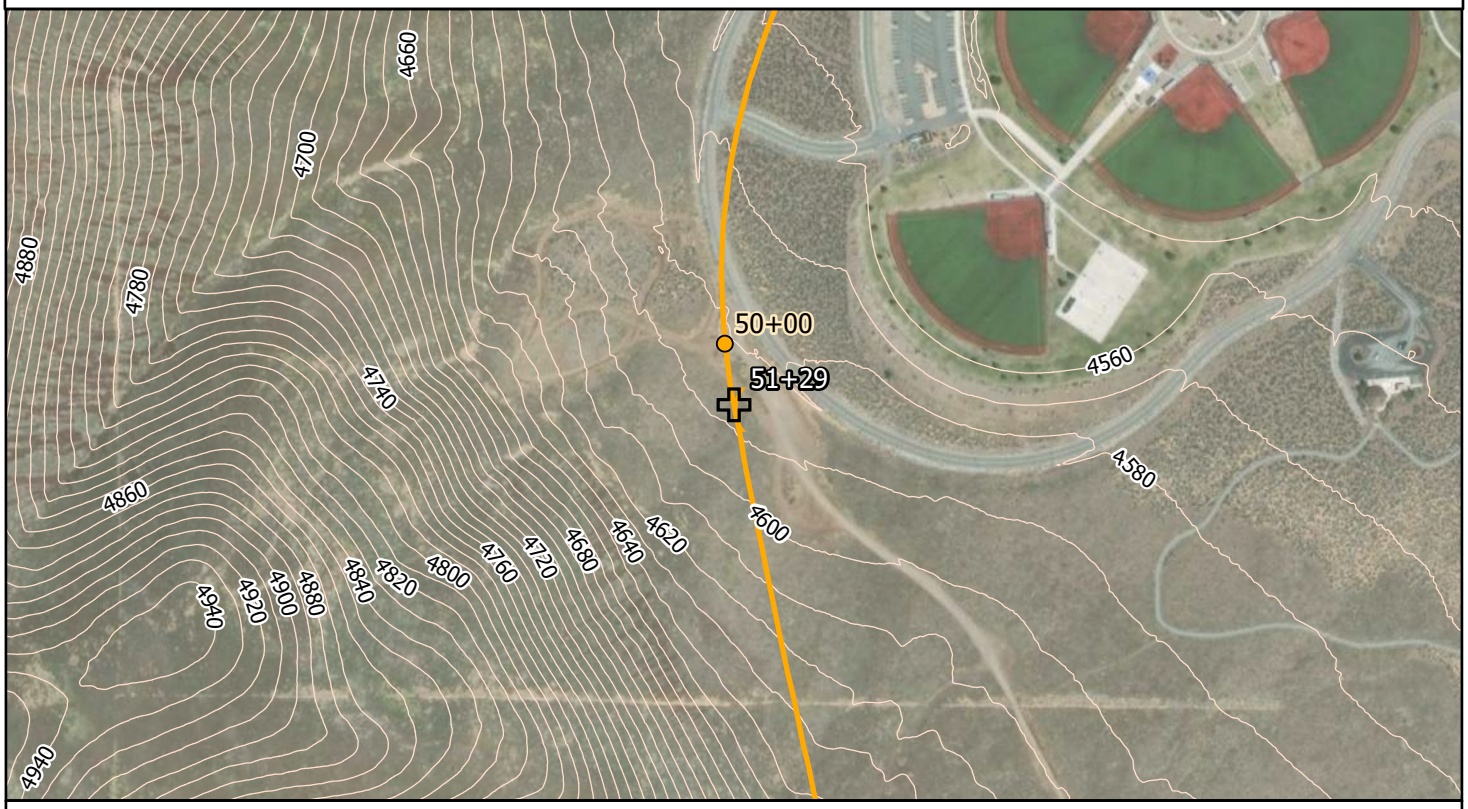
*URXQG &RQGLWLRQ
7\SH6RLO
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH
5RFN 7\SH
&RPPHQW

9HJHWDWLRQ
7\SHEUXVK
'HQVLW\6DUVH
&RPPHQWV0HGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 51+29

Golden eagle ballpark.



Looking towards TRIC.



Looking towards Vista.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 62+28

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6RLO

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\VSDUVH

&RPPHQWVJUDVVHV ZLWK VSUHDG RXW VPDOO VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

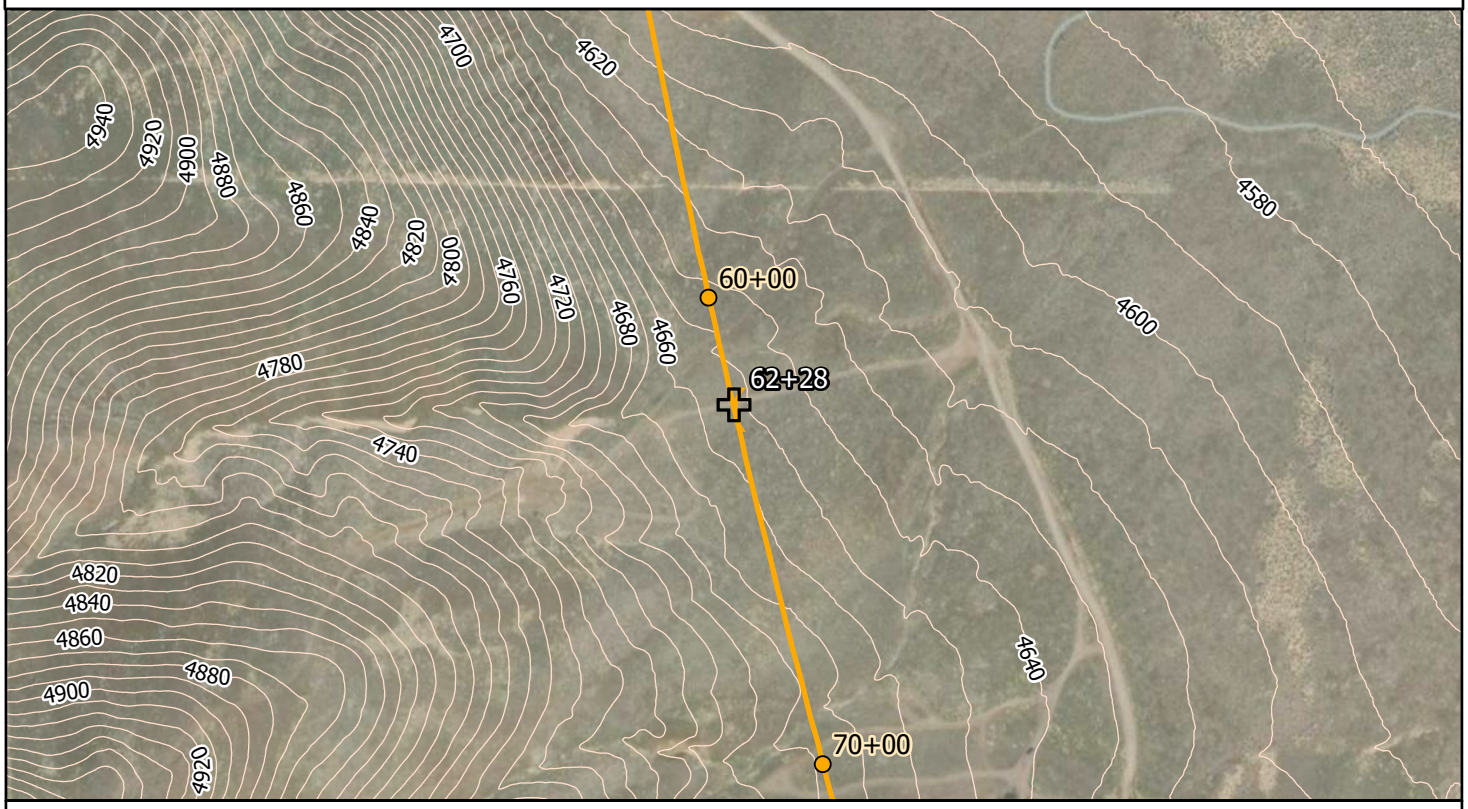
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 62+28

Looking towards TRIC.



Looking towards Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 70+11

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

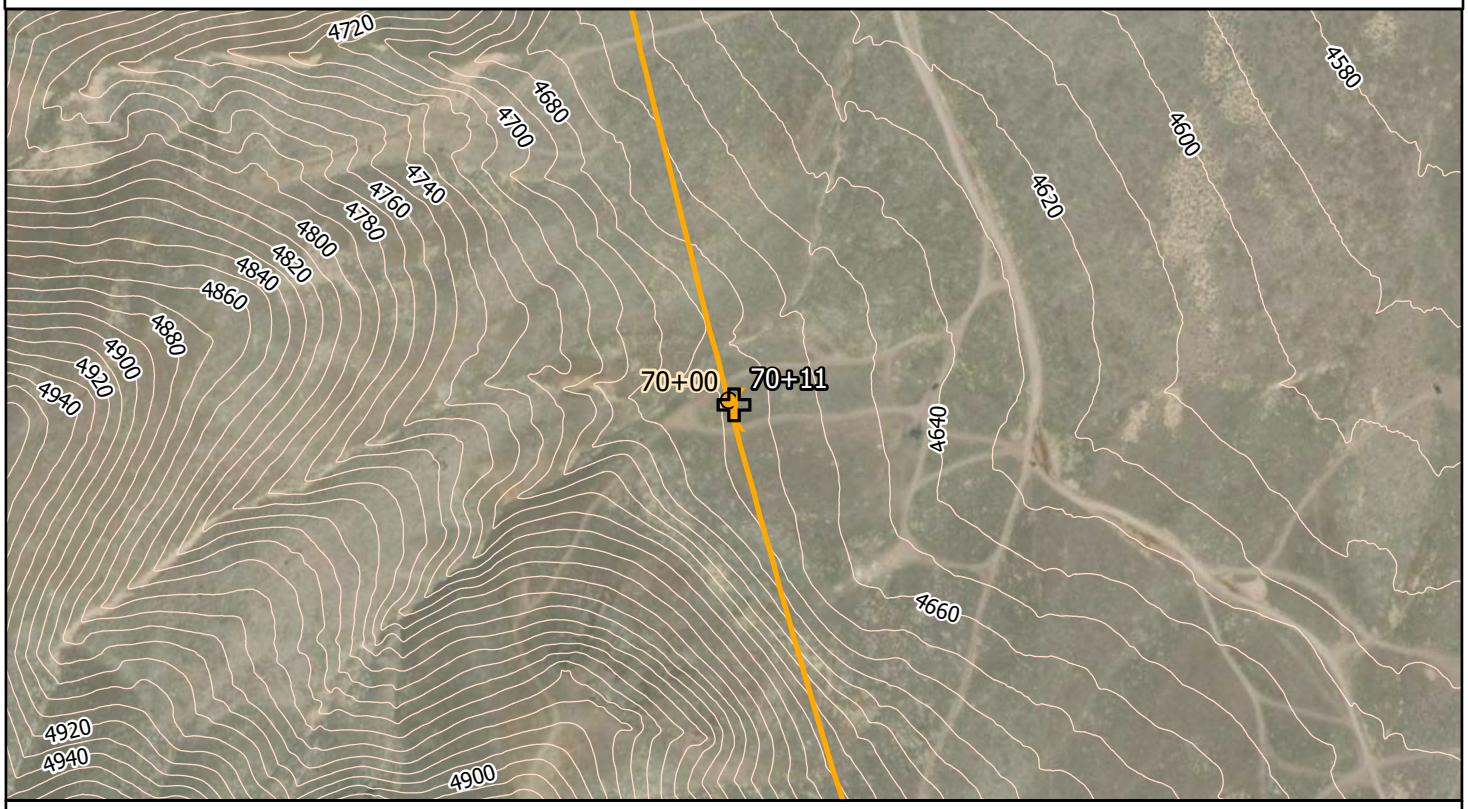
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

%HGURFN PD\ EH VKDOORZ EDVHG RII RI URDG VXUIDFH FRQGLWLRQV



1257+

86)HHW

Vista Data Point — Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 70+11

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 80+82

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

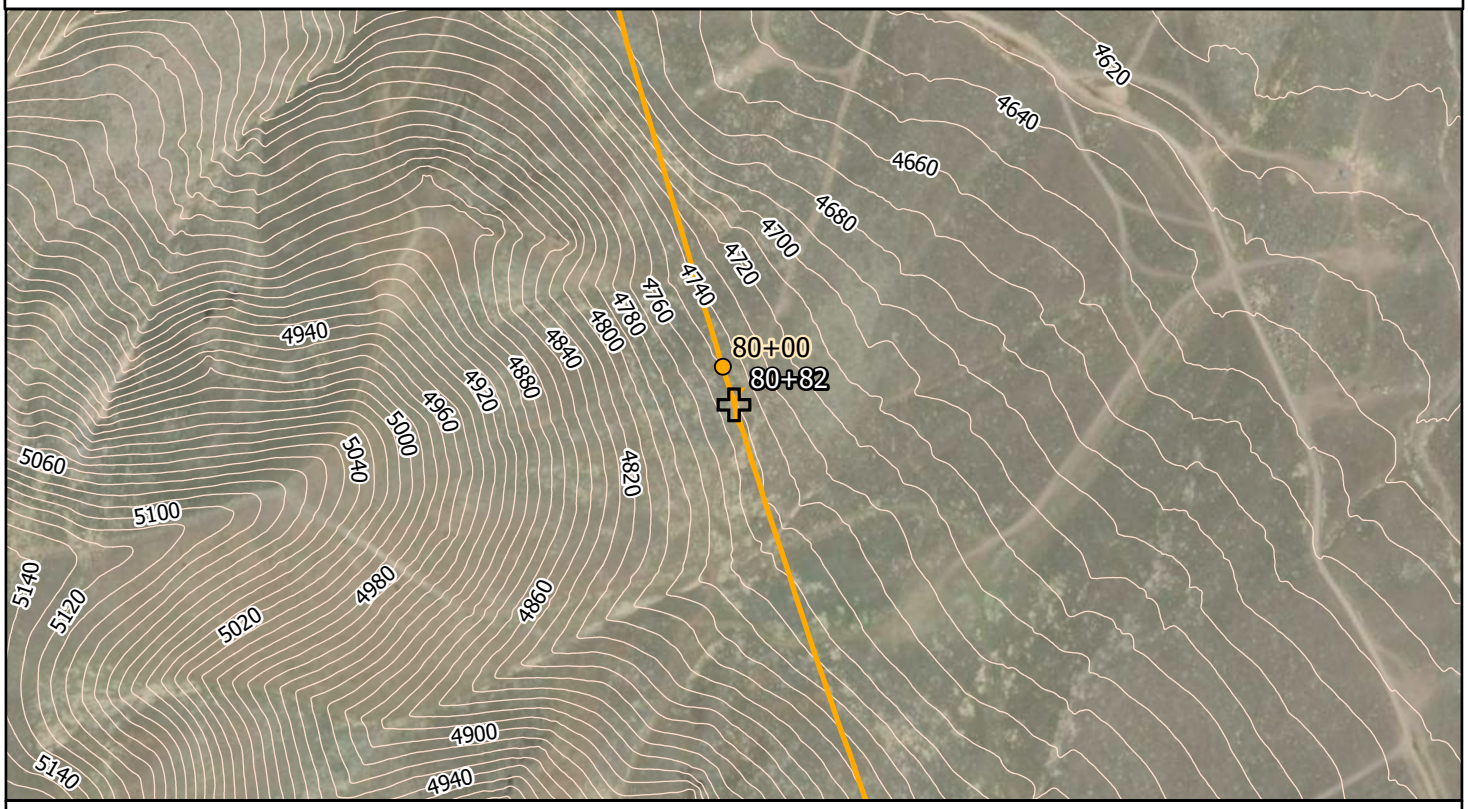
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 80+82

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 93+71

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQWRRW GLDPHWHU ERXOGHUV SUHVHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

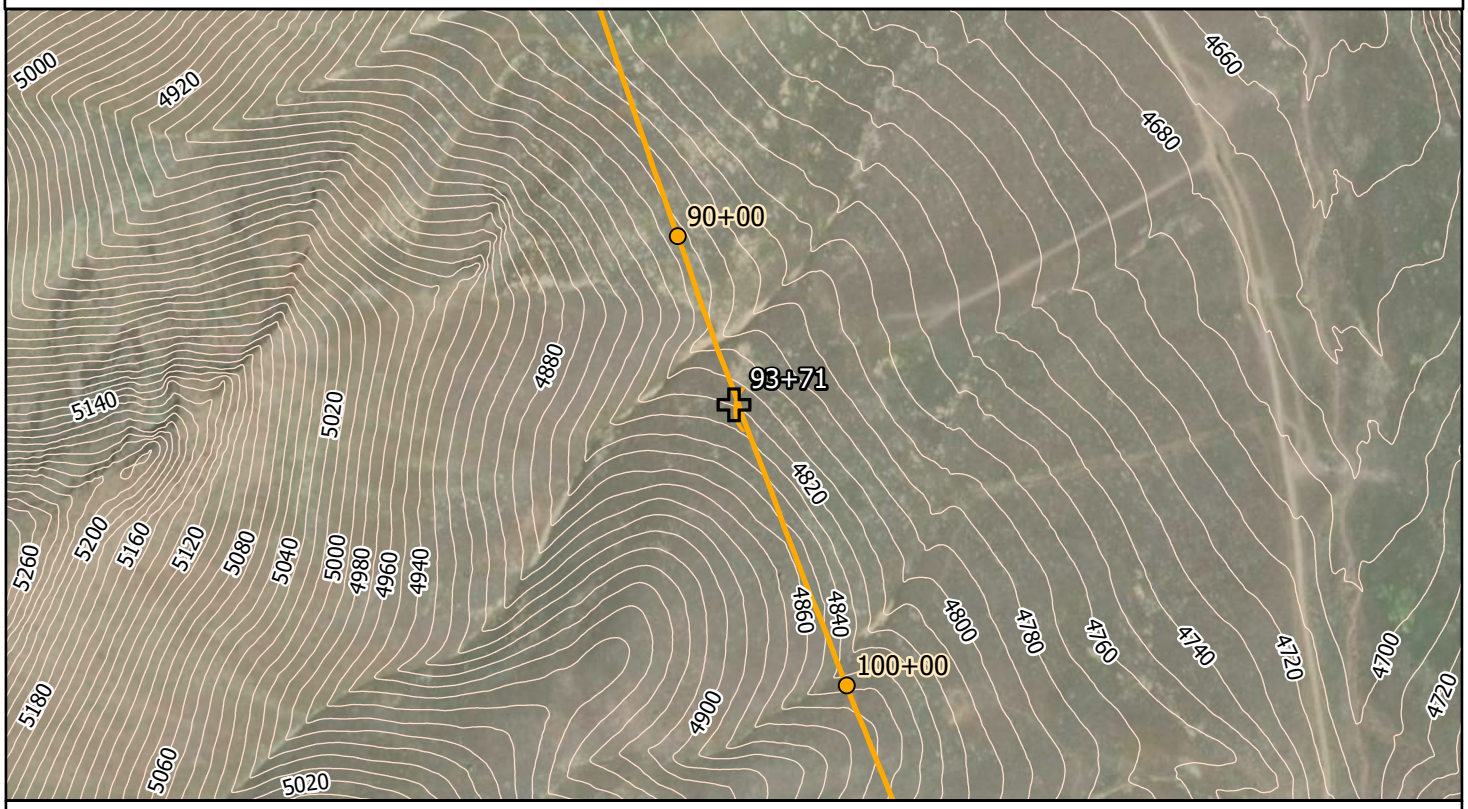
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 93+71

Looking to TRIC.



Looking to Vista.



Rock outcropping on hill to the south.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ/ł … Œ … −//Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 104+66

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

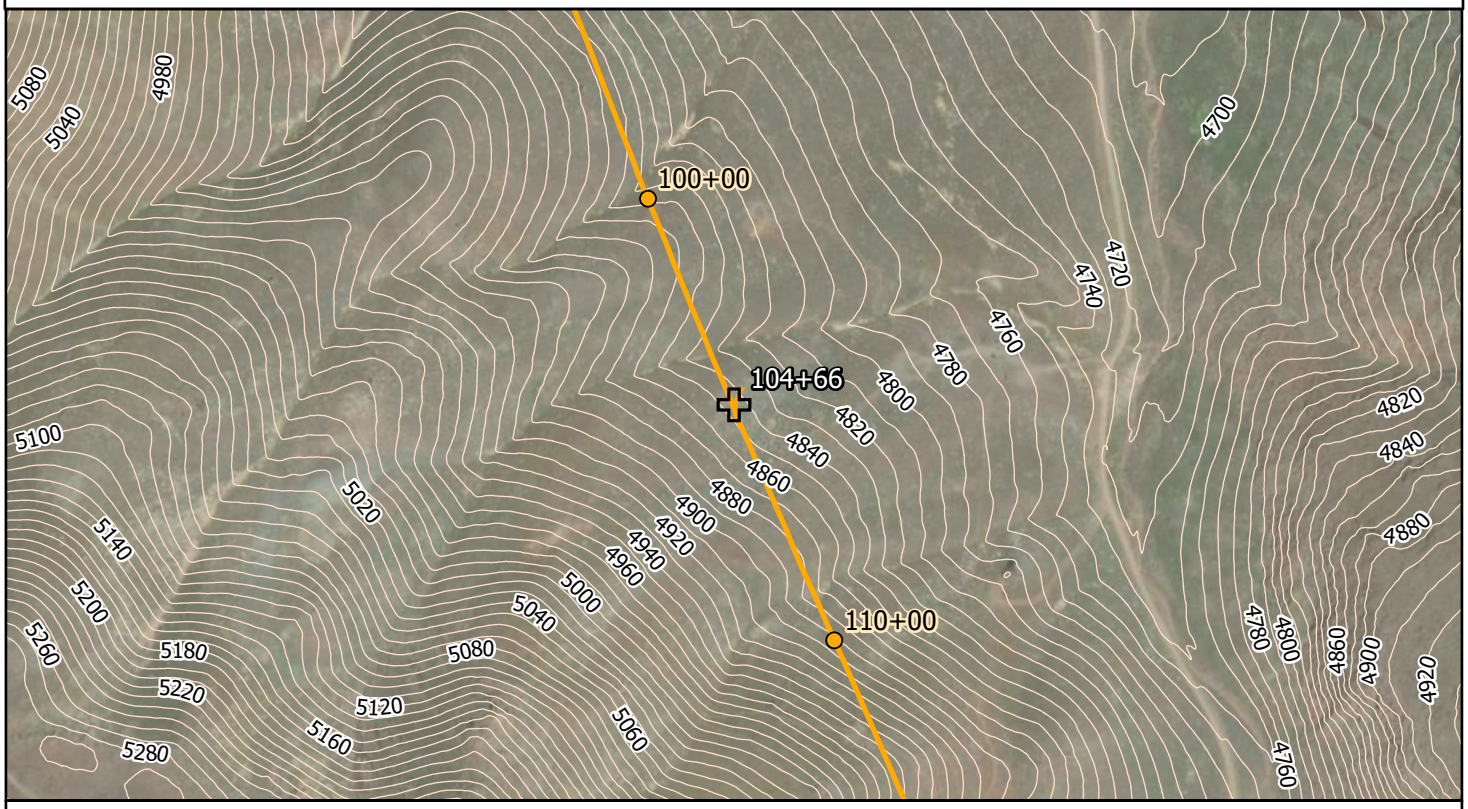
*URXQG &RQGLWLRQ
7\SH&REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH
&RPPHQW ZLJKW WR PRGHUDWH JURXQG FRYHUDJH

9HJHWDWLRQ
7\SH EUXVK
'HQVLW\ 6DUVH
&RPPHQWV 0WGLXP VDJH EUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 104+66

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 113+03

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

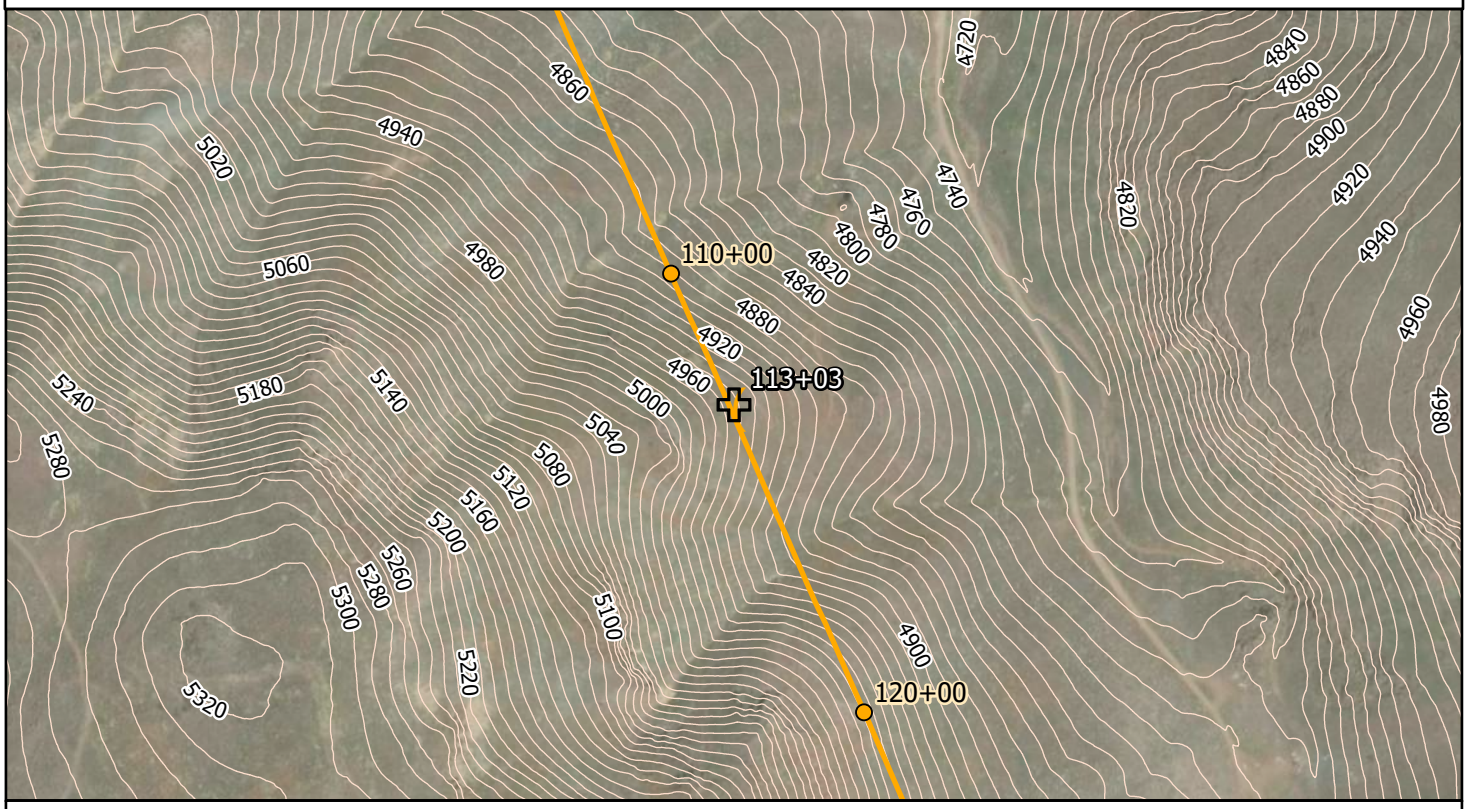
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW VLNHO\ VKDOORZ EHGURFN GXH WR SUHVHQFH RI VFUHH DQG RXWFUR

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH $QGHVLWH EDVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH $QGHVLWH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK PRGHUDWHO\ VWURQJ FKLSV
:HDWKHULQJ PRGHUDWH
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 113+03

Looking to TRIC.



Looking to Vista.



Rock outcrop uphill from data point.



Scree downhill from data point.



fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 127+43

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

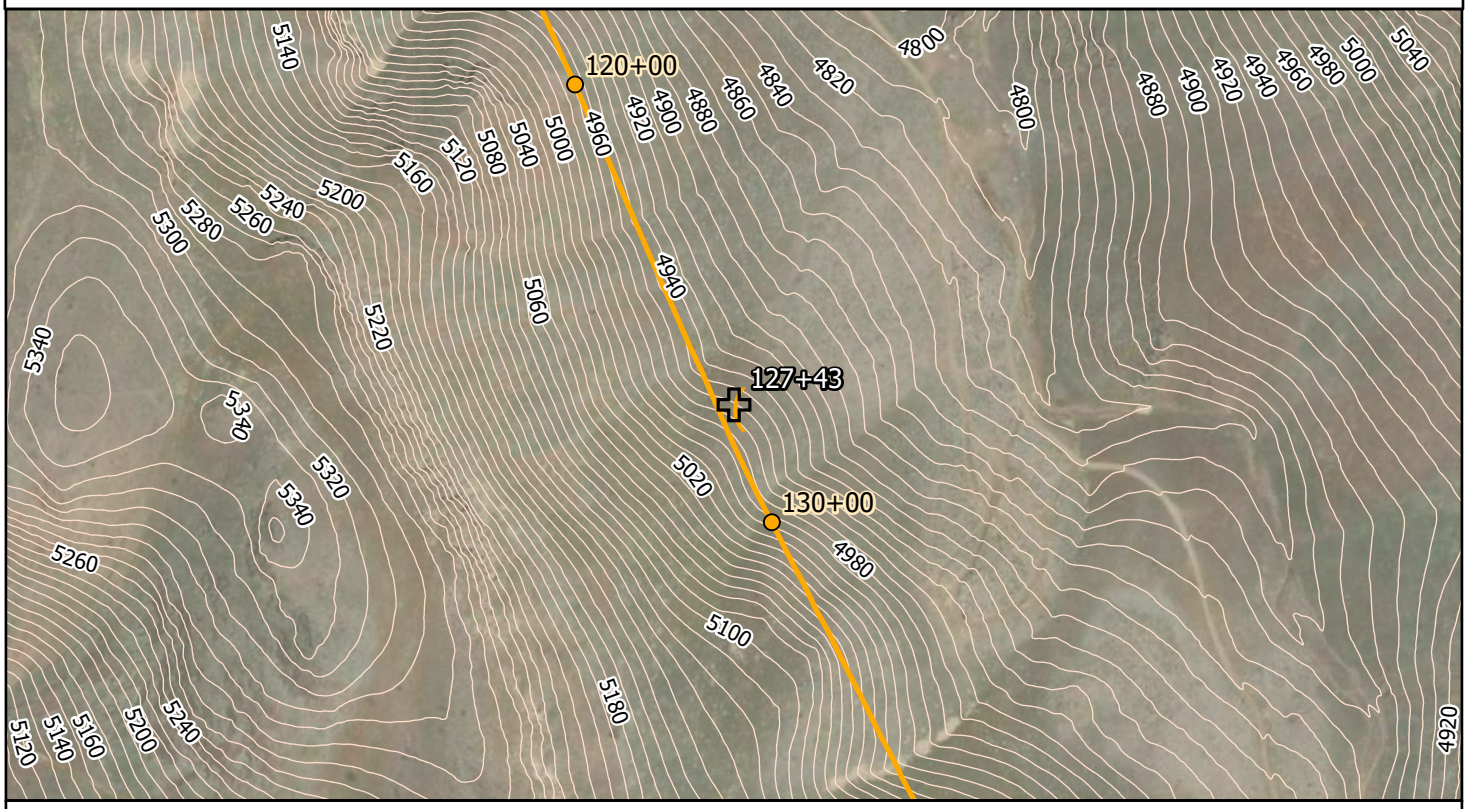
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 127+43

Aeolian wind blown deposit downhill fro data point. Marked by darker brush.



Looking to TRIC.



Looking to Vista.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 139+37

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

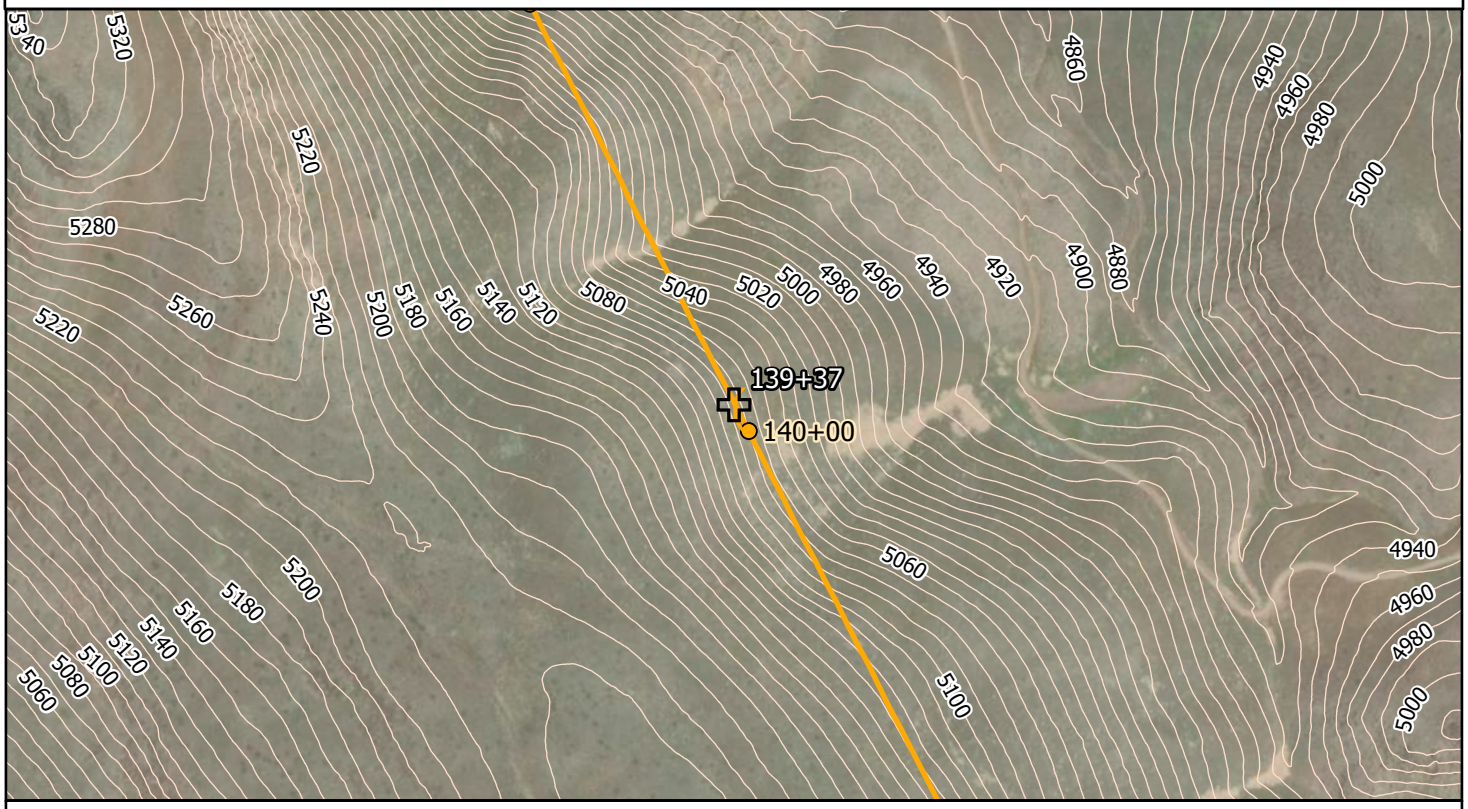
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ˜˘LQ ‚
*URXQG &RYHUDJH ˜ ˘ CLUDJH ˜ ˘
5RFN 7\SH‚
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ EUXVK
'HQVLW\ 6\ WDUVH
&RPPHQWV‚ 6WDUVH VPDOO WR PHGLXP VDJHEUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 139+37

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 149+56

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

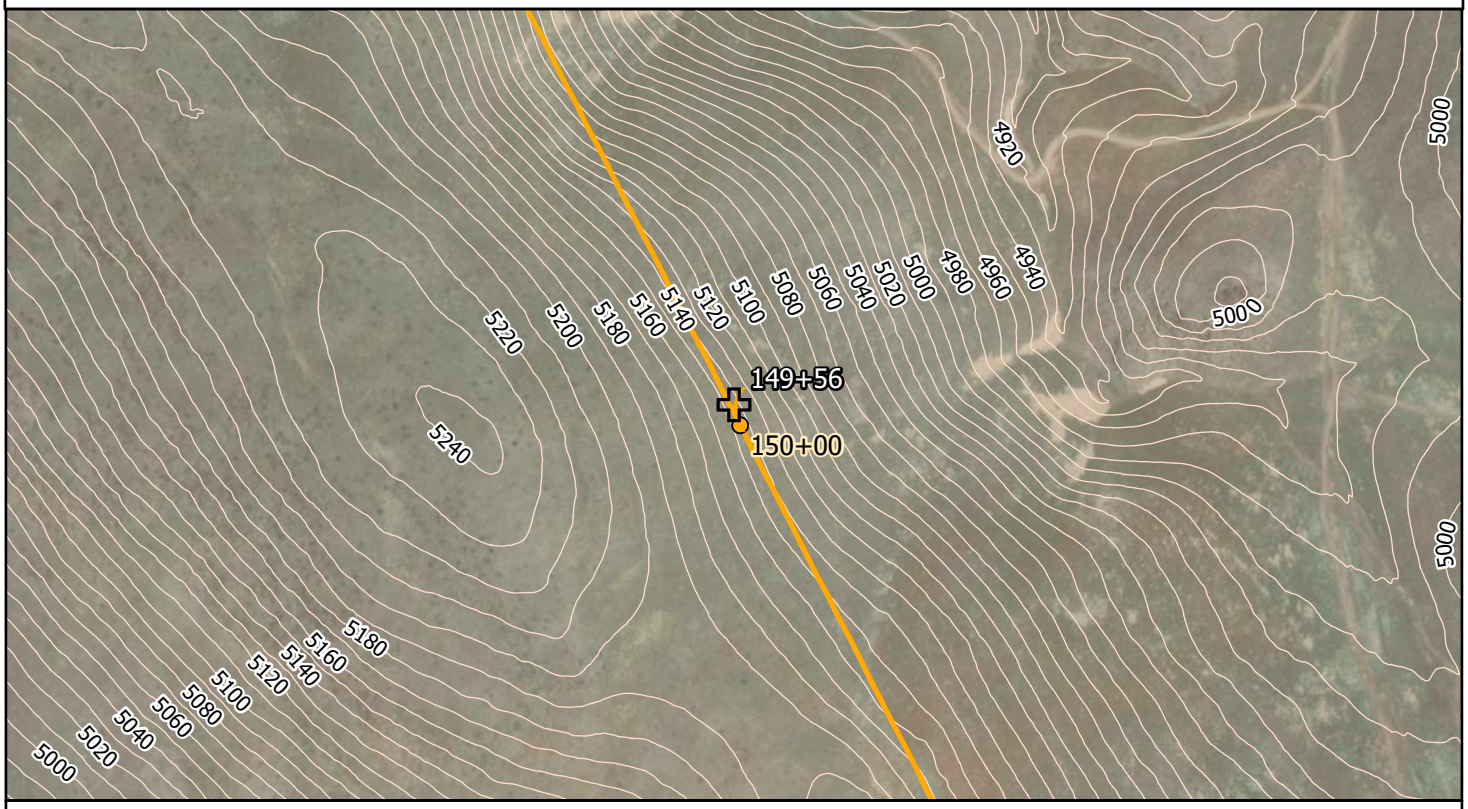
6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQWV

6KDOORZ EHGURFN OLNHO\



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 149+56

Looking to TRIC.



Looking to Vista. Scree.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 160+03

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

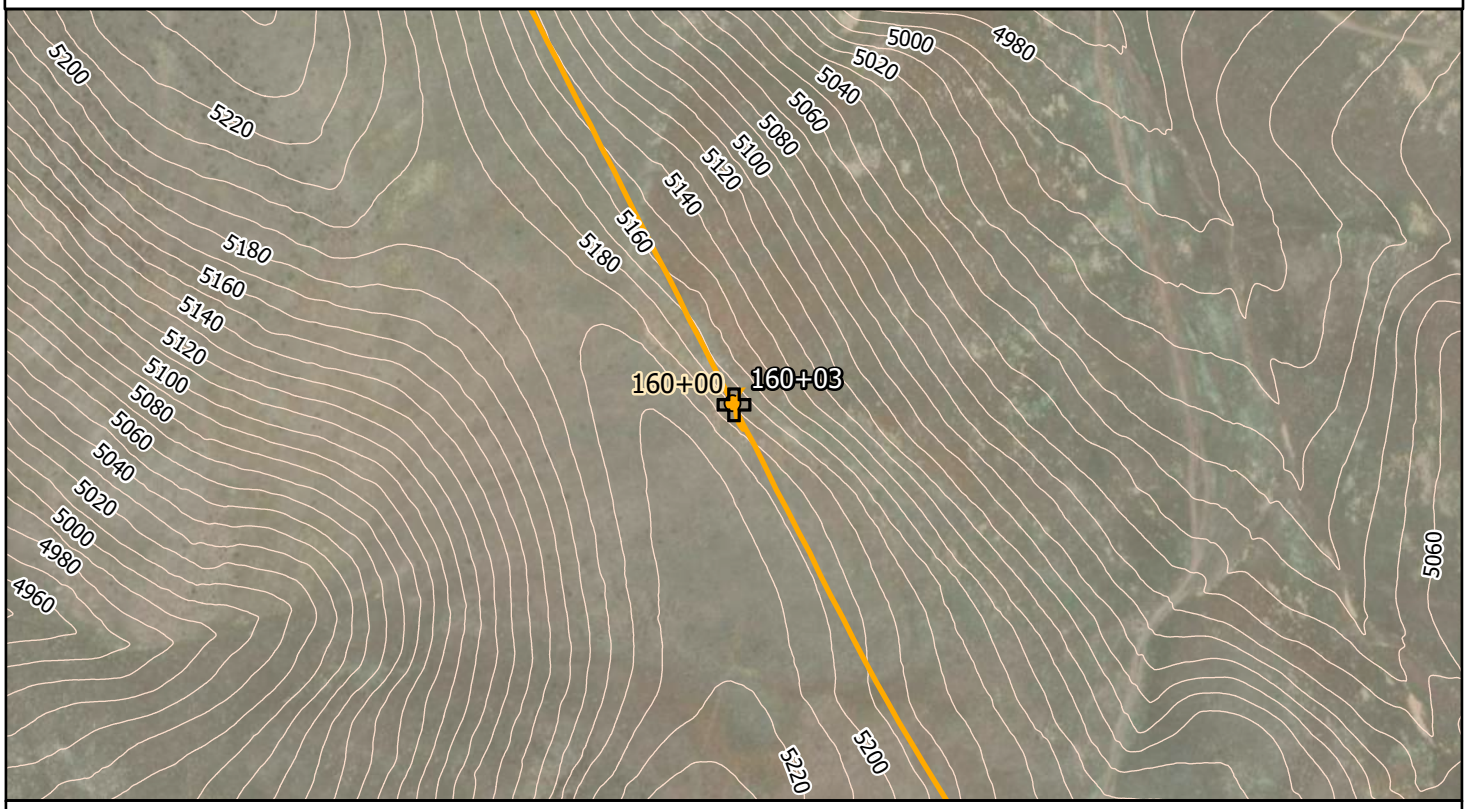
%HGGLQJ LI VHGLPHQWDU\

6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQW



1257+

86)HHW

Vista Data Point

Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 160+03

Looking to TRIC.



Looking to Vista.



Outcropping uphill from data point.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 172+79

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH%HGURFN

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

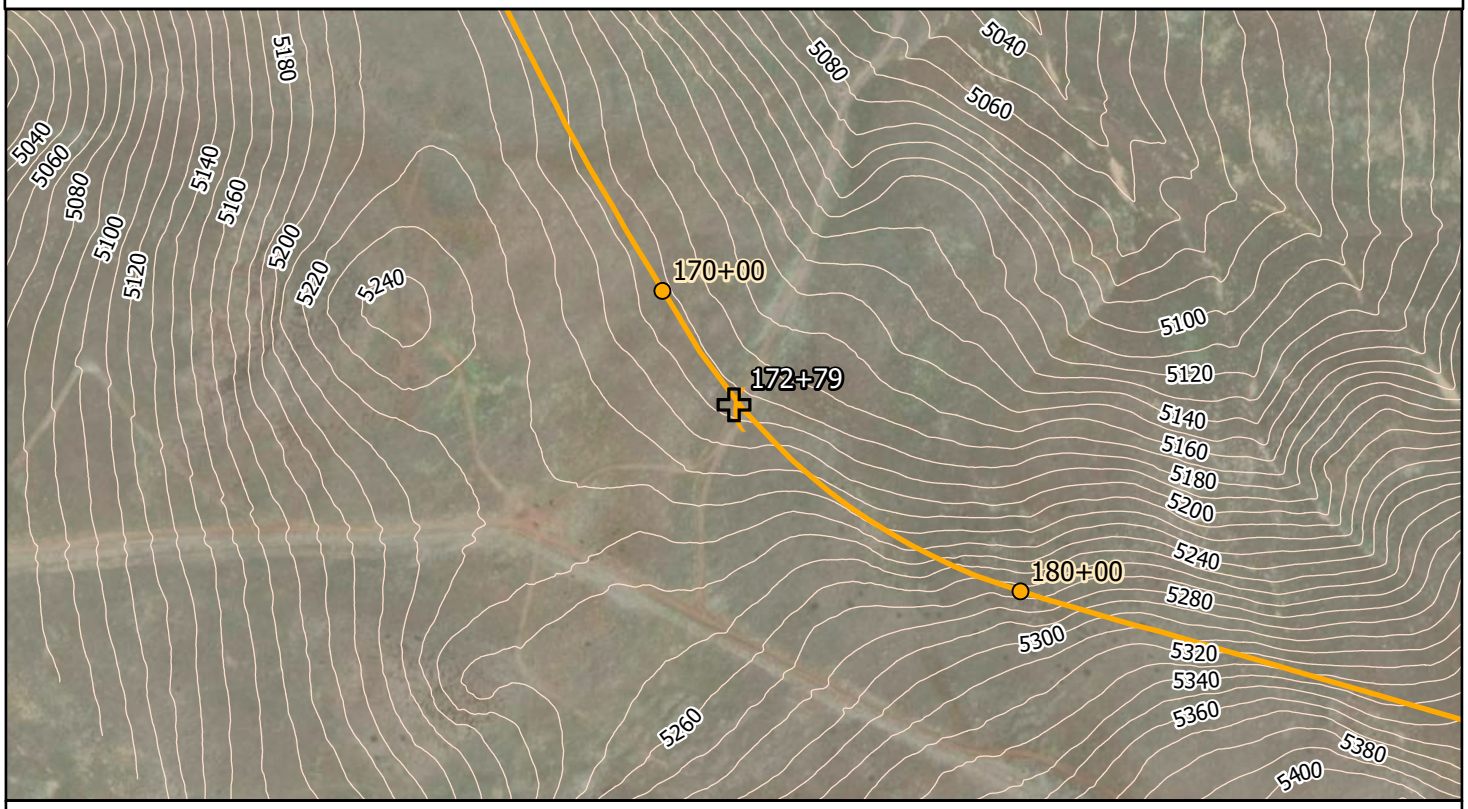
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 172+79

Bedrock apparent in dirt road.



Looking to TRIC.



Looking to Vista.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 185+31

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH%HGURFN

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

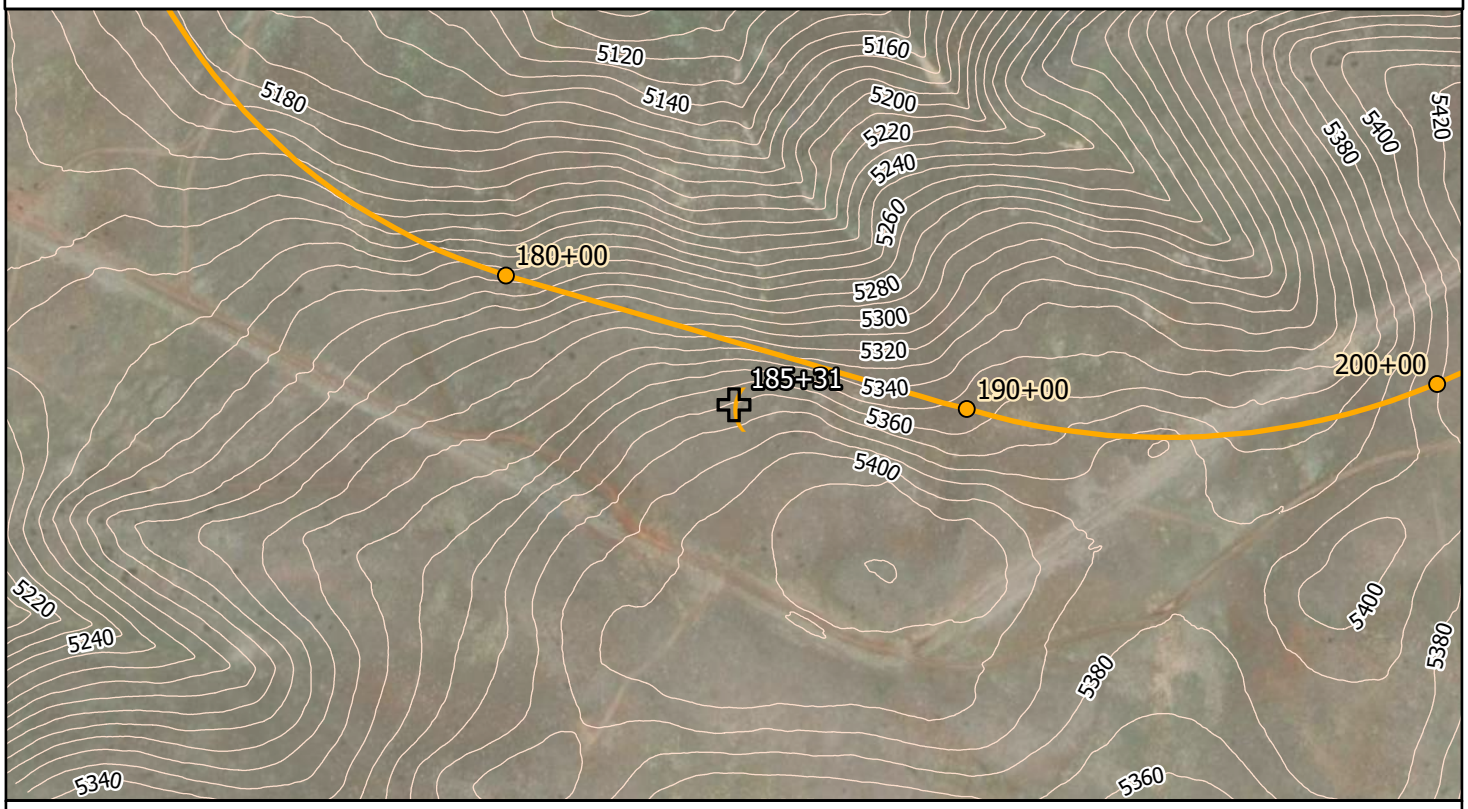
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

6FUHH VPDOO RXWFURSV PDNH EHGURFN DSSDUHQW



Project Name: La Posada Geotechnical Investigation Station Name: 185+31

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 200+11

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

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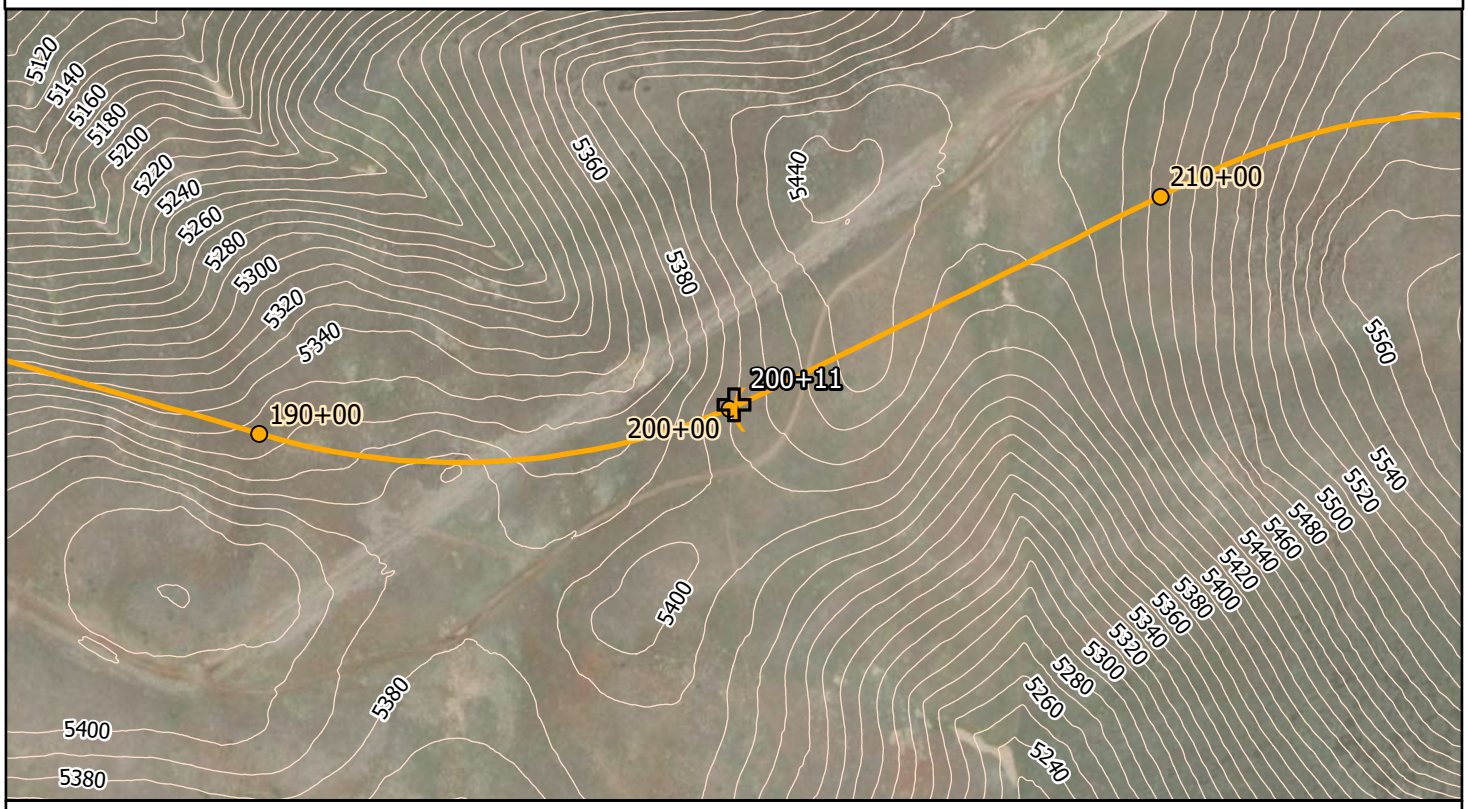
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point

Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 200+11

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 210+03

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH%HGURFN

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

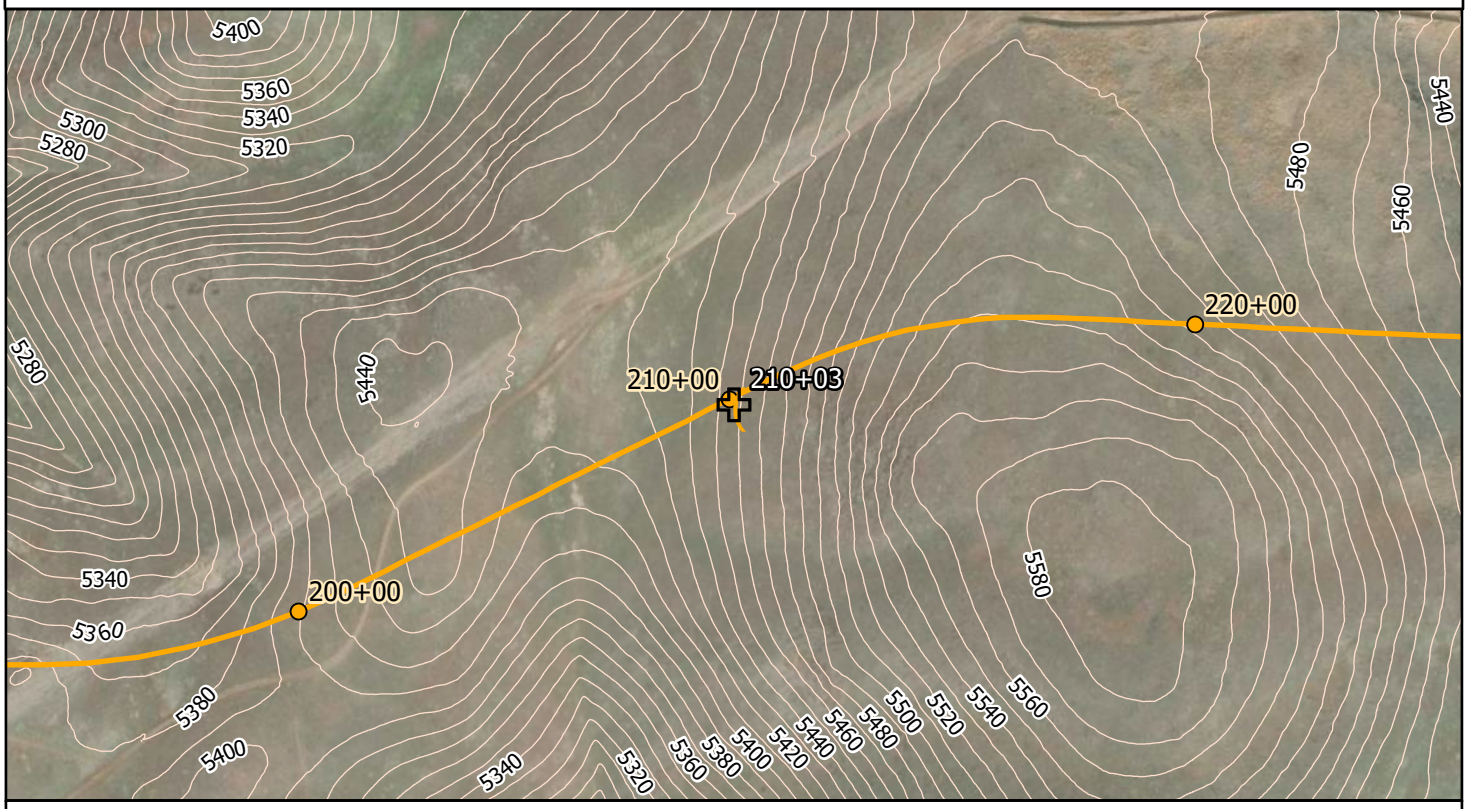
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

&REEOH IORDW DQG VPDOO RXWFURSV PDNH EHGURFN DSSDUHQW



1257+

86)HHW

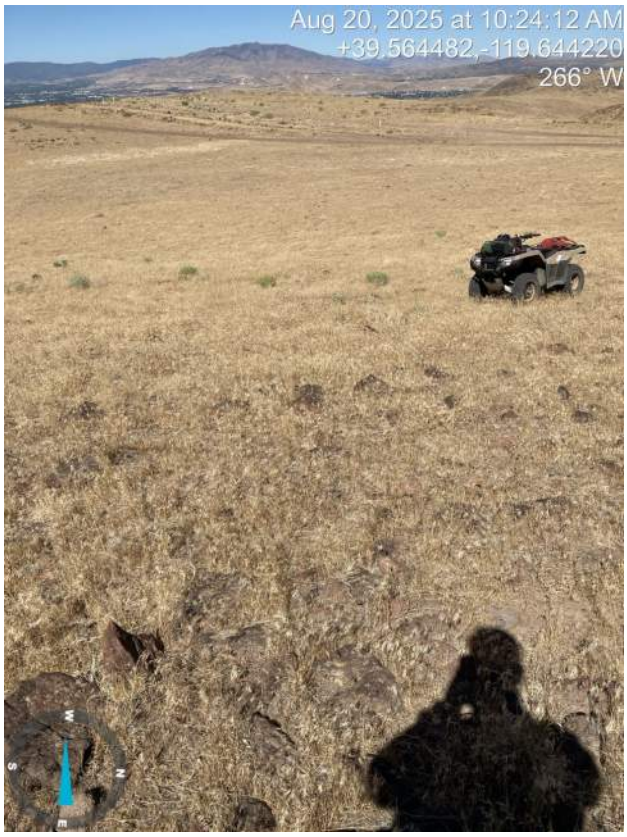
Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 210+03

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 219+81

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

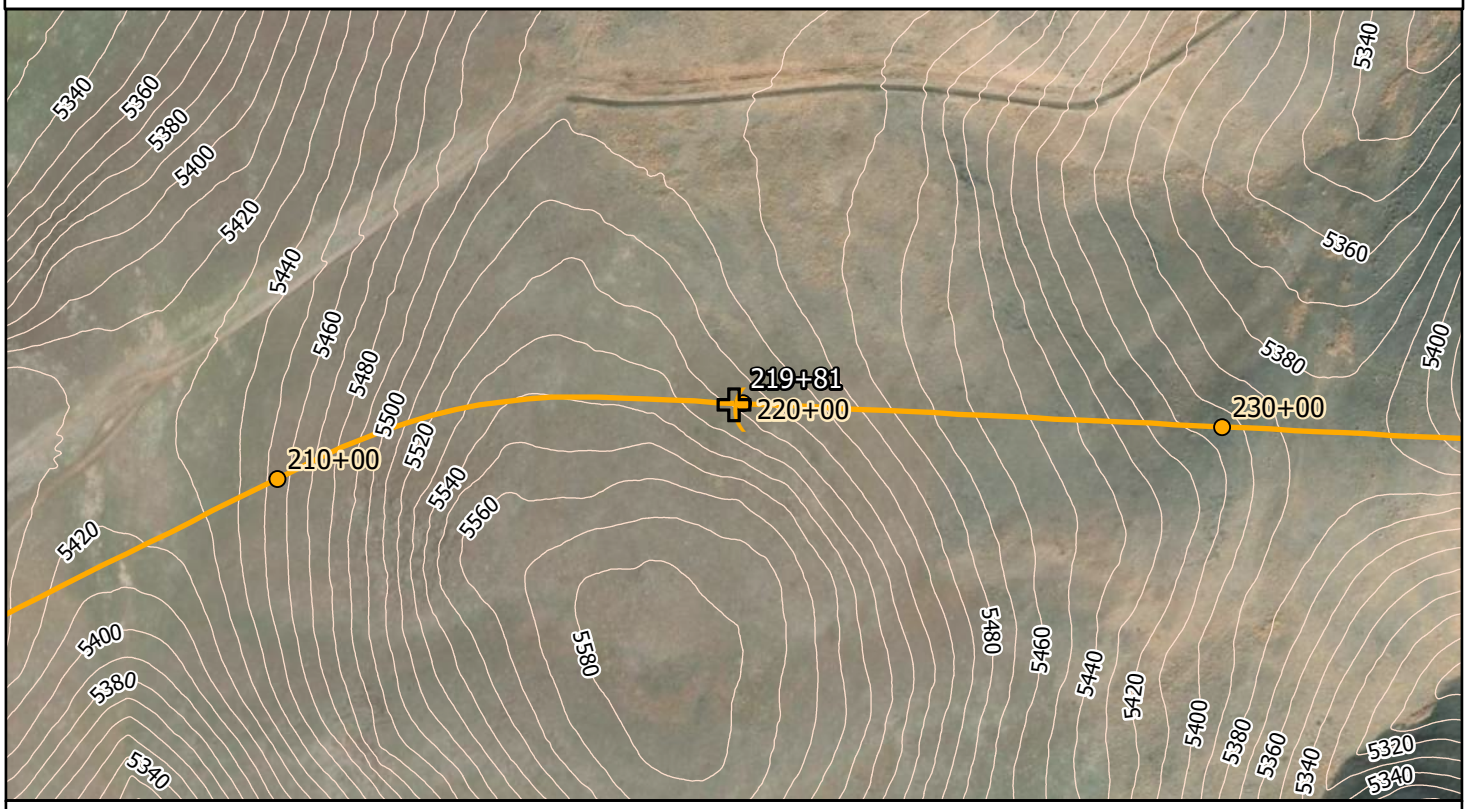
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 219+81

Boulder float. Indicative of shallow bedrock.



Looking to TRIC.



Looking to Vista.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 230+35

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH½HGURFN

&RPPHQW¸

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ ¸

*URXQG &RYHUDJH¸

5RFN 7\SH¸

&RPPHQW¸

9HJHWDWLRQ

7\SH-UDVVHV

'HQVLW\VD UVH

&RPPHQWV¸

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH¸

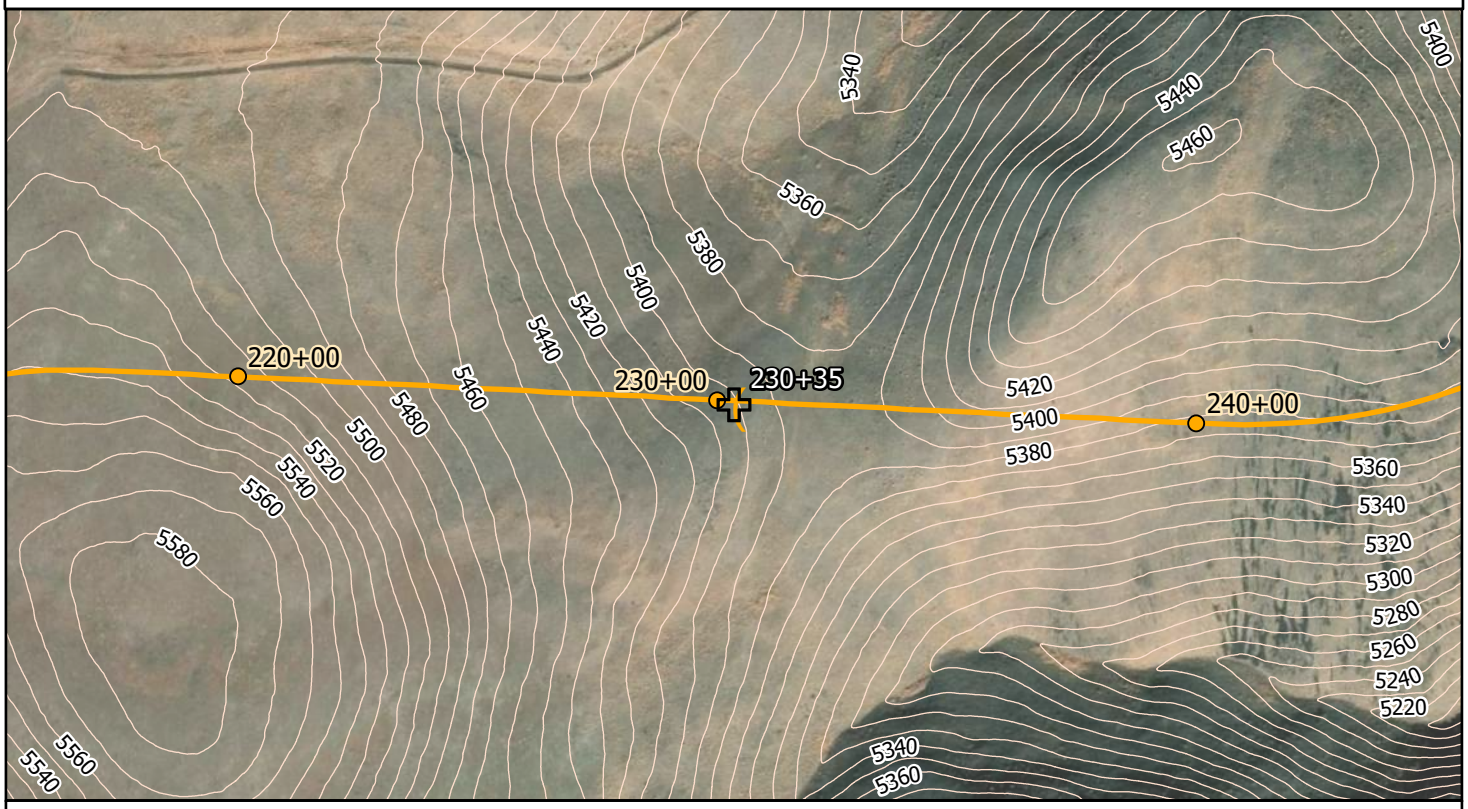
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸

6WUHQJWK¸

:HDWKHULQJ¸

&RPPHQWV¸

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 230+35

Looking to TRIC.



Looking to Vista.



Surface bedrock.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 239+68

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

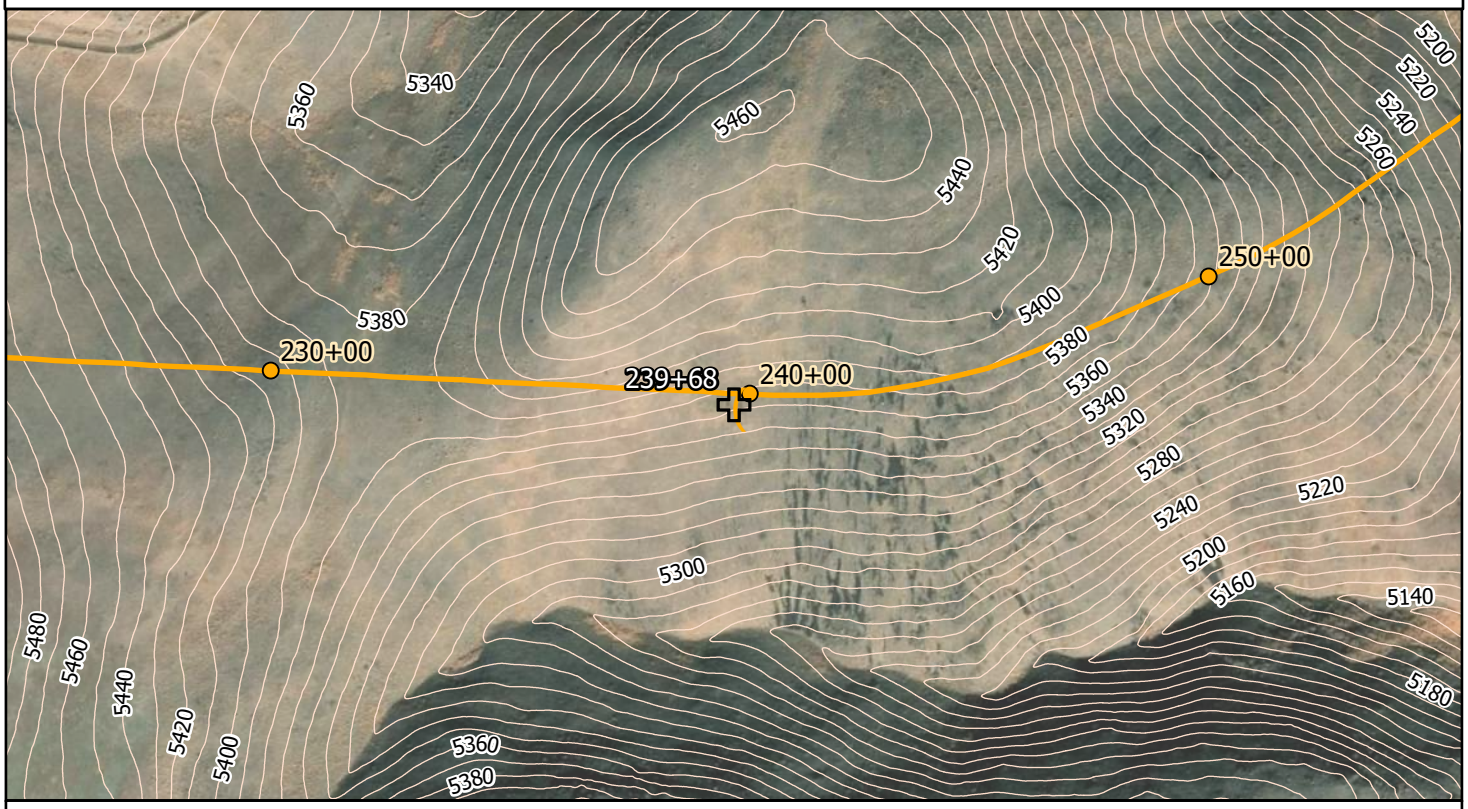
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 239+68

Looking to TRIC. Scree..



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 250+05

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

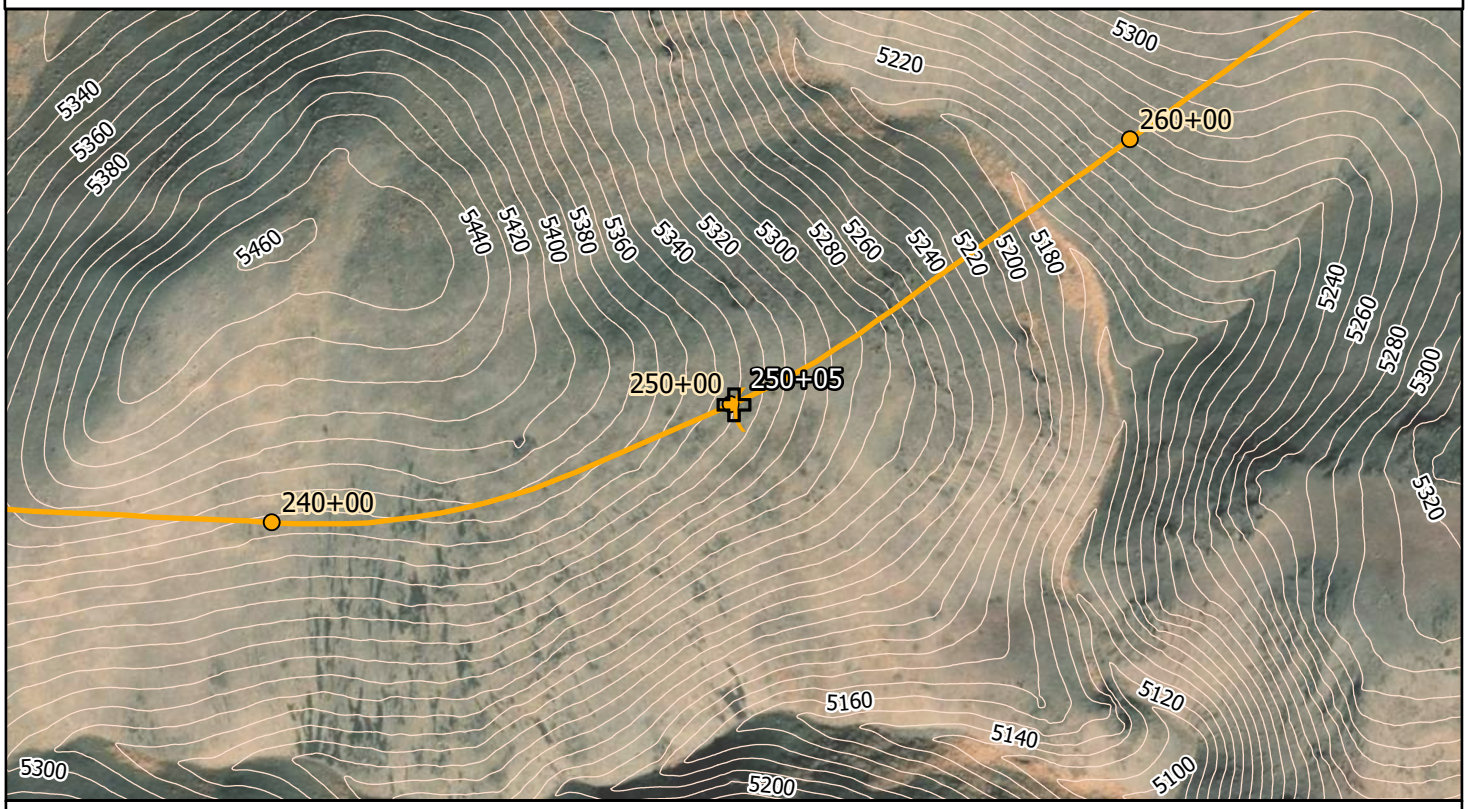
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ˙LQ ‚
*URXQG &RYHUDJH‚ PRGHUDWH ˘ ^˘
5RFN 7\SH‚ %DVDOW
&RPPHQW‚ QRGHUDWH WR KHDY\

9HJHWDWLRQ
7\SH‚ JUDVVHV
'HQVLW\‚ %DUVH
&RPPHQW‚ *UDVVHV ZLWK D IHZ PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 250+05

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 253+98

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

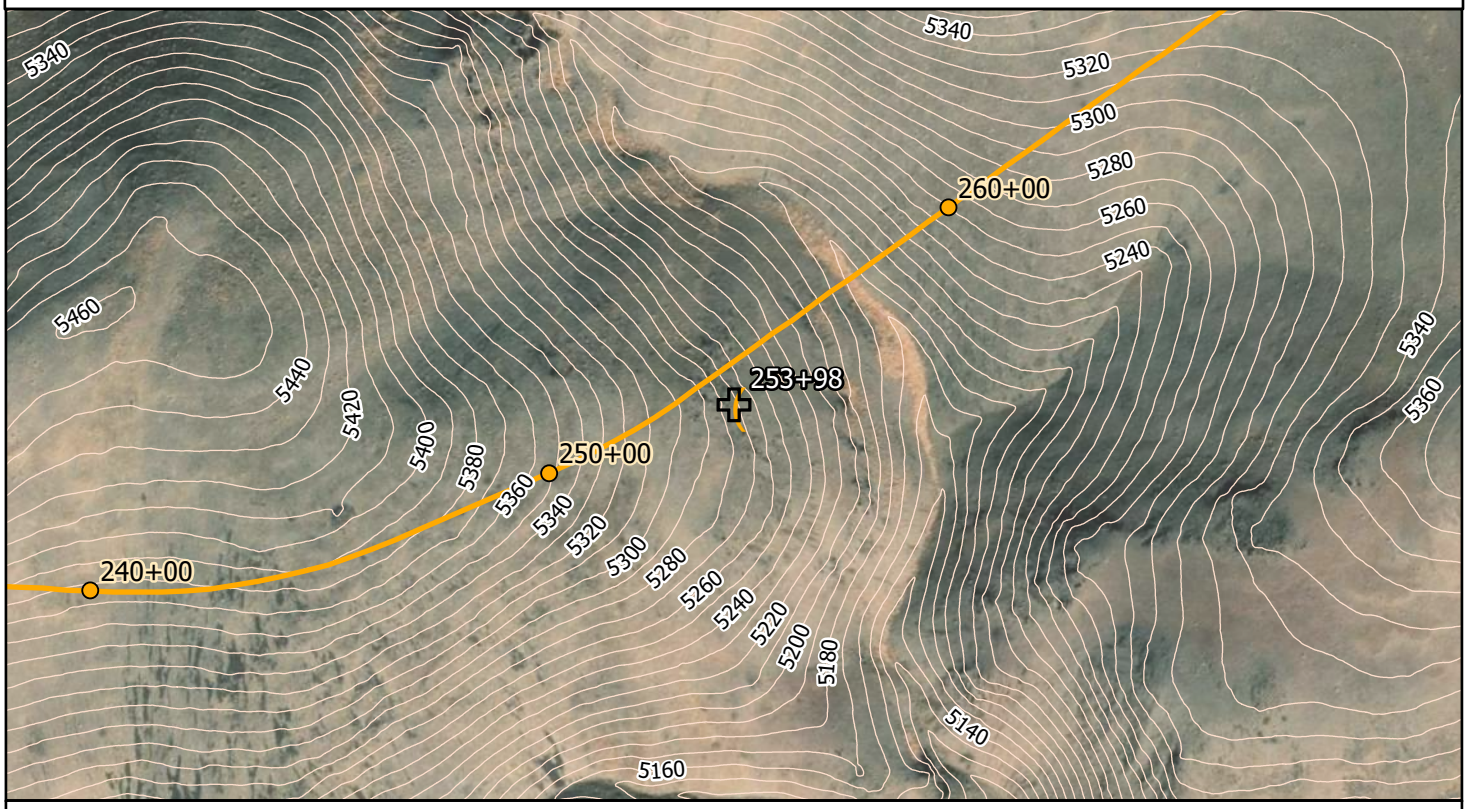
*URXQG &RQGLWLRQ
7\SH%HGURFN
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH
5RFN 7\SH
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH $QGHVLWH EDVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK PRGHUDWHO\ VWURQJ FKLSV
:HDWKHULQJ PRGHUDWH
&RPPHQWV 0RGHUDWHO\ VWURQJ WR VWURQJ

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 253+98

Bedrock outcrop.



No Photo

No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 257+22

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ RU)UDFWXUHV

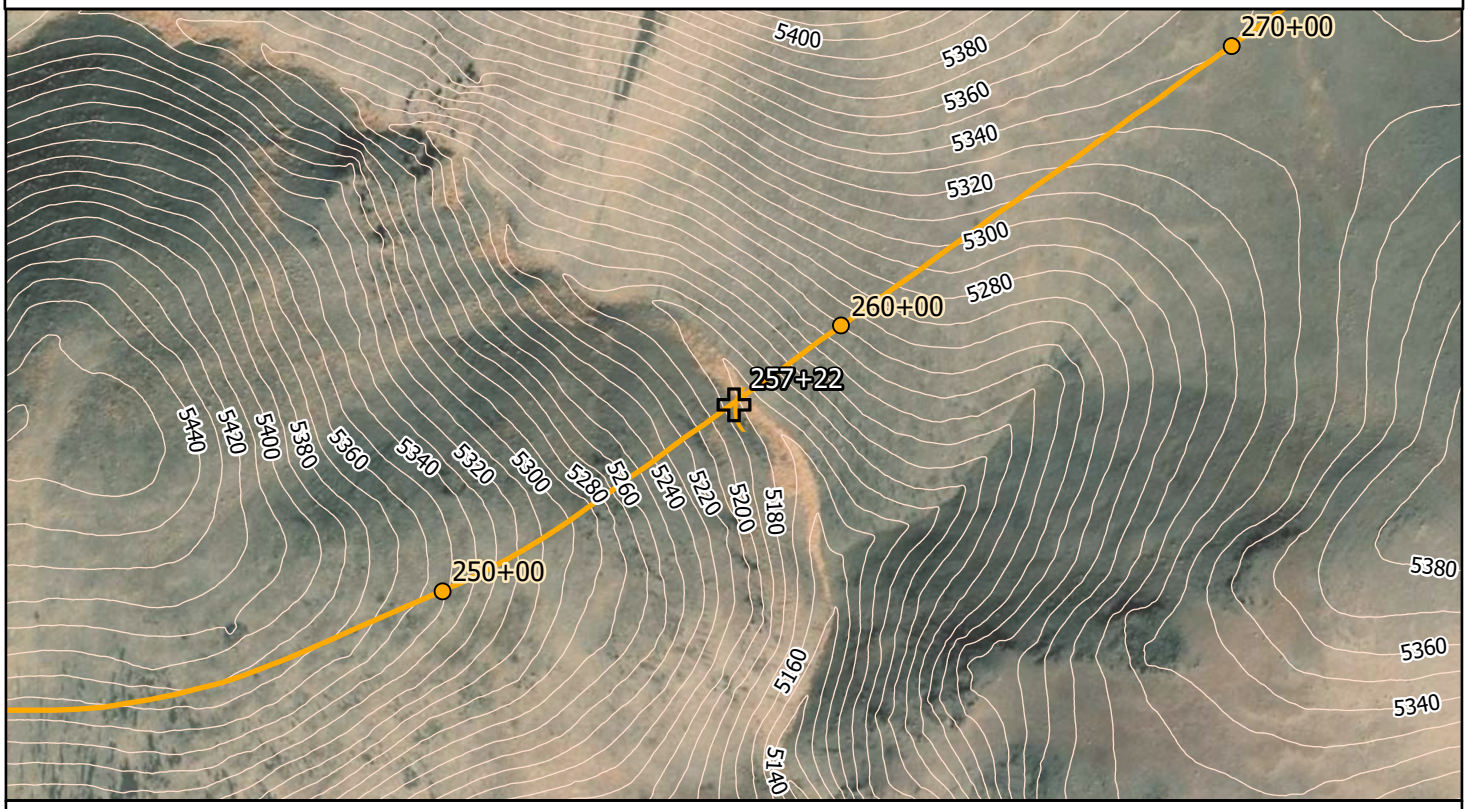
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

'DWD SRLQW WDNHQ LQ ERWWRP RI GUDLQDJH



1257+

86)HHW

Vista Data Point

Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 257+22

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 270+06

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH: &REEOH)ORDW

&RPPHQW:

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ:

*URXQG &RYHUDJH:

5RFN 7\SH: %DVDOW

&RPPHQW:

9HJHWDWLRQ

7\SH: *UDVVHV

'HQVLW\: 6SDUVH

&RPPHQWV:

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH:

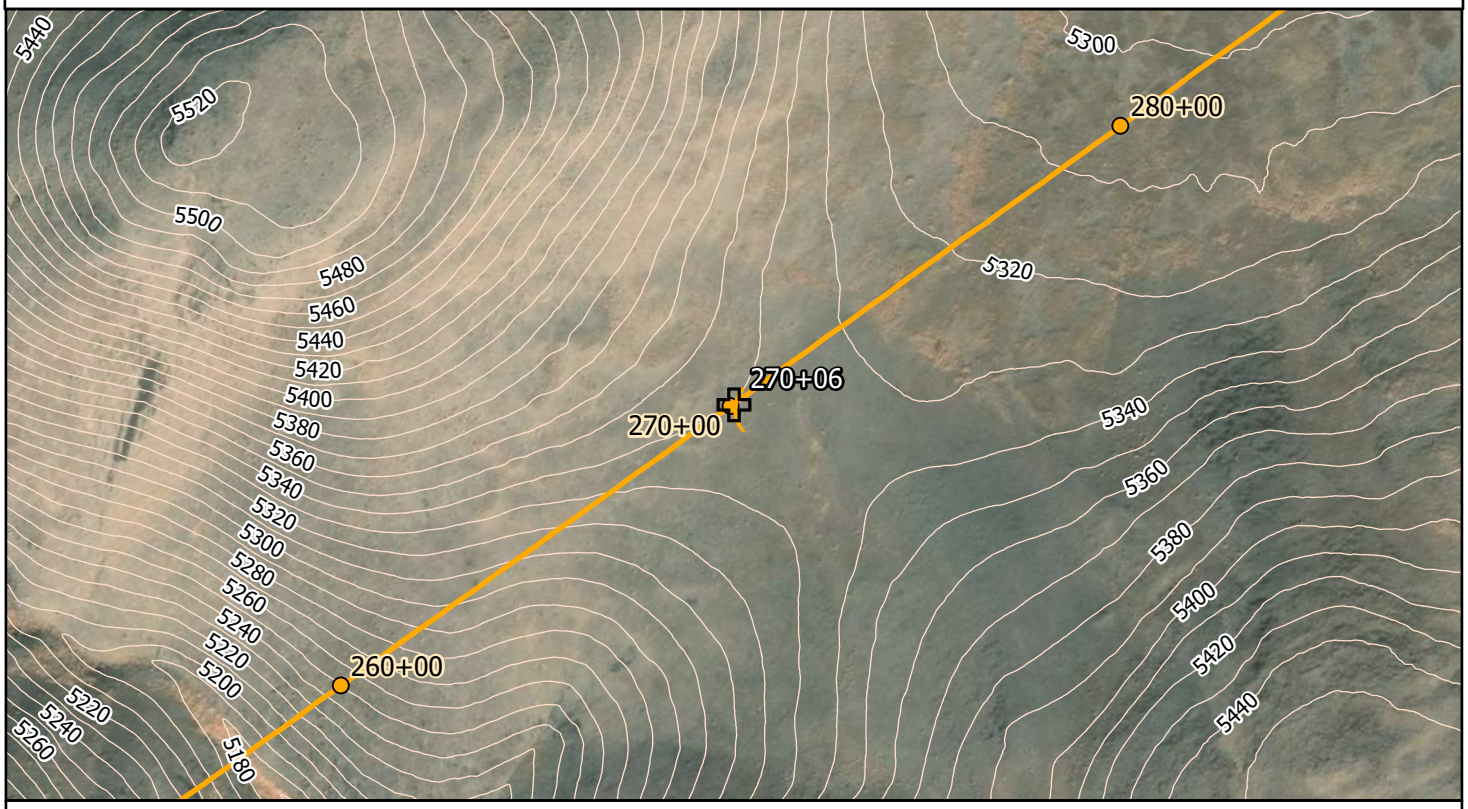
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV:

6WUHQJWK:

:HDWKHULQJ:

&RPPHQWV:

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point — Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 270+06

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 280+06

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

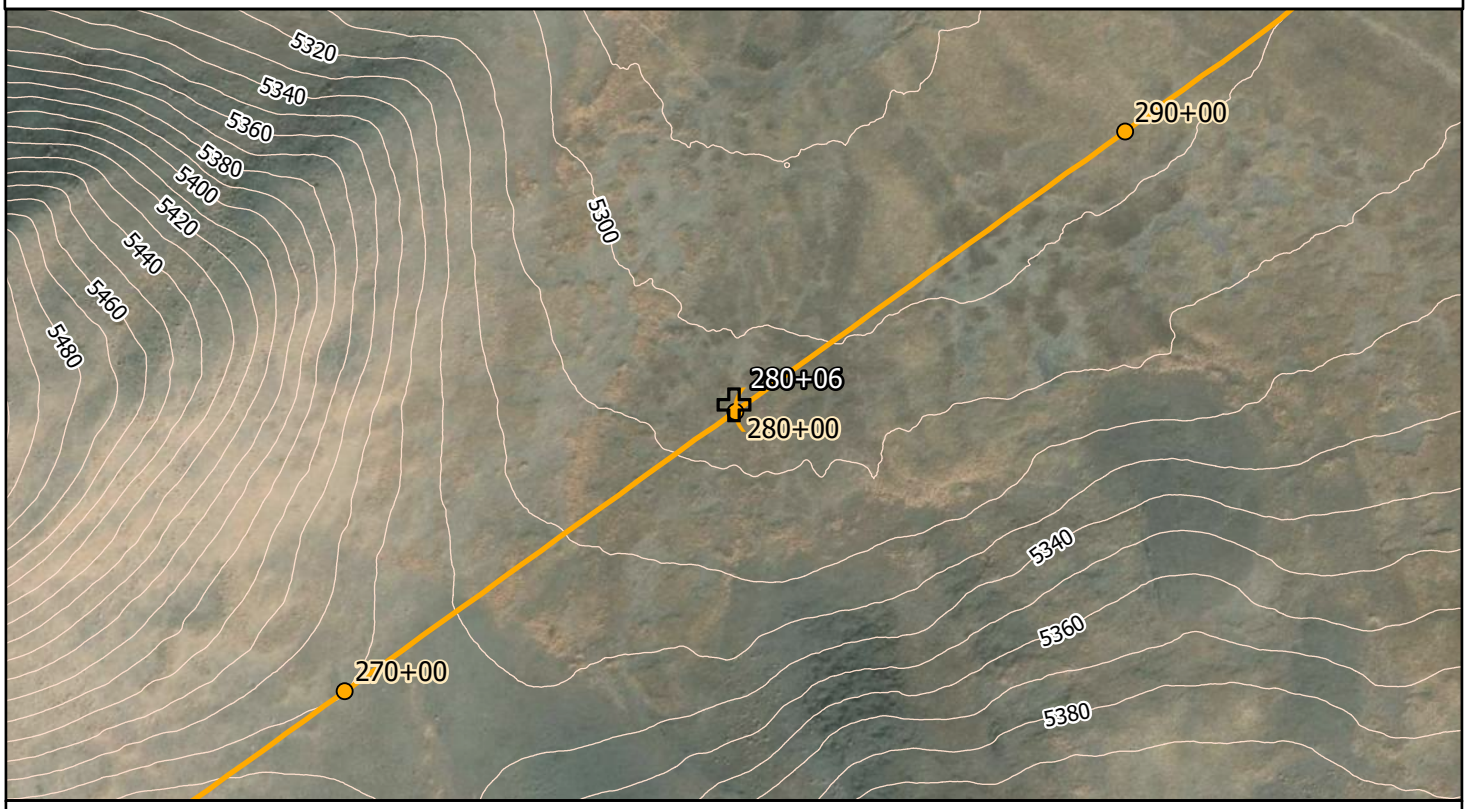
*URXQG &RQGLWLRQ
7\SH6RLO
&RPPHQW&LW\HO\ FOD\ VRLO

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH
5RFN 7\SH
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 280+06

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 291+60

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

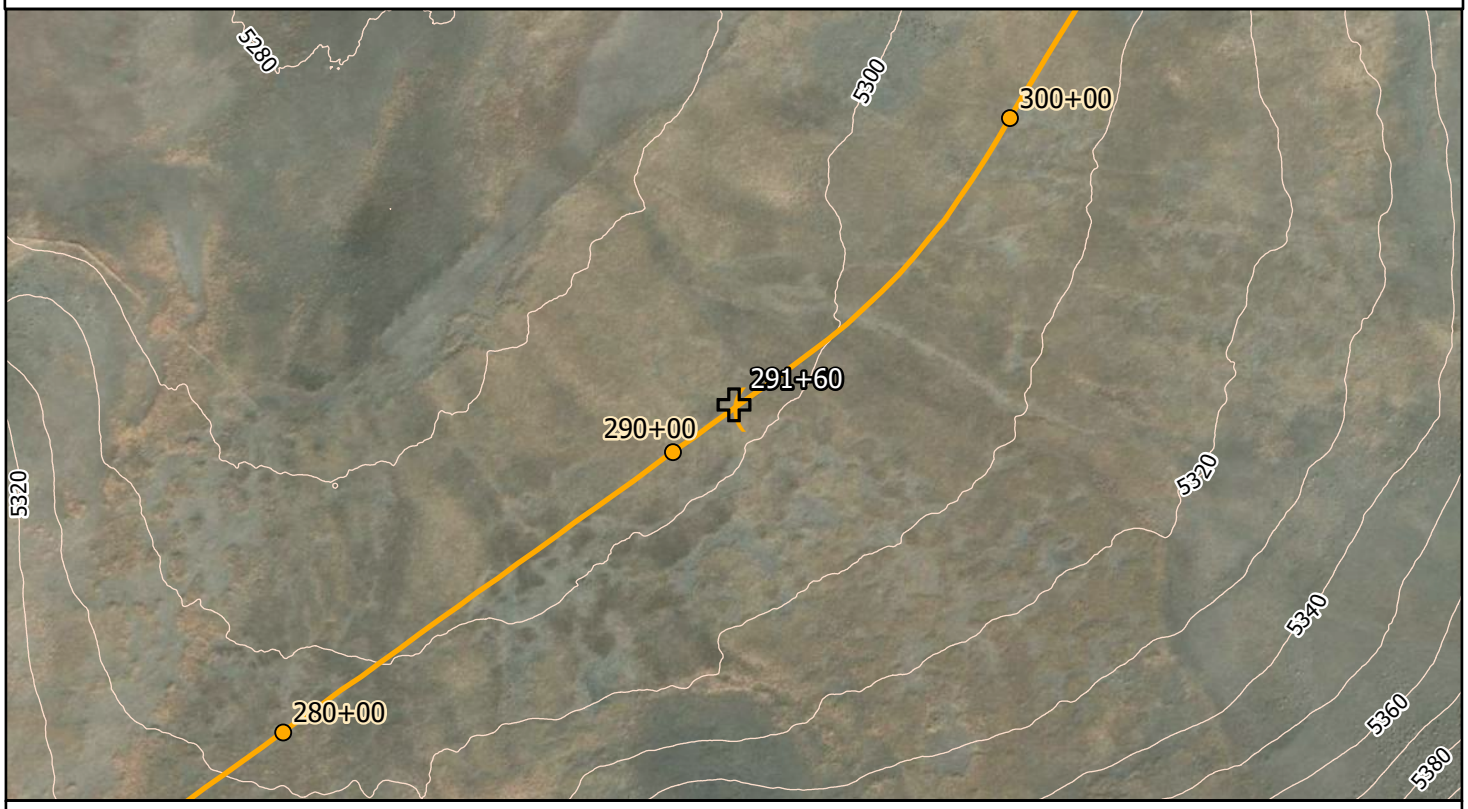
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQW



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 291+60

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 300+48

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

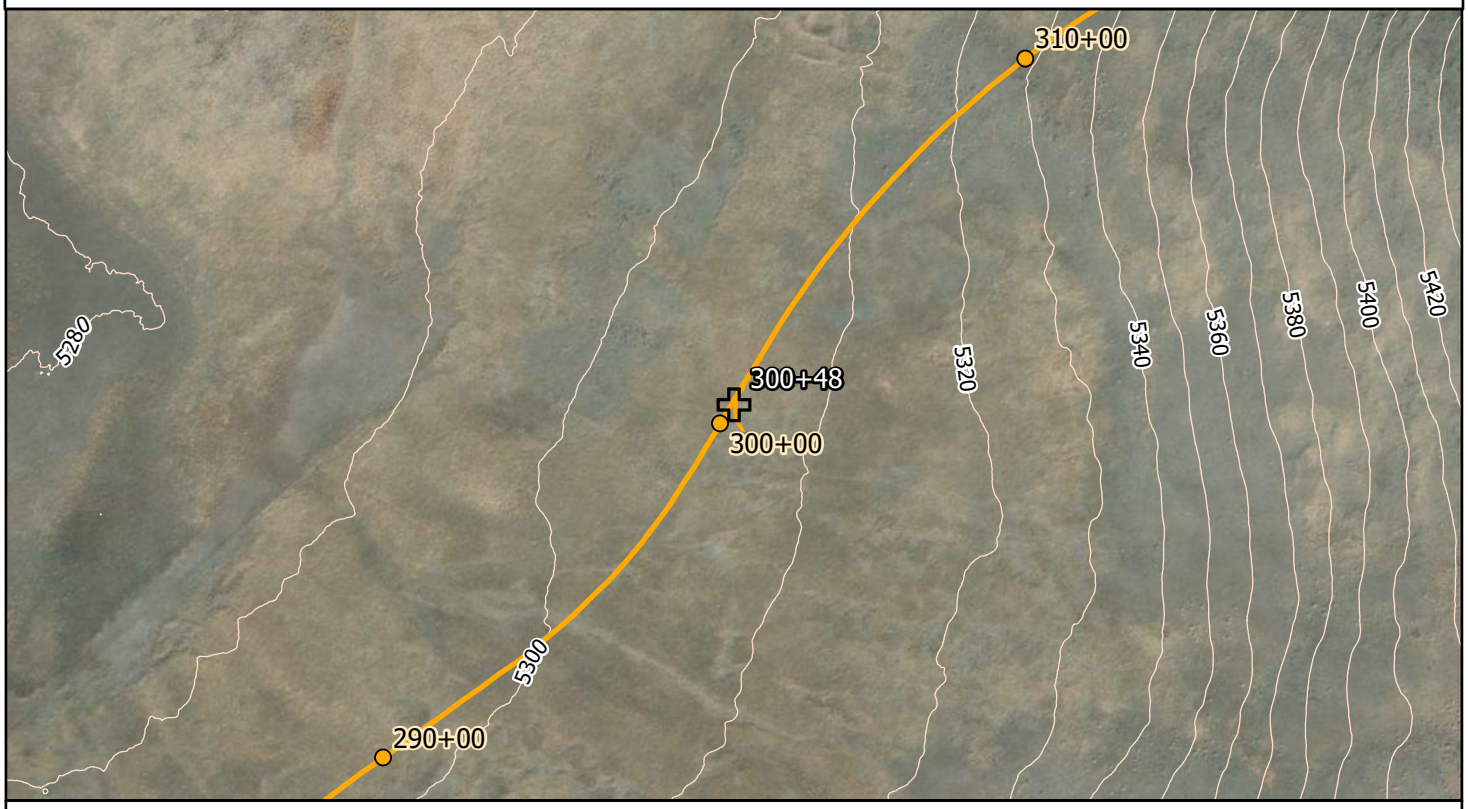
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 300+48

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 310+29

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

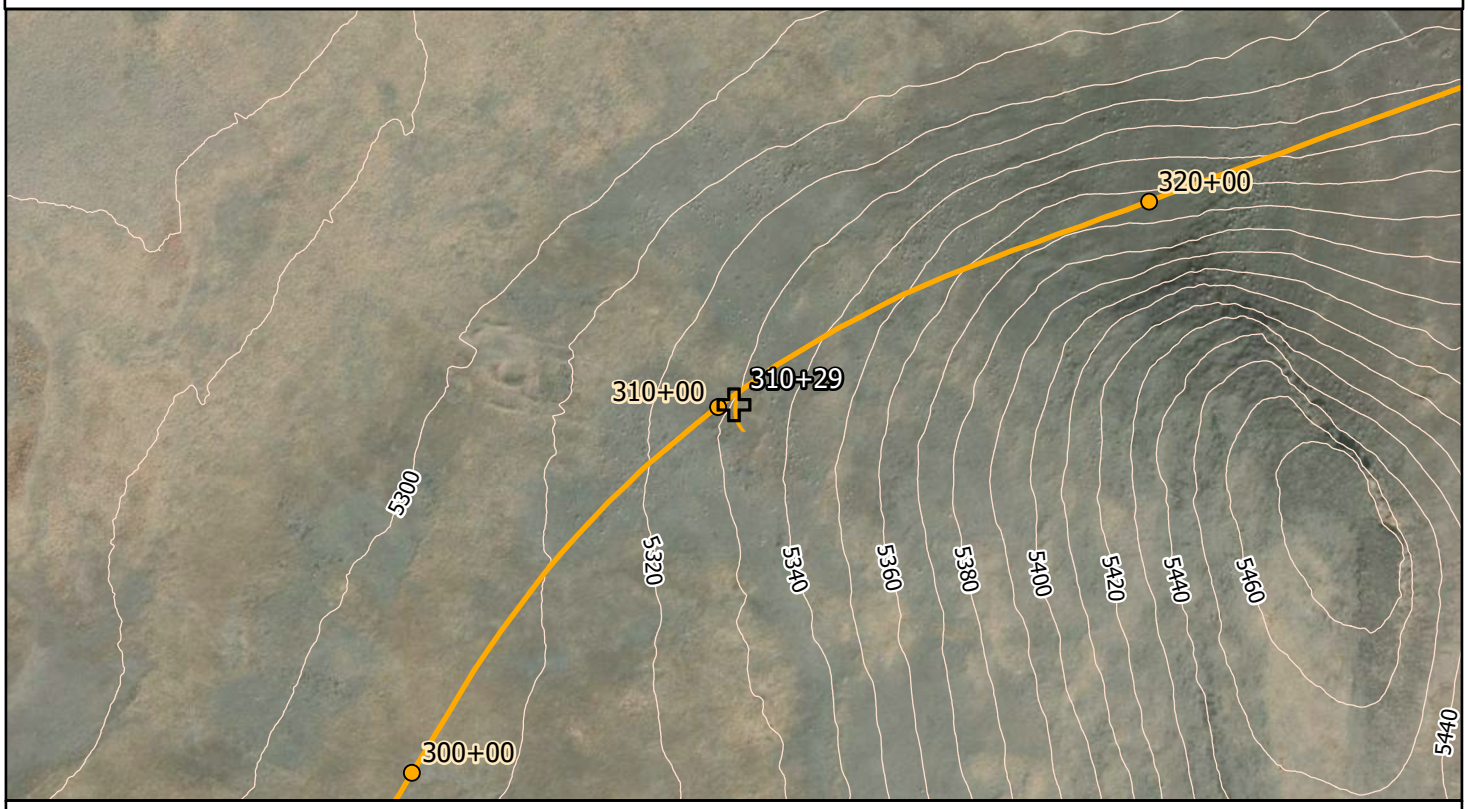
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 310+29

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 319+94

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH½HGURFN

&RPPHQW¸

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ ¸

*URXQG &RYHUDJH¸

5RFN 7\SH¸

&RPPHQW¸

9HJHWDWLRQ

7\SH½EUXVK

'HQVLW\½6SDUVH

&RPPHQW¸6PDOO EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH½DVDOW

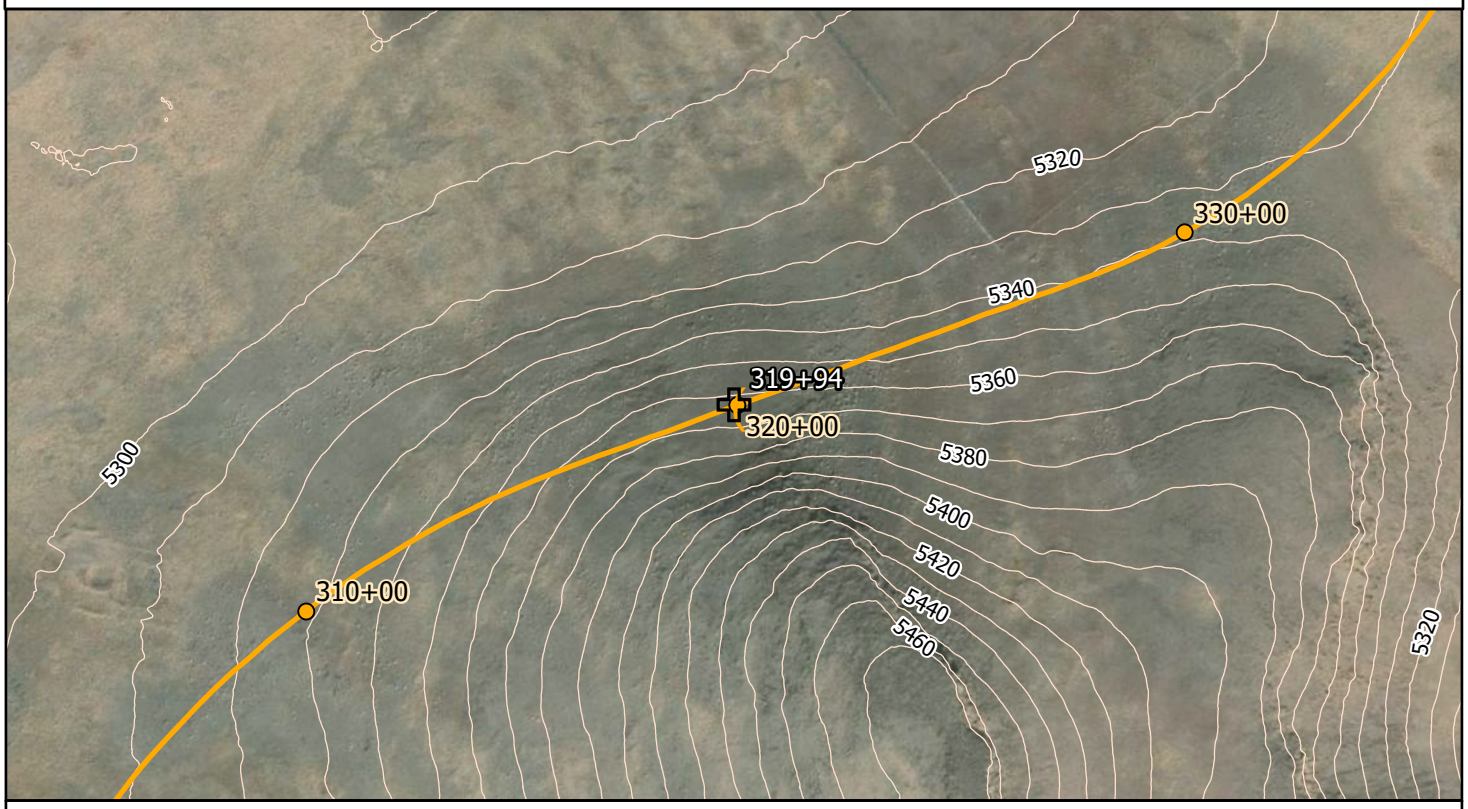
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸

6WUHQJWK½RQJ ERXQFH

:HDWKHULQJ½UDWH

&RPPHQWV¸

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 319+94

Bedrock outcrop uphill from data point.



Looking to TRIC.



Looking to Vista.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 330+16

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH%HGURFN

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH%UXVK

'HQVLW\%DUH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

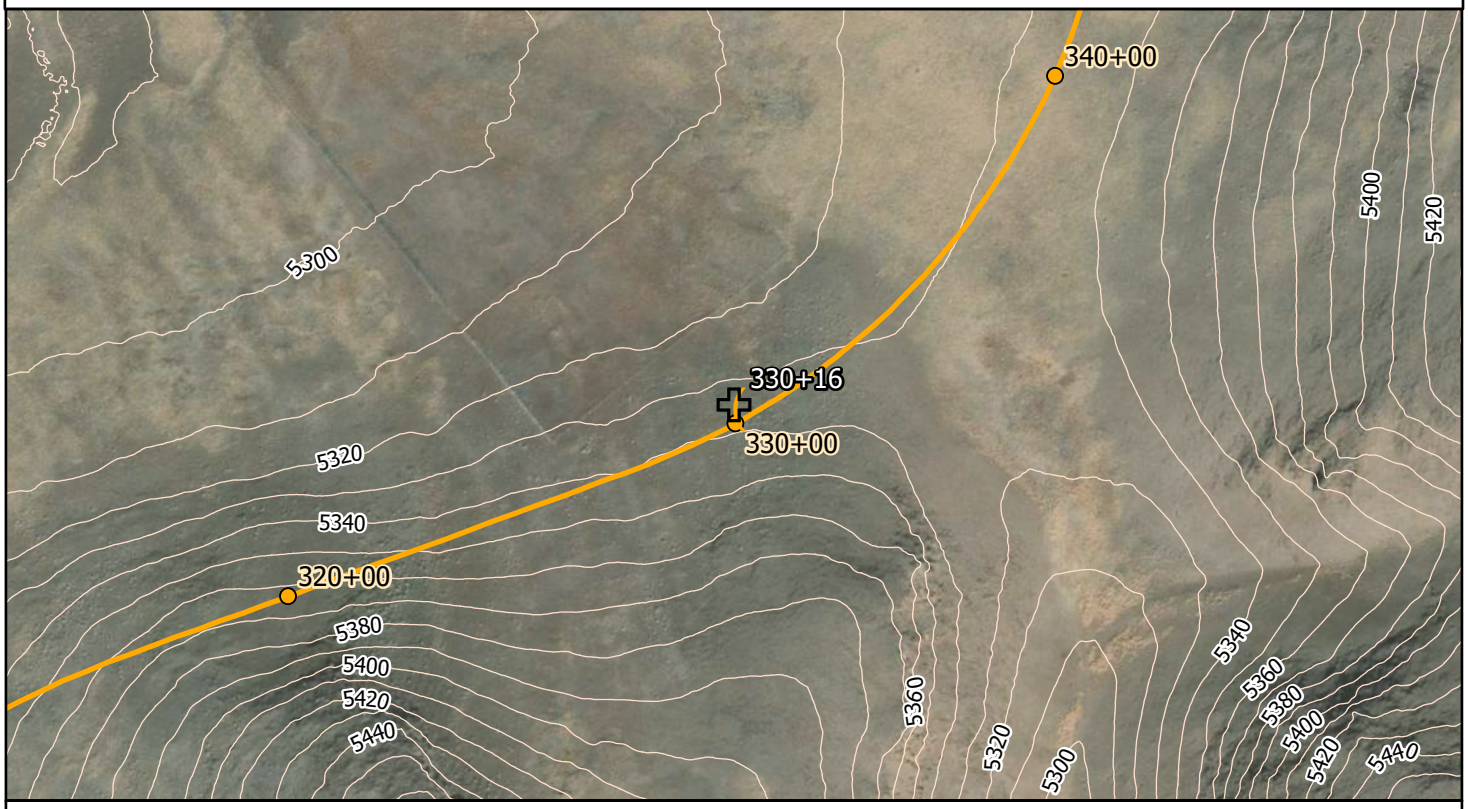
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 330+16

Looking to TRIC.



Looking to Vista.



Surficial bedrock.



Surficial bedrock 1.



WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 340+81

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

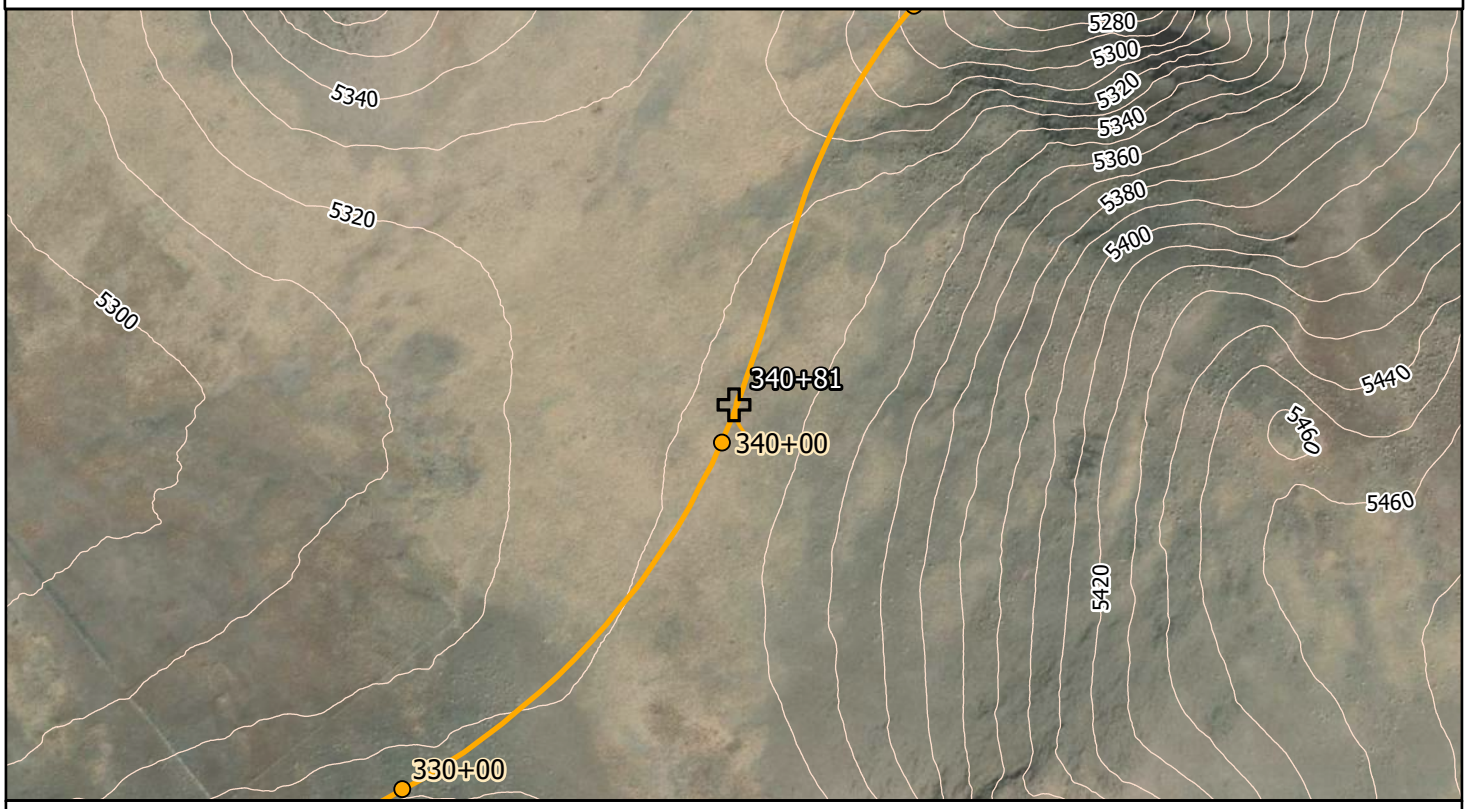
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 340+81

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 349+94

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW DYLHU IORDW DQG VFUHH RQ KLOOVLGHV

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

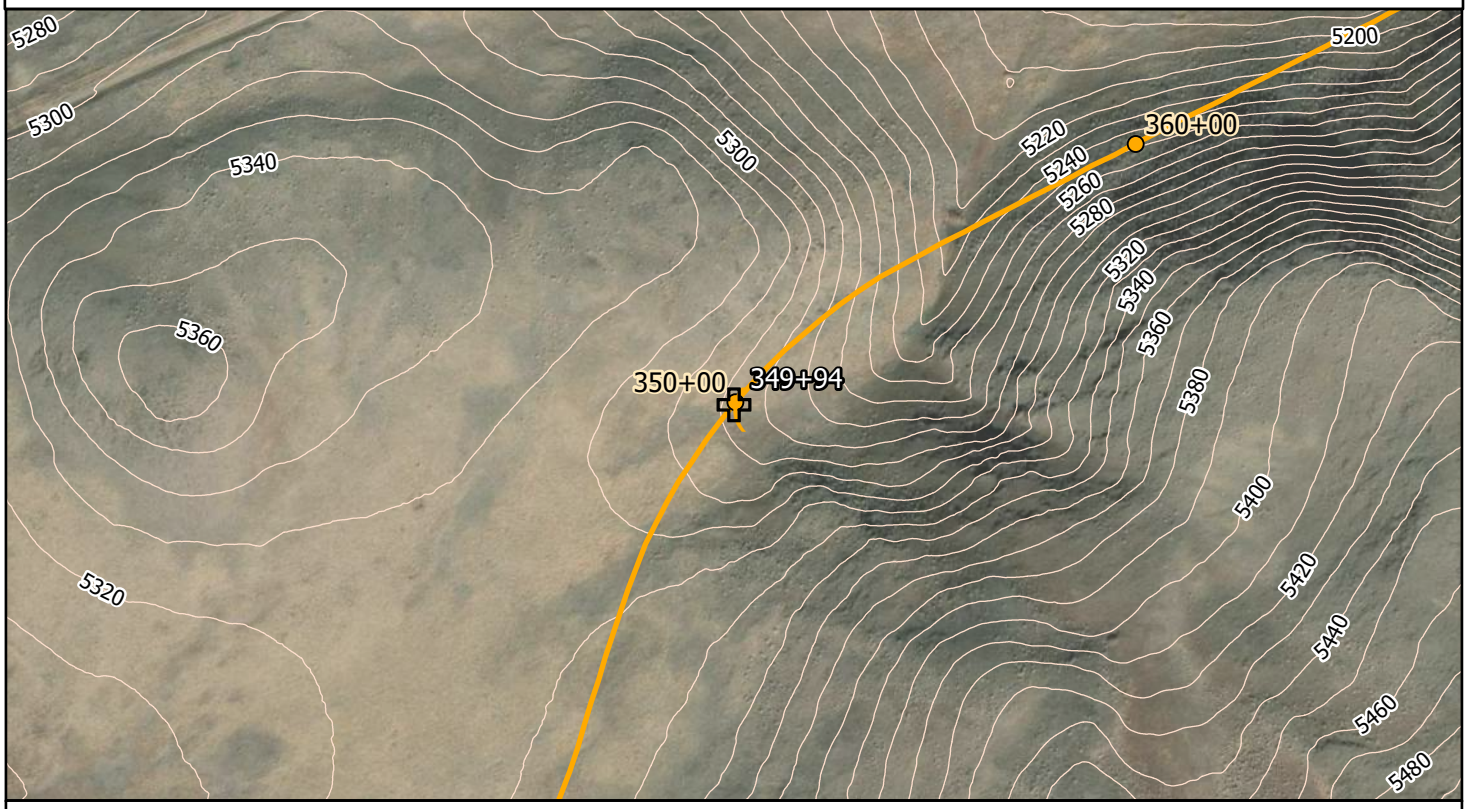
6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

/LNHO\ FOD\ VRLO



Project Name: La Posada Geotechnical Investigation Station Name: 349+94

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 359+68

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

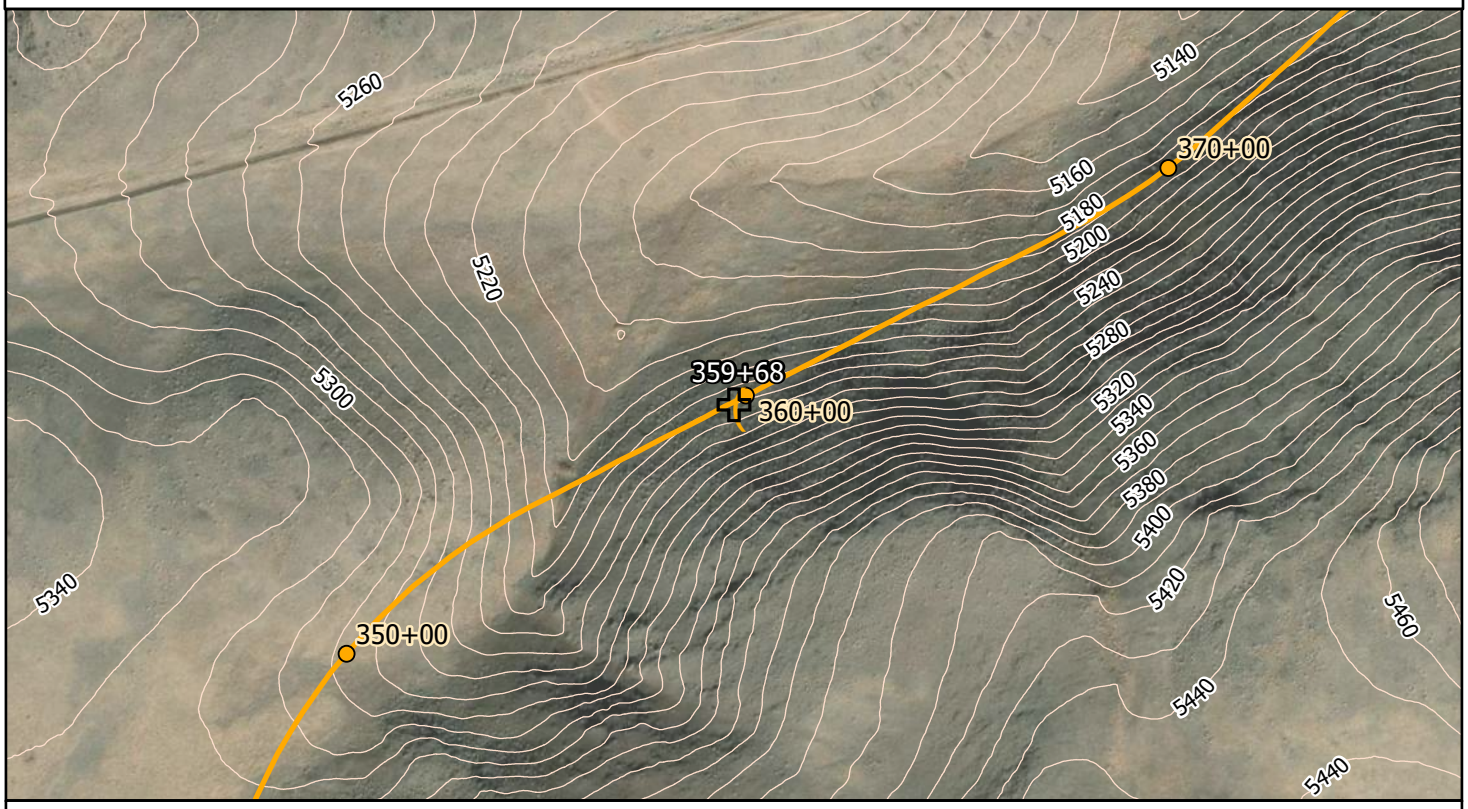
*URXQG &RQGLWLRQ
7\SH%HGURFN
&RPPHQW¸

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ ¸
*URXQG &RYHUDJH¸
5RFN 7\SH¸
&RPPHQW¸

9HJHWDWLRQ
7\SH¸EUXVK
'HQVLW\ 6\DUVH
&RPPHQWV¸ 0HGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH¸
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸
6WUHQJWK¸
:HDWKHULQJ¸
&RPPHQWV¸

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 359+68

Looking to TRIC.



Looking to Vista.



Surficial bedrock.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 369+61

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH%DVDOW

&RPPHQW

9HJHWDWLRQ

7\SHEUXVK

'HQVLW\VSDUVH

&RPPHQWVDJHEUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

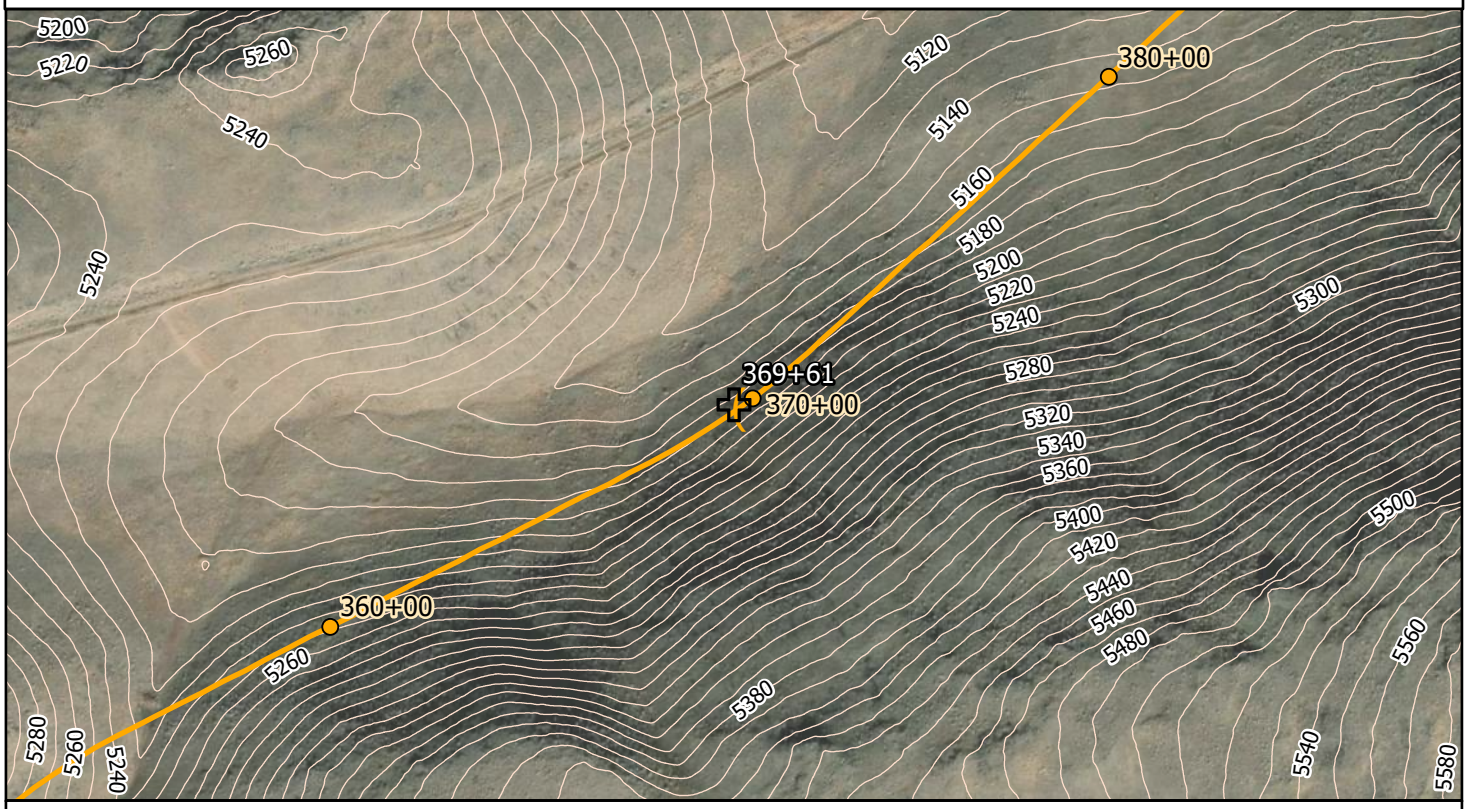
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 369+61

Looking to TRIC.



Looking to Vista.



Scree.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 380+18

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%ODV DOW

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

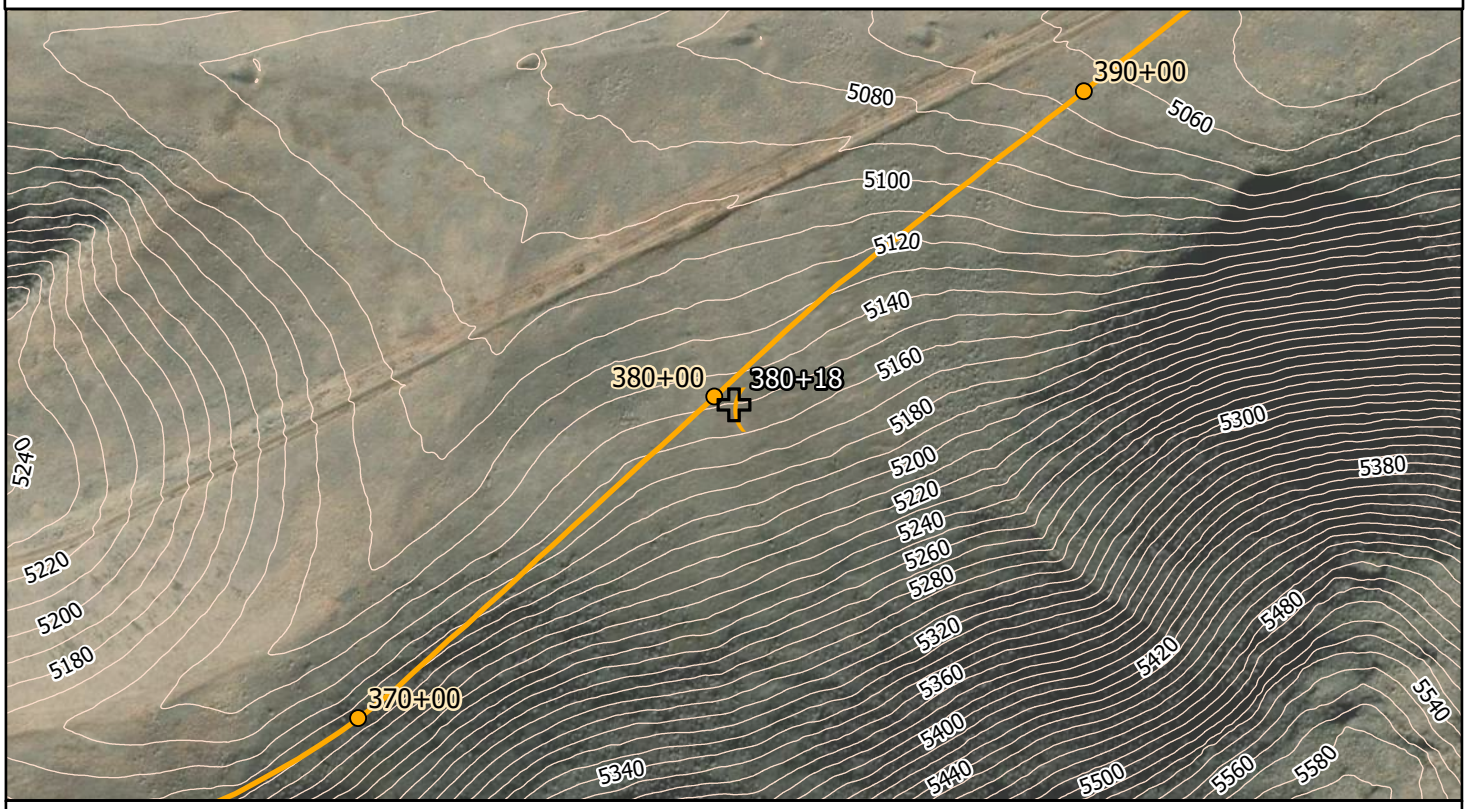
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 380+18

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 390+52

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH 6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

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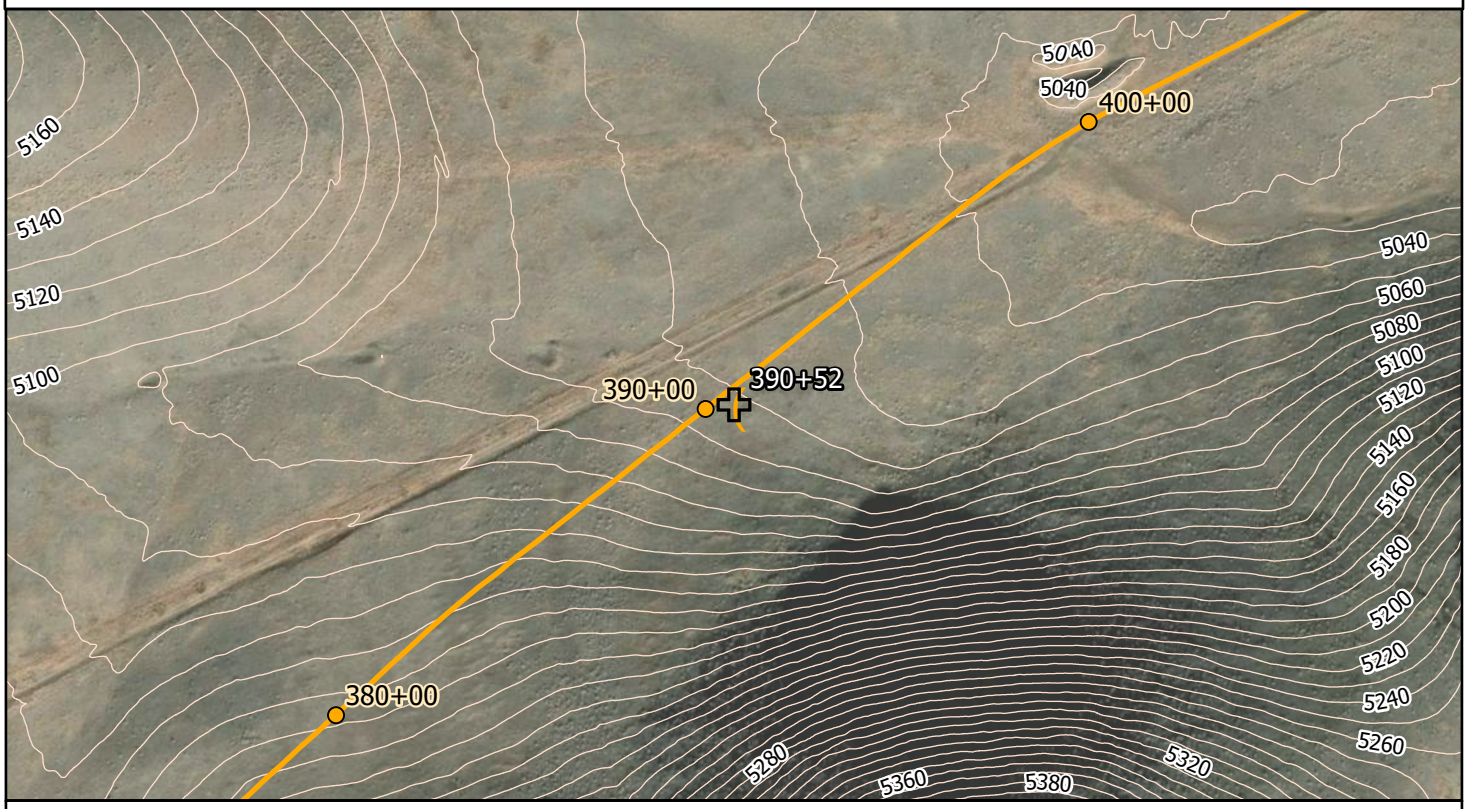
:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

)ODWWHU JURXQG OLNHO\ FOD\ VRLO



1257+

86)HHW

Vista Data Point

Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 390+52

Looking to TRIC.



Looking to Vista.



Scree.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 401+24

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW DQGHVLWH

&RPPHQW

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ VSDUVH

&RPPHQW OLJKW VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

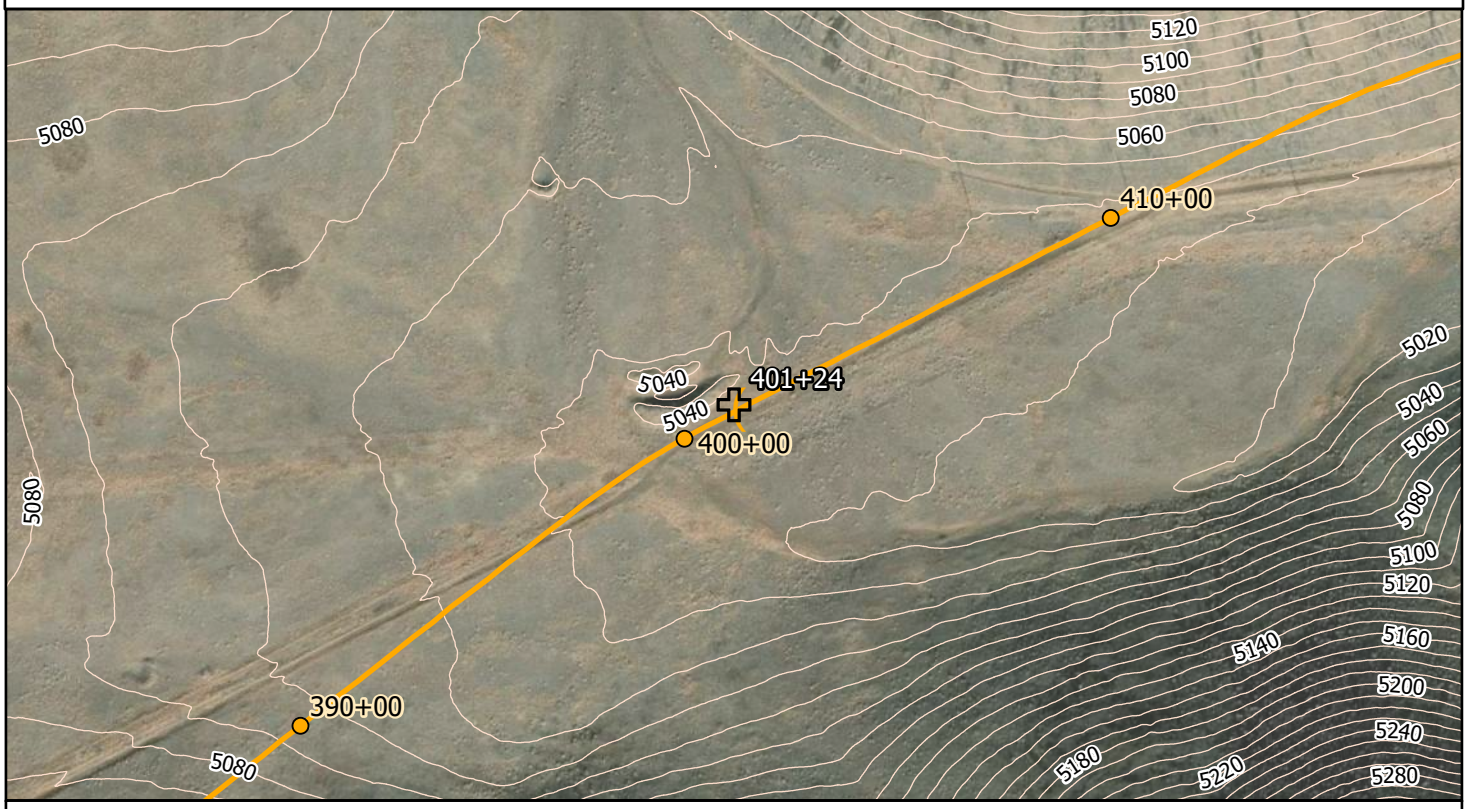
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 401+24

Looking to TRIC.



Looking to Vista.



Open excavation next to data point.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 410+02

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

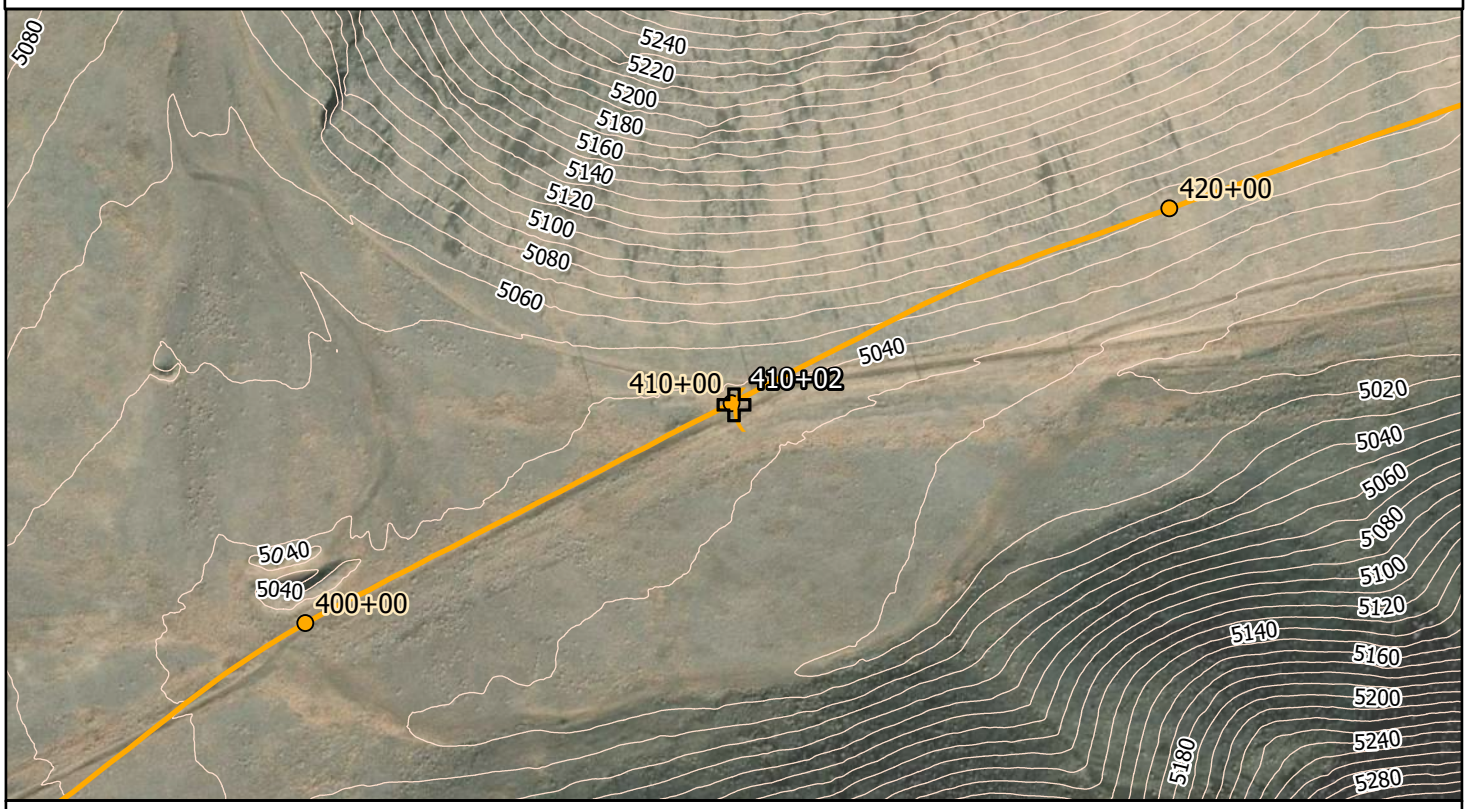
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ %DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 410+02

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 420+18

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

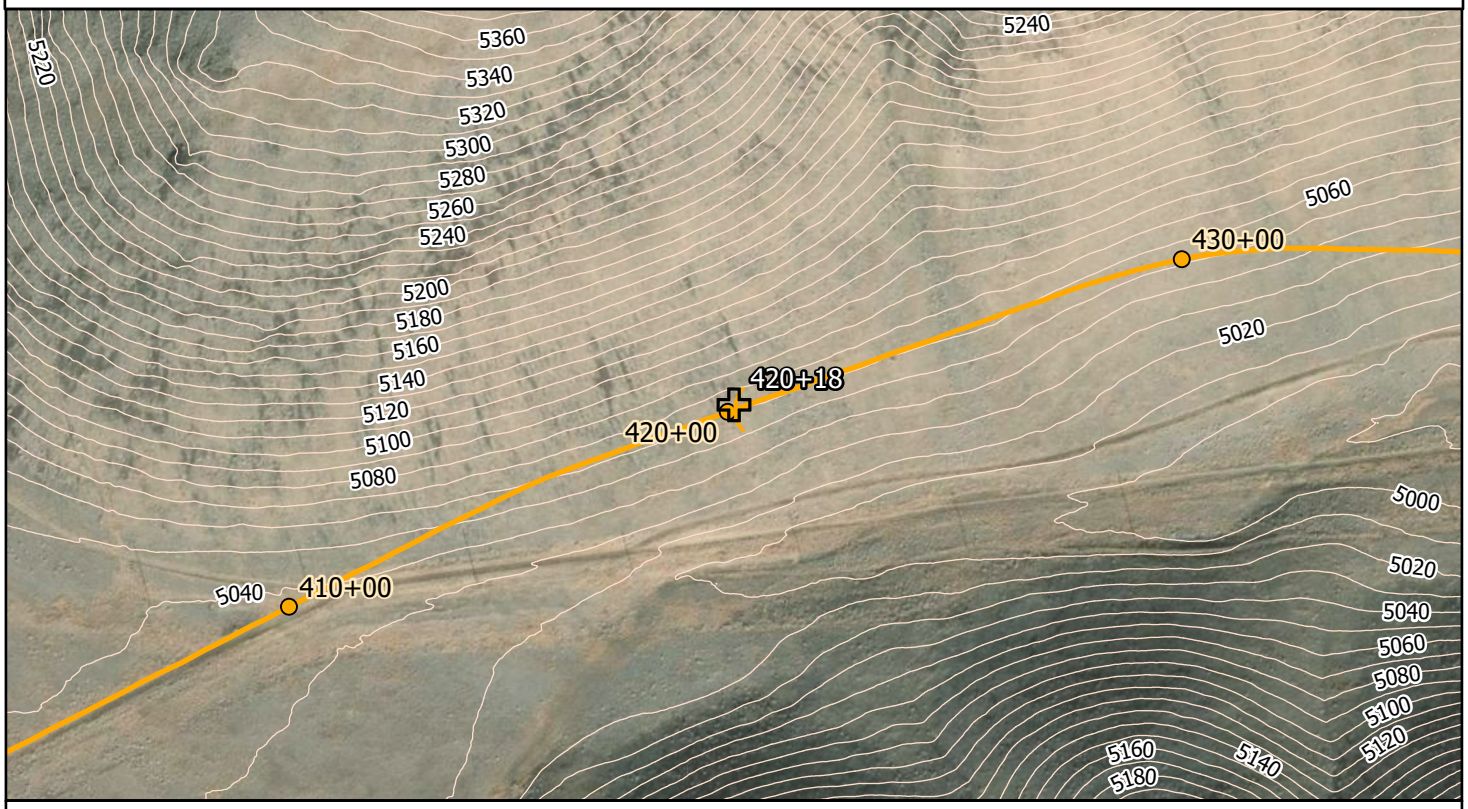
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQW



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 420+18

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 430+18

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

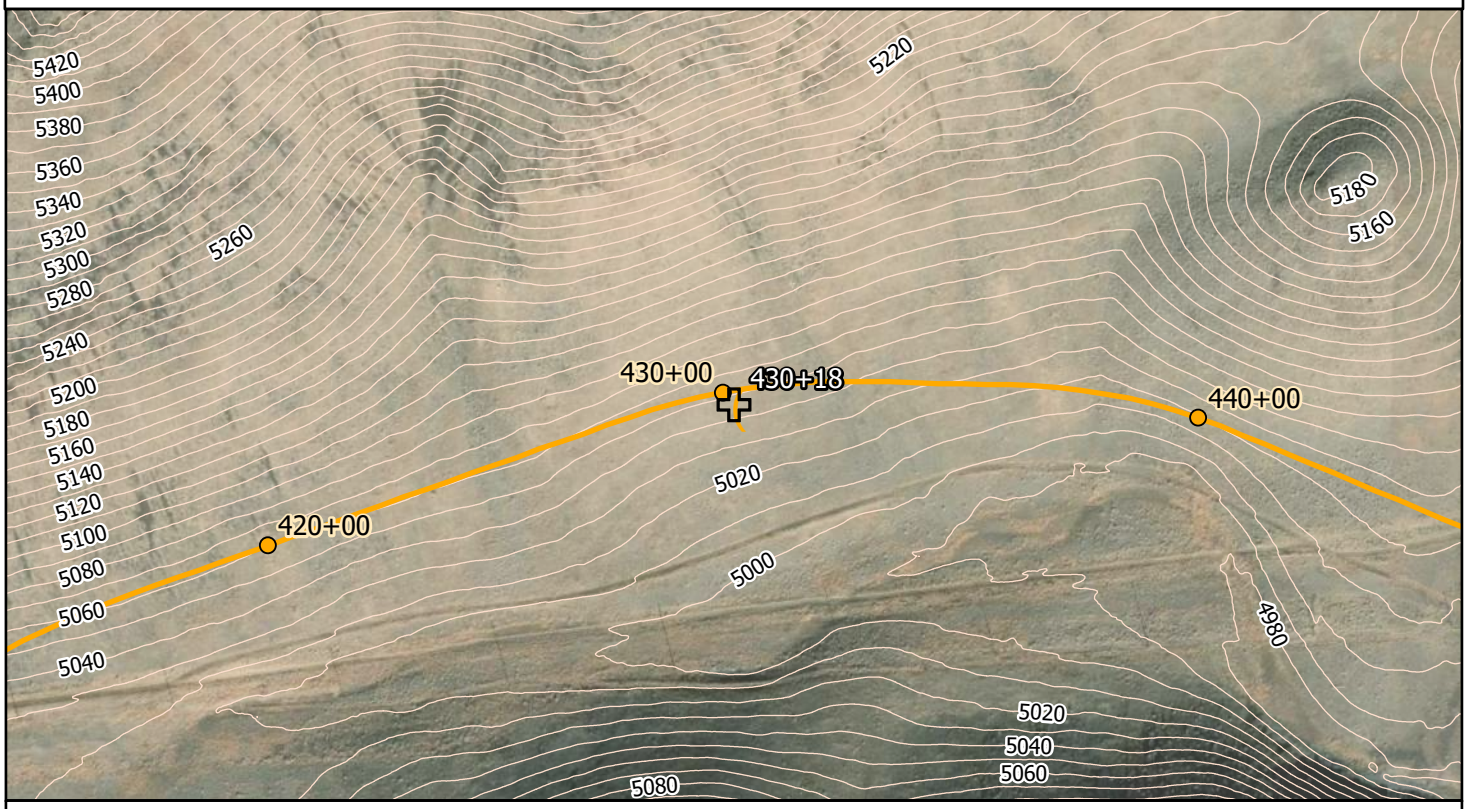
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H LQ
*URXQG &RYHUDJH PRGHUDWH
5RFN 7\SH %DVDOW DQGHVLWH
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV QWZ VPDOO VDJH EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 430+18

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 440+38

Project Number: 8312057 Survey Date: 08/20/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

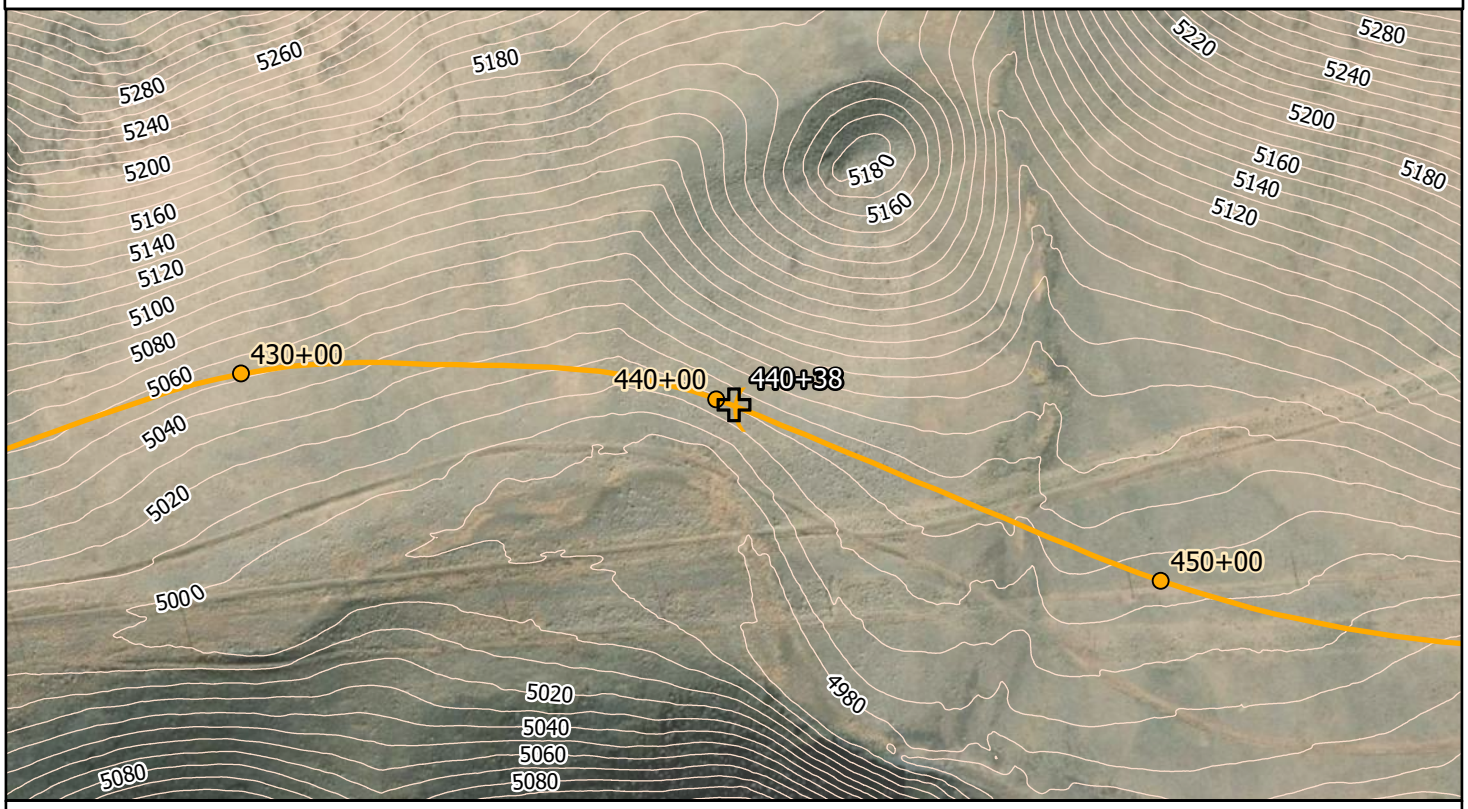
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 440+38

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 450+52

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW WKW WR PRGHUDWH FRYHUDJH

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

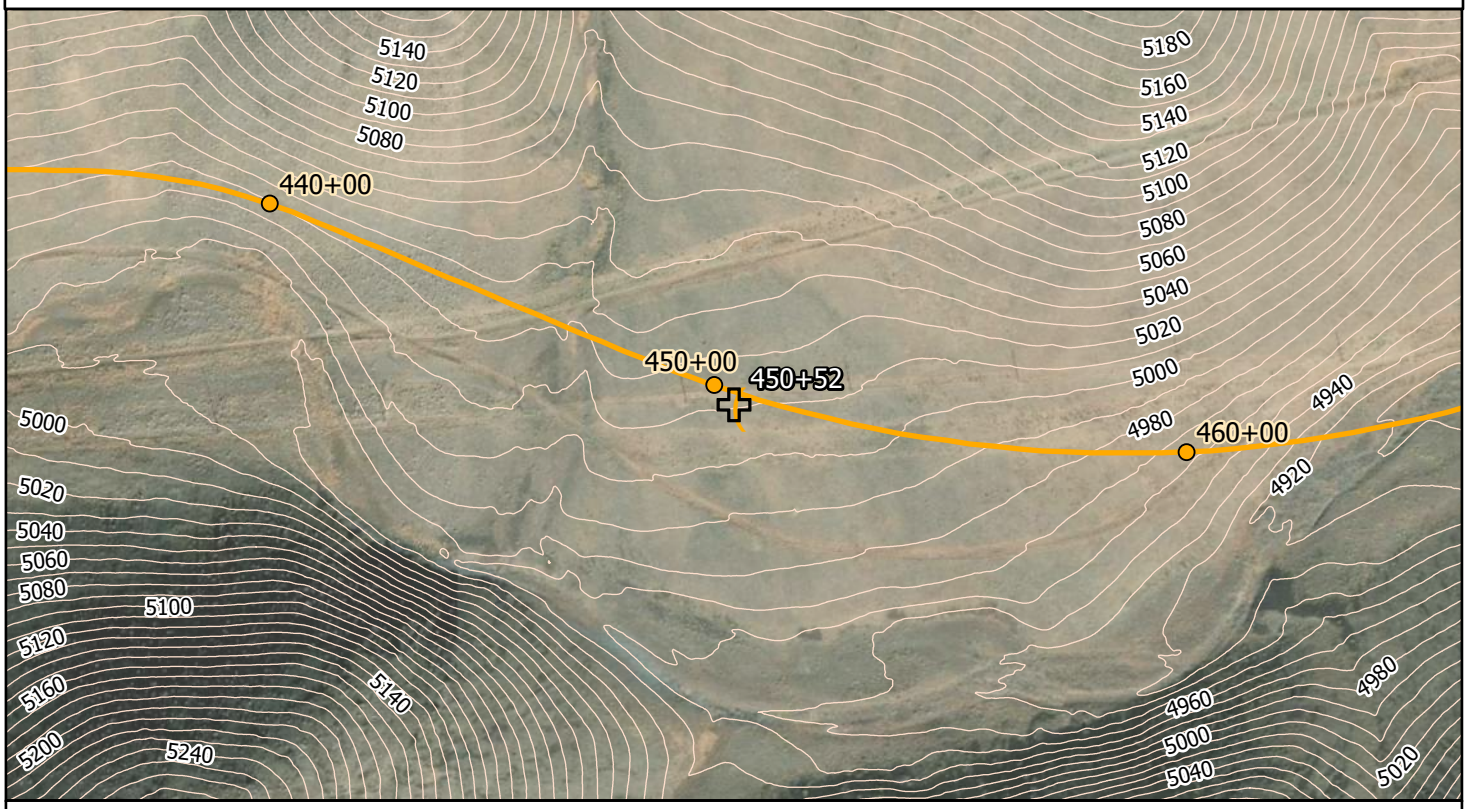
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 450+52

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 460+95

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

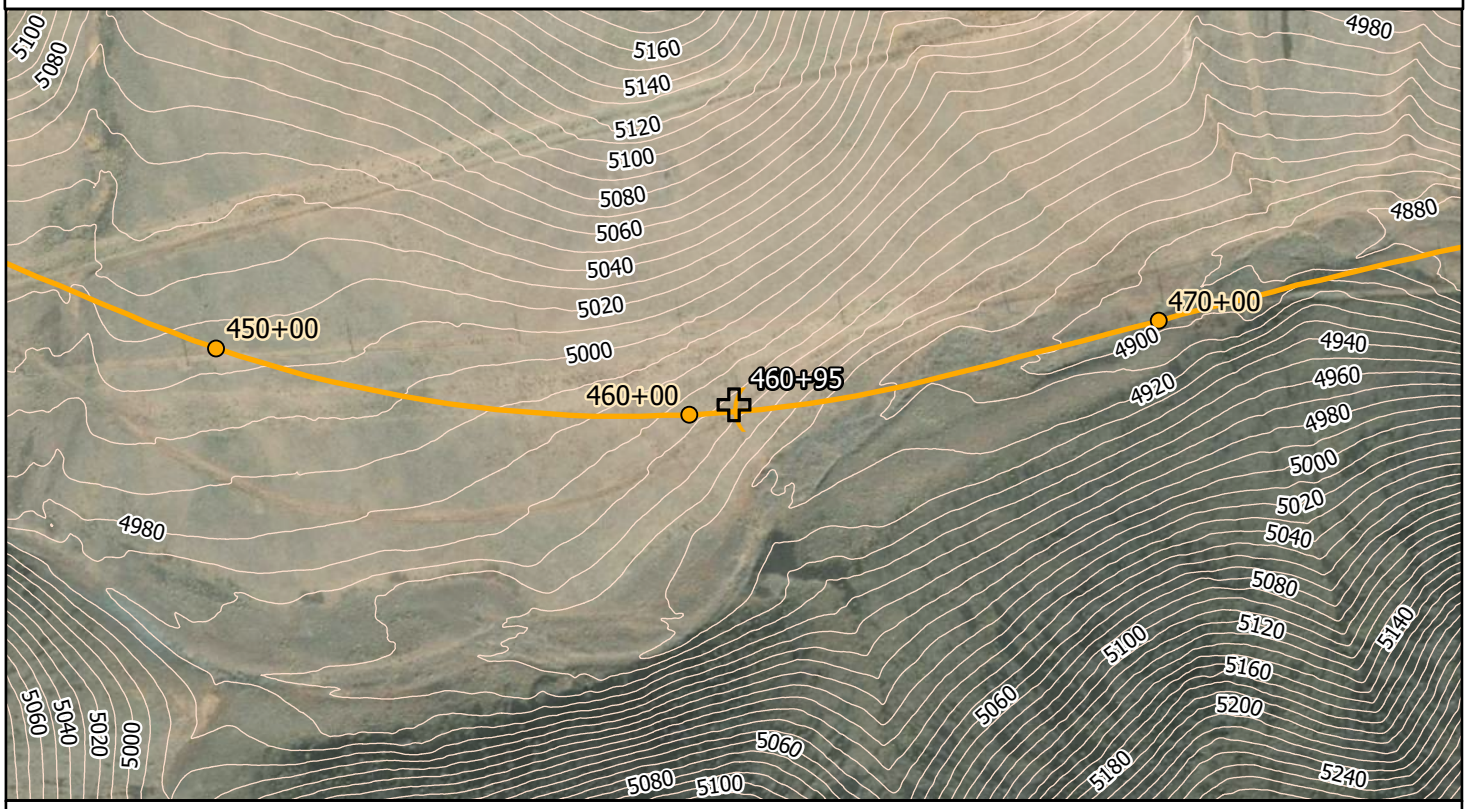
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 460+95

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 469+89

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

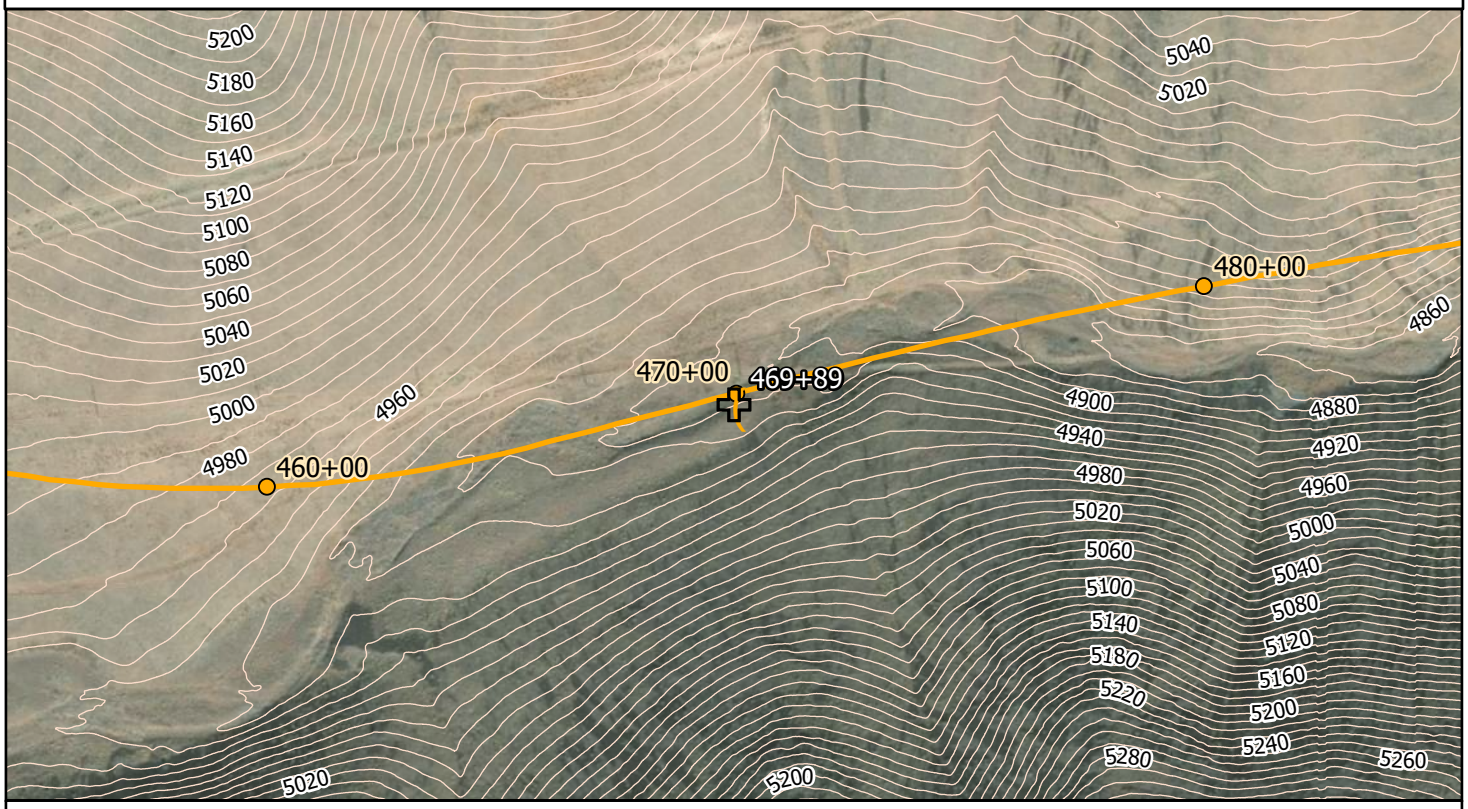
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚ 0FUHH XSKLOO IURP GDWD SRLQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ˙LQ ‚
*URXQG &RYHUDJH‚ KHUDYJH! ^˘
5RFN 7\SH‚ %DVDOW DQGHVLWH
&RPPHQW‚

9HJHWDWLRQ
7\SH‚ EUXVK
'HQVLW\ 6DUVH
&RPPHQWV‚ 0WGLXP VDJHEUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 469+89

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

”‘—•† ‘•†‹–‹‘• —”˜‡› ƒ–ƒ Š‡‡–•

Project Name: La Posada Geotechnical Investigation Station Name: 477+20

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH!

5RFN 7\SH%ODVW DOW DQGHVLWH

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SHSQGHVLWH

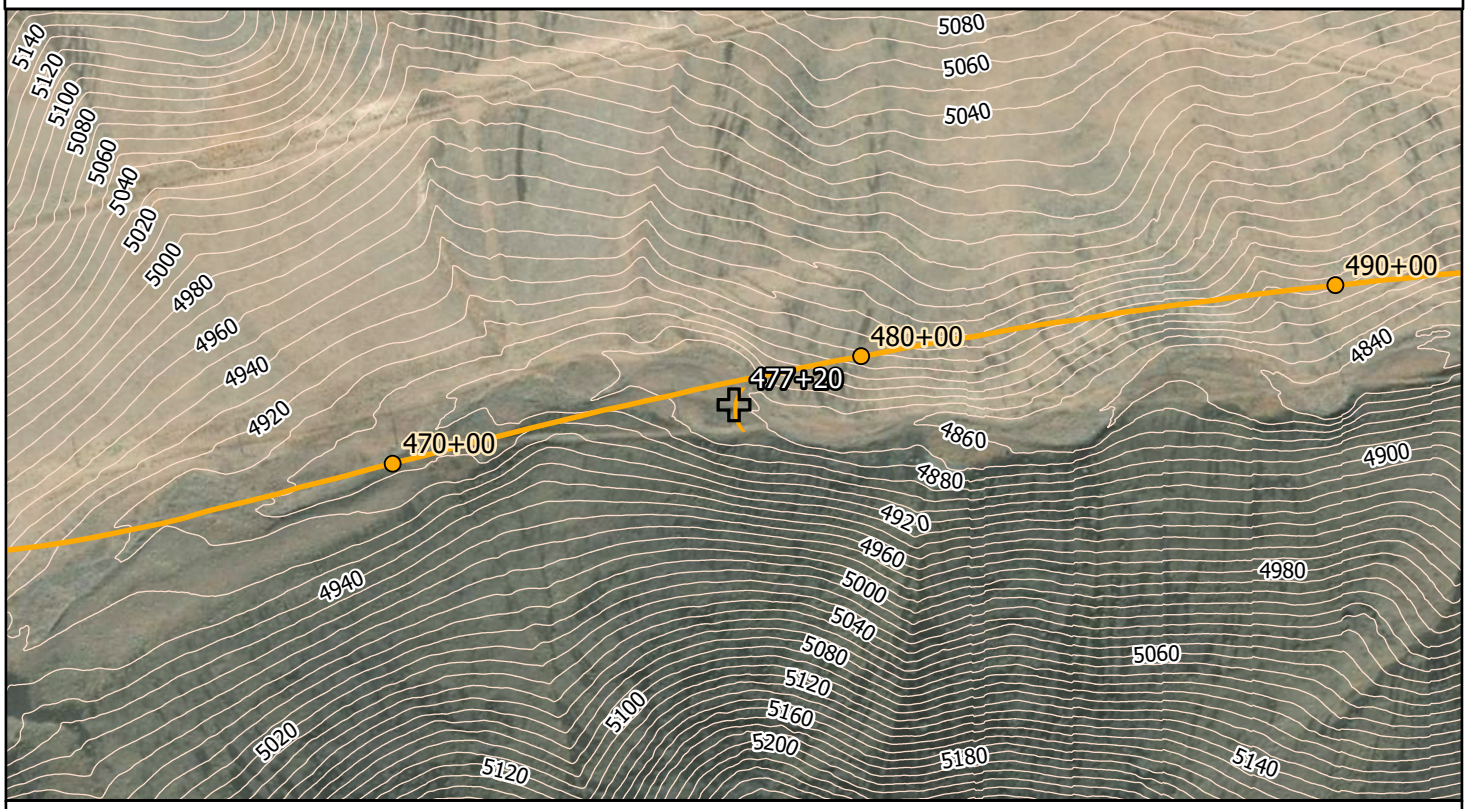
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWKRGHUDWHO\ VWURQJ FKLSV

:HDWKHULQJGHUDWH

&RPPHQWVGHUDWHO\ VWURQJ WR VWURQJ

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 477+20

Rock outcropping with Scree in background.



No Photo

No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 480+03

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

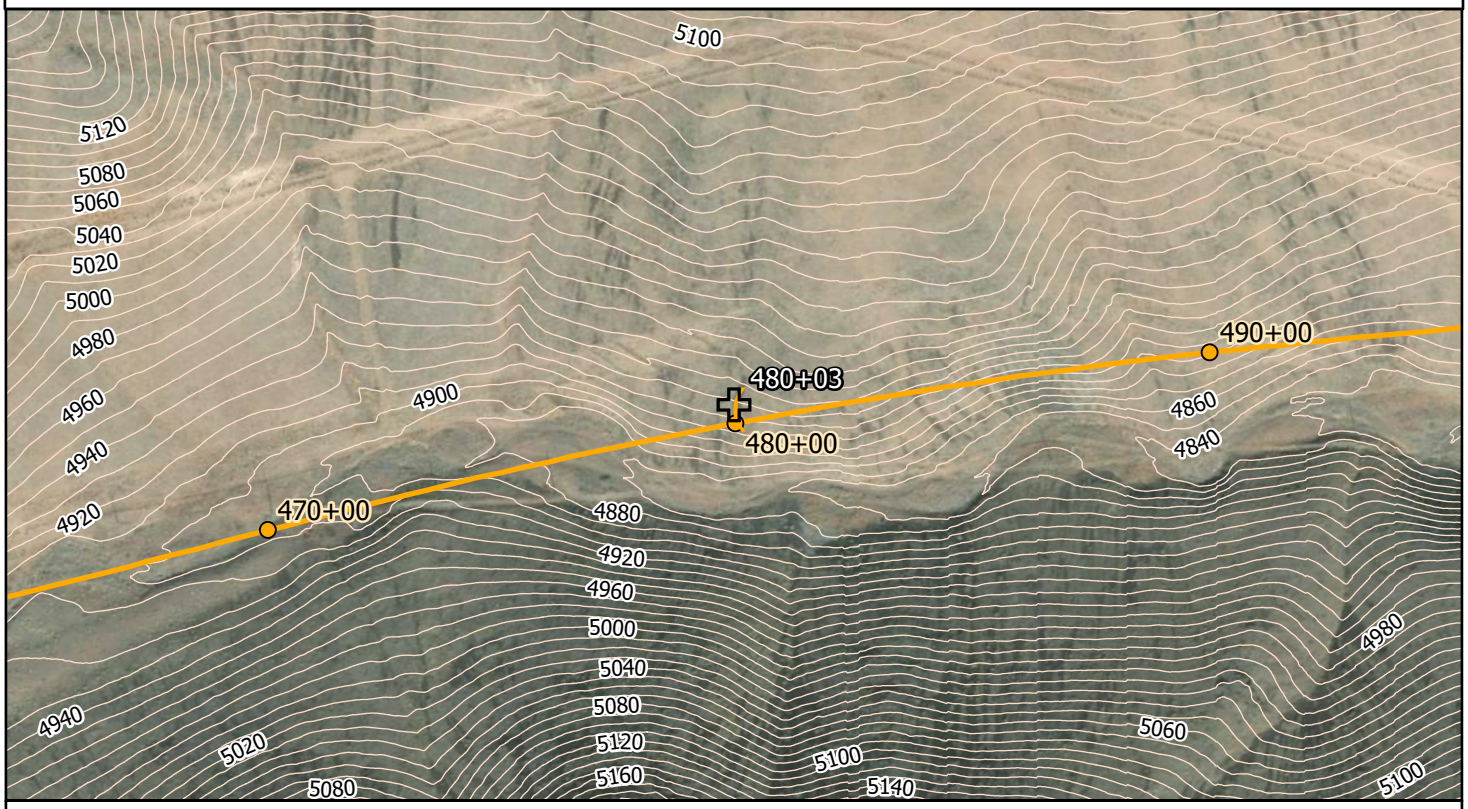
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 480+03

Looking to TRIC.



Looking to Vista.



Photo 3.



No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 490+06

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

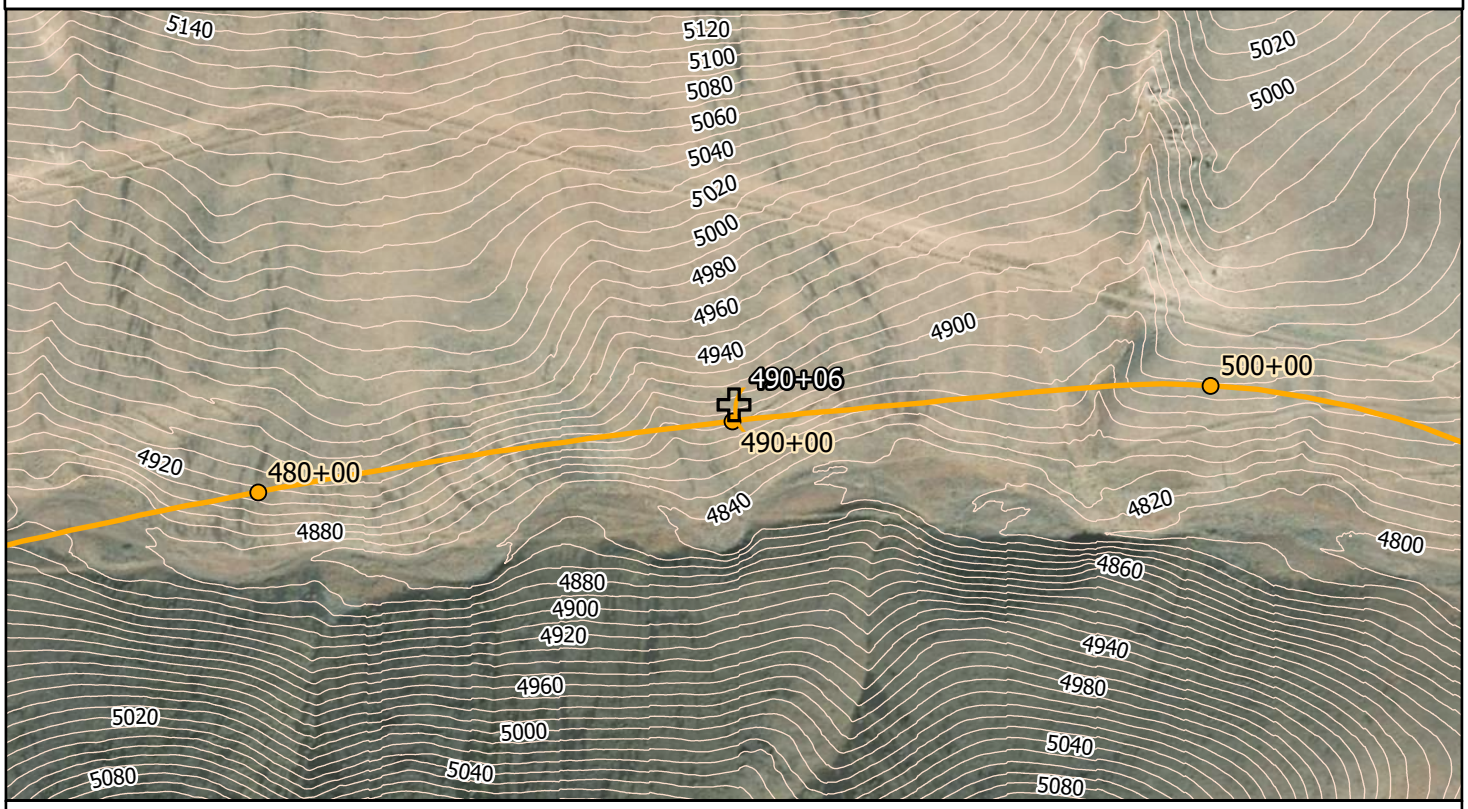
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH ^ˇ
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH %DVDOW
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK PRGHUDWHO\ VWURQJ FKLSV
:HDWKHULQJ PRGHUDWH
&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 490+06

Bedrock cut downhill from data point.



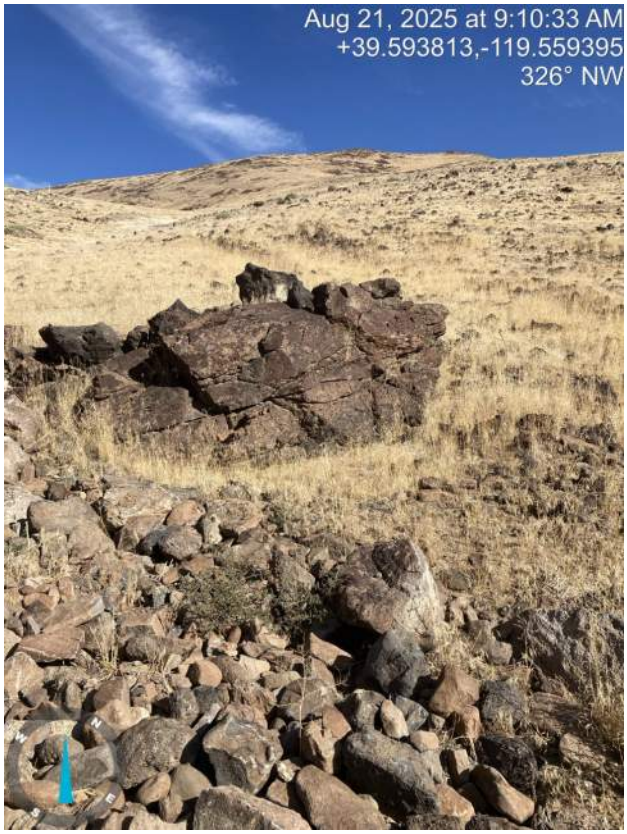
Looking to TRIC.



Looking to Vista.



Outcropping downhill from data point.



WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 500+20

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH *UDVVHV

'HQVLW\ 6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

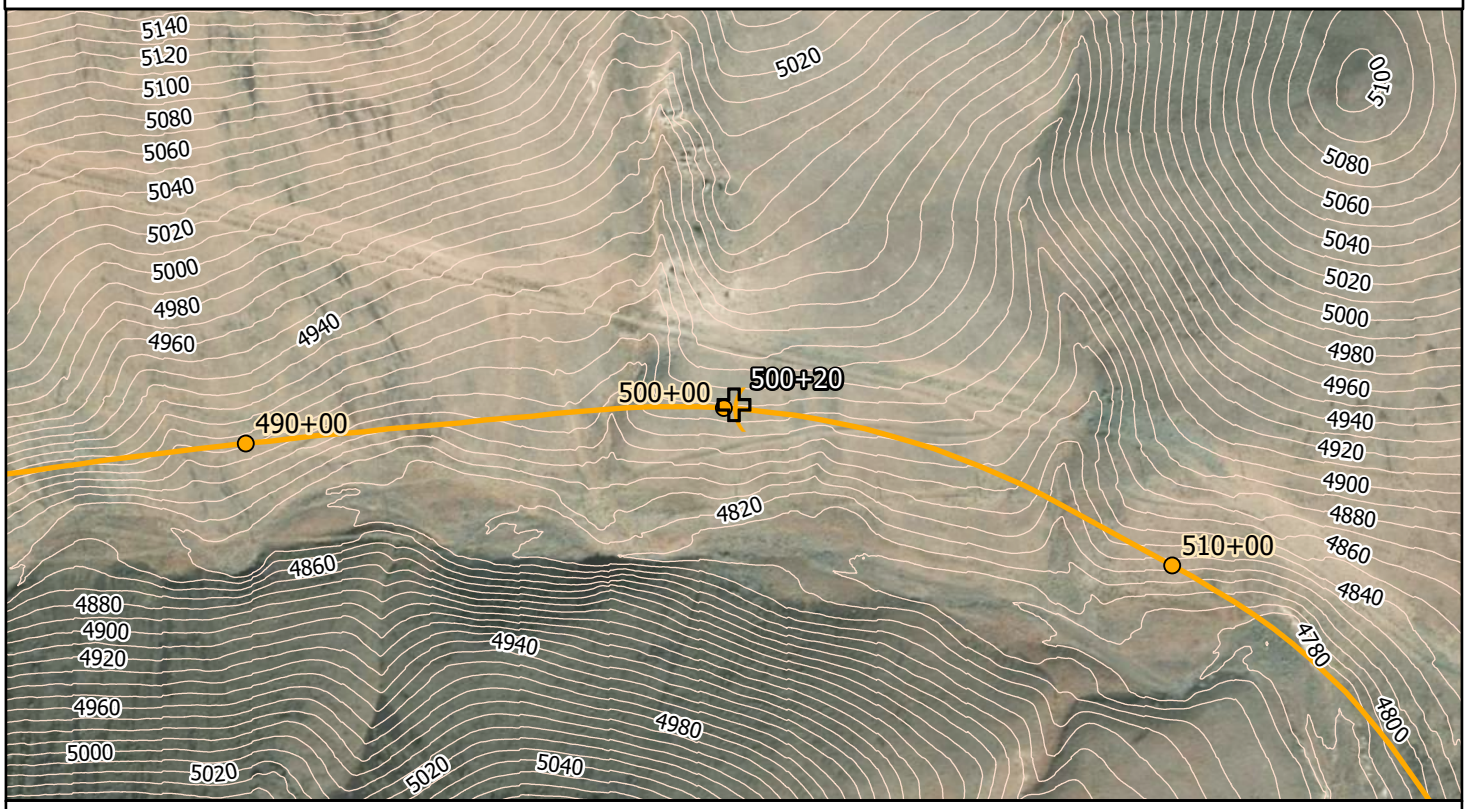
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 500+20

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 509+98

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

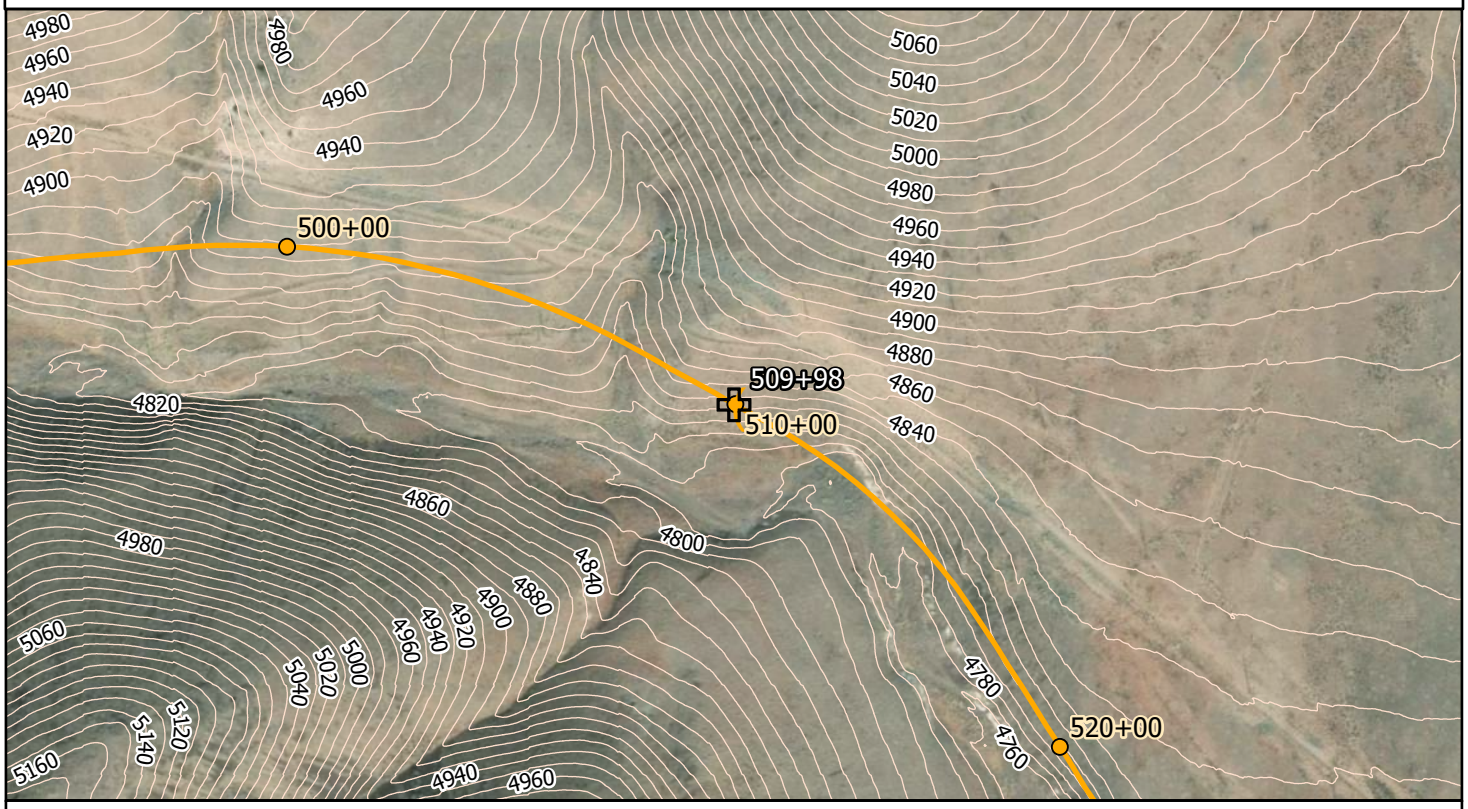
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 509+98

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 519+84

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH 6FUHH

&RPPHQW 6FUHH ZLWK ERXOGHUV

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ ¸

*URXQG &RYHUDJH ^^

5RFN 7\SH %DVDOW

&RPPHQW¸

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ VSDUVH

&RPPHQW¸ VPDOO WR PHGLXP EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH¸

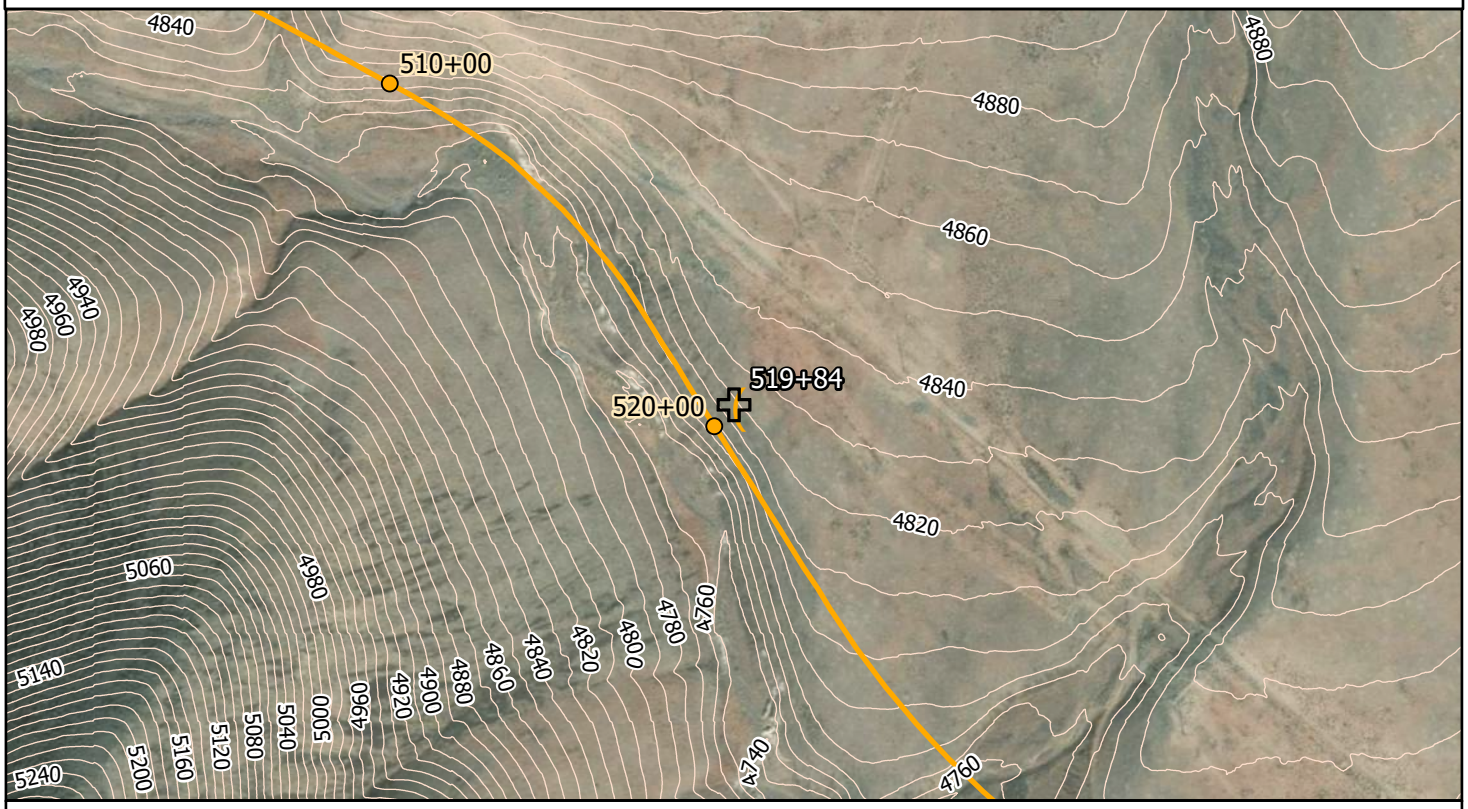
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV¸

6WUHQJWK¸

:HDWKHULQJ¸

&RPPHQWV¸

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 519+84

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 531+64

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH EUXVK

'HQVLW\ VSDUVH

&RPPHQWV JUDVV EUXVK ZLWK JUDVVHV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

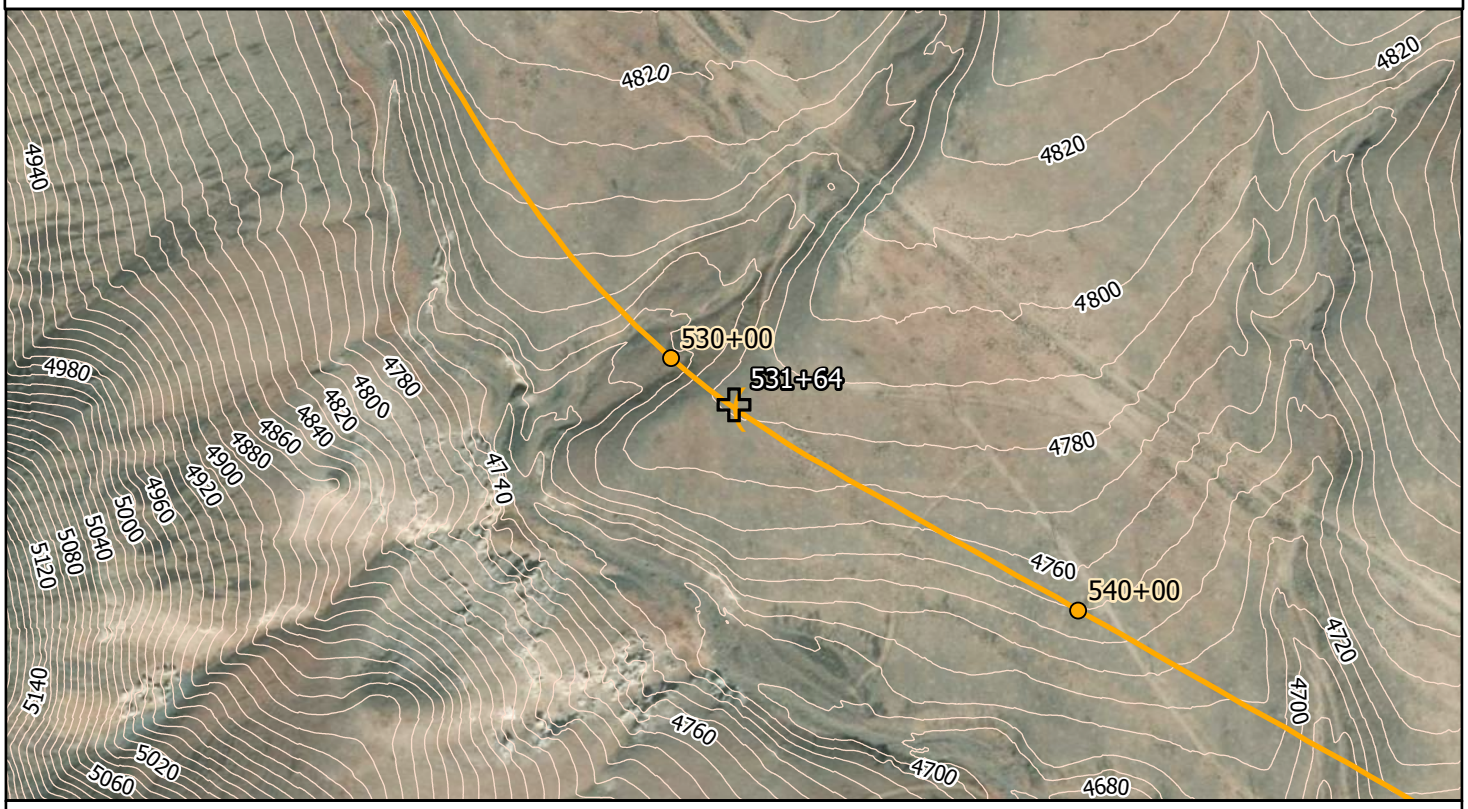
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 531+64

Looking to TRIC.



Looking to Vista. Note scree in drainage channel west of data point..



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 541+12

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

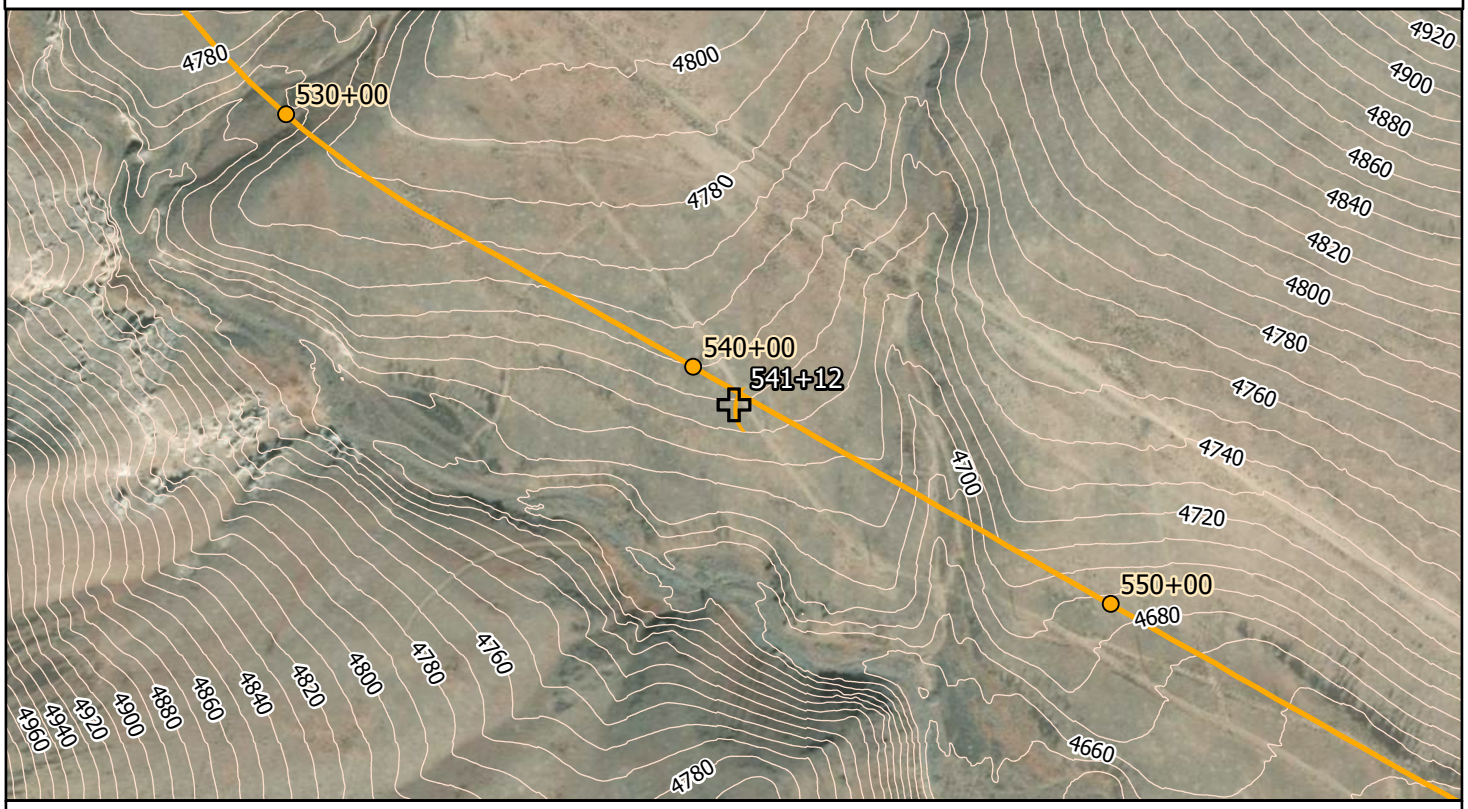
*URXQG &RQGLWLRQ
7\SH‚ &REEOH)ORDW
&RPPHQW‚

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ ‚
*URXQG &RYHUDJH‚ PRGHUDWH ˘ ^˘
5RFN 7\SH‚ %DVDOW
&RPPHQW‚ QRGHUDWH WR KHDY\

9HJHWDWLRQ
7\SH‚ JUDVVHV
'HQVLW\‚ 6DUVH
&RPPHQWV‚ 6WDOO WR PHGLXP EUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH‚
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV‚
6WUHQJWK‚
:HDWKHULQJ‚
&RPPHQWV‚

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 541+12

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 549+61

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQW

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

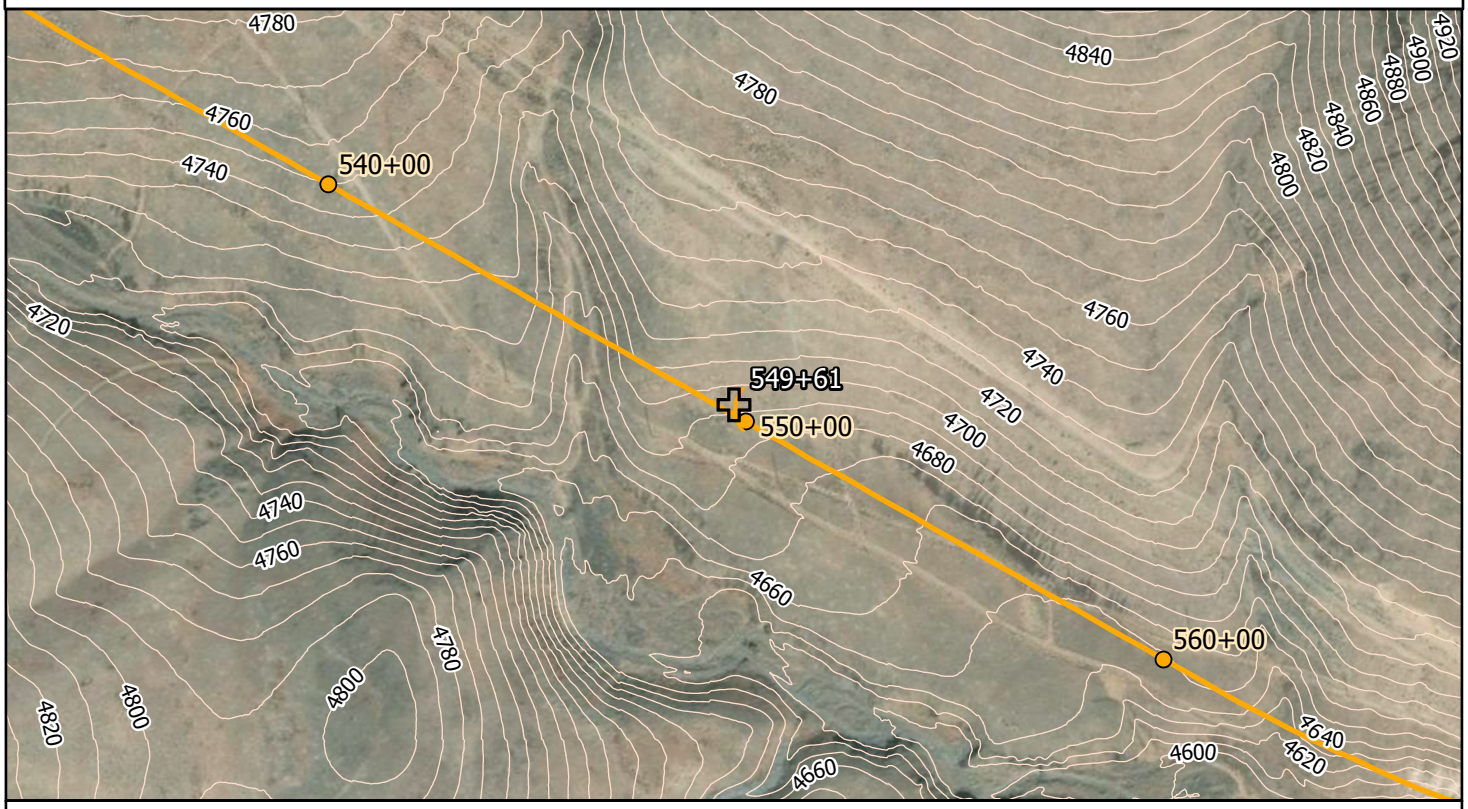
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQW

*HQHUDO &RPPHQW



Project Name: La Posada Geotechnical Investigation Station Name: 549+61

Looking to la Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 555+36

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%DVDOW

&RPPHQW

9HJHWDWLRQ

7\SHJUDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

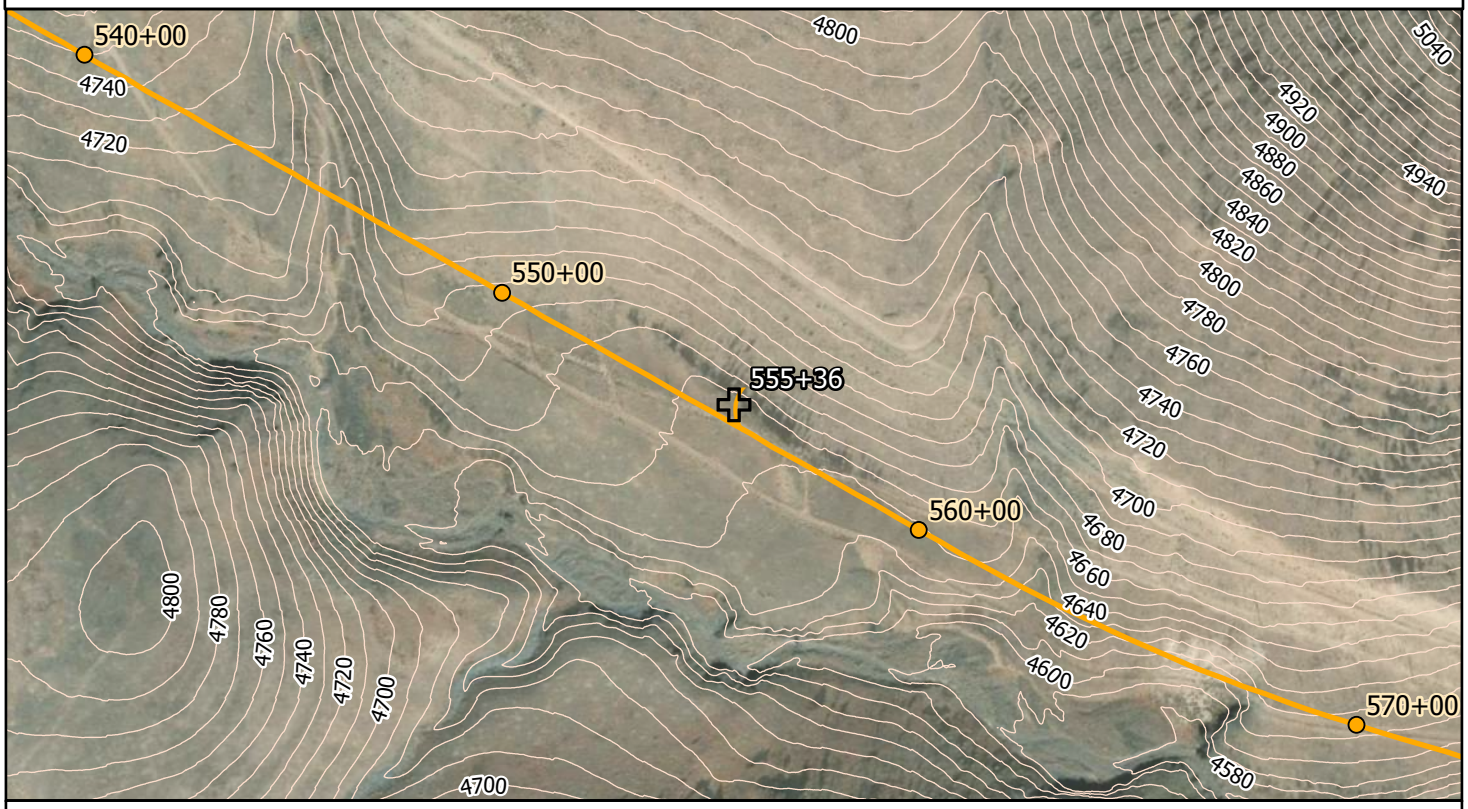
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 555+36

Looking to TRIC.



Looking to Vista.



Scree slope.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 563+50

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH%ODV DOW

&RPPHQW

9HJHWDWLRQ

7\SH%UXVK

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

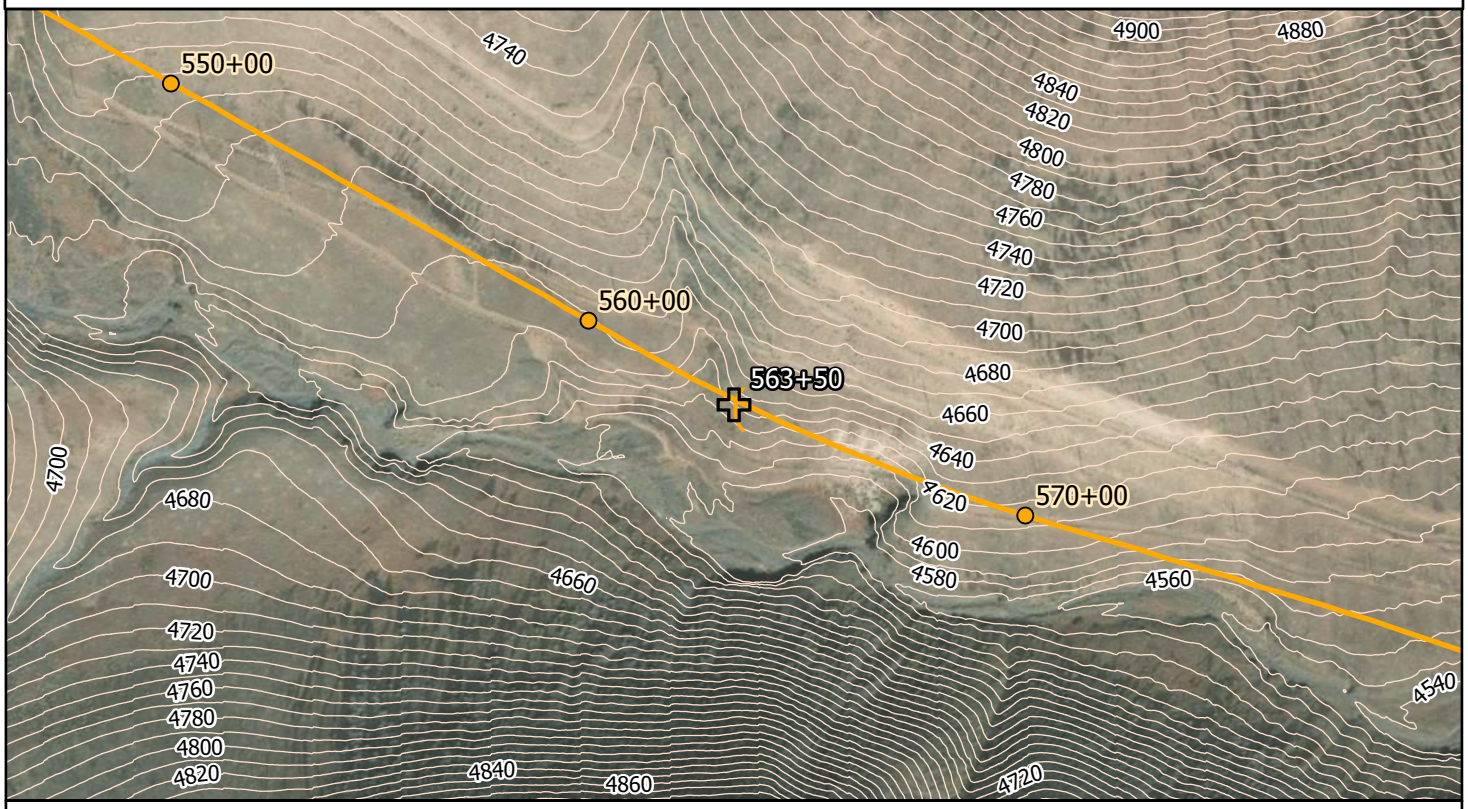
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



Project Name: La Posada Geotechnical Investigation Station Name: 563+50

Looking to TRIC.



No Photo

Looking to Vista.



No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 566+76

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH&REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH*UDVVHV

'HQVLW\6SDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH%DVDOW

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point — Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 566+76

Outcrop.



No Photo

No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 570+63

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RQGLWLRQ

5RFN 7\SH

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

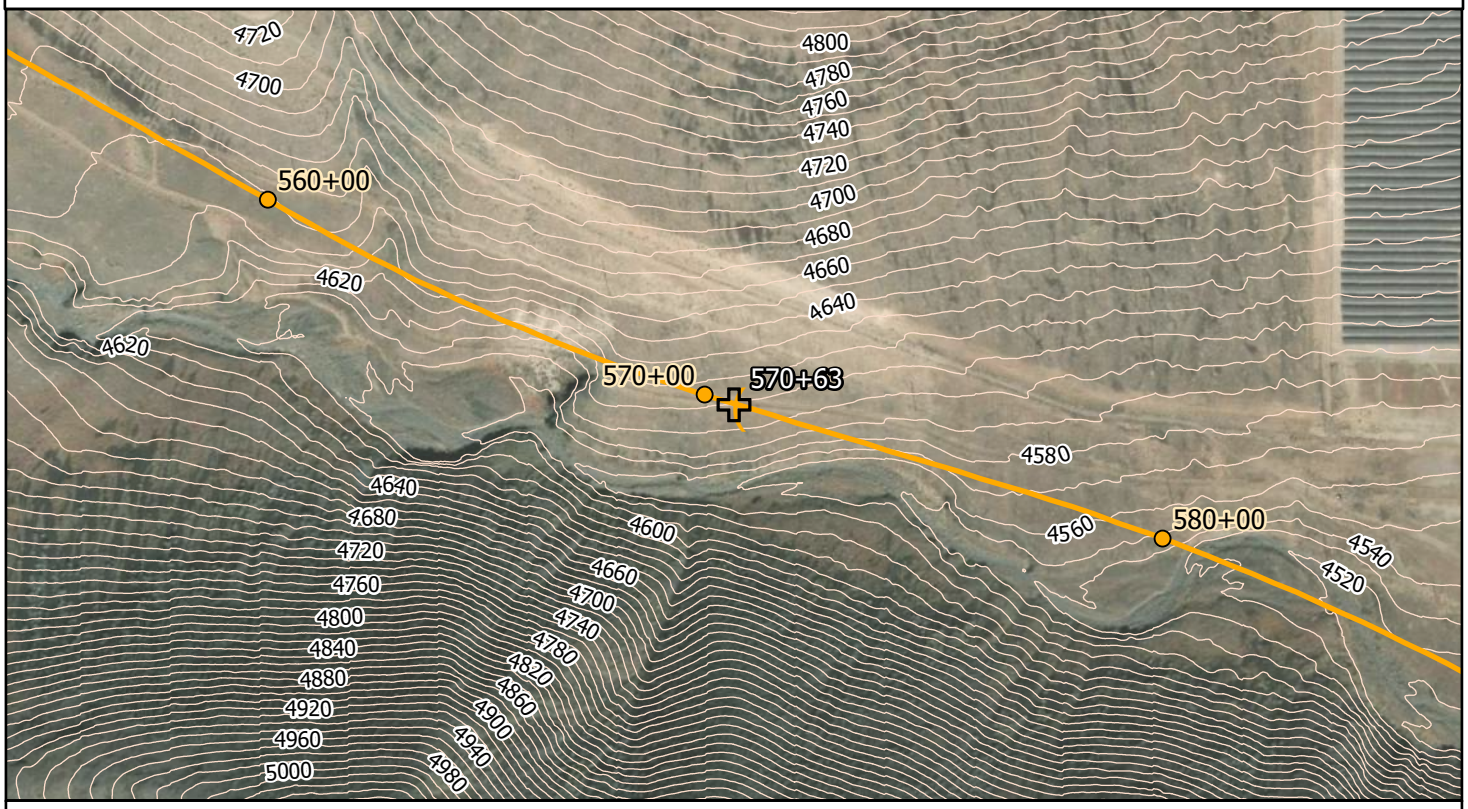
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 570+63

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 580+57

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH6FUHH

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H ! LQ

*URXQG &RYHUDJH

5RFN 7\SHV DOW DQGHVLWH

&RPPHQW

9HJHWDWLRQ

7\SH

'HQVLW\

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

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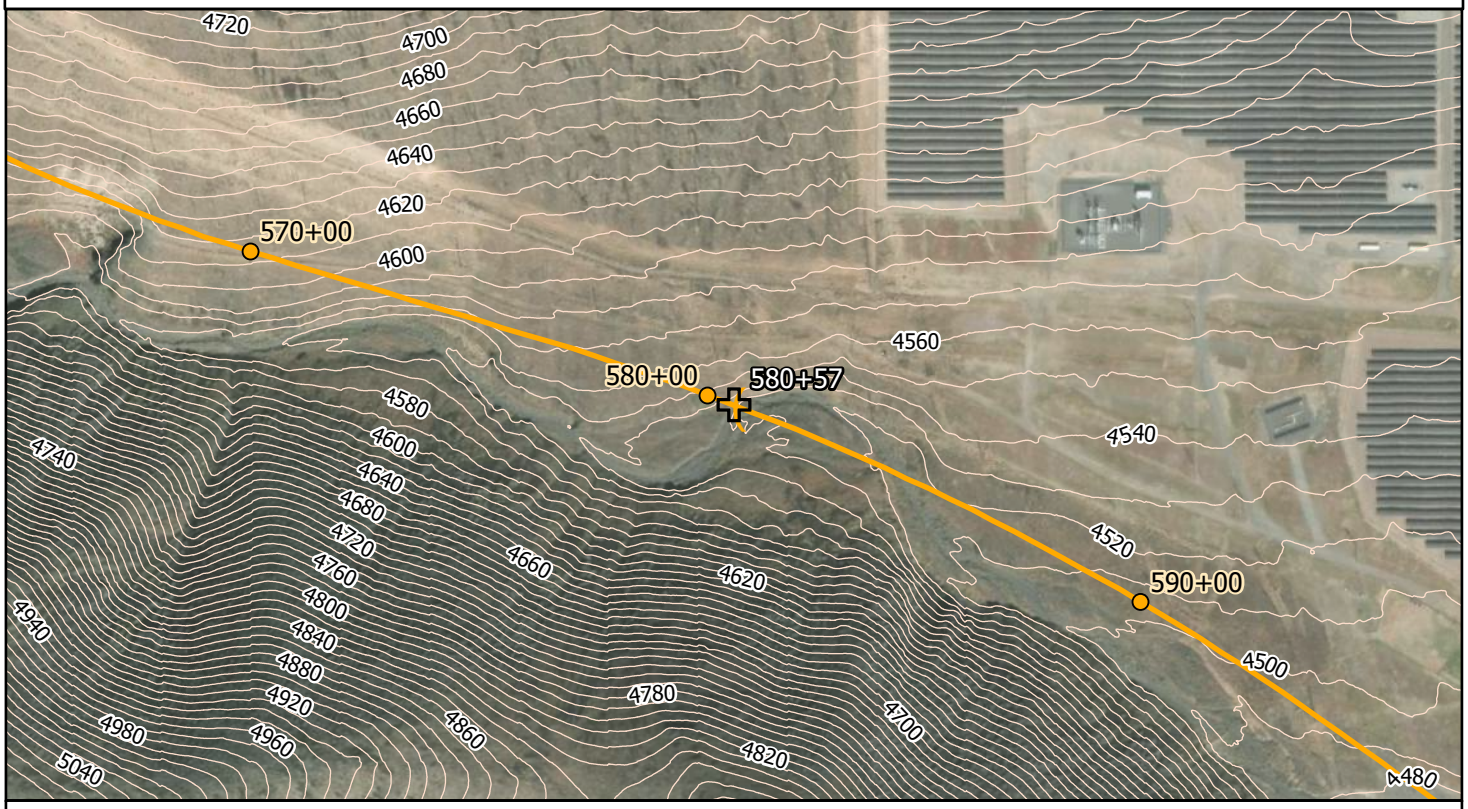
:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV

3RLQW WDNHQ LQ GUDLQDJH FKDQQHO



Project Name: La Posada Geotechnical Investigation Station Name: 580+57

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 587+34

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH &REEOH)ORDW

&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ

*URXQG &RYHUDJH

5RFN 7\SH %DVDOW

&RPPHQW

9HJHWDWLRQ

7\SH JUDVVHV

'HQVLW\ VSDUVH

&RPPHQWV

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH

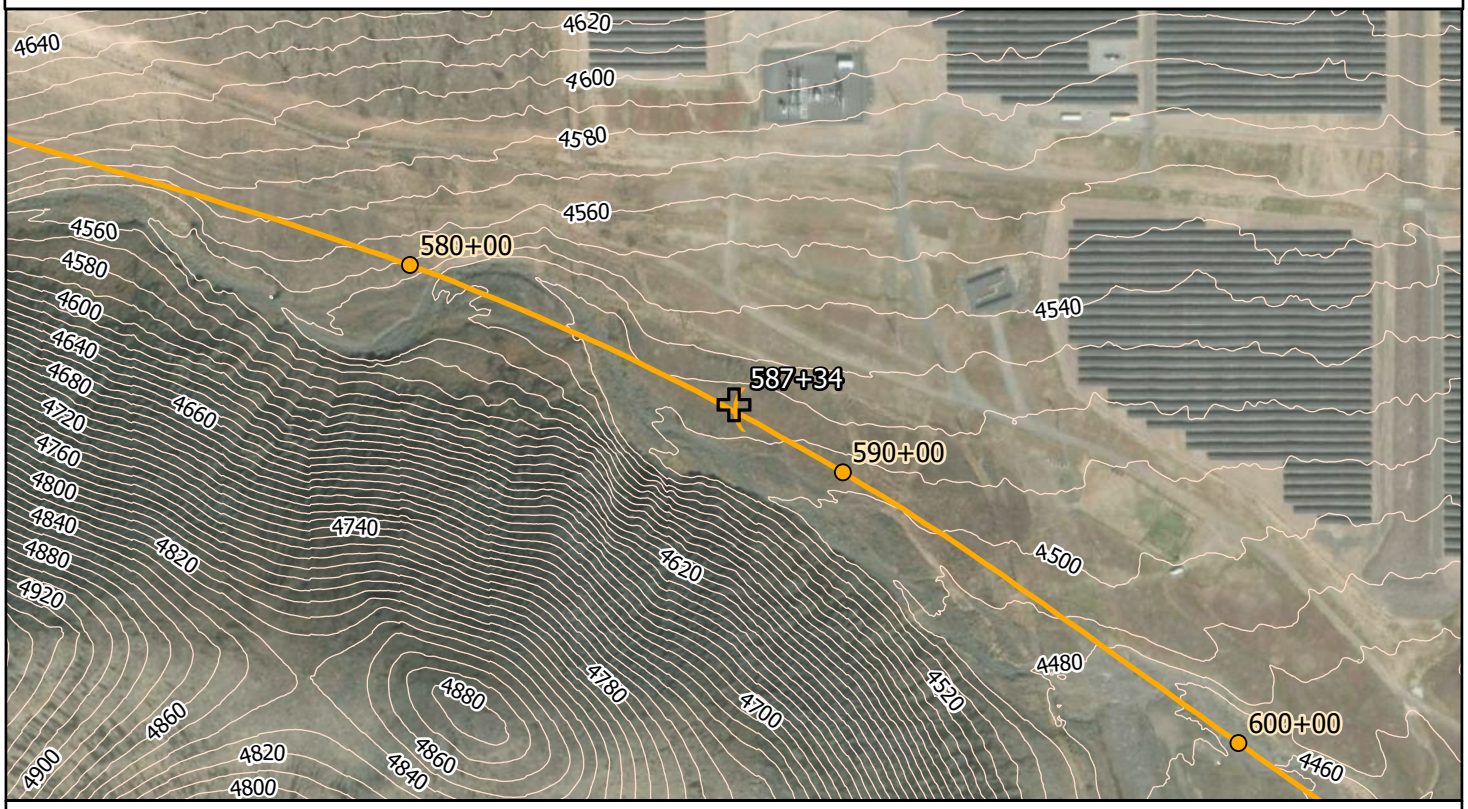
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV

6WUHQJWK

:HDWKHULQJ

&RPPHQWV

*HQHUDO &RPPHQWV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 587+34

Looking to la Posada.



Looking to TRIC.



No Photo

No Photo

WOOD RODGERS

fl , Š ' ƒ , ' ƒ ‰ Œ ‰ , ' Š fl Ÿ / ł … Œ … −// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 590+16

Project Number: 8312057 Survey Date: 08/21/2025 Survey By: J. Beadell

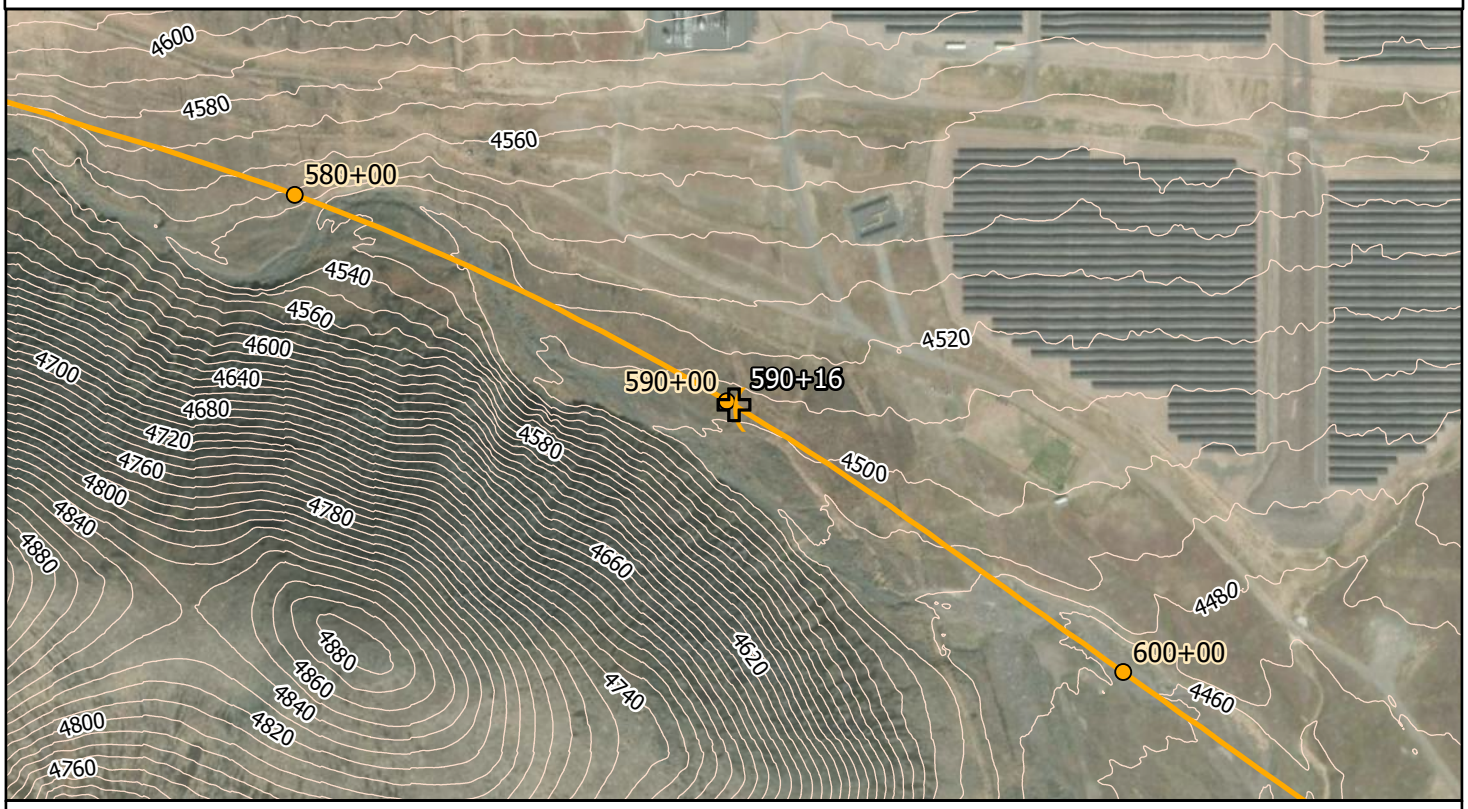
*URXQG &RQGLWLRQ
7\SH &REEOH)ORDW
&RPPHQW

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG
0D[6L]H ! LQ
*URXQG &RYHUDJH ^ˇ
5RFN 7\SH %DVDOW
&RPPHQW

9HJHWDWLRQ
7\SH JUDVVHV
'HQVLW\ 6DUVH
&RPPHQWV PHGLXP VDJHEUXVK

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG
7\SH
%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV
6WUHQJWK
:HDWKHULQJ
&RPPHQWV

*HQHUDO &RPPHQWV
(QG RI DFFHVVLEOH 9LVWD DOLJQPHQW



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 590+16

Looking to TRIC.



Looking to Vista.



No Photo

No Photo

WOOD RODGERS

fl , Š ’ ƒ , ’ ƒ ‰ Œ ‰ , ’ Š fl Ÿ / ł … Œ … –// Œ Ł

Project Name: La Posada Geotechnical Investigation Station Name: 593+20

Project Number: 8312057 Survey Date: 08/19/2025 Survey By: J. Beadell

*URXQG &RQGLWLRQ

7\SH: &REEOH)ORDW

&RPPHQW:

&REEOH)ORDW 6FUHH LI HQFRXQWHUHG

0D[6L]H LQ:

*URXQG &RYHUDJH:

5RFN 7\SH:

&RPPHQW:

9HJHWDWLRQ

7\SH: *UDVVHV

'HQVLW\: 6DUVH

&RPPHQWV:

5RFN 2XWFURSSLQJV LI HQFRXQWHUHG

7\SH:

%HGGLQJ LI VHGLPHQWDU\ -RLQWV RU)UDFWXUHV:

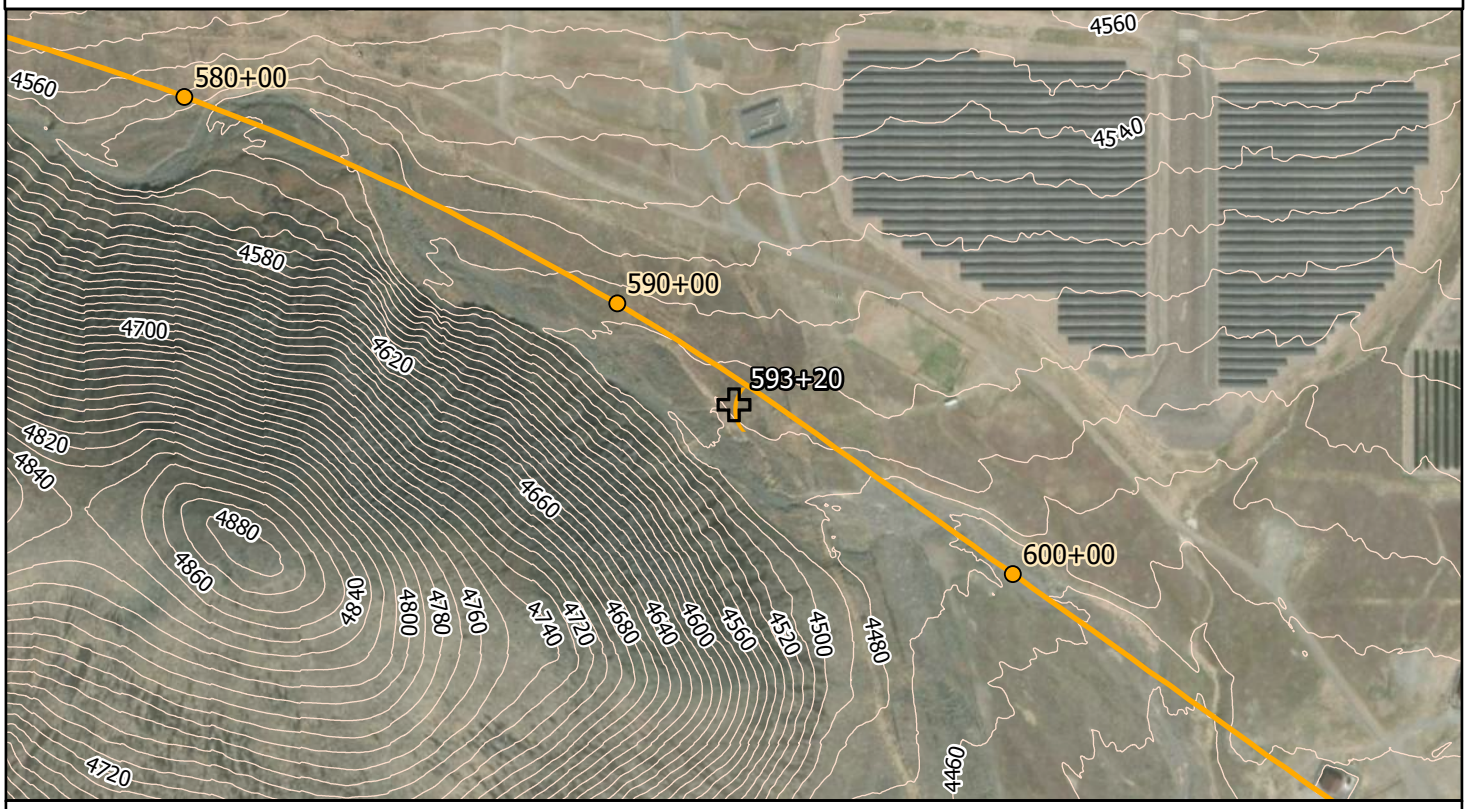
6WUHQJWK:

:HDWKHULQJ:

&RPPHQWV:

*HQHUDO &RPPHQWV

(QG RI /D 3RVDGD DOLJQPHQW DFFHVV



1257+

86)HHW

Vista Data Point Vista Route

Project Name: La Posada Geotechnical Investigation Station Name: 593+20

Looking to La Posada.



Looking to TRIC.

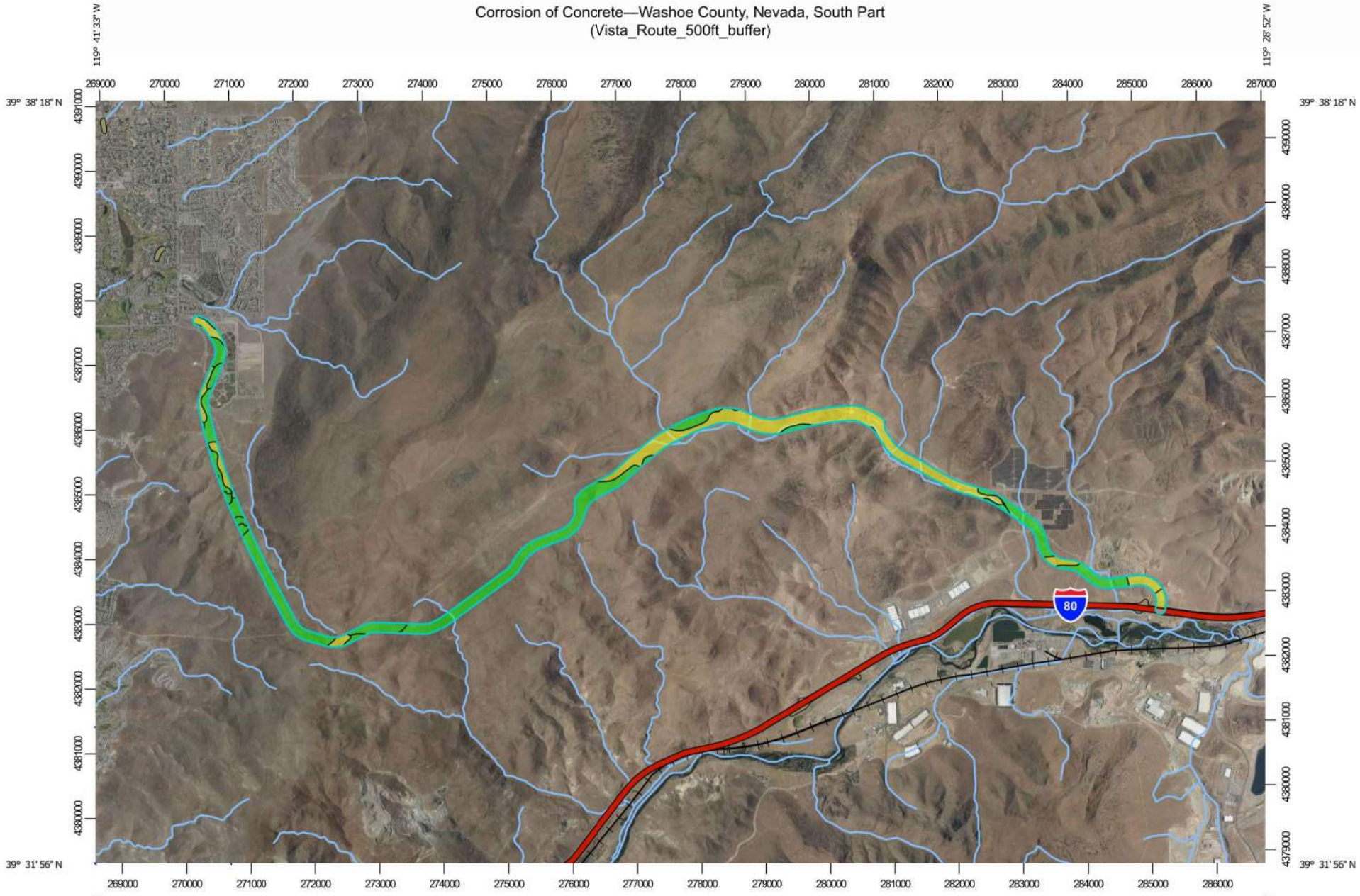


No Photo

No Photo

APPENDIX C
WSS Surveys

Corrosion of Concrete—Washoe County, Nevada, South Part
(Vista_Route_500ft_buffer)



Map Scale: 1:83,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 4000 8000 16000 24000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
- Moderate
- Low
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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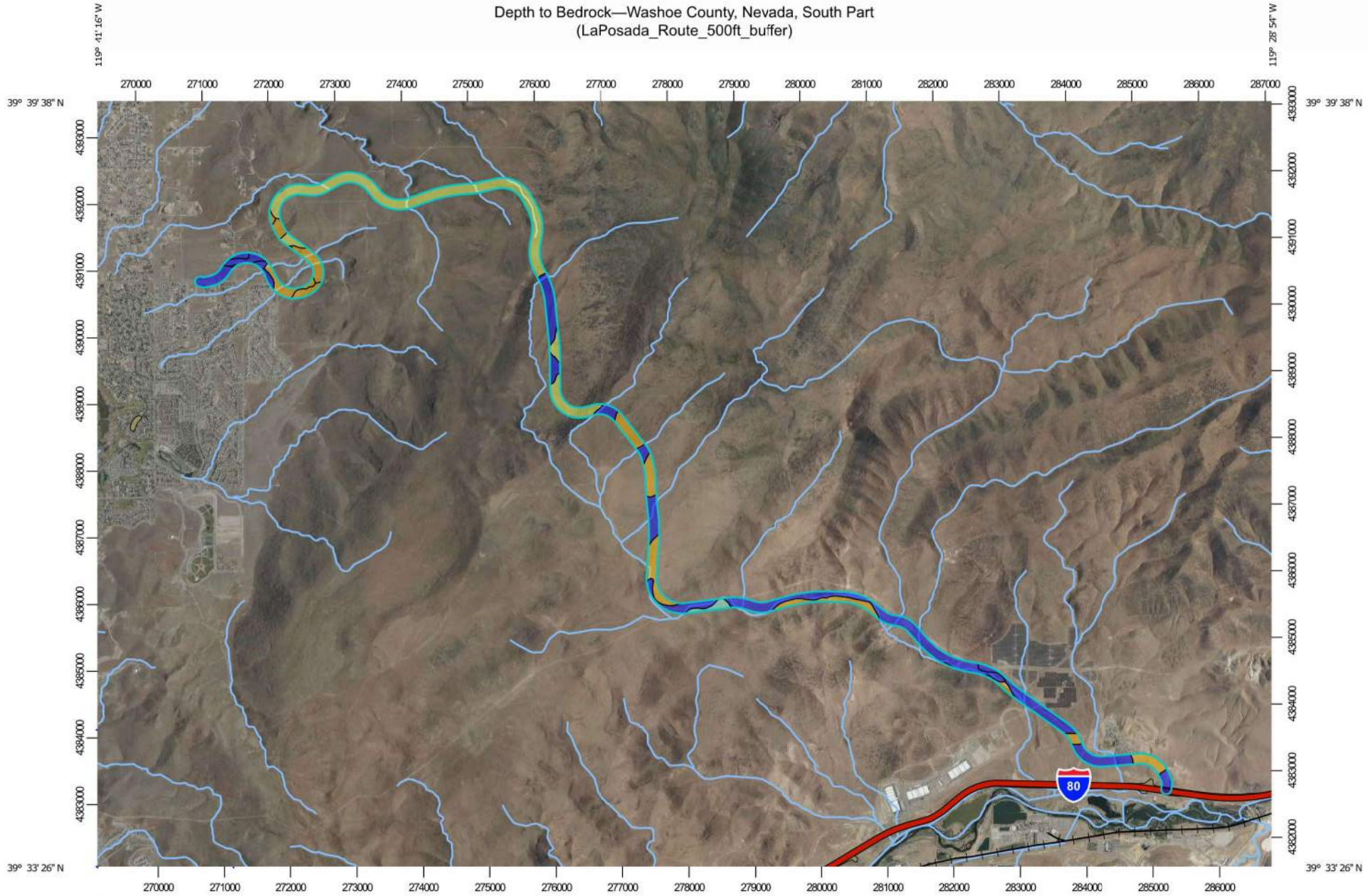
Soil Survey Area: Washoe County, Nevada, South Part
Survey Area Data: Version 22, Sep 17, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2022—Jul 1, 2024

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Depth to Bedrock—Washoe County, Nevada, South Part
(LaPosada_Route_500ft_buffer)



Map Scale: 1:80,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 3500 7000 14000 21000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
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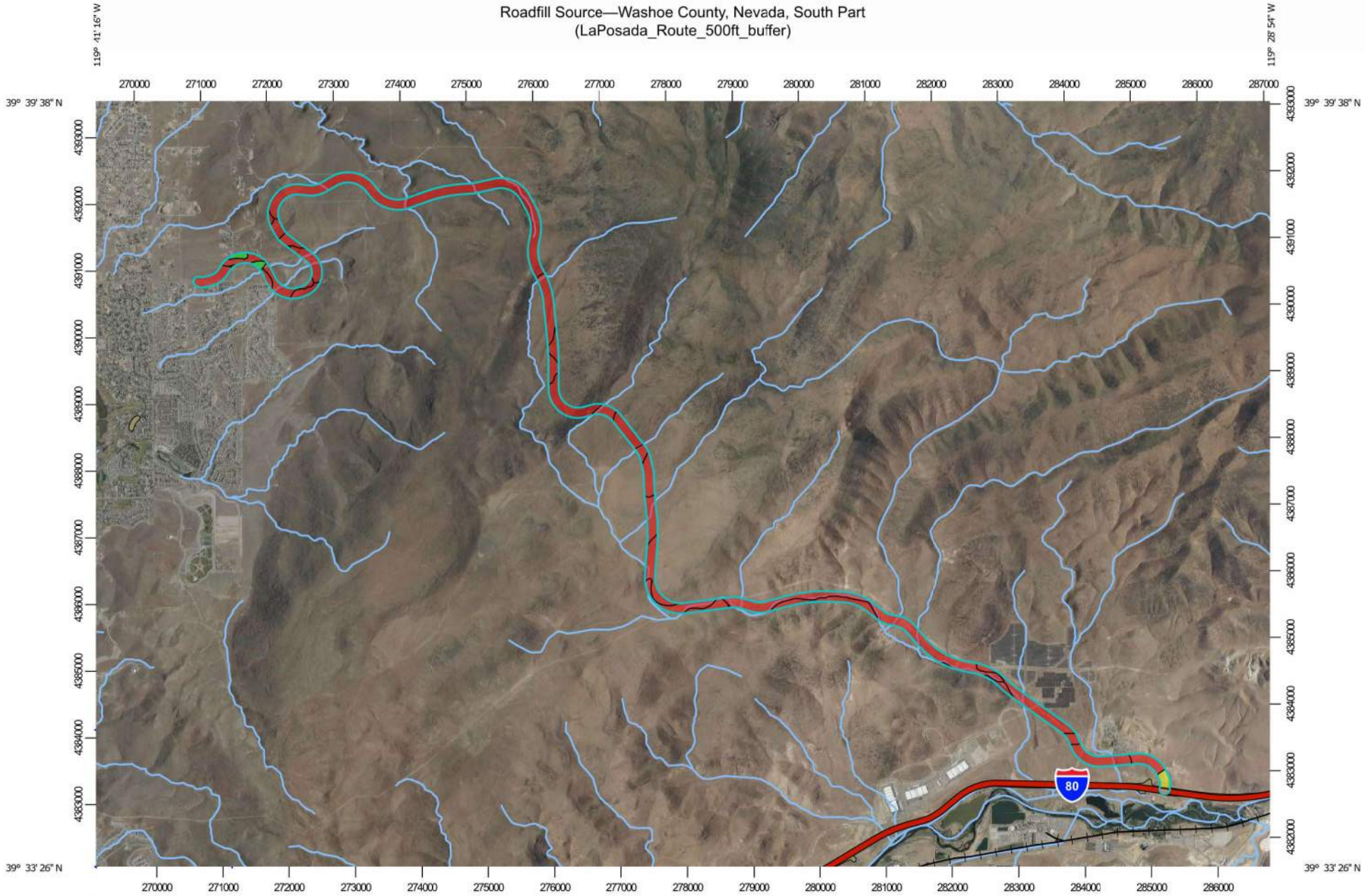
Roadfill Source—Washoe County, Nevada, South Part
(LaPosada_Route_500ft_buffer)



Map Scale: 1:80,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 3500 7000 14000 21000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Poor
- Fair
- Good
- Not rated or not available

Soil Rating Lines
- Poor
- Fair
- Good
- Not rated or not available

Soil Rating Points
- Poor
- Fair
- Good
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Transportation
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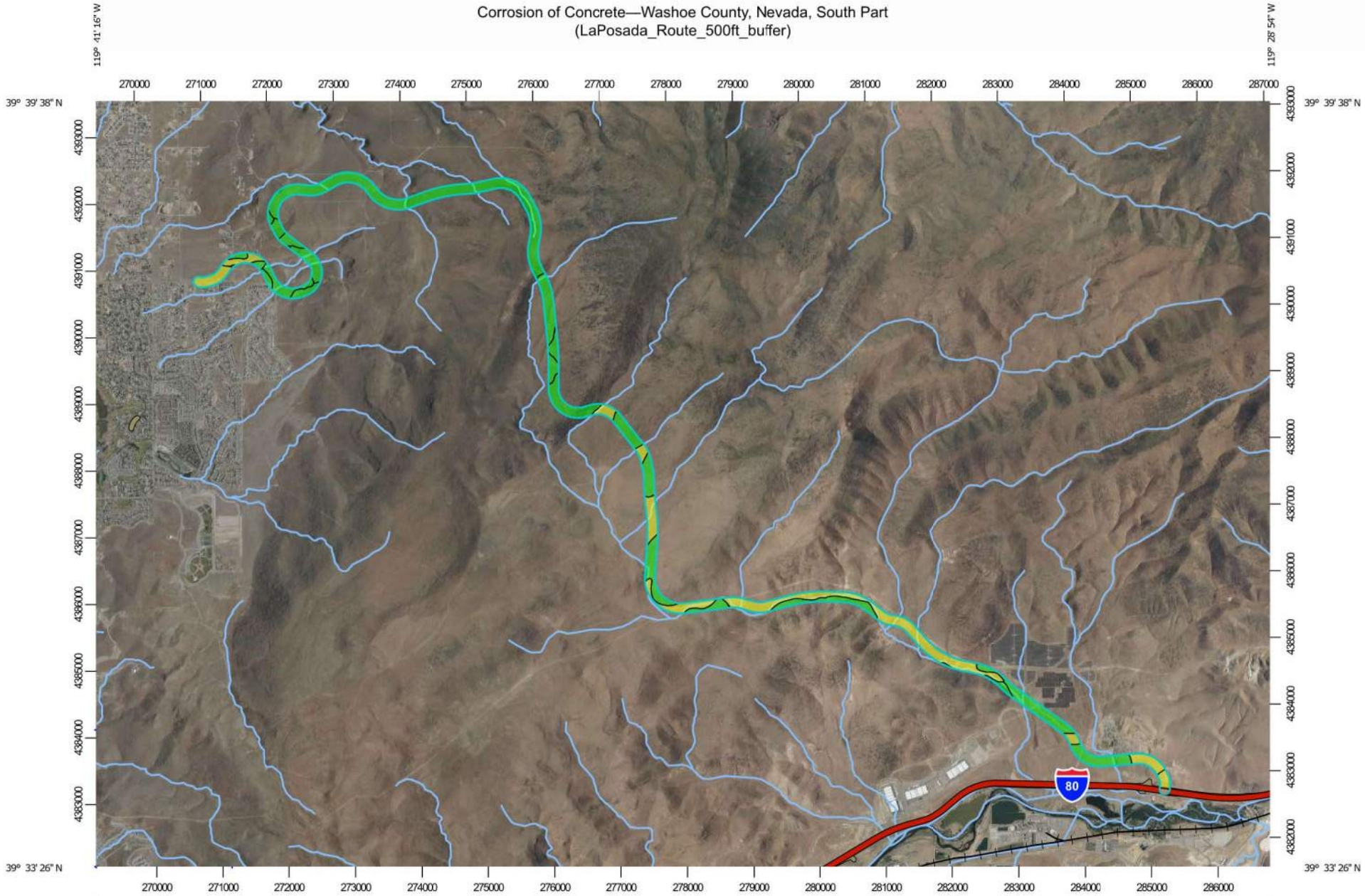
Corrosion of Concrete—Washoe County, Nevada, South Part
(LaPosada_Route_500ft_buffer)



Map Scale: 1:80,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 3500 7000 14000 21000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
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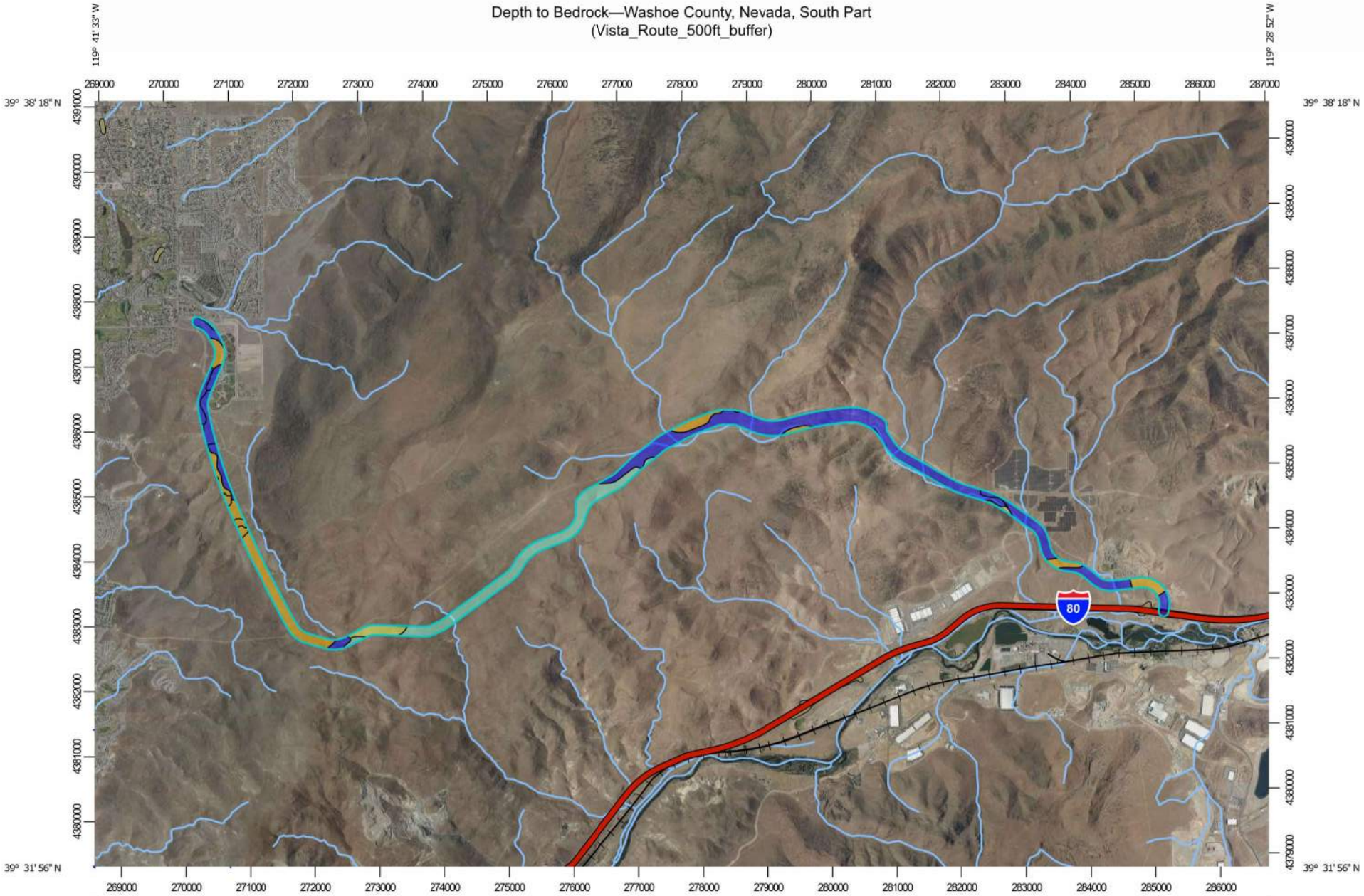
Depth to Bedrock—Washoe County, Nevada, South Part
(Vista_Route_500ft_buffer)



Map Scale: 1:83,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 4000 8000 16000 24000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
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Soils

Soil Rating Polygons
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- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
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- 100 - 150
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- > 200
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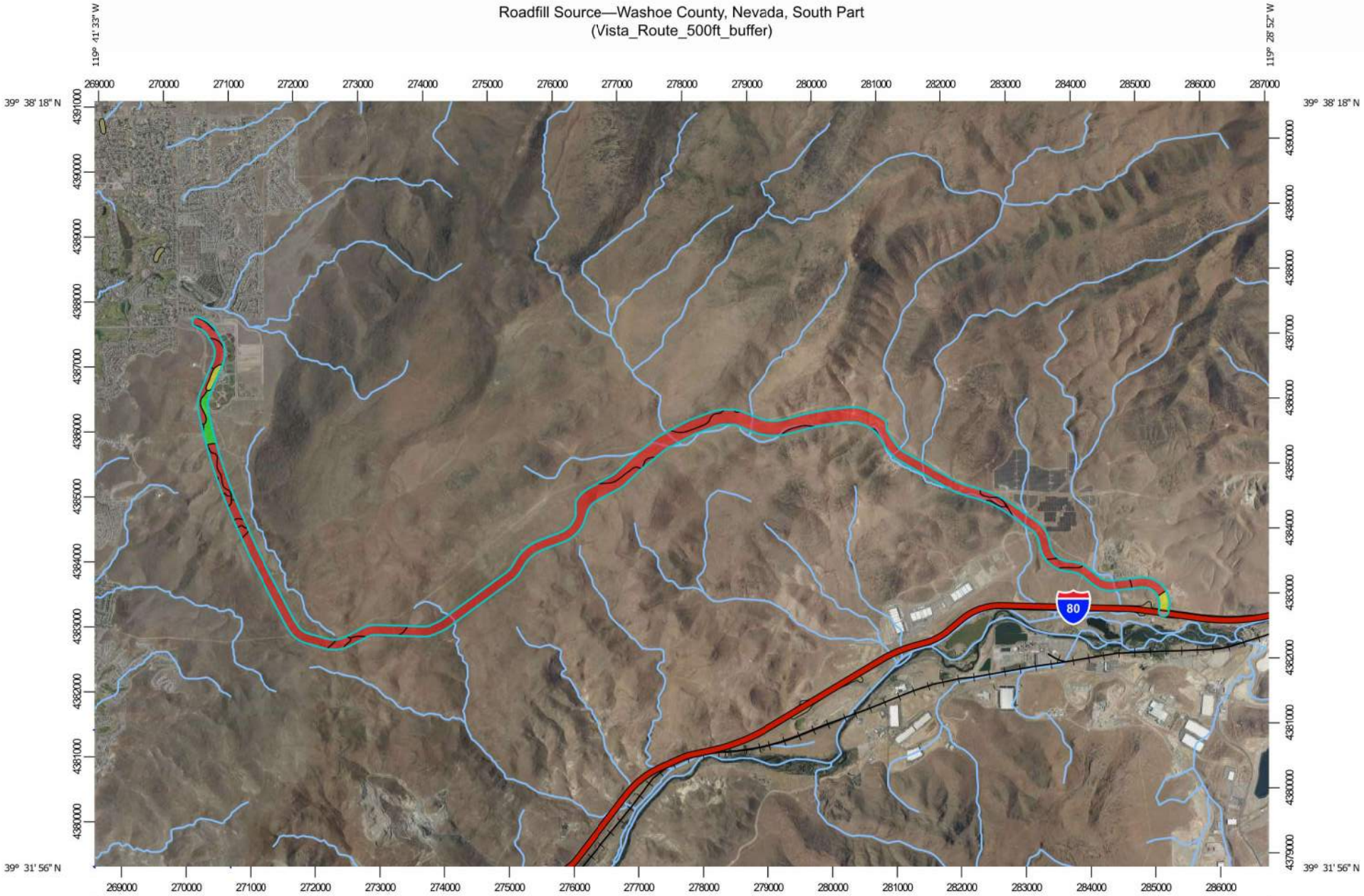

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Meters
0 1000 2000 4000 6000

Feet
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MAP LEGEND

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Background
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Soils

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- Not rated or not available

Soil Rating Lines
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- Fair
- Good
- Not rated or not available

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APPENDIX C:
TECHNICAL DRAINAGE REPORT

TECHNICAL DRAINAGE REPORT

FOR

NORTHEAST CONNECTOR FEASIBILITY STUDY

Prepared for:

RTC of Washoe County
PO Box 30002
Reno, NV 89502-3163

October 27, 2025

Prepared by:
Wood Rodgers Inc.
1361 Corporate Boulevard
Reno, Nevada 89502
(775) 823-4068
James Springgate, PE

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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1 EXECUTIVE SUMMARY

The Northeast Connector Project, located near Sparks, Nevada, connects State Route 439 (USA Parkway) and the Tahoe Regional Industrial Center (TRIC) to Vista Boulevard at Golden Eagle Regional Park (GERP). This report evaluated the more conservative point of connection alternative at Vista Boulevard, whose alignment is thought at this time to need more drainage infrastructure than other alternatives. The project will construct a new paved roadway and associated drainage infrastructure designed in accordance with the *Truckee Meadows Regional Drainage Manual (TMRDM)* and *Nevada Department of Transportation Drainage Manual* to safely convey stormwater runoff while preserving natural hydrologic patterns and minimizing downstream impacts.

The proposed road alignment is approximately 12.6 miles long. Terrain within the corridor is steep and undeveloped, consisting primarily of undeveloped desert with steep canyons and washes. The roadway alignment lies entirely within FEMA Unshaded Zone X (Area of minimal flood hazard), and no portion of the proposed roadway intersects mapped 500-year floodplains. The highway alignment connects to Road 16 north of I-80, which crosses the Truckee River and several FEMA flood zones. Road 16 will serve as the link to USA Parkway and likely require widening, though the condition of its existing bridge over the river is currently unknown. Drainage improvements will be maintained by the appropriate governing agency having jurisdiction at the time of construction. Forty-three drainage basins were delineated along the corridor, divided into west, central, and east sections:

- West Side (S-01 to S-14): Flows routed towards the GERP Southwest Channel near Golden Eagle Regional Park.
- Central Basins (N-01 to N-08, S-15 to S-23): Combined flows discharge southeast toward the Truckee River.
- East Side (N-09 to N-18, S-25 to S-27): Flows conveyed towards the Truckee River via Culverts, 32, 33, 34, and 35.

Peak flow computations were performed using Green and Ampt method per NDOT design criteria. Design rainfall depths were obtained from *NOAA Atlas 14*, and time-of-concentration values were determined per TMRDM criteria. Hydraulic design of the storm conveyance system was performed using *Bentley CulvertMaster v3.3*. Thirty-four culverts, consisting of reinforced concrete box (RCB) and reinforced concrete pipe (RCP), were developed and sized to convey the 100-year storm event under inlet control, while one crossing (Culvert 13) will require a bridge due to topographic constraints. Outlet protection and energy dissipation will be provided where velocities exceed 15 feet per second.

Peak discharge rates range from approximately 15 cfs (Cubic feet per second) for small basins to over 1,800 cfs for major catchments during the 100-year storm event. As the corridor lies entirely outside FEMA flood hazard zones and is not expected to impact downstream conditions, no detention facilities are anticipated currently. The project complies with federal and local drainage and floodplain standards. No adverse hydrologic or floodplain impacts are anticipated from development of the Northeast Connector project.

2 INTRODUCTION

The Northeast Connector project (Project) is located near Sparks, in Washoe County, Nevada, connecting the USA Parkway exit near Interstate 80, to Vista Boulevard, located at Golden Eagle Regional Park (GERP). The project currently consists of a new paved roadway, new drainage culverts, and other associated infrastructure. The storm drain system culverts have been designed to the standards of the *Truckee Meadows Regional Drainage Manual* and *Nevada Department of Transportation* standards.

At this time, many of the elements of the Northeast Connector project have not been designed. This preliminary drainage report evaluates the proposed drainage for the Northeast Connector Feasibility Study. The design intends to maintain natural flow paths, convey 100-year flows beneath the proposed roadway via thirty-four culverts, while minimizing downstream impacts. While sections of the Project are in further design phases, this report will be revised with updated information, or supplemental reports will be compiled detailing the new conditions.

2.1 PROJECT LOCATION

According to the Public Land Survey System, the site is situated within Sections 18, 19, 22, 23, 24, 27, 28, 29, 30, and 32, Township 20 North, Range 21 East, along with Sections 19, 20, 21, 27, and 28, Township 20 North, Range 22 East, Mount Diablo Meridian (MDM), in Washoe County, Nevada. The parcels comprising the development are designated Assessor Parcel Numbers (APNs) 084-550-01, 084-020-01, 084-020-02, 084-020-04, 084-020-06, 084-020-07, 084-020-08, 084-020-11, 084-020-12, 084-020-13, 084-020-16, 084-030-21, 084-030-22, and 084-110-35, 084-110-37, 084-120-28. Please see **Appendix A** for the Parcels Exhibit showing the labeled boundaries of the above properties. The roadway alignment begins west of Golden Eagle Regional Park, which contains existing infrastructure such as sports fields, parking areas, a restaurant, and other amenities. For this drainage analysis, the Northeast Connector is planned to utilize the existing Vista Boulevard and Homerun Drive intersection and head south along a realigned Homerun Drive, west of Golden Eagle Regional Park. From there, the proposed roadway extends south before curving northeast and then southeast, generally following existing trails and utility corridors, and then intercepting Road 16 and terminating into USA Parkway. Before reaching its terminus, the current alignment passes near existing solar farms and through APN 084-110-35, then continues across privately owned parcels APN 084-110-37 and 084-120-84. Apart from these developed areas and the connection at Golden Eagle Regional Park, the surrounding landscape primarily consists of undeveloped open space. A vicinity map is provided in **Appendix A.**

2.2 PROJECT DESCRIPTION

The parcels through which the Northeast Connector will pass total approximately 10,000 acres, but only approximately 100 acres will be disturbed with the proposed Northeast Connector. The existing terrain of the Project is highly variable, with slopes exceeding 100 percent along the existing hill features and flattening to less than 3 percent in localized low-lying areas. Reference **Appendix A** for the Hydrologic Basin Map, which includes an average slope overlay for the project area. The site consists primarily of undeveloped mountainous desert terrain, characterized by

rocky canyons, sparse vegetation, and intermittent brush cover. Native vegetation includes grasses, sagebrush, and rabbitbrush, with grasses representing the dominant ground cover.

The proposed roadway path is located within FEMA Flood Insurance Rate Map (FIRM) Panels 32031C3056G, 32031C3060G, 32031C3080G, 32031C3083G, 32031C3084G, and 32031C3103G.

- FEMA Panel 32031C3056G identifies a 1-percent annual chance (100-year) flood zone associated with the off-site drainage feature known as the GERP Channel, located east of the proposed roadway alignment, near Golden Eagle Regional Park. Drainage from Basins S-01 through S-15 ultimately converge into this channel, however, the project is not anticipated to increase the 100-year water surface elevation within the structure at this stage of design.
- FEMA Panel 32031C3084G along with 32031C3103G include the Truckee River and its associated floodplain, situated off-site to the south of the project area.

The entire proposed roadway alignment lies within Unshaded Zone X (Area of Minimal Flood Hazard), indicating that no portion of the project is located within a mapped FEMA flood hazard area. A FEMA Flood Zone Exhibit illustrating the relevant panels and floodplain boundaries is provided in **Appendix A**.

2.3 Regulatory Perspective

The project site is located primarily on federally managed land, except for APNs 084-110-35, 084-110-37, and 084-120-84. Drainage infrastructure located within public roadways is anticipated to be owned and maintained by the appropriate governing agency having jurisdiction at the time of construction.

3 PREVIOUS STUDIES

To date, no previous drainage studies have been found for the project area. However, design documents indicate existing storm drain infrastructure and culvert installations within Golden Eagle Regional Park.

4 METHODS

The following methods were used to develop the hydrologic model and estimate peak runoff for the proposed conditions. Hydrologic parameters, rainfall data, infiltration characteristics, and basin geometries were defined in accordance with the Truckee Meadows Regional Drainage Manual (TMRDM) and NDOT design guidance. The analysis integrates rainfall data from NOAA Atlas 14, soil infiltration parameters derived from the Green and Ampt method, and basin areas and slopes delineated in ArcGIS. HEC-HMS (version 4.2.1) was used to perform the runoff simulations, calculate peak discharges, and generate hydrographs for the 5-year and 100-year storm events.

4.1 Hydrologic Analysis

The hydrologic analysis consists of peak runoff flow computations for the proposed conditions. The 5-year and 100-year storm events were modeled per the TMRDM using the Green and Ampt Method. Although the TRMRDM does not specifically allow the Green and Ampt method for flow

calculation, NDOT has been utilizing the method as a less subjective flow estimation method than the NRCS Unit Hydrograph Method. The Green and Ampt method has also been used to calculate peak flows for large drainage basins within the City of Sparks (Reach 9, 5 Ridges, etc.).

Basin areas, Green and Ampt infiltration parameters, NOAA Atlas 14 rainfall data, and lag times (T_{lag}) for both basins and interconnecting reaches between culverts were input into the model to compute peak runoff flows. The rainfall values used for computation are listed within **Appendix B**.

4.1.1 Time of Concentration/Lag Time

The time of concentration (t_c) is defined as the time required for water to flow from the hydraulically most distant part of the drainage area to the point of consideration. Usually, the point of consideration is the discharge point of the basin or sub-basin. Time of concentration is used in the Rational Method to determine the corresponding rainfall intensity used to calculate the peak runoff rate of a given storm event for the basin or sub-basin. For basins less than one square mile in total area and slope less than 10 percent, the following equations shall be used in determining time of concentration.

$$t_c = t_i + t_t$$

Where:

t_c = time of concentration (minutes)
t_i = initial, overland flow time (minutes)
t_t = travel time in ditch, channel, gutter, pipe etc. (minutes)

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

Where:

t_i = initial overland flow time (minutes)
R = flow runoff coefficient (for Rational Method equal to C_5 from table 701 of TMRDM- in **Appendix B**)
L_o = length of overland flow (feet, 500 feet max.)
S = average overland basin slope (percent)

$$t_t = \frac{L}{V * 60}$$

Where:

t_t = travel time
L = length of water course
V = average water velocity

URBANIZED BASIN CHECK AND tc MINIMUM

The final time of concentration shall be the lesser of tc calculated above and the following subject to a minimum of 5 minutes for paved areas and 10 minutes for landscaped areas.

$$t_c = \frac{L}{180} + 10$$

Where L = watershed length (feet)

LAG TIME

Lag time (T_{lag}) for SCS calculations is defined as:

$$T_{\text{lag}} = t_c * 0.6$$

Tables detailing the t_c and T_{lag} values for the analyzed basins for existing and proposed conditions are included in **Appendix C**.

FOR BASINS GREATER THAN ONE SQUARE MILE IN TOTAL AREA OR SLOPE GREATER THAN 10 PERCENT

Lag time (T_{lag}) for SCS calculations is defined as:

$$T_{\text{lag}} = 22.1 K_n (L * \frac{L_c}{S^{0.5}})^{0.33}$$

Where:

K_n = Roughness Factor
L = Length of longest water course (miles)
L_c = Length along longest watercourse measured upstream to basin centroid (miles)
S = Representative slope along watercourse (feet/mile)

4.1.2 Design Rainfall Depths

Precipitation depth estimates were taken from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 1, Version 5, which provides rainfall information for latitude and longitude. The site's approximate coordinates are 39.625° N and 119.527° W, representing the centroid of the largest contributing basin. Appropriate rainfall intensities were applied for the 5-year and 100-year storm events taken from these coordinates. Depth numbers are included in **Appendix C** of this report.

4.1.3 Green and Ampt Method

This analysis utilizes the Green and Ampt Method as an infiltration model used to estimate the rate at which water enters the soil during storm events. It calculates infiltration based on soil suction head, hydraulic conductivity (in/hr), moisture content, and impervious surface percentages. NDOT has recently started to adopt this method for hydrologic modeling due to its improved accuracy over traditional approaches. To support its use, NDOT has developed GIS-based datasets soil surveys, which provide region-specific Green and Ampt parameters such as

saturated hydraulic conductivity, porosity, and suction head. The method offers several advantages, including closer alignment with physical soil properties, reduced subjectivity compared to other approaches, and potentially increased accuracy, particularly over large areas. Reference the Green and Ampt Data table within **Appendix C** for specific data input per basin. The equation utilized is defined below:

$$f = K_s \left(1 + \frac{\Psi(\theta_s - \theta_i)}{F}\right)$$

Where:

f = Infiltration rate (in/hr)
K_s = Saturated hydraulic conductivity (in/hr)
Ψ = Wetting-front suction head (in)
θ_s = Volumetric water content at saturation (in^3/in^3)
θ_i = Initial volumetric water content (in^3/in^3)
F = Cumulative infiltration depth (in)

4.1.4 HEC-HMS Flow Computations

HEC-HMS modeling software, version 4.2.1 was used to calculate peak flows for the Project using Green & Ampt infiltration parameters.

Rainfall depth (P) was obtained from NOAA Atlas 14, infiltration rate (f) was computed using the Green and Ampt Method, and basin area (A) was delineated using ArcGIS topographic data. The runoff flow rate was then calculated using the following equation, where 1.008 is a unit conversion factor from in/hr·ac to cfs:

$$Q = (P - f) \times A \times 1.008$$

Where:

- Q= runoff flow rate (cfs)
- P= accumulated rainfall (in/hr)
- f= infiltration rate (in/hr)
- A= drainage area (acres)

HEC-HMS applies the computed peak flow and modifies its duration and timing based on the basin's lag time.

4.2 HYDRAULIC COMPUTATIONS

Hydraulic calculations for the proposed storm drain system were completed using Bentley CulvertMaster, CONNECT Edition, Version 3.3. The analysis incorporated estimated best-fit upstream and downstream invert elevations, and culvert lengths, both based on topographic data, existing slopes, preliminary roadway grading, and aerial imagery. Entrance coefficients

were selected based on commonly utilized inlet designs. Maximum allowable headwater depths were determined from the roadway grading plans, topographic data, and invert elevations. Tailwater elevations were estimated to be 3 feet at all culverts to maintain inlet control, as all culverts are expected to operate under inlet-controlled conditions. The computed 100-year design flow and computed headwater for each culvert was also included in the analysis. These parameters were used to determine appropriate culvert sizes. A summary of the proposed culverts size, shape, number of barrels, lengths, invert elevations, station number, and flows are provided in **Appendix C**.

5 HISTORIC DRAINAGE SYSTEM

The project site is primarily located within undeveloped desert and mountainous terrain in Washoe County, characterized by steep slopes, erosion prone soils, and naturally defined drainage channels. Historically, runoff has been conveyed entirely by overland flow and ephemeral washes that follow the natural topographic contours of the landscape. No known storm drain infrastructure or roadway crossings currently exist within the project limits.

Under existing conditions, the majority of surface runoff is generated by direct rainfall and localized snowmelt. The drainage system consists of numerous small sub-basins that combine downslope into larger washes, many of which eventually discharge toward the Truckee River, and some draining into small dry-lake beds.

The predominant drainage pathway originates near the discharge of Basin S-19, forming a natural channel that runs nearly parallel to the proposed roadway alignment before ultimately joining the Truckee River. This main drainage path conveys combined flow contributions from Basins S-19 through S-24 and Basins N-03 through N-14. This natural flow path remains a key component of site drainage and serves as the principal outlet for the eastern portion of the project area.

Conversely, the western basins, Basins S-01 through S-15, drain westward and southward into Spanish Springs Canyon and toward Golden Eagle Regional Park.

Overall, the historic drainage pattern is defined by natural flow channels and convergences across the existing topography, with runoff following well-established ephemeral channels directing toward the Truckee River, Spanish Springs Canyon, and Golden Eagle Regional Park. The proposed drainage design has been developed to maintain these natural flow paths and discharge locations as closely as practicable to existing conditions. Improvements such as new culverts and roadside channels are proposed to preserve conveyance paths beneath the roadway and to prevent an increase of localized ponding or erosion.

Please see **Appendix C** and Table 1 below summarizing the 5-year and 100-year peak flows expected at each junction used in the HEC-HMS calculations:

Table 1: Existing Peak Flows at Junctions				
Discharge	**Contributing Basins**	**Flow Path**	**5-Year Peak Flow (cfs)**	**100-Year Peak Flow (cfs)**
1	S-19, S-20	1	30.3	134.7
2	S-19, S-20, N-03	1	343.8	1180.9
3	S-19 - S-21, N-03, N-04	1	535.0	2050.5
4	S-19 - S-21, N-03 - N-06	1	684.2	2590.3
5	S-19 - S-22, N-03 - N-06	1	700.6	2650.2
6	S-19 - S-23, N-03 - N-08	1	717.6	2712.9
7	S-26, N-15, N-16	2	334.3	1441.6
8	S-27, N-18	3	18.3	111.7

6 PROPOSED DRAINAGE SYSTEM

A hydrologic analysis was conducted, resulting in the delineation of forty-three distinct drainage basins. These basins were defined based on their respective discharge points and topographic boundaries. For organizational clarity, basins are labeled according to their location relative to the proposed roadway alignment:

- Basins beginning with 'S' are located south of the roadway.
- Basins beginning with 'N' are located north of the roadway.

Each basin has been evaluated for flow direction, sheet and channelized flow distances, contributing area, average slope, and culvert requirements. Please refer to Table 2 below for flow and lag time data, the Vicinity Map and Hydrological Basins Map in **Appendices A and C** for spatial context, and to **Appendix C** for detailed culvert sizing associated with each basin.

6.1 WESTERN BASINS (S-01 TO S-14)

A map with the name 'Western Basins Exhibit' was prepared to visualize this section, please reference it in **Appendix A**.

- Basins S-01 through S-14 are located on the west side of the project. Basin S-01 lies just west of Golden Eagle Regional Park, with the remaining basins extending southward. During hydrologic review, Basins S-02 and S-04 were merged with S-01 and S-03, respectively. As a result, additional channeling may be needed in Basins S-01 and S-03 east of the roadway to convey flow northward from these combined basins. Basin S-14, located south of S-13, curves westward along the roadway and drains into Culvert 12. Each basin drains independently toward the roadway and discharges through a dedicated culvert, all ultimately draining toward the GERP Southwest Channel. The largest basin in this group is approximately 245 acres, with all basins totaling approximately 592 acres, and with all average slopes exceeding 10 percent.

6.2 CENTRAL BASINS (N-01 TO N-08, S-15 TO S-24)

A map with the name 'Central Basins Exhibit' was prepared to visualize this section, please reference it in **Appendix A**.

- Basins N-01, S-15, and S-16 are located east of Basin S-14. These off-site basins were included in the hydrologic model due to potential impacts from roadway grading. Though their flow paths are not expected to intersect the roadway, new channels may be required after grading to maintain off-site conveyance. N-01 drains northeast away from the roadway, while S-15 and S-16 flow generally southward.
- Basins N-02, S-17, and S-18 are situated northeast of S-16. These basins discharge through Culverts 13–15 into off-site drainage paths or natural basins.
- Basins S-19 and S-20 are steeper basins that drain northeast through Culverts 16 and 17, converging before joining Flow Path 1, which additively encompasses flows from Junctions 1-6. Basin S-19 is the beginning of Flow Path 1. Please reference Flow Path definitions in Table 1 above.
- Basins N-03, S-21, and N-04 combine flows before discharging through Culvert 18, where they are joined by S-21. N-04, the largest basin in this group at approximately 3,918 acres, flows south toward the road and may require a channel cut to direct flow to Culvert 19, Flow Path 1 then conveys combined discharge through Culvert 20 into Basin N-05.
- Basins N-05 and N-06, located east of N-04, merge with upstream flows before discharging through Culvert 21.
- Basins S-22 and N-07 follow downstream. S-22 receives discharge from Culvert 21 and flows eastward to Culvert 22, flowing into Basin N-07. The resulting channel carries flow from S-19 through N-07 for approximately 4,500 feet before joining Basin S-23.
- Basins S-23 and N-08 continue downstream. S-23 flows northeast through Culvert 23 and merges with N-08 before discharging through Culvert 24.
- Basin S-24, located southeast of S-23, drains northeast along the roadway grade, merging with the existing combined flow before continuing off-site through the established drainage path. Combined flows with Flow Path 1 at this point (Junction 6) include contributions from S-19 through S-23 and N-03 through N-08.
- The final combined flow travels approximately 1.5 miles parallel to the proposed roadway in a natural drainage channel. After 1.5 miles it diverges away from the roadway and is believed to flow under Reno Technology Parkway East, continue south under Interstate 80, and ultimately discharge into the Truckee River. A field visit is recommended to verify existing culvert conditions under both Reno Technology Parkway East and Interstate 80.
- The largest basin within the Central Basins is Basin N-04 at approximately 3918 acres, with the Central basins occupying a total of approximately 6904 acres.

6.3 EASTERN BASINS (N-09 TO N-18, S-25 TO S-27)

A map with the name 'Eastern Basins Exhibit' was prepared to visualize this section, please reference it in **Appendix A**.

- Basins N-09 through N-14 are located southeast of Basin N-08 and arranged sequentially. All basins exhibit average slopes greater than 10 percent, except Basin N-14, which has

an average slope below 10 percent. Each basin discharges south through Culverts 25 through 30, contributing to the Flow Path 1, off-site, channel. Basin N-09 is the largest hydrologic basin within the project area, encompassing approximately 3,930 acres, with the Eastern Basins occupying a total of about 9455 acres.

- Basin S-25 is located south of Basin N-14 and discharges off-site to the east, merging with the flow described above.
- Basins N-15 and S-26 are adjacent drainage areas east and south of N-14. Flow from S-26 passes beneath the proposed roadway and joins discharge from N-15. Basin S-26 begins Flow Path 2.
- Basin N-16, located east of N-15, receives the combined flow from N-15 and S-26 after approximately 1,250 feet, then discharges off-site through Culvert 32. This drainage follows a separate discharge route from the previously described Flow Path 1 but is also expected to pass beneath Interstate 80 and ultimately reach the Truckee River.
- Basin N-17, southeast of N-16, drains south through Culvert 33, discharging toward Interstate 80 approximately 1,000 feet east of the Flow Path 2.
- Basins N-18 and S-27 are located southeast and southwest of N-17 and make up Flow Path 3. N-18 conveys flow southward toward Interstate 80, discharging to FRWA16, a roadway that runs beneath the roadway. S-27 drains to a discharge point on the east side of FRWA16, while N-18 drains to a point on the west side, both contributing to the same overall drainage system.

Table 2 below provides a summary of the drainage area, lag times, and the calculated 5-year and 100-year design flows at the discharge point for each basin.

Table 2: Existing Peak Flows at Discharge of Each Basin				
Basin Name	**Area (ac)**	**T_{lag} (min)**	**5-yr Q (cfs)**	**100-yr Q (cfs)**
N-01	4.7	6.0	6.1	17.7
N-02	218.2	13.5	149.5	524.2
N-03	614.0	22.3	332.0	1111.1
N-04	3917.8	104.7	444.1	1817.2
N-05	114.6	22.5	68.3	212.9
N-06	615.6	59.2	143.9	522.9
N-07	53.2	21.0	32.3	102.6
N-08	424.3	44.2	134.7	468.5
N-09	3930.6	116.6	357.5	1563.3
N-10	1811.9	107.6	240.1	840.7
N-11	157.4	34.3	62.6	210.5
N-12	67.2	18.9	44.2	138.2
N-13	484.0	40.6	164.7	559.3
N-14	54.5	10.7	54.4	157.7
N-15	1542.7	74.8	235.3	927.2
N-16	1043.6	73.6	102.5	535.4
N-17	180.5	35.8	24.0	153.8
N-18	113.6	32.8	17.6	107.7
S-01	245.3	35.6	75.1	291.0
S-03	120.3	24.0	69.7	214.3
S-05	48.1	21.1	27.9	90.8
S-06	17.7	17.4	7.3	32.7
S-07	26.2	16.4	21.7	61.2
S-08	8.7	11.6	6.2	22.4
S-09	21.6	14.0	21.1	56.4
S-10	26.4	9.9	29.7	81.2
S-11	12.6	10.8	13.5	37.3
S-12	15.7	10.4	17.1	47.1
S-13	11.6	9.1	13.8	37.4
S-14	37.5	21.9	23.5	71.6
S-15	7.2	15.5	5.1	16.6
S-16	15.2	20.1	8.7	29.4
S-17	140.3	12.0	84.1	342.3
S-18	63.7	13.0	35.8	147.9
S-19	50.8	20.1	21.3	89.5
S-20	32.7	13.4	17.9	74.2
S-21	204.8	36.5	48.9	222.5
S-22	245.0	31.1	111.4	361.6
S-23	153.3	28.5	79.0	245.1
S-24	28.4	17.1	22.2	64.3
S-25	13.3	19.2	11.6	36.1
S-26	45.1	17.8	35.7	122.4
S-27	10.8	19.1	6.5	26.4

6.4 PROPOSED CULVERTS

A total of thirty-five culvert locations were originally identified along the proposed roadway alignment, however, one location designated as Culvert-13 was determined to require a bridge structure instead due to topographic constraints. As a result, the final design includes thirty-four culverts to safely convey the 100-year design flows beneath the proposed roadway. The culvert system consists of reinforced concrete box (RCB) and reinforced concrete pipe (RCP) structures. Each culvert was analyzed and sized using an iterative process in Bentley CulvertMaster, Version 3.3, to ensure adequate capacity and hydraulic performance under the specific conditions at each crossing. Outlet protection is recommended at all culvert discharge points to mitigate potential erosion, as elevated velocities are anticipated during major storm events. In accordance with the *Truckee Meadows Regional Drainage Manual (TMRDM)*, culverts with outlet velocities equal to or exceeding 15 feet per second during the 100-year storm event will require enhanced energy dissipation measures, while outlets with velocities below 15 feet per second may be protected using a standard riprap apron. The hydraulic design was developed to minimize the potential for overloading at any culvert. A culvert layout map is provided in **Appendix A**, along with detailed culvert calculation reports supporting the design within **Appendix C.**

6.5 PROPOSED DRAINAGE CHANNELS

As noted previously, the project area contains numerous natural drainage channels and ephemeral flow paths that have developed in response to the existing topography. The proposed roadway design aims to preserve and utilize these natural drainage courses wherever feasible to maintain existing hydrologic patterns and minimize disturbance. In areas where the roadway is in a cut condition, roadside ditches will likely need to be excavated to collect and convey runoff away from the highway toward the nearest downstream culvert. In certain locations, the natural drainage path may need to be modified to accommodate the roadway, but efforts will be made to maintain flow patterns as naturally as possible. Basins S-01 and S-03 may require additional channel improvements east of the roadway to convey flow northward toward Culverts 1 and 2. In contrast, Basins N-01, S-15, and S-16 will require grading to direct flow safely away from the roadway embankment rather than to a culvert. In locations where natural drainage channels run adjacent to or parallel with the proposed alignment, erosion control and slope protection measures, such as riprap armoring, concrete armoring, or vegetative stabilization, may be necessary to prevent potential degradation of the roadway structure.

6.6 WATER QUALITY CONTROLS

The proposed Northeast Connector Feasibility Study has been designed with consideration for both construction-phase and long-term water-quality protection. The project will comply with applicable Washoe County, NDEP, and Truckee Meadows Regional Drainage Manual (TMRDM) requirements to minimize sedimentation, erosion, and pollutant transport to downstream waterways. Temporary best management practices (BMPs) such as wind, erosion, and sediment controls will be implemented during construction to limit off-site impacts, with permanent measures incorporated in later phases once final grading and drainage alignments are established.

At this stage, no significant water-quality concerns or environmentally sensitive areas have been identified within the project limits. Although, it should be noted that the majority of the project ultimately drains to the Truckee River, which should be carefully considered in future design phases to ensure protection of downstream water quality. The final design will incorporate appropriate stormwater treatment measures, such as stabilized outfalls, armored channels, and other best management practices, to maintain natural drainage functions and protect receiving waters. Additional water quality controls will also be implemented during construction in accordance with the site Erosion Control Plan.

6.7 Detention Requirements

At this stage of the project, no detention facilities are proposed or required. Based on the current design, proposed peak flows are anticipated to closely match existing conditions, as the project is a transportation corridor that maintains existing flow paths and minimizes changes to watershed characteristics. This determination will be re-evaluated during final design once grading, drainage alignments, and culvert hydraulics are finalized to confirm compliance with Truckee Meadows Regional Drainage Manual (TMRDM) and Washoe County design criteria.

7 SPECIAL FLOOD HAZARDS

The entire site lies within FEMA flood hazard area "unshaded X", which indicates that the project is outside the 0.2% probability per year flood zone. This area was designated as "unshaded X" with the FEMA Letter of Map Revision dated April 28, 2009. As the project area is outside the 0.2% annual probability of flooding, there are no special flood hazard considerations proposed with this project.

7.1 Impacts of Proposed Development on Flood Hazard Area

As the Northeast Connector Feasibility Study is outside the floodplain and keeps watershed characteristics near existing, no negative impacts to downstream Flood Hazard Areas are anticipated.

7.2 Floodproofing Measures

Storm drainage culverts have been designed to convey the 100-year flow conditions without overland release of runoff.

7.3 FEMA and Local Code Compliance

The Northeast Connector project will be compliant with all federal and local code requirements.

8 CONCLUSION

The proposed Northeast Connector project has been designed at a preliminary level to perpetuate off-site generated flows that drain through the project. Storm water quality measures will be installed during construction to reduce probability of sediment being carried off-site by storm runoff. At this time, no negative impacts are anticipated from the development of the Northeast Connector project.

9 REFERENCES

Truckee Meadows Regional Drainage Manual, April 30, 2009.

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ArcGIS Pro version *3.4.3*. Environmental Systems Research Institute

Bentley CulvertMaster V3.3, Haestad Methods, Inc.

City of Sparks. (2021). *Golden Eagle Regional Park Little League Parking Lot Addition (Bid #20/21-014)/PWP #WA-2021-170*

APPENDIX A

VICINITY MAP AND EXHIBITS

FIGURE 1

VICINITY MAP

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY

Legend

Prop. Highway

NORTH

0 3,750 7,500 15,000

Feet

WOOD RODGERS

\\woodrodgers.loc\ProductionData\Jobs-Reno\Jobs\8312_RTC of Washoe County\8312057_LaPosada_TRIC\GIS\ArcGIS_Pro\La_Posada_Hydrology_RR_V2\La_Posada_Hydrology_RR_V2.aprx 10/27/2025 11:27 AM rrubins

FIGURE 2

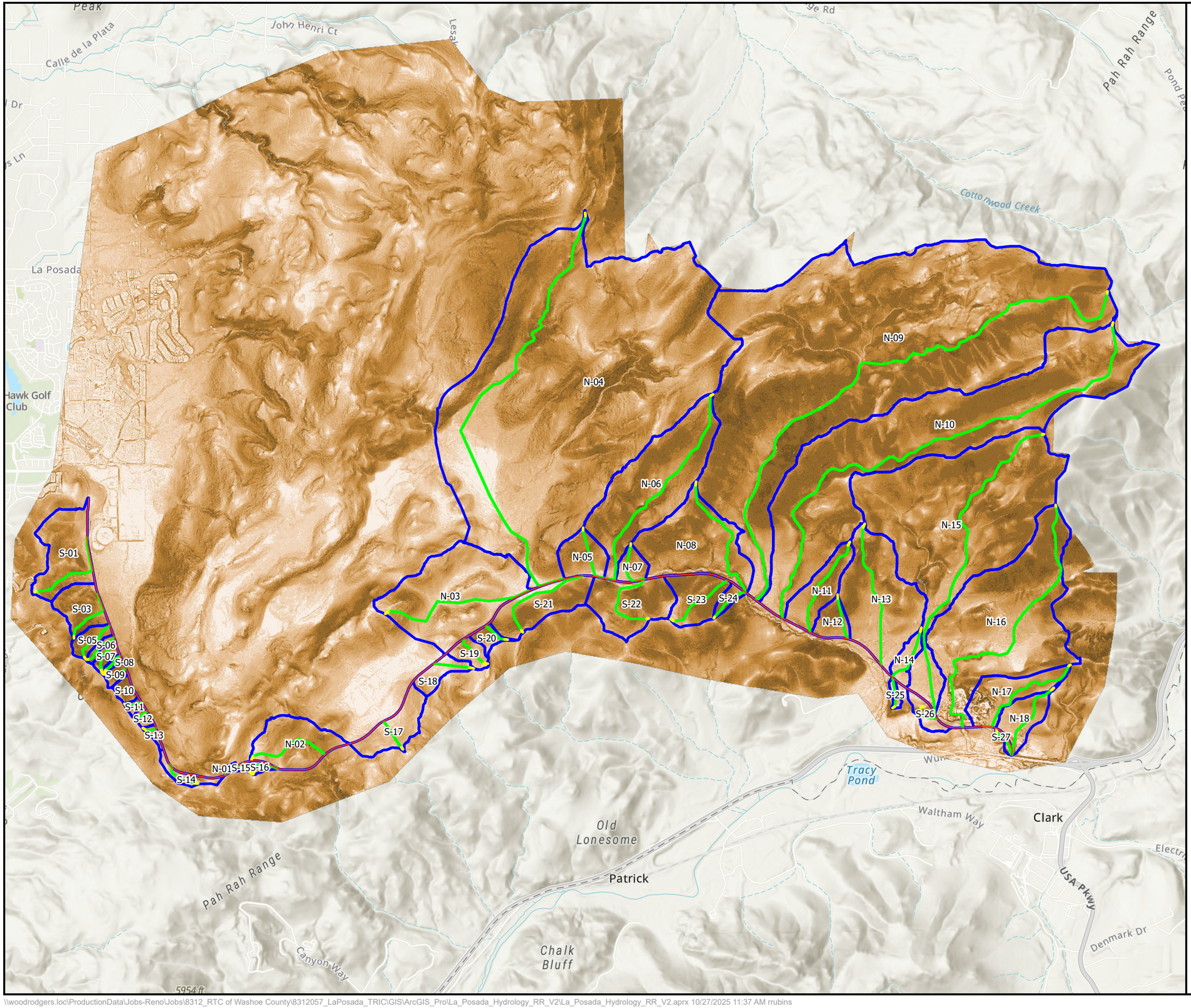
HYDROLOGIC BASINS EXHIBIT

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

Slope_of_Basins			
≤3	≤25	Prop. Highway	
≤6	≤30	Watersheds	
≤10	≤40	Flowpaths	
≤15	≤60	Channel	
≤20	≤100	Sheet	

0 2,500 5,000 10,000

Feet

NORTH

WOOD RODGERS

FIGURE 3

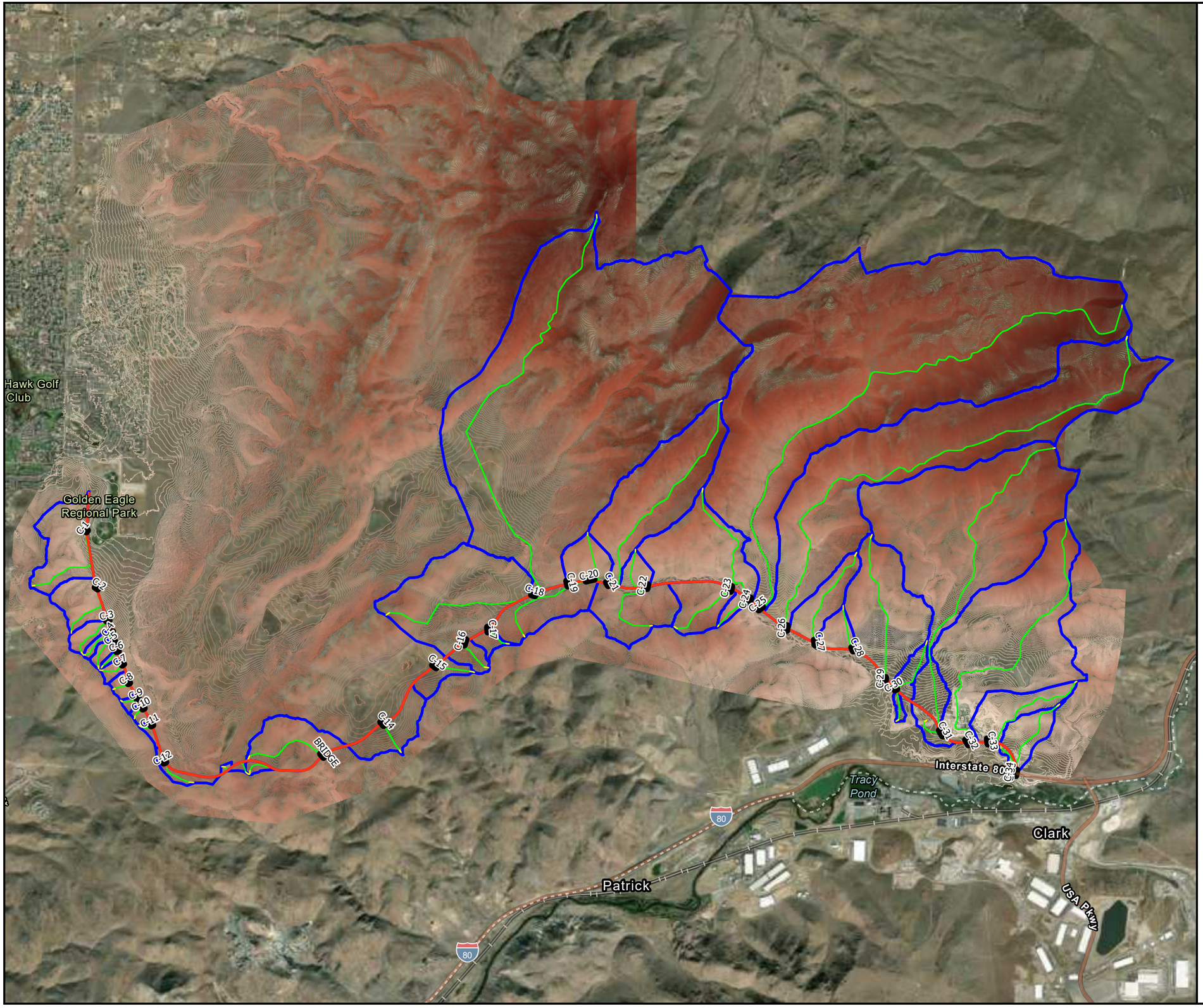
CULVERT LOCATIONS

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

- Culvert Locations
- Prop. Highway
- Watersheds

Flowpaths

- Channel
- Sheet

10 Foot Contours

- 4,240
- 4,240 - 7,500
- 7,500

0 2,500 5,000 10,000

Feet

NORTH

WOOD RODGERS

FIGURE 4

WESTERN BASINS EXHIBIT

NORTHEAST CONNECTION FEASIBILITY PROJECT

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

- Culvert Locations
- Prop. Highway
- Watersheds
- Combined Flows

Flowpaths

- Channel
- Sheet

Contour

4,240

4,240 - 7,500

7,500

0 1,000 2,000 4,000

Feet

NORTH

WOOD RODGERS

FIGURE 5

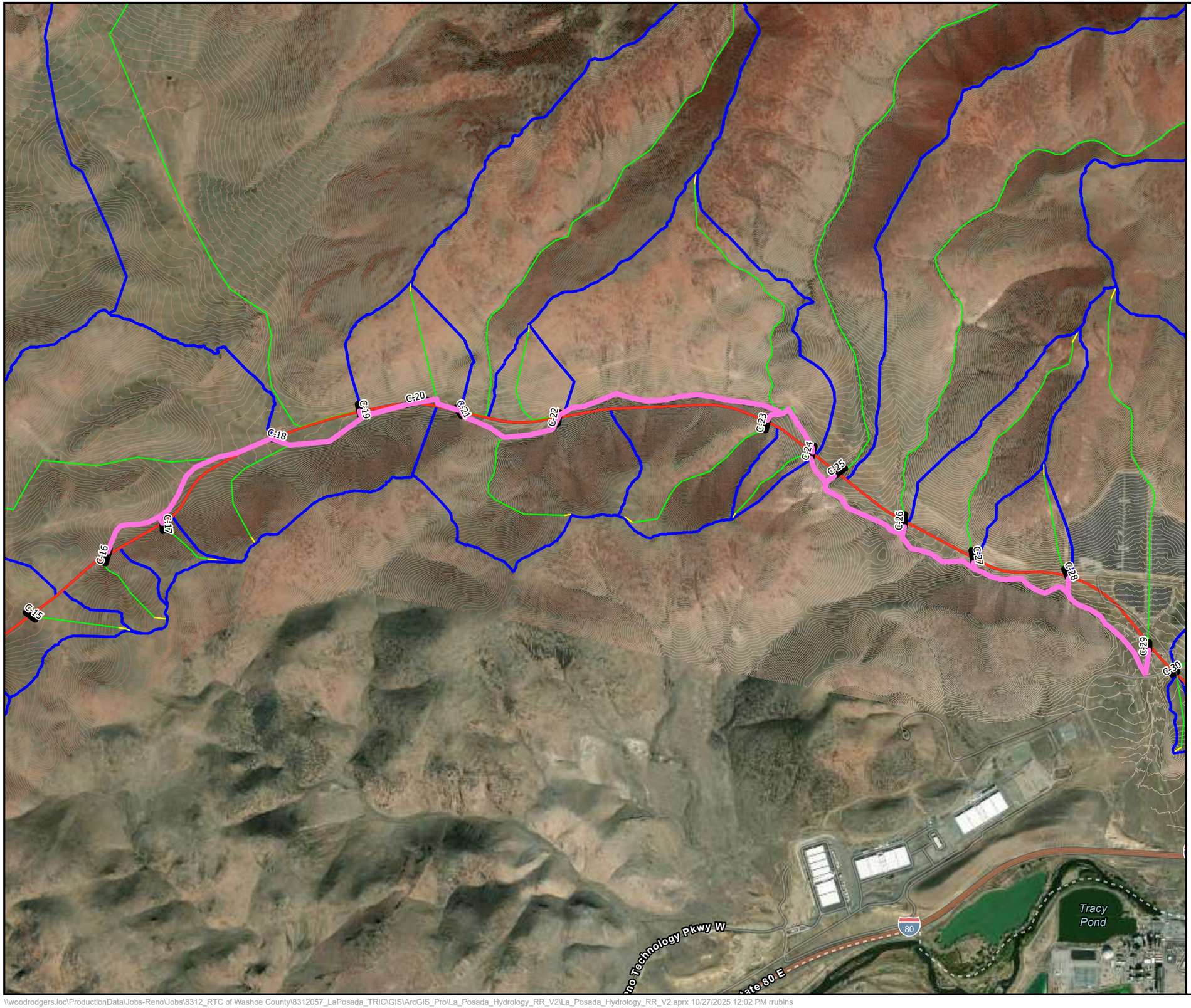
CENTRAL BASINS EXHIBIT

NORTHEAST CONNECTION FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

- Culvert Locations
- Prop. Highway
- Watersheds
- Combined Flows

Flowpaths

- Channel
- Sheet

Contour

- 4,240
- 4,240 - 7,500
- 7,500

0 1,000 2,000 4,000

Feet

NORTH

WOOD RODGERS

FIGURE 6

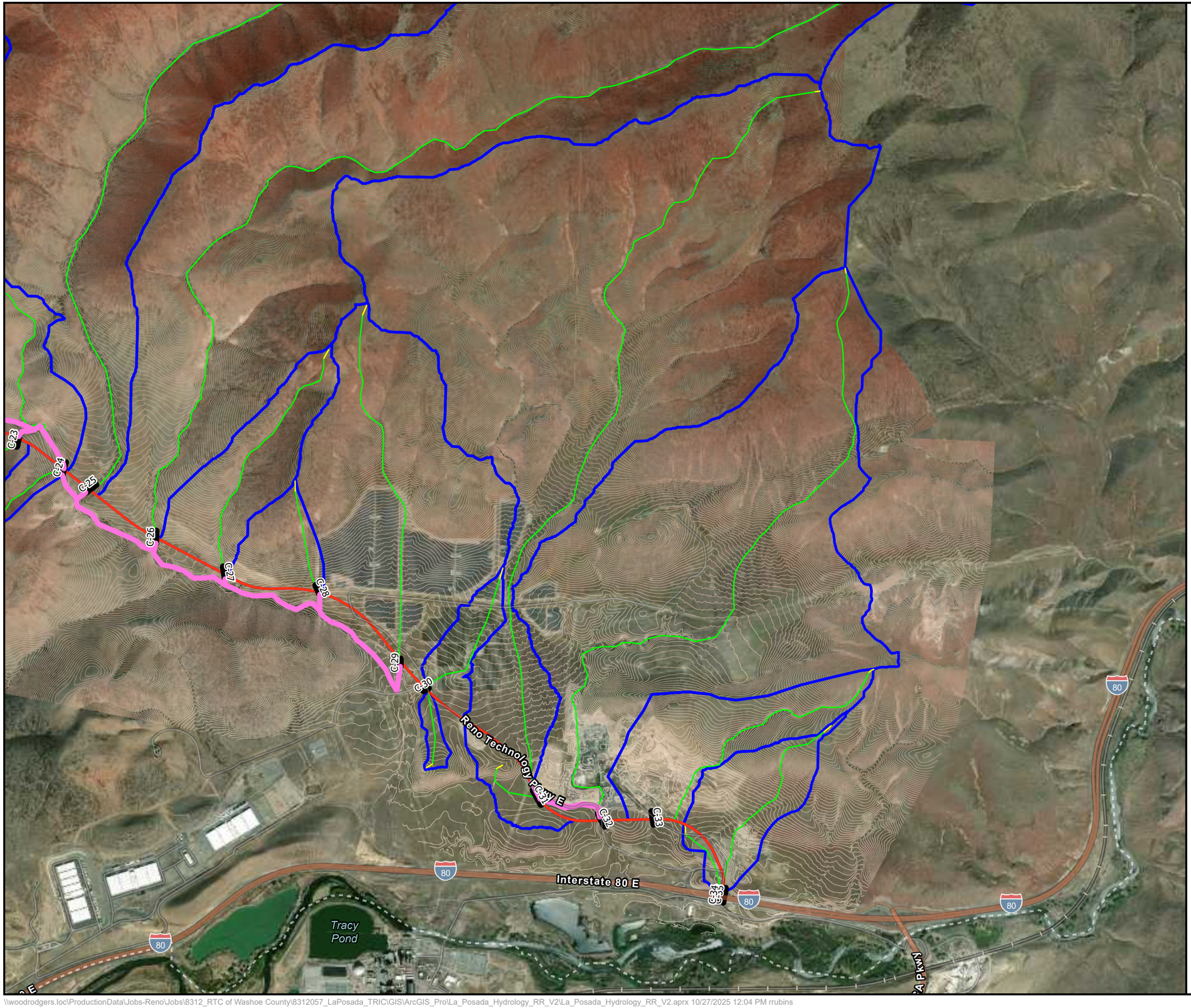
EASTERN BASINS EXHIBIT

NORTHEAST CONNECTION FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

- Culvert Locations
- Prop. Highway
- Watersheds
- Combined Flows
- Flowpaths
  - Channel
  - Sheet
- Contour
  - 4,240
  - 4,240 - 7,500
  - 7,500

0 1,000 2,000 4,000

Feet

NORTH

WOOD RODGERS

FIGURE 8

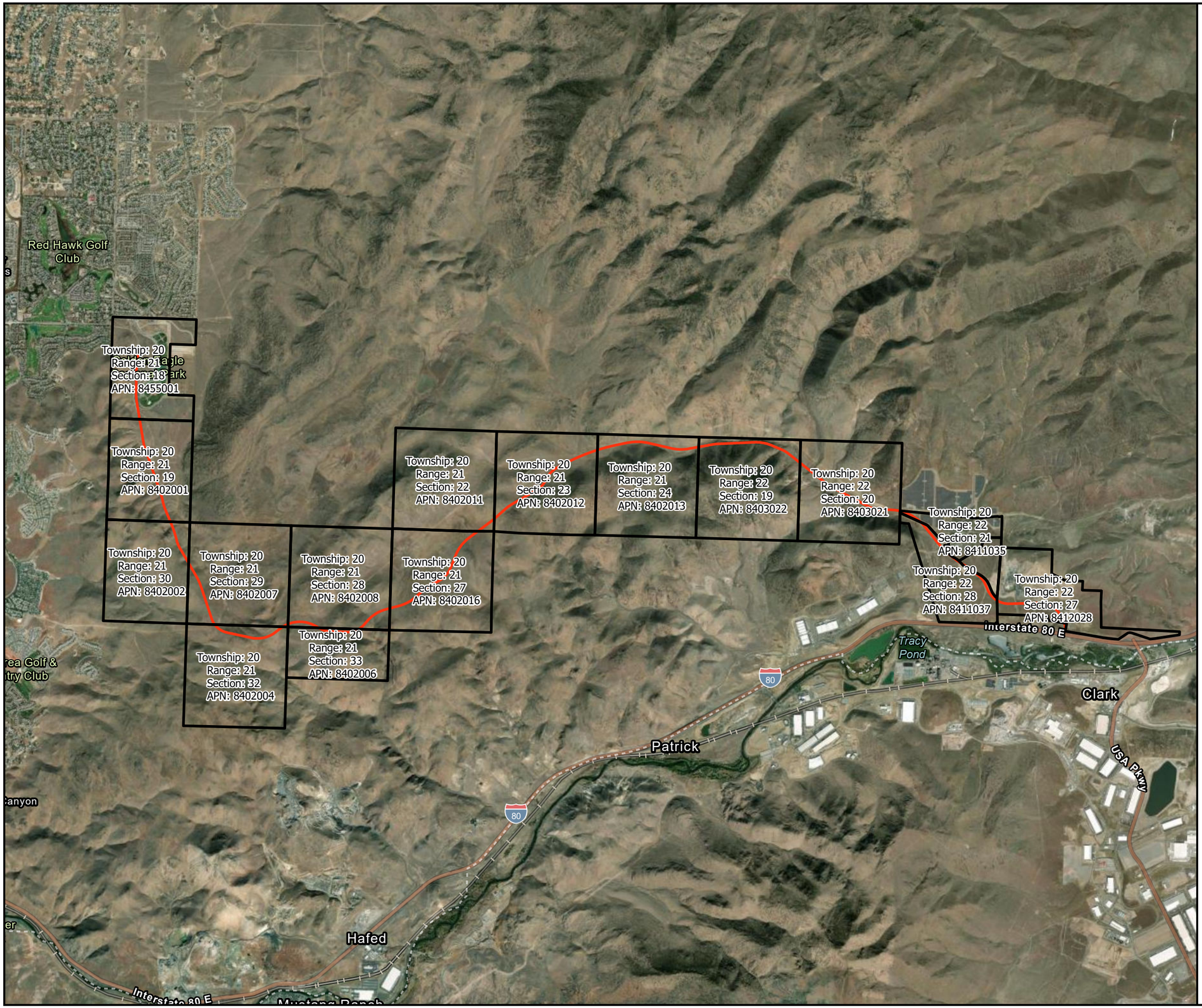
WASHOE COUNTY PARCELS EXHIBIT

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

Parcels

Prop. Highway

0 2,500 5,000 10,000

Feet

NORTH

WOOD RODGERS

FIGURE 7

FEMA FLOOD ZONES EXHIBIT

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY

Legend

- FEMA Panel Boundary
- FEMA Flood Hazard Boundaries
- Limit Lines
- Other Boundary
- SFHA / Flood Zone Boundary
- Prop. Highway
- Watersheds

0 2,500 5,000 10,000

Feet

NORTH

WOOD RODGERS

FIGURE 7

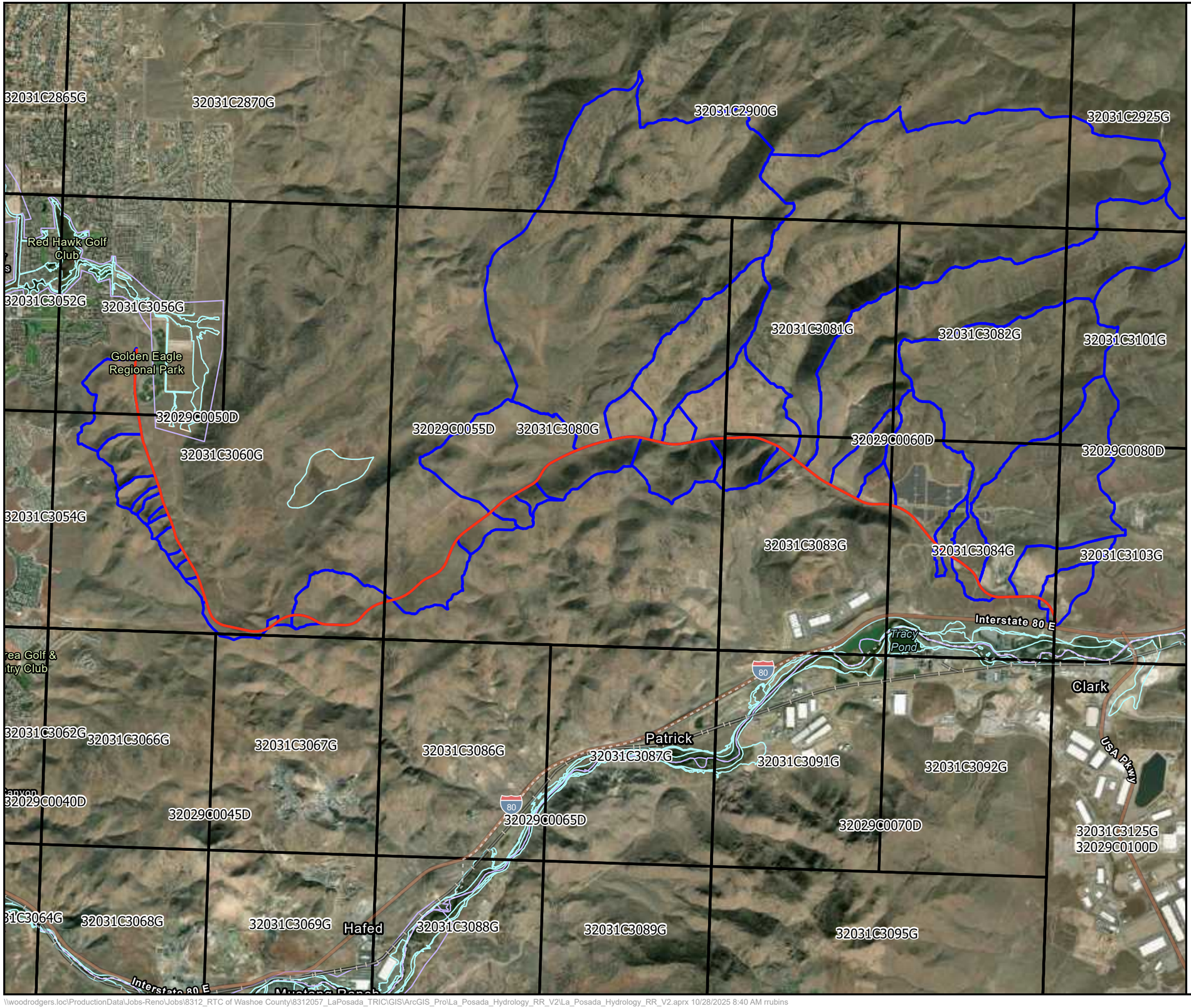
FEMA FLOOD ZONES EXHIBIT

NORTHEAST CONNECTOR FEASIBILITY STUDY

WASHOE COUNTY, NEVADA

OCTOBER 2025

PRELIMINARY



Legend

- FEMA Panel Boundary
- FEMA Flood Hazard Boundaries
  - Limit Lines
  - Other Boundary
- SFHA / Flood Zone Boundary
- Prop. Highway
- Watersheds

0 2,500 5,000 10,000

Feet

NORTH

WOOD RODGERS

APPENDIX B

SOURCED TABLES

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.625°, Longitude: -119.5266°
Elevation: 5919 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.117 (0.099-0.137)	0.147 (0.123-0.174)	0.197 (0.164-0.232)	0.241 (0.200-0.286)	0.313 (0.253-0.376)	0.380 (0.299-0.461)	0.458 (0.350-0.565)	0.554 (0.407-0.698)	0.711 (0.492-0.927)	0.860 (0.565-1.15)
10-min	0.178 (0.150-0.209)	0.224 (0.187-0.264)	0.299 (0.249-0.354)	0.366 (0.304-0.435)	0.477 (0.385-0.573)	0.578 (0.455-0.702)	0.697 (0.533-0.859)	0.843 (0.619-1.06)	1.08 (0.748-1.41)	1.31 (0.859-1.74)
15-min	0.221 (0.186-0.259)	0.277 (0.232-0.327)	0.371 (0.309-0.438)	0.454 (0.377-0.539)	0.591 (0.478-0.710)	0.716 (0.564-0.870)	0.864 (0.660-1.06)	1.04 (0.767-1.32)	1.34 (0.928-1.75)	1.62 (1.06-2.16)
30-min	0.297 (0.250-0.349)	0.373 (0.312-0.441)	0.499 (0.416-0.590)	0.612 (0.508-0.726)	0.796 (0.643-0.956)	0.964 (0.759-1.17)	1.16 (0.889-1.43)	1.41 (1.03-1.77)	1.81 (1.25-2.36)	2.18 (1.44-2.91)
60-min	0.368 (0.310-0.432)	0.462 (0.387-0.545)	0.618 (0.515-0.730)	0.757 (0.628-0.898)	0.985 (0.796-1.18)	1.19 (0.939-1.45)	1.44 (1.10-1.77)	1.74 (1.28-2.19)	2.24 (1.55-2.92)	2.70 (1.78-3.60)
2-hr	0.479 (0.414-0.565)	0.598 (0.520-0.704)	0.767 (0.657-0.907)	0.910 (0.770-1.08)	1.13 (0.930-1.34)	1.32 (1.06-1.59)	1.55 (1.22-1.89)	1.84 (1.40-2.27)	2.34 (1.71-2.97)	2.81 (1.99-3.66)
3-hr	0.581 (0.507-0.673)	0.725 (0.639-0.844)	0.906 (0.789-1.05)	1.05 (0.909-1.23)	1.26 (1.07-1.48)	1.44 (1.21-1.71)	1.66 (1.37-1.99)	1.95 (1.57-2.38)	2.45 (1.92-3.03)	2.91 (2.22-3.68)
6-hr	0.843 (0.741-0.969)	1.05 (0.926-1.22)	1.30 (1.13-1.51)	1.49 (1.29-1.73)	1.74 (1.49-2.03)	1.93 (1.63-2.26)	2.12 (1.78-2.51)	2.38 (1.96-2.85)	2.81 (2.27-3.41)	3.22 (2.56-3.97)
12-hr	1.17 (1.02-1.33)	1.47 (1.29-1.68)	1.85 (1.62-2.13)	2.16 (1.87-2.48)	2.56 (2.20-2.97)	2.88 (2.44-3.36)	3.19 (2.68-3.77)	3.51 (2.89-4.19)	3.92 (3.16-4.77)	4.30 (3.39-5.32)
24-hr	1.51 (1.34-1.72)	1.92 (1.71-2.18)	2.49 (2.20-2.81)	2.94 (2.59-3.34)	3.59 (3.14-4.07)	4.11 (3.56-4.67)	4.66 (4.00-5.31)	5.23 (4.45-5.99)	6.04 (5.05-6.97)	6.70 (5.51-7.78)
2-day	1.88 (1.64-2.15)	2.40 (2.10-2.75)	3.17 (2.76-3.63)	3.80 (3.29-4.35)	4.71 (4.04-5.41)	5.46 (4.65-6.28)	6.26 (5.28-7.24)	7.12 (5.93-8.29)	8.36 (6.82-9.82)	9.38 (7.52-11.1)
3-day	2.10 (1.84-2.42)	2.70 (2.36-3.10)	3.61 (3.14-4.15)	4.35 (3.77-5.01)	5.44 (4.67-6.26)	6.33 (5.38-7.30)	7.29 (6.14-8.44)	8.33 (6.93-9.68)	9.82 (8.01-11.5)	11.1 (8.86-13.1)
4-day	2.32 (2.03-2.68)	3.00 (2.62-3.46)	4.05 (3.52-4.68)	4.91 (4.26-5.67)	6.17 (5.30-7.12)	7.20 (6.12-8.32)	8.32 (7.01-9.65)	9.53 (7.92-11.1)	11.3 (9.19-13.2)	12.7 (10.2-15.1)
7-day	2.79 (2.42-3.25)	3.61 (3.12-4.21)	4.90 (4.22-5.73)	5.97 (5.12-6.97)	7.52 (6.39-8.79)	8.80 (7.40-10.3)	10.2 (8.50-12.0)	11.7 (9.64-13.8)	13.9 (11.2-16.5)	15.7 (12.5-18.8)
10-day	3.21 (2.77-3.74)	4.17 (3.61-4.85)	5.64 (4.86-6.58)	6.84 (5.86-7.97)	8.52 (7.24-9.95)	9.90 (8.35-11.6)	11.4 (9.51-13.3)	13.0 (10.7-15.2)	15.2 (12.4-18.0)	17.1 (13.7-20.4)
20-day	4.20 (3.65-4.86)	5.44 (4.73-6.30)	7.26 (6.29-8.42)	8.69 (7.50-10.1)	10.7 (9.13-12.4)	12.2 (10.4-14.3)	13.9 (11.7-16.3)	15.7 (13.0-18.4)	18.1 (14.8-21.4)	20.1 (16.2-23.9)
30-day	4.99 (4.33-5.80)	6.48 (5.62-7.53)	8.68 (7.49-10.1)	10.4 (8.94-12.1)	12.8 (10.9-14.9)	14.7 (12.4-17.1)	16.7 (14.1-19.5)	18.8 (15.7-22.1)	21.7 (17.9-25.6)	24.1 (19.6-28.6)
45-day	6.04 (5.23-6.94)	7.86 (6.80-9.01)	10.5 (9.03-12.1)	12.6 (10.8-14.5)	15.4 (13.1-17.8)	17.7 (15.0-20.5)	20.1 (16.9-23.4)	22.7 (18.8-26.5)	26.4 (21.5-31.0)	29.4 (23.6-34.8)
60-day	7.01 (6.03-8.06)	9.18 (7.91-10.5)	12.2 (10.5-14.1)	14.5 (12.4-16.7)	17.5 (14.9-20.2)	19.8 (16.8-23.0)	22.2 (18.6-25.8)	24.6 (20.5-28.7)	28.0 (23.0-32.8)	30.7 (24.9-36.2)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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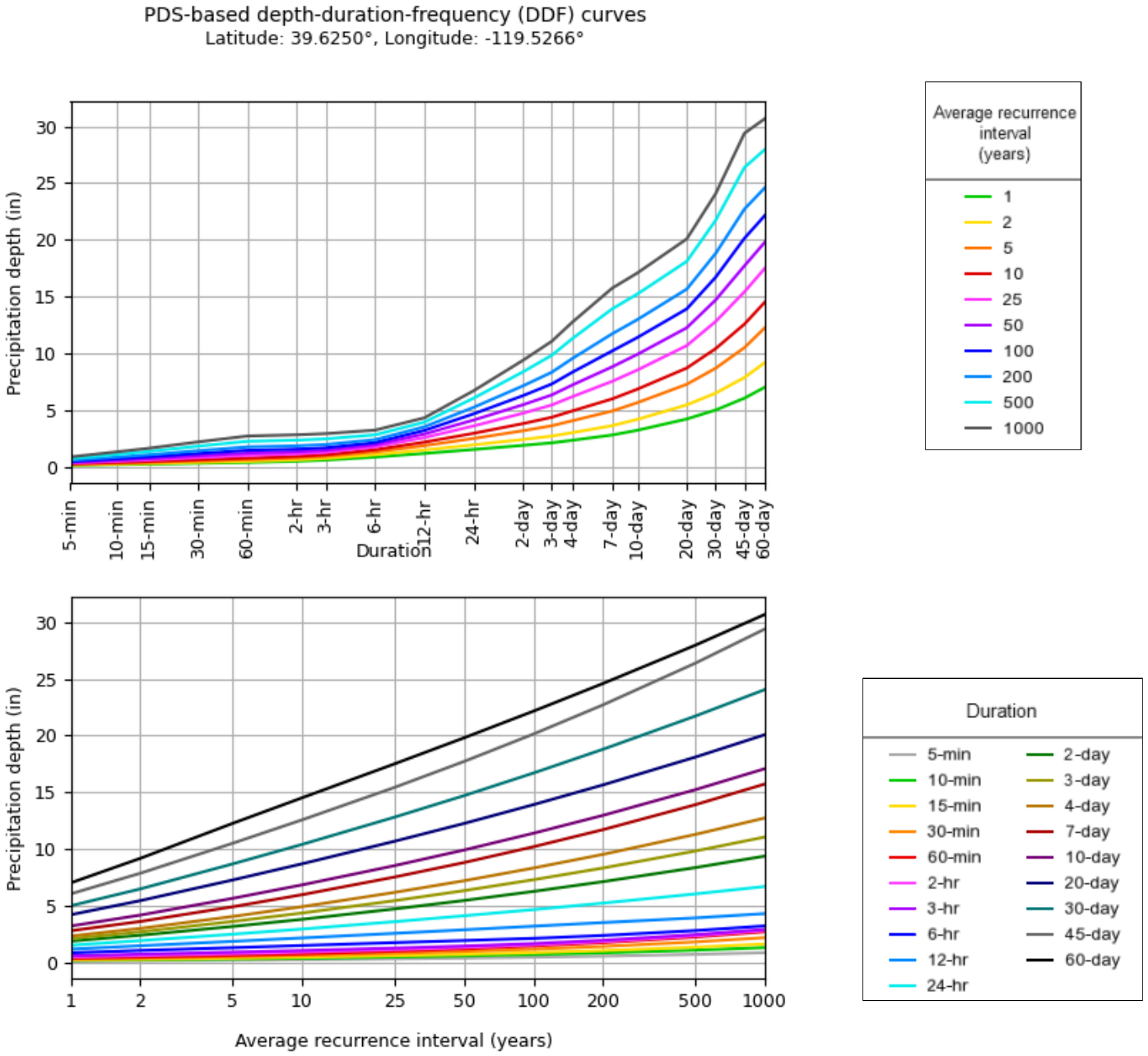
PF graphical



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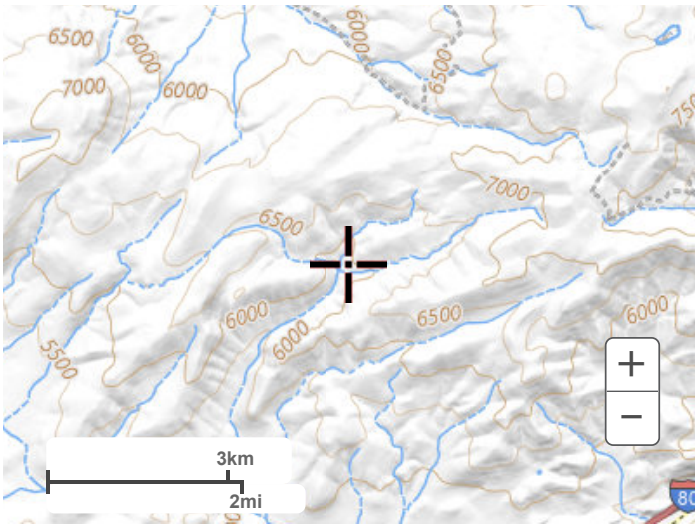
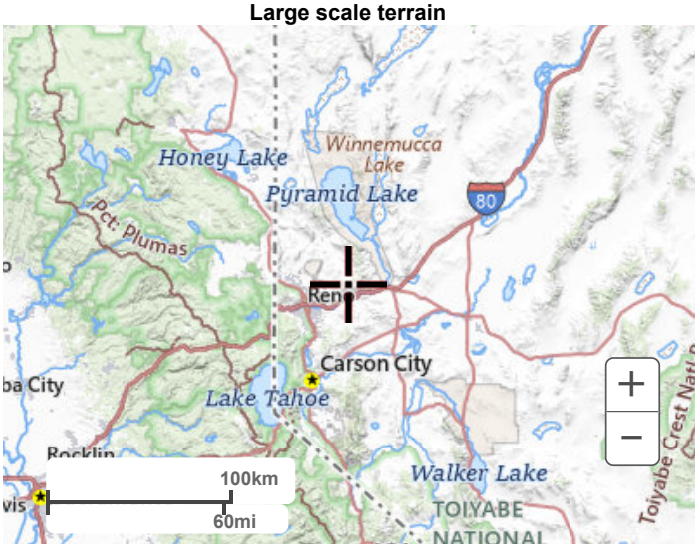
Maps & aerials

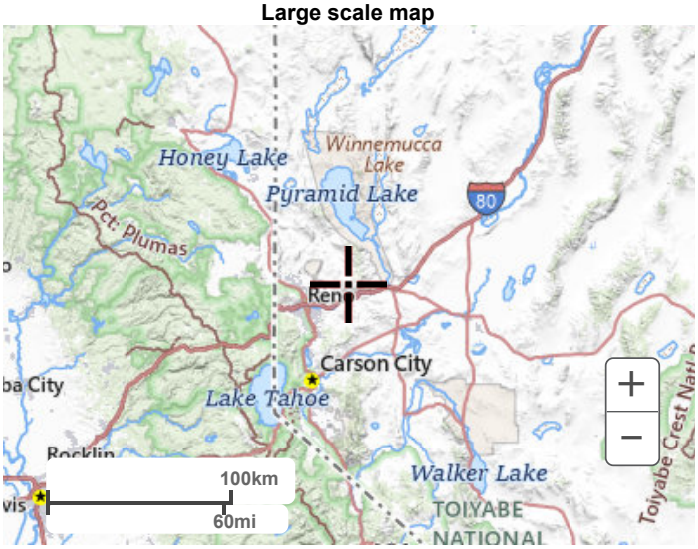
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

RATIONAL FORMULA METHOD
RUNOFF COEFFICIENTS

Land Use or Surface Characteristics	Aver. % Impervious Area	Runoff Coefficients 5-Year (C_5)	Runoff Coefficients 100-Year (C_{100})
Business/Commercial:			
Downtown Areas	85	.82	.85
Neighborhood Areas	70	.65	.80
Residential:			
(Average Lot Size)			
⅛ Acre or Less (Multi-Unit)	65	.60	.78
¼ Acre	38	.50	.65
⅛ Acre	30	.45	.60
½ Acre	25	.40	.55
1 Acre	20	.35	.50
Industrial:	72	.68	.82
Open Space:			
(Lawns, Parks, Golf Courses)	5	.05	.30
Undeveloped Areas:			
Range	0	.20	.50
Forest	0	.05	.30
Streets/Roads:			
Paved	100	.88	.93
Gravel	20	.25	.50
Drives/Walks:	95	.87	.90
Roof:	90	.85	.87

Notes:

1. Composite runoff coefficients shown for Residential, Industrial, and Business/Commercial Areas assume irrigated grass landscaping for all pervious areas. For development with landscaping other than irrigated grass, the designer must develop project specific composite runoff coefficients from the surface characteristics presented in this table.

APPENDIX C

DRAWINGS AND TABLES

Time of Concentration
Proposed Onsite Basins

Project: La_Posada Connector

Project Location: Sparks, NV

Time of Concentration Table

Drainage Basin	Drainage Area (AC)	CN/c	Initial Flow Time, T_i								Travel Time, T_t			
			Overland Flow				Channelized Flow				Total (T_i+T_t)	Urbanized Basins Check	Final	
			L_i (ft)	S (ft/ft)	R	T_i (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	TLAG
N-01	4.72	80	181	0.061	0.67	5.8	582	0.066	4.1	2.3	10.0	14.2	**10.0**	6.0
N-02	218.16	80	204	0.077	0.67	5.7	4413	0.073	4.4	16.8	22.5	35.6	**22.5**	13.5
N-03	613.95	80	215	0.062	0.67	6.3	8223	0.076	4.4	30.9	37.2	56.9	**37.2**	22.3
N-14	54.51	80	226	0.074	0.67	6.1	2968	0.068	4.2	11.7	17.8	27.7	**17.8**	10.7
S-17	140.31	80	147	0.081	0.67	4.8	1642	0.081	4.6	34.6	39.3	19.9	**19.9**	12.0
S-18	63.69	80	232	0.027	0.67	8.6	1881	0.080	4.6	34.5	43.1	21.7	**21.7**	13.0
S-25	13.32	80	153	0.172	0.67	3.8	1499	0.028	2.7	26.5	30.3	19.2	**19.2**	11.5
S-26	45.12	80	142	0.075	0.67	4.8	1254	0.058	3.9	31.7	36.5	17.8	**17.8**	10.7
S-27	10.82	80	188	0.062	0.67	5.8	1448	0.057	3.8	31.6	37.5	19.1	**19.1**	11.5

Basins Over 1 mi2 analyzed using TLAG = 22.1*Kn(L*Lc/S^0.5)^0.33

	Drainage Area (AC)	CN	Kn	L	Lc	S (ft/mi)	TLAG (hours)	TLAG (min)	Σ TLAG (hours)	Σ TLAG (min)
N-04	3917.78	80	0.09	0.03	0.02	1238.8	0.06	3.34	1.75	**104.74**
N-04	3917.78	80	0.09	4.72	2.83	480.5	1.69	101.40		
N-05	114.64	80	0.09	0.03	0.02	1300.0	0.05	2.83	0.38	**22.54**
N-05	114.64	80	0.09	0.55	0.30	1495.0	0.33	19.71		
N-06	615.57	80	0.09	0.03	0.02	543.0	0.06	3.43	0.99	**59.25**
N-06	615.57	80	0.09	2.31	1.16	715.2	0.93	55.82		
N-07	53.24	80	0.09	0.02	0.01	1462.4	0.04	2.37	0.35	**21.02**
N-07	53.24	80	0.09	0.50	0.25	1197.7	0.31	18.65		
N-08	424.26	80	0.09	0.04	0.02	864.1	0.06	3.79	0.74	**44.23**
N-08	424.26	80	0.09	1.36	0.82	878.1	0.67	40.45		
N-09	3930.56	80	0.09	0.02	0.01	921.4	0.04	2.61	1.94	**116.60**
N-09	3930.56	80	0.09	6.04	3.02	439.9	1.90	113.99		
N-10	1811.85	80	0.09	0.03	0.02	651.3	0.06	3.46	1.79	**107.64**
N-10	1811.85	80	0.09	5.37	2.69	473.6	1.74	104.19		
N-11	157.42	80	0.09	0.04	0.02	934.0	0.06	3.59	0.57	**34.25**
N-11	157.42	80	0.09	1.02	0.51	1026.7	0.51	30.66		
N-12	67.17	80	0.09	0.04	0.02	889.7	0.06	3.68	0.32	**18.91**
N-12	67.17	80	0.09	0.41	0.20	1774.8	0.25	15.23		
N-13	483.97	80	0.09	0.04	0.02	223.5	0.07	4.37	0.68	**40.64**
N-13	483.97	80	0.09	1.44	0.58	934.0	0.60	36.27		
N-15	1542.68	80	0.09	0.02	0.01	1244.3	0.04	2.17	1.25	**74.78**
N-15	1542.68	80	0.09	3.39	1.70	672.1	1.21	72.61		
N-16	1043.64	80	0.09	0.02	0.01	1472.1	0.04	2.10	1.23	**73.57**
N-16	1043.64	80	0.09	3.06	1.69	596.9	1.19	71.47		
N-17	180.52	80	0.09	0.02	0.01	1307.4	0.04	2.25	0.60	**35.80**
N-17	180.52	80	0.09	1.19	0.48	712.7	0.56	33.56		
N-18	113.60	80	0.09	0.04	0.02	403.6	0.07	4.04	0.55	**32.79**

Time of Concentration
Proposed Onsite Basins

N-18	113.60	80	0.09	0.83	0.42	667.8	0.48	28.75		
S-01	245.27	80	0.09	0.96	0.57	845.4	0.54	32.19	0.59	**35.65**
S-01	245.27	80	0.09	0.02	0.01	239.8	0.06	3.46		
S-03	120.35	80	0.09	0.02	0.01	2208.2	0.04	2.32	0.40	**24.00**
S-03	120.35	80	0.09	0.59	0.35	1345.9	0.36	21.68		
S-05	48.09	80	0.09	0.02	0.01	1494.9	0.04	2.31	0.35	**21.06**
S-05	48.09	80	0.09	0.45	0.27	1072.5	0.31	18.75		
S-06	17.73	80	0.09	0.02	0.01	949.5	0.04	2.46	0.29	**17.44**
S-06	17.73	80	0.09	0.36	0.18	1273.8	0.25	14.98		
S-07	26.22	80	0.09	0.03	0.01	676.4	0.05	3.10	0.27	**16.40**
S-07	26.22	80	0.09	0.32	0.16	1528.0	0.22	13.30		
S-08	8.74	80	0.09	0.03	0.01	469.6	0.05	2.84	0.19	**11.61**
S-08	8.74	80	0.09	0.21	0.08	2185.1	0.15	8.76		
S-09	21.60	80	0.09	0.03	0.02	325.5	0.06	3.76	0.23	**13.99**
S-09	21.60	80	0.09	0.23	0.11	1929.9	0.17	10.22		
S-10	26.36	80	0.09	0.02	0.01	1037.0	0.04	2.46	0.17	**9.93**
S-10	26.36	80	0.09	0.15	0.07	2488.2	0.12	7.47		
S-11	12.62	80	0.09	0.02	0.01	833.0	0.04	2.60	0.18	**10.77**
S-11	12.62	80	0.09	0.16	0.08	1659.8	0.14	8.17		
S-12	15.70	80	0.09	0.03	0.02	437.8	0.06	3.53	0.17	**10.41**
S-12	15.70	80	0.09	0.11	0.07	1709.5	0.11	6.87		
S-13	11.61	80	0.09	0.03	0.01	559.8	0.05	2.99	0.15	**9.06**
S-13	11.61	80	0.09	0.11	0.04	1090.5	0.10	6.06		
S-14	37.47	80	0.09	0.05	0.03	295.8	0.09	5.20	0.37	**21.92**
S-14	37.47	80	0.09	0.33	0.20	667.9	0.28	16.71		
S-15	7.24	80	0.09	0.04	0.02	279.7	0.07	4.01	0.26	**15.47**
S-15	7.24	80	0.09	0.26	0.10	997.7	0.19	11.46		
S-16	15.22	80	0.09	0.04	0.02	377.6	0.07	4.06	0.34	**20.11**
S-16	15.22	80	0.09	0.33	0.18	675.8	0.27	16.05		
S-19	50.83	80	0.09	0.04	0.02	232.0	0.08	4.96	0.33	**20.07**
S-19	50.83	80	0.09	0.33	0.16	810.9	0.25	15.11		
S-20	32.70	80	0.09	0.03	0.01	519.6	0.05	3.22	0.22	**13.43**
S-20	32.70	80	0.09	0.23	0.09	1424.7	0.17	10.21		
S-21	204.84	80	0.09	0.03	0.01	809.2	0.05	2.79	0.61	**36.52**
S-21	204.84	80	0.09	1.02	0.51	571.6	0.56	33.73		
S-22	244.98	80	0.09	0.02	0.01	427.8	0.05	2.96	0.52	**31.07**
S-22	244.98	80	0.09	0.81	0.41	704.0	0.47	28.11		
S-23	153.31	80	0.09	0.04	0.02	277.5	0.07	4.38	0.47	**28.49**
S-23	153.31	80	0.09	0.70	0.35	948.6	0.40	24.11		
S-24	28.43	80	0.09	0.02	0.01	920.7	0.04	2.20	0.28	**17.07**
S-24	28.43	80	0.09	0.40	0.20	1967.9	0.25	14.87		

Project: La_Posada Connector
Project Location: Sparks, NV
Time of Concentration Table

Drainage Basin	Channelized Flow					
	L_t (ft)	Beginning Elevation	End Elevation	S (ft/ft)	V (ft/s)	T_{t2} (min)
Junction-1 > Junction-2	2993	5140	5040	0.033	2.9	16.9
Junction-2 > Junction-3	3079	5040	5000	0.013	1.8	27.9
Junction-3 > Junction-4	1183	4995	4980	0.013	1.8	10.8
Junction-4 > Junction-5	2427	4980	4918	0.026	2.6	15.7
Junction-5 > Junction-6	6058	4918	4748	0.028	2.7	37.4
N-04 >Junction-3	1112	5020	5000	0.018	2.2	8.6
N-15 > Junction-7	1847	4350	4310	0.022	2.4	13.0
S-19 > Junction-1	1501	5220	5140	0.053	3.7	6.7
S-20 > Junction-1	161	5155	5140	0.093	4.9	0.5
S-23 > Junction-6	1587	4820	4748	0.045	3.4	7.7
S-26 > Junction-7	1476	4335	4310	0.017	2.1	11.7
Junction-6 > Offsite	9135	4748	4430	0.035	3.0	50.6

Project: La_Posada Connector

Project Location: Sparks, NV

Green and Ampt Data

Table 3: Green and Ampt Data at Each Basin						
Basin Name	Area (ac)	Initial Content	Saturated Content	Suction Head (in)	Conductivity (in/hr)	Impervious (%)
N-01	4.718752	0.16641	0.443838	11.267444	0.122	0
N-02	218.16	0.15576	0.44322	11.228012	0.147	0
N-03	613.9507	0.17087	0.443574	10.83321	0.110	0
N-04	3917.78	0.16999	0.446807	10.583932	0.115	0
N-05	114.6432	0.17689	0.443304	10.294561	0.094	0
N-06	615.5719	0.17436	0.446512	10.306612	0.100	0
N-07	53.2383	0.17506	0.443706	10.759944	0.100	0
N-08	424.2587	0.17638	0.443687	10.482747	0.096	0
N-09	3930.564	0.16034	0.4462	10.756777	0.133	0.001663
N-10	1811.852	0.15909	0.442975	11.121662	0.140	0.146223
N-11	157.4219	0.16786	0.444642	11.232957	0.122	0.160525
N-12	67.17046	0.16514	0.443484	10.989574	0.126	0.189973
N-13	483.9718	0.15768	0.438103	10.033279	0.137	0.179656
N-14	54.50747	0.145	0.424	7.041	0.132	0
N-15	1542.683	0.13723	0.425311	10.79925	0.170	0.096502
N-16	1043.636	0.11238	0.409648	8.893898	0.253	0
N-17	180.5154	0.08014	0.400767	5.251054	0.482	0
N-18	113.5969	0.08295	0.401864	5.199409	0.465	0
S-01	245.2697	0.18509	0.445916	11.827621	0.168	0.096547
S-03	120.3469	0.17516	0.443416	11.111245	0.113	0.207684
S-05	48.09286	0.16903	0.443333	10.723517	0.138	0.164095
S-06	17.7348	0.13609	0.441333	10.494686	0.251	0.077394
S-07	26.21848	0.18098	0.445186	10.799813	0.095	0.211864
S-08	8.735525	0.15002	0.442241	10.584136	0.206	0.110324
S-09	21.5992	0.18885	0.443891	10.752592	0.073	0.178995
S-10	26.35522	0.1801	0.44301	9.86758	0.084	0.001918
S-11	12.6236	0.18	0.443	9.858	0.085	0
S-12	15.69924	0.18	0.443	9.858	0.085	0
S-13	11.60926	0.18	0.443	9.858	0.085	0
S-14	37.46548	0.17864	0.443186	10.098088	0.089	0
S-15	7.242146	0.16852	0.443971	11.282932	0.116	0
S-16	15.21785	0.16858	0.443975	11.283218	0.116	0
S-17	140.3121	0.135	0.442	11.14	0.197	0
S-18	63.68647	0.13516	0.442004	11.135373	0.197	0
S-19	50.82756	0.14118	0.442137	10.96399	0.182	0
S-20	32.70066	0.13501	0.442	11.13975	0.197	0
S-21	204.8442	0.14277	0.442407	11.137155	0.178	0
S-22	244.9766	0.17672	0.443014	10.032432	0.093	0
S-23	153.3118	0.18	0.443	9.858	0.085	0
S-24	28.42641	0.17987	0.443019	9.88207	0.085	0
S-25	13.31561	0.13885	0.421799	6.871402	0.165	0
S-26	45.11848	0.12751	0.417735	6.558335	0.226	0
S-27	10.82494	0.10548	0.410606	5.235235	0.338	0

Project: La_Posada Connector

Project Location: Sparks, NV

Culvert Sizing Table

WOOD RODGERS

Culvert Name	Est. Length	Est. Station	Beginning Elevation	End Elevation	Culvert Slope	Contributing Flow	100-yr Flow (cfs)	5-yr Flow (cfs)	Box or Pipe	# Barrels	Size
C-1	99	14	4565	4562	0.030	S-01	291	75.1	Pipe	2	48"
C-2	143	43	4573	4568	0.035	S-03	214.3	69.7	Pipe	1	48"
C-3	98	62	4774	4770	0.041	S-05	90.8	27.9	Pipe	1	42"
C-4	142	68	4809	4805	0.028	S-06	32.7	7.3	Pipe	1	36"
C-5	156	73	4826	4820	0.038	S-07	61.2	21.7	Pipe	1	36"
C-6	191	78	4858	4850	0.042	S-08	22.4	6.2	Pipe	1	24"
C-7	194	86	4881	4873	0.041	S-09	56.4	21.1	Pipe	1	36" sc
C-8	174	96	4950	4946	0.023	S-10	81.2	29.7	Pipe	1	42"
C-9	178	105	5001	4995	0.034	S-11	37.3	13.5	Pipe	1	30" sc
C-10	263	111	5039	5032	0.027	S-12	47.1	17.1	Pipe	1	30"
C-11	165	121	5102	5098	0.024	S-13	37.4	13.8	Pipe	1	30"
C-12	166	142	5207	5202	0.030	S-14	71.6	23.5	Pipe	1	30"
C-13	450	232	5185	5175	0.022	N-02	524.2	149.5	BRIDGE	0	0
C-14	72	268	5302	5297	0.069	S-17	342.3	84.1	Box	1	12x4
C-15	74	304	5308	5306	0.027	S-18	147.9	35.8	Pipe	2	42"
C-16	241	330	5238	5225	0.054	S-19	89.5	21.3	Pipe	1	42" sc
C-17	129	343	5165	5162	0.023	S-20	74.2	17.9	Pipe	1	42"
C-18	132	370	5032	5030	0.015	Junction-2	1180.9	343.8	Box	2	12x5
C-19	220	393	5004	4995	0.041	N-04	1817.2	444.1	Box	4	12x4
C-20	246	400	4990	4982	0.033	Junction-3	2050.5	535	Box	4	12x4
C-21	88	414	4979	4976	0.034	Junction-4	2590.3	684.2	Box	4	12x4
C-22	108	435	4920	4916	0.037	Junction-5	2650.2	700.6	Box	4	12x4
C-23	132	480	4843	4836	0.053	S-23	245.1	79	Box	1	8x4
C-24	324	491	4753	4747	0.019	Junction 6	2712.9	717.6	Box	2	12x4 sc
C-25	115	498	4962	4957	0.043	N-09	1563.3	357.5	Box	2	12x4
C-26	125	515	4682	4678	0.032	N-10	840.7	240.1	Box	1	12x8
C-27	100	532	4620	4612	0.080	N-11	210.5	62.6	Pipe	1	60"
C-28	101	552	4578	4572	0.059	N-12	138.2	44.2	Pipe	1	72"
C-29	112	575	4452	4448	0.036	N-13	559.3	164.7	Box	1	10x4
C-30	85	583	4439	4436	0.035	N-14	157.7	54.4	Pipe	1	72"
C-31	77	616	4331	4327	0.052	S-26	122.4	35.7	Pipe	1	60"
C-32	141	632	4313	4308	0.035	Junction-7	1441.6	334.3	Box	1	12x4 sc
C-33	117	643	4330	4327	0.026	N-17	153.8	24	Pipe	1	36" sc
C-34	106	665	4259	4257	0.019	S-27	26.4	6.5	Pipe	1	48"
C-35	106	666	4257	4255	0.019	N-18	107.7	17.6	Pipe	1	60"

*SC – Special Construction: Culverts placed under >50 ft of fill, requires reinforced structural design.

Project: La_Posada_Hydro Simulation Run: 5-yr

Start of Run: 01Jan2025, 00:00 Basin Model: Base Models
End of Run: 02Jan2025, 00:00 Meteorologic Model: 5-yr
Compute Time: 21Oct2025, 14:42:48 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0.1305053	30.3	01Jan2025, 12:21	0.19
Junction-1 > Junction-2	0.1305053	30.3	01Jan2025, 12:37	0.19
Junction-2	1.0897453	343.8	01Jan2025, 12:24	0.27
Junction-2 > Junction-3	1.0897453	343.8	01Jan2025, 12:51	0.27
Junction-3	7.5309953	535.0	01Jan2025, 12:54	0.26
Junction-3 > Junction-4	7.5309953	535.0	01Jan2025, 13:04	0.26
Junction-4	8.6718953	684.2	01Jan2025, 13:03	0.27
Junction-4 > Junction-5	8.6718953	684.2	01Jan2025, 13:18	0.27
Junction-5	9.1378254	700.6	01Jan2025, 13:18	0.27
Junction-5 > Junction-6	9.1378254	700.6	01Jan2025, 13:55	0.27
Junction-6	10.0402354	717.6	01Jan2025, 13:55	0.28
Junction-7	4.1113936	334.3	01Jan2025, 13:23	0.31
Junction-8	0.1943930	18.3	01Jan2025, 12:31	0.12
N-01	0.0073726	6.1	01Jan2025, 12:07	0.26
N-02	0.3408600	149.5	01Jan2025, 12:14	0.23
N-03	0.9592400	332.0	01Jan2025, 12:23	0.29
N-04	6.1212000	444.1	01Jan2025, 13:46	0.26
N-04 > Junction-3	6.1212000	444.1	01Jan2025, 13:54	0.26
N-05	0.1791200	68.3	01Jan2025, 12:24	0.33
N-06	0.9617800	143.9	01Jan2025, 13:00	0.31
N-07	0.0831801	32.3	01Jan2025, 12:22	0.31
N-08	0.6628700	134.7	01Jan2025, 12:45	0.32
N-09	6.1412000	357.5	01Jan2025, 13:58	0.24
N-10	2.8309000	240.1	01Jan2025, 13:49	0.54
N-11	0.2459600	62.6	01Jan2025, 12:35	0.62

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
N-12	0.1049500	44.2	01Jan2025, 12:20	0.68
N-13	0.7561600	164.7	01Jan2025, 12:41	0.65
N-14	0.0851630	54.4	01Jan2025, 12:12	0.31
N-15	2.4103000	235.3	01Jan2025, 13:16	0.42
N-15 > Junction-7	2.4103000	235.3	01Jan2025, 13:29	0.42
N-16	1.6306000	102.5	01Jan2025, 13:14	0.16
N-17	0.2820400	24.0	01Jan2025, 12:36	0.11
N-18	0.1774800	17.6	01Jan2025, 12:33	0.11
S-01	0.3832100	75.1	01Jan2025, 12:36	0.43
S-03	0.1880300	69.7	01Jan2025, 12:25	0.74
S-05	0.0751408	27.9	01Jan2025, 12:22	0.61
S-06	0.0277090	7.3	01Jan2025, 12:18	0.32
S-07	0.0409640	21.7	01Jan2025, 12:17	0.78
S-08	0.0136485	6.2	01Jan2025, 12:12	0.44
S-09	0.0337468	21.1	01Jan2025, 12:15	0.74
S-10	0.0411777	29.7	01Jan2025, 12:11	0.35
S-11	0.0197232	13.5	01Jan2025, 12:12	0.35
S-12	0.0245287	17.1	01Jan2025, 12:11	0.35
S-13	0.0181384	13.8	01Jan2025, 12:10	0.35
S-14	0.0585336	23.5	01Jan2025, 12:23	0.34
S-15	0.0113152	5.1	01Jan2025, 12:16	0.27
S-16	0.0237765	8.7	01Jan2025, 12:21	0.27
S-17	0.2192300	84.1	01Jan2025, 12:13	0.18
S-18	0.0995044	35.8	01Jan2025, 12:14	0.18
S-19	0.0794135	21.3	01Jan2025, 12:21	0.20
S-19 > Junction-1	0.0794135	21.3	01Jan2025, 12:27	0.20
S-20	0.0510918	17.9	01Jan2025, 12:14	0.18
S-20 > Junction-1	0.0510918	17.9	01Jan2025, 12:14	0.18
S-21	0.3200500	48.9	01Jan2025, 12:37	0.20
S-22	0.3827500	111.4	01Jan2025, 12:32	0.33
S-23	0.2395400	79.0	01Jan2025, 12:30	0.35

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
S-23 > Junction-6	0.2395400	79.0	01Jan2025, 12:37	0.35
S-24	0.0444137	22.2	01Jan2025, 12:18	0.35
S-25	0.0208044	11.6	01Jan2025, 12:12	0.27
S-26	0.0704936	35.7	01Jan2025, 12:12	0.22
S-26 > Junction-7	0.0704936	35.7	01Jan2025, 12:23	0.22
S-27	0.0169130	6.5	01Jan2025, 12:12	0.17

Project: La_Posada_Hydro Simulation Run: 100-yr

Start of Run: 01Jan2025, 00:00 Basin Model: Base Models
End of Run: 02Jan2025, 00:00 Meteorologic Model: 100-yr
Compute Time: 21Oct2025, 14:42:44 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0.1305053	134.7	01Jan2025, 12:21	0.92
Junction-1 > Junction-2	0.1305053	134.7	01Jan2025, 12:37	0.92
Junction-2	1.0897453	1180.9	01Jan2025, 12:25	1.11
Junction-2 > Junction-3	1.0897453	1180.9	01Jan2025, 12:52	1.11
Junction-3	7.5309953	2050.5	01Jan2025, 12:57	1.09
Junction-3 > Junction-4	7.5309953	2050.5	01Jan2025, 13:07	1.09
Junction-4	8.6718953	2590.3	01Jan2025, 13:05	1.10
Junction-4 > Junction-5	8.6718953	2590.3	01Jan2025, 13:20	1.10
Junction-5	9.1378254	2650.2	01Jan2025, 13:20	1.10
Junction-5 > Junction-6	9.1378254	2650.2	01Jan2025, 13:57	1.10
Junction-6	10.0402354	2712.9	01Jan2025, 13:56	1.11
Junction-7	4.1113936	1441.6	01Jan2025, 13:23	1.11
Junction-8	0.1943930	111.7	01Jan2025, 12:32	0.73
N-01	0.0073726	17.7	01Jan2025, 12:07	1.10
N-02	0.3408600	524.2	01Jan2025, 12:15	1.03
N-03	0.9592400	1111.1	01Jan2025, 12:24	1.14
N-04	6.1212000	1817.2	01Jan2025, 13:46	1.09
N-04 > Junction-3	6.1212000	1817.2	01Jan2025, 13:54	1.09
N-05	0.1791200	212.9	01Jan2025, 12:24	1.20
N-06	0.9617800	522.9	01Jan2025, 13:01	1.17
N-07	0.0831801	102.6	01Jan2025, 12:22	1.17
N-08	0.6628700	468.5	01Jan2025, 12:46	1.19
N-09	6.1412000	1563.3	01Jan2025, 13:58	1.04
N-10	2.8309000	840.7	01Jan2025, 13:48	1.52
N-11	0.2459600	210.5	01Jan2025, 12:36	1.66

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
N-12	0.1049500	138.2	01Jan2025, 12:20	1.76
N-13	0.7561600	559.3	01Jan2025, 12:42	1.71
N-14	0.0851630	157.7	01Jan2025, 12:12	1.16
N-15	2.4103000	927.2	01Jan2025, 13:16	1.30
N-15 > Junction-7	2.4103000	927.2	01Jan2025, 13:29	1.30
N-16	1.6306000	535.4	01Jan2025, 13:14	0.84
N-17	0.2820400	153.8	01Jan2025, 12:37	0.70
N-18	0.1774800	107.7	01Jan2025, 12:34	0.72
S-01	0.3832100	291.0	01Jan2025, 12:37	1.33
S-03	0.1880300	214.3	01Jan2025, 12:25	1.85
S-05	0.0751408	90.8	01Jan2025, 12:22	1.66
S-06	0.0277090	32.7	01Jan2025, 12:19	1.11
S-07	0.0409640	61.2	01Jan2025, 12:18	1.92
S-08	0.0136485	22.4	01Jan2025, 12:13	1.32
S-09	0.0337468	56.4	01Jan2025, 12:15	1.91
S-10	0.0411777	81.2	01Jan2025, 12:11	1.25
S-11	0.0197232	37.3	01Jan2025, 12:12	1.24
S-12	0.0245287	47.1	01Jan2025, 12:11	1.24
S-13	0.0181384	37.4	01Jan2025, 12:10	1.24
S-14	0.0585336	71.6	01Jan2025, 12:23	1.22
S-15	0.0113152	16.6	01Jan2025, 12:17	1.12
S-16	0.0237765	29.4	01Jan2025, 12:21	1.12
S-17	0.2192300	342.3	01Jan2025, 12:13	0.89
S-18	0.0995044	147.9	01Jan2025, 12:14	0.90
S-19	0.0794135	89.5	01Jan2025, 12:21	0.94
S-19 > Junction-1	0.0794135	89.5	01Jan2025, 12:27	0.94
S-20	0.0510918	74.2	01Jan2025, 12:15	0.90
S-20 > Junction-1	0.0510918	74.2	01Jan2025, 12:15	0.90
S-21	0.3200500	222.5	01Jan2025, 12:38	0.94
S-22	0.3827500	361.6	01Jan2025, 12:33	1.20
S-23	0.2395400	245.1	01Jan2025, 12:30	1.24

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
S-23 > Junction-6	0.2395400	245.1	01Jan2025, 12:37	1.24
S-24	0.0444137	64.3	01Jan2025, 12:18	1.24
S-25	0.0208044	36.1	01Jan2025, 12:13	1.10
S-26	0.0704936	122.4	01Jan2025, 12:12	0.98
S-26 > Junction-7	0.0704936	122.4	01Jan2025, 12:23	0.98
S-27	0.0169130	26.4	01Jan2025, 12:13	0.85

Culvert Calculator Report
C-01

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,569.00	ft	Headwater Depth/Height	1.63	
Computed Headwater Elevation	4,568.54	ft	Discharge	291.00	cfs
Inlet Control HW Elev.	4,568.54	ft	Tailwater Elevation	4,563.00	ft
Outlet Control HW Elev.	4,568.39	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,562.00	ft	Downstream Invert	4,560.00	ft
Length	99.00	ft	Constructed Slope	0.020202	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.75	ft
Slope Type	Steep		Normal Depth	2.50	ft
Flow Regime	Supercritical		Critical Depth	3.56	ft
Velocity Downstream	15.81	ft/s	Critical Slope	0.009126	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	4.00	ft
Section Size	48 inch		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	4,568.39	ft	Upstream Velocity Head	2.36	ft
Ke	0.20		Entrance Loss	0.47	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,568.54	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	25.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-02

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,687.00	ft	Headwater Depth/Height	2.58	
Computed Headwater Elevation	4,680.32	ft	Discharge	214.30	cfs
Inlet Control HW Elev.	4,680.32	ft	Tailwater Elevation	4,668.00	ft
Outlet Control HW Elev.	4,679.40	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,670.00	ft	Downstream Invert	4,665.00	ft
Length	143.00	ft	Constructed Slope	0.034965	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.97	ft
Slope Type	Steep		Normal Depth	2.70	ft
Flow Regime	Supercritical		Critical Depth	3.88	ft
Velocity Downstream	21.44	ft/s	Critical Slope	0.019611	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	4.00	ft
Section Size	48 inch		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,679.40	ft	Upstream Velocity Head	4.60	ft
Ke	0.20		Entrance Loss	0.92	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,680.32	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	12.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-03

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,777.00	ft	Headwater Depth/Height	1.44	
Computed Headwater Elevation	4,777.03	ft	Discharge	90.80	cfs
Inlet Control HW Elev.	4,777.03	ft	Tailwater Elevation	4,773.00	ft
Outlet Control HW Elev.	4,777.00	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,772.00	ft	Downstream Invert	4,770.00	ft
Length	98.00	ft	Constructed Slope	0.020408	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	2.19	ft
Slope Type	Steep		Normal Depth	2.02	ft
Flow Regime	N/A		Critical Depth	2.95	ft
Velocity Downstream	14.36	ft/s	Critical Slope	0.007752	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,777.00	ft	Upstream Velocity Head	1.71	ft
Ke	0.20		Entrance Loss	0.34	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,777.03	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	9.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-04

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,812.00	ft	Headwater Depth/Height	0.93	
Computed Headwater Elevation	4,811.80	ft	Discharge	32.70	cfs
Inlet Control HW Elev.	4,811.66	ft	Tailwater Elevation	4,808.00	ft
Outlet Control HW Elev.	4,811.80	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,809.00	ft	Downstream Invert	4,805.00	ft
Length	142.00	ft	Constructed Slope	0.028169	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.11	ft
Flow Regime	N/A		Critical Depth	1.86	ft
Velocity Downstream	4.63	ft/s	Critical Slope	0.004853	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,811.80	ft	Upstream Velocity Head	0.79	ft
Ke	0.20		Entrance Loss	0.16	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,811.66	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	7.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-05

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,841.00	ft	Headwater Depth/Height	1.42	
Computed Headwater Elevation	4,830.26	ft	Discharge	61.20	cfs
Inlet Control HW Elev.	4,830.25	ft	Tailwater Elevation	4,823.00	ft
Outlet Control HW Elev.	4,830.26	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,826.00	ft	Downstream Invert	4,820.00	ft
Length	156.00	ft	Constructed Slope	0.038462	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.44	ft
Flow Regime	N/A		Critical Depth	2.52	ft
Velocity Downstream	8.66	ft/s	Critical Slope	0.008061	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,830.26	ft	Upstream Velocity Head	1.45	ft
Ke	0.20		Entrance Loss	0.29	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,830.25	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	7.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-06

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,867.00	ft	Headwater Depth/Height	1.43	
Computed Headwater Elevation	4,860.86	ft	Discharge	22.40	cfs
Inlet Control HW Elev.	4,860.85	ft	Tailwater Elevation	4,853.00	ft
Outlet Control HW Elev.	4,860.86	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,858.00	ft	Downstream Invert	4,850.00	ft
Length	191.00	ft	Constructed Slope	0.041885	ft/ft

Hydraulic Profile					
Profile	CompositePressureProfileS1S2		Depth, Downstream	3.00	ft
Slope Type	N/A		Normal Depth	0.98	ft
Flow Regime	N/A		Critical Depth	1.69	ft
Velocity Downstream	7.13	ft/s	Critical Slope	0.009335	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,860.86	ft	Upstream Velocity Head	0.97	ft
Ke	0.20		Entrance Loss	0.19	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,860.85	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	3.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-07

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,907.00	ft	Headwater Depth/Height	1.34	
Computed Headwater Elevation	4,885.01	ft	Discharge	56.40	cfs
Inlet Control HW Elev.	4,884.98	ft	Tailwater Elevation	4,876.00	ft
Outlet Control HW Elev.	4,885.01	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,881.00	ft	Downstream Invert	4,873.00	ft
Length	194.00	ft	Constructed Slope	0.041237	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.35	ft
Flow Regime	N/A		Critical Depth	2.43	ft
Velocity Downstream	7.98	ft/s	Critical Slope	0.007281	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,885.01	ft	Upstream Velocity Head	1.31	ft
Ke	0.20		Entrance Loss	0.26	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,884.98	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	7.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-08

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,967.00	ft	Headwater Depth/Height	1.32	
Computed Headwater Elevation	4,954.60	ft	Discharge	81.20	cfs
Inlet Control HW Elev.	4,954.60	ft	Tailwater Elevation	4,949.00	ft
Outlet Control HW Elev.	4,954.60	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,950.00	ft	Downstream Invert	4,946.00	ft
Length	174.00	ft	Constructed Slope	0.022989	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.82	ft
Flow Regime	N/A		Critical Depth	2.81	ft
Velocity Downstream	9.25	ft/s	Critical Slope	0.006754	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,954.60	ft	Upstream Velocity Head	1.49	ft
Ke	0.20		Entrance Loss	0.30	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,954.60	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	9.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-09

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,012.00	ft	Headwater Depth/Height	1.38	
Computed Headwater Elevation	5,004.44	ft	Discharge	37.30	cfs
Inlet Control HW Elev.	5,004.44	ft	Tailwater Elevation	4,998.00	ft
Outlet Control HW Elev.	5,004.44	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,001.00	ft	Downstream Invert	4,995.00	ft
Length	178.00	ft	Constructed Slope	0.033708	ft/ft

Hydraulic Profile					
Profile	CompositePressureProfileS1S2		Depth, Downstream	3.00	ft
Slope Type	N/A		Normal Depth	1.24	ft
Flow Regime	N/A		Critical Depth	2.07	ft
Velocity Downstream	7.60	ft/s	Critical Slope	0.008142	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,004.44	ft	Upstream Velocity Head	1.15	ft
Ke	0.20		Entrance Loss	0.23	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,004.44	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	4.9	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-10

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,046.00	ft	Headwater Depth/Height	1.71	
Computed Headwater Elevation	5,043.28	ft	Discharge	47.10	cfs
Inlet Control HW Elev.	5,043.28	ft	Tailwater Elevation	5,035.00	ft
Outlet Control HW Elev.	5,043.16	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	5,039.00	ft	Downstream Invert	5,032.00	ft
Length	263.00	ft	Constructed Slope	0.026616	ft/ft

Hydraulic Profile					
Profile	CompositePressureProfileS1S2		Depth, Downstream	1.55	ft
Slope Type	N/A		Normal Depth	1.55	ft
Flow Regime	N/A		Critical Depth	2.26	ft
Velocity Downstream	14.77	ft/s	Critical Slope	0.011571	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,043.16	ft	Upstream Velocity Head	1.58	ft
Ke	0.20		Entrance Loss	0.32	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,043.28	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	4.9	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-11

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,107.00	ft	Headwater Depth/Height	1.38	
Computed Headwater Elevation	5,105.46	ft	Discharge	37.40	cfs
Inlet Control HW Elev.	5,105.46	ft	Tailwater Elevation	5,101.00	ft
Outlet Control HW Elev.	5,105.45	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	5,102.00	ft	Downstream Invert	5,098.00	ft
Length	165.00	ft	Constructed Slope	0.024242	ft/ft

Hydraulic Profile					
Profile	CompositePressureProfileS1S2		Depth, Downstream	1.39	ft
Slope Type	N/A		Normal Depth	1.37	ft
Flow Regime	N/A		Critical Depth	2.07	ft
Velocity Downstream	13.35	ft/s	Critical Slope	0.008170	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,105.45	ft	Upstream Velocity Head	1.15	ft
Ke	0.20		Entrance Loss	0.23	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,105.46	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	4.9	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-12

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,220.00	ft	Headwater Depth/Height	2.88	
Computed Headwater Elevation	5,214.21	ft	Discharge	71.60	cfs
Inlet Control HW Elev.	5,214.21	ft	Tailwater Elevation	5,205.00	ft
Outlet Control HW Elev.	5,214.03	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	5,207.00	ft	Downstream Invert	5,202.00	ft
Length	166.00	ft	Constructed Slope	0.030120	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	2.11	ft
Slope Type	N/A		Normal Depth	2.06	ft
Flow Regime	N/A		Critical Depth	2.45	ft
Velocity Downstream	16.20	ft/s	Critical Slope	0.027192	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,214.03	ft	Upstream Velocity Head	3.34	ft
Ke	0.20		Entrance Loss	0.66	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,214.21	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	4.9	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-13 (Bridge)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5.01	ft	Headwater Depth/Height	0.33	
Computed Headwater Elevation	5,188.93	ft	Discharge	524.20	cfs
Inlet Control HW Elev.	5,188.87	ft	Tailwater Elevation	5.00	ft
Outlet Control HW Elev.	5,188.93	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,185.00	ft	Downstream Invert	5,175.00	ft
Length	450.00	ft	Constructed Slope	0.022222	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.25	ft
Slope Type	Steep		Normal Depth	1.25	ft
Flow Regime	Supercritical		Critical Depth	2.46	ft
Velocity Downstream	17.44	ft/s	Critical Slope	0.002884	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 12 ft		Rise	12.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	5,188.93	ft	Upstream Velocity Head	1.23	ft
Ke	0.20		Entrance Loss	0.25	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,188.87	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	288.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-14

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,307.00	ft	Headwater Depth/Height	1.17	
Computed Headwater Elevation	5,306.70	ft	Discharge	342.30	cfs
Inlet Control HW Elev.	5,306.64	ft	Tailwater Elevation	5,300.00	ft
Outlet Control HW Elev.	5,306.70	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,302.00	ft	Downstream Invert	5,297.00	ft
Length	72.00	ft	Constructed Slope	0.069444	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.03	ft
Flow Regime	N/A		Critical Depth	2.94	ft
Velocity Downstream	9.51	ft/s	Critical Slope	0.002925	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,306.70	ft	Upstream Velocity Head	1.47	ft
Ke	0.20		Entrance Loss	0.29	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,306.64	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	48.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-15

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,313.00	ft	Headwater Depth/Height	1.23	
Computed Headwater Elevation	5,312.31	ft	Discharge	147.90	cfs
Inlet Control HW Elev.	5,312.29	ft	Tailwater Elevation	5,309.00	ft
Outlet Control HW Elev.	5,312.31	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,308.00	ft	Downstream Invert	5,306.00	ft
Length	74.00	ft	Constructed Slope	0.027027	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.64	ft
Flow Regime	N/A		Critical Depth	2.69	ft
Velocity Downstream	8.42	ft/s	Critical Slope	0.006134	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	5,312.31	ft	Upstream Velocity Head	1.35	ft
Ke	0.20		Entrance Loss	0.27	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,312.29	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	19.2	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-16

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,252.00	ft	Headwater Depth/Height	1.41	
Computed Headwater Elevation	5,242.95	ft	Discharge	89.50	cfs
Inlet Control HW Elev.	5,242.91	ft	Tailwater Elevation	5,228.00	ft
Outlet Control HW Elev.	5,242.95	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,238.00	ft	Downstream Invert	5,225.00	ft
Length	241.00	ft	Constructed Slope	0.053942	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.50	ft
Flow Regime	N/A		Critical Depth	2.94	ft
Velocity Downstream	10.20	ft/s	Critical Slope	0.007604	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,242.95	ft	Upstream Velocity Head	1.68	ft
Ke	0.20		Entrance Loss	0.34	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,242.91	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	9.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-17

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,177.00	ft	Headwater Depth/Height	1.23	
Computed Headwater Elevation	5,169.32	ft	Discharge	74.20	cfs
Inlet Control HW Elev.	5,169.31	ft	Tailwater Elevation	5,165.00	ft
Outlet Control HW Elev.	5,169.32	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	5,165.00	ft	Downstream Invert	5,162.00	ft
Length	129.00	ft	Constructed Slope	0.023256	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.72	ft
Flow Regime	N/A		Critical Depth	2.70	ft
Velocity Downstream	8.45	ft/s	Critical Slope	0.006153	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,169.32	ft	Upstream Velocity Head	1.35	ft
Ke	0.20		Entrance Loss	0.27	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,169.31	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	9.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-18

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,040.00	ft	Headwater Depth/Height	1.42	
Computed Headwater Elevation	5,039.10	ft	Discharge	1,180.90	cfs
Inlet Control HW Elev.	5,039.10	ft	Tailwater Elevation	5,033.00	ft
Outlet Control HW Elev.	5,038.75	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	5,032.00	ft	Downstream Invert	5,030.00	ft
Length	132.00	ft	Constructed Slope	0.015152	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.88	ft
Slope Type	Steep		Normal Depth	2.43	ft
Flow Regime	Supercritical		Critical Depth	4.22	ft
Velocity Downstream	17.10	ft/s	Critical Slope	0.003100	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 5 ft		Rise	5.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	5,038.75	ft	Upstream Velocity Head	2.11	ft
Ke	0.20		Entrance Loss	0.42	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,039.10	ft	Flow Control	Submerged	
Inlet Type	90° headwall w 45° bevels		Area Full	120.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-19

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,010.00	ft	Headwater Depth/Height	1.48	
Computed Headwater Elevation	5,009.92	ft	Discharge	1,817.20	cfs
Inlet Control HW Elev.	5,009.92	ft	Tailwater Elevation	4,998.00	ft
Outlet Control HW Elev.	5,009.67	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	5,004.00	ft	Downstream Invert	4,995.00	ft
Length	102.00	ft	Constructed Slope	0.088235	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.46	ft
Slope Type	Steep		Normal Depth	1.14	ft
Flow Regime	Supercritical		Critical Depth	3.54	ft
Velocity Downstream	25.92	ft/s	Critical Slope	0.002999	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	4				

Outlet Control Properties					
Outlet Control HW Elev.	5,009.67	ft	Upstream Velocity Head	1.77	ft
Ke	0.20		Entrance Loss	0.35	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,009.92	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	192.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-20

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	5,998.00	ft	Headwater Depth/Height	1.70	
Computed Headwater Elevation	4,996.80	ft	Discharge	2,050.50	cfs
Inlet Control HW Elev.	4,996.80	ft	Tailwater Elevation	4,985.00	ft
Outlet Control HW Elev.	4,996.15	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,990.00	ft	Downstream Invert	4,982.00	ft
Length	246.00	ft	Constructed Slope	0.032520	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.88	ft
Slope Type	Steep		Normal Depth	1.71	ft
Flow Regime	Supercritical		Critical Depth	3.84	ft
Velocity Downstream	22.66	ft/s	Critical Slope	0.003042	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	4				

Outlet Control Properties					
Outlet Control HW Elev.	4,996.15	ft	Upstream Velocity Head	1.92	ft
Ke	0.20		Entrance Loss	0.38	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,996.80	ft	Flow Control	Submerged	
Inlet Type	90° headwall w 45° bevels		Area Full	192.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-21

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,988.00	ft	Headwater Depth/Height	2.23	
Computed Headwater Elevation	4,987.93	ft	Discharge	2,590.30	cfs
Inlet Control HW Elev.	4,987.93	ft	Tailwater Elevation	4,979.00	ft
Outlet Control HW Elev.	4,986.39	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,979.00	ft	Downstream Invert	4,976.00	ft
Length	88.00	ft	Constructed Slope	0.034091	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.68	ft
Slope Type	Steep		Normal Depth	1.97	ft
Flow Regime	Supercritical		Critical Depth	4.00	ft
Velocity Downstream	20.13	ft/s	Critical Slope	0.008113	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	4				

Outlet Control Properties					
Outlet Control HW Elev.	4,986.39	ft	Upstream Velocity Head	2.83	ft
Ke	0.20		Entrance Loss	0.57	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,987.93	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	192.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-22

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,927.00	ft	Headwater Depth/Height	2.30	
Computed Headwater Elevation	4,926.19	ft	Discharge	2,650.20	cfs
Inlet Control HW Elev.	4,926.19	ft	Tailwater Elevation	4,916.00	ft
Outlet Control HW Elev.	4,924.55	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,917.00	ft	Downstream Invert	4,913.00	ft
Length	108.00	ft	Constructed Slope	0.037037	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.57	ft
Slope Type	Steep		Normal Depth	1.94	ft
Flow Regime	Supercritical		Critical Depth	4.00	ft
Velocity Downstream	21.51	ft/s	Critical Slope	0.008493	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	4				

Outlet Control Properties					
Outlet Control HW Elev.	4,924.55	ft	Upstream Velocity Head	2.96	ft
Ke	0.20		Entrance Loss	0.59	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,926.19	ft	Flow Control	Submerged	
Inlet Type	90° headwall w 45° bevels		Area Full	192.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-23

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,849.00	ft	Headwater Depth/Height	1.24	
Computed Headwater Elevation	4,847.97	ft	Discharge	245.10	cfs
Inlet Control HW Elev.	4,847.97	ft	Tailwater Elevation	4,839.00	ft
Outlet Control HW Elev.	4,847.93	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,843.00	ft	Downstream Invert	4,836.00	ft
Length	132.00	ft	Constructed Slope	0.053030	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.41	ft
Slope Type	Steep		Normal Depth	1.22	ft
Flow Regime	Supercritical		Critical Depth	3.08	ft
Velocity Downstream	21.79	ft/s	Critical Slope	0.003624	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 4 ft		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,847.93	ft	Upstream Velocity Head	1.54	ft
Ke	0.20		Entrance Loss	0.31	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,847.97	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	32.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-24

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,790.00	ft	Headwater Depth/Height	3.94	
Computed Headwater Elevation	4,784.53	ft	Discharge	2,712.90	cfs
Inlet Control HW Elev.	4,784.53	ft	Tailwater Elevation	4,750.00	ft
Outlet Control HW Elev.	4,775.89	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,753.00	ft	Downstream Invert	4,747.00	ft
Length	235.00	ft	Constructed Slope	0.025532	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	7.12	ft
Slope Type	Steep		Normal Depth	5.96	ft
Flow Regime	Supercritical		Critical Depth	8.00	ft
Velocity Downstream	31.75	ft/s	Critical Slope	0.019023	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 8 ft		Rise	8.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,775.89	ft	Upstream Velocity Head	12.41	ft
Ke	0.20		Entrance Loss	2.48	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,784.53	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	96.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-25

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,775.00	ft	Headwater Depth/Height	2.89	
Computed Headwater Elevation	4,973.56	ft	Discharge	1,563.30	cfs
Inlet Control HW Elev.	4,973.56	ft	Tailwater Elevation	4,960.00	ft
Outlet Control HW Elev.	4,970.95	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,962.00	ft	Downstream Invert	4,957.00	ft
Length	220.00	ft	Constructed Slope	0.022727	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.94	ft
Slope Type	Steep		Normal Depth	2.56	ft
Flow Regime	Supercritical		Critical Depth	4.00	ft
Velocity Downstream	22.16	ft/s	Critical Slope	0.011821	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	4,970.95	ft	Upstream Velocity Head	4.12	ft
Ke	0.20		Entrance Loss	0.82	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,973.56	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	96.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-26

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,692.00	ft	Headwater Depth/Height	1.52	
Computed Headwater Elevation	4,691.11	ft	Discharge	840.70	cfs
Inlet Control HW Elev.	4,691.11	ft	Tailwater Elevation	4,681.00	ft
Outlet Control HW Elev.	4,690.55	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,682.00	ft	Downstream Invert	4,678.00	ft
Length	125.00	ft	Constructed Slope	0.032000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	3.16	ft
Slope Type	Steep		Normal Depth	2.39	ft
Flow Regime	Supercritical		Critical Depth	5.34	ft
Velocity Downstream	22.17	ft/s	Critical Slope	0.003293	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 6 ft		Rise	6.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,690.55	ft	Upstream Velocity Head	2.67	ft
Ke	0.20		Entrance Loss	0.53	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,691.11	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	72.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-27

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,627.00	ft	Headwater Depth/Height	1.38	
Computed Headwater Elevation	4,626.88	ft	Discharge	210.50	cfs
Inlet Control HW Elev.	4,626.74	ft	Tailwater Elevation	4,615.00	ft
Outlet Control HW Elev.	4,626.88	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,620.00	ft	Downstream Invert	4,612.00	ft
Length	100.00	ft	Constructed Slope	0.080000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.22	ft
Slope Type	Steep		Normal Depth	1.83	ft
Flow Regime	Supercritical		Critical Depth	4.13	ft
Velocity Downstream	25.00	ft/s	Critical Slope	0.006443	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	60 inch		Rise	5.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,626.88	ft	Upstream Velocity Head	2.29	ft
Ke	0.20		Entrance Loss	0.46	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,626.74	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	19.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-28

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,572.00	ft	Headwater Depth/Height	0.79	
Computed Headwater Elevation	4,571.72	ft	Discharge	138.20	cfs
Inlet Control HW Elev.	4,571.37	ft	Tailwater Elevation	4,565.00	ft
Outlet Control HW Elev.	4,571.72	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,567.00	ft	Downstream Invert	4,562.00	ft
Length	101.00	ft	Constructed Slope	0.049505	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.79	ft
Slope Type	Steep		Normal Depth	1.55	ft
Flow Regime	Supercritical		Critical Depth	3.19	ft
Velocity Downstream	19.45	ft/s	Critical Slope	0.003478	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	6.00	ft
Section Size	72 inch		Rise	6.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,571.72	ft	Upstream Velocity Head	1.27	ft
Ke	0.20		Entrance Loss	0.25	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,571.37	ft	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	28.3	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-29

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,462.00	ft	Headwater Depth/Height	2.34	
Computed Headwater Elevation	4,461.35	ft	Discharge	559.30	cfs
Inlet Control HW Elev.	4,461.35	ft	Tailwater Elevation	4,451.00	ft
Outlet Control HW Elev.	4,459.65	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,452.00	ft	Downstream Invert	4,448.00	ft
Length	112.00	ft	Constructed Slope	0.035714	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.62	ft
Slope Type	Steep		Normal Depth	2.03	ft
Flow Regime	Supercritical		Critical Depth	4.00	ft
Velocity Downstream	21.36	ft/s	Critical Slope	0.009301	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	10.00	ft
Section Size	10 x 4 ft		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,459.65	ft	Upstream Velocity Head	3.04	ft
Ke	0.20		Entrance Loss	0.61	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,461.35	ft	Flow Control	Submerged	
Inlet Type	90° headwall w 45° bevels		Area Full	40.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-30

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,444.00	ft	Headwater Depth/Height	0.85	
Computed Headwater Elevation	4,444.09	ft	Discharge	157.70	cfs
Inlet Control HW Elev.	4,443.79	ft	Tailwater Elevation	4,439.00	ft
Outlet Control HW Elev.	4,444.09	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,439.00	ft	Downstream Invert	4,436.00	ft
Length	85.00	ft	Constructed Slope	0.035294	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.16	ft
Slope Type	Steep		Normal Depth	1.81	ft
Flow Regime	Supercritical		Critical Depth	3.42	ft
Velocity Downstream	17.26	ft/s	Critical Slope	0.003620	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	6.00	ft
Section Size	72 inch		Rise	6.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,444.09	ft	Upstream Velocity Head	1.40	ft
Ke	0.20		Entrance Loss	0.28	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,443.79	ft	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	28.3	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-31

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,342.00	ft	Headwater Depth/Height	0.96	
Computed Headwater Elevation	4,341.79	ft	Discharge	122.40	cfs
Inlet Control HW Elev.	4,341.57	ft	Tailwater Elevation	4,338.00	ft
Outlet Control HW Elev.	4,341.79	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,337.00	ft	Downstream Invert	4,335.00	ft
Length	77.00	ft	Constructed Slope	0.025974	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.16	ft
Slope Type	Steep		Normal Depth	1.85	ft
Flow Regime	Supercritical		Critical Depth	3.16	ft
Velocity Downstream	15.11	ft/s	Critical Slope	0.004176	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	60 inch		Rise	5.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,341.79	ft	Upstream Velocity Head	1.36	ft
Ke	0.20		Entrance Loss	0.27	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,341.57	ft	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	19.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-32

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,349.00	ft	Headwater Depth/Height	7.89	
Computed Headwater Elevation	4,341.55	ft	Discharge	1,441.60	cfs
Inlet Control HW Elev.	4,341.55	ft	Tailwater Elevation	4,309.00	ft
Outlet Control HW Elev.	4,332.49	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	4,310.00	ft	Downstream Invert	4,306.00	ft
Length	141.00	ft	Constructed Slope	0.028369	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	4.00	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	4.00	ft
Velocity Downstream	30.03	ft/s	Critical Slope	0.040208	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	12.00	ft
Section Size	12 x 4 ft		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,332.49	ft	Upstream Velocity Head	14.02	ft
Ke	0.20		Entrance Loss	2.80	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,341.55	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	48.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
C-33

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,347.00	ft	Headwater Depth/Height	4.68	
Computed Headwater Elevation	4,345.05	ft	Discharge	153.80	cfs
Inlet Control HW Elev.	4,344.94	ft	Tailwater Elevation	4,330.00	ft
Outlet Control HW Elev.	4,345.05	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	4,331.00	ft	Downstream Invert	4,327.00	ft
Length	117.00	ft	Constructed Slope	0.034188	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	3.00	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	2.98	ft
Velocity Downstream	21.76	ft/s	Critical Slope	0.049731	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,345.05	ft	Upstream Velocity Head	7.36	ft
Ke	0.20		Entrance Loss	1.47	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,344.94	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	7.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-34

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,262.00	ft	Headwater Depth/Height	0.55	
Computed Headwater Elevation	4,261.20	ft	Discharge	26.40	cfs
Inlet Control HW Elev.	4,261.05	ft	Tailwater Elevation	4,260.00	ft
Outlet Control HW Elev.	4,261.20	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,259.00	ft	Downstream Invert	4,257.00	ft
Length	106.00	ft	Constructed Slope	0.018868	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	0.99	ft
Flow Regime	N/A		Critical Depth	1.52	ft
Velocity Downstream	2.61	ft/s	Critical Slope	0.003594	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	4.00	ft
Section Size	48 inch		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,261.20	ft	Upstream Velocity Head	0.56	ft
Ke	0.20		Entrance Loss	0.11	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,261.05	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	12.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
C-35

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	4,262.00	ft	Headwater Depth/Height	0.89	
Computed Headwater Elevation	4,261.44	ft	Discharge	107.70	cfs
Inlet Control HW Elev.	4,261.23	ft	Tailwater Elevation	4,258.00	ft
Outlet Control HW Elev.	4,261.44	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	4,257.00	ft	Downstream Invert	4,255.00	ft
Length	106.00	ft	Constructed Slope	0.018868	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.88	ft
Flow Regime	N/A		Critical Depth	2.96	ft
Velocity Downstream	8.76	ft/s	Critical Slope	0.003952	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	60 inch		Rise	5.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	4,261.44	ft	Upstream Velocity Head	1.23	ft
Ke	0.20		Entrance Loss	0.25	ft

Inlet Control Properties					
Inlet Control HW Elev.	4,261.23	ft	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	19.6	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

APPENDIX D:
GEOMETRIC CRITERIA



Sparks-TRIC Connection Feasibility Study

Design Criteria Memo

September 2025

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Figure 6: Full fill condition with elevation change greater than 15'.
Figure 7: Full fill condition with elevation change less than 15'.

DESIGN CRITERIA TECHNICAL MEMORANDUM

NOVEMBER 3, 2025

BACKGROUND AND PURPOSE

The Regional Transportation Commission of Washoe County (RTC) is completing the Sparks-TRIC Connection Feasibility Study (Study) which is evaluating a potential new roadway connection between the east Sparks and Spanish Springs area in Washoe County, Nevada with the Tahoe-Reno Industrial Center (TRIC) in Storey County, Nevada. The proposed roadway would connect residential areas in the Truckee Meadows with employment centers in TRIC. Interstate 80 (I-80) is currently the only direct connection and is often congested with no alternate route during incidences, reducing transportation reliability.

This Study is evaluating the feasibility, potential costs, and benefits of a potential connection at a planning level. One component of feasibility and developing costs is to evaluate potential alignment corridors. The Trimble Quantm alignment optimization software is being applied to quickly evaluate candidate corridors.

The purpose of this memo is to define the design criteria and cost factors to be used in the Quantm platform. This memo is a living document and design criteria may evolve during Study development.

LOCATION / STUDY LIMITS

The Study location is in eastern Washoe County and northern Storey County, Nevada. Study limits include the eastern development boundary of Sparks and Spanish Springs to the west, I-80 to the south, USA Parkway to the east, and La Posada Drive to the north. See **Figure 1** for the study area.

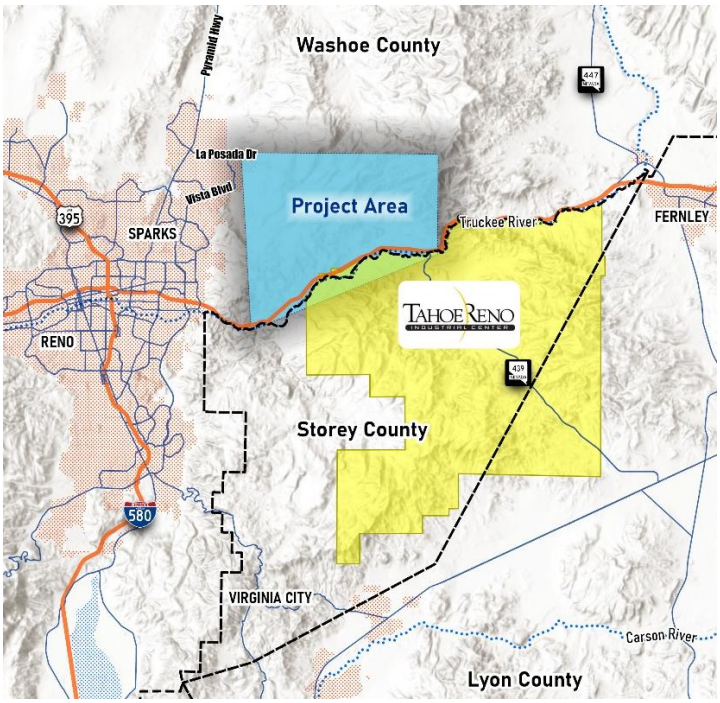


Figure 1: Study Area

GEOMETRIC DESIGN CRITERIA

Geometric criteria are critical to defining potential roadway corridors and corresponding alignments. **Table 1** below defines the major design criteria needed to perform Quantm alignment optimization.

Table 1: Geometric Design Criteria

Design Element	Study Criteria	Notes and References
Design Vehicle	WB-67	Per Green Book Section 2.8
Posted Speed Min	35mph	Urban (mountains as necessary)
Design Speed Min	45mph	
Posted Speed Max	45mph	Rural / Mountainous
Design Speed Max	55mph	
Min Stopping Sight Distance	495’ (0-2% grade) (55mph)	Per Green Book Table 3-1
Min Passing Sight Distance	900’ (55mph)	Per Green Book Table 3-4
Stopping Sight Distance at Grade	Based on Speed & Grade 553’ at 6% Downgrade (55mph)	Per Green Book Table 3-2
Cross Section		
Lane Widths	12’	Per Green Book Table 7-3
Outside Shoulder Width	8’ (<45 mph) 10’ (≥45 mph)	Per NDOT Road Design Section 2.1 and 2.2
Inside Shoulder Width	4’ (Single Lane)	Per NDOT Road Design Section 2.1
Outside Bridge Shoulder Width	4’	Per NDOT Road Design Section 2.1
Superelevation		
Max Superelevation	6%	Per NDOT Road Design Section 3.5
Min Length of Runoff	Based on Speed & Super 153’ (55mph / 6% Super)	Per Green Book Table 3-16a
Horizontal		
Min Horizontal Curve Radius	Based on Speed & Super 1060’ (55mph / 6% Super)	Per Green Book Table 3-7
Vertical		
Min K Value Crest	Based on Design Speed 114 (55mph)	Per Green Book Table 3-35
Min K value Sag	Based on Design Speed 115 (55mph)	Per Green Book Table 3-37
Min Length of Vertical Curve	3x Design Speed 165’ (55mph)	Per Green Book Figure 3-35/3-37
Max Vertical Grade	6% (≥45 mph)	Per NDOT Road Design Section 2.1
Min Vertical Grade	0.5%	Per NDOT Drainage Manual
Roadside Safety		
Min Vertical Clearance	16’-6”	Per NDOT Road Design Section 2.1
Cut Slope ≤15’ H	See Table (4:1 or flatter)	Per NDOT Road Design Table 3.12
Cut Slope >15’ H	4:1 Foreslope/2:1 Backslope	Per NDOT Road Design Table 3.12
Fill Slope ≤15’ H	See Table (4:1 or flatter)	Per NDOT Road Design Table 3.12
Fill Slope >15’ H	2:1	Per NDOT Road Design Table 3.12
Drainage		
V-Ditch Channel	Based on Foreslope	Per AASHTO Roadside Figure 3-6
Trapezoidal Channel (4’ Bottom)	Based on Foreslope	Per AASHTO Roadside Figure 3-7

List of Sources:

- 2018 AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition (Green Book)
- 2011 AASHTO Roadside Design Guide, 4th Edition
- 2019 NDOT Road Design Guide
- 2006 NDOT Drainage Manual, 2nd Edition

UNIT COSTS

The table below (**Table 2**) outlines unit cost inputs used in the Quantm system for estimating and alignment optimization purposes. Other required parameters are also included for reference.

Table 2: Conceptual Unit Costs & Parameters

QUANTM Item	Unit	Unit Cost	Description
Borrow	Cubic Yard	$40	Cost of purchasing material and transporting it from an external site.
Dump	Cubic Yard	$5	Cost of removing excess or unusable material.
Haul	Cubic Yard/Mile	$2	Cost of transporting 1 CY of usable material along the alignment.
Topsoil	Cubic Yard	$2.50	Cost of clearing and grubbing 1 CY of topsoil.
Soil	Cubic Yard	$8	Cost of cutting 1 CY of soil during excavation.
Broken Rock	Cubic Yard	$75	Cost of cutting 1 CY of rock during excavation.
Fill	Cubic Yard	$3	Cost of placing and compacting the fill.
Pavement	Cubic Yard	$400	Cost of placing 1 CY of pavement and compacting it to a specified thickness (assuming non-local source).
Subgrade	Cubic Yard	$100	Cost of placing 1 CY of subgrade and compacting it to a specified thickness.
Bridge	Square Foot	$400	Fixed cost per unit area of the bridge deck. Can be set to a variance based on bridge height.
Retaining Wall	Square Foot	$150	Fixed cost per unit area of wall face.
Culverts	Linear Foot	$450	Channel that allows waterways or other features to pass under a route.

TYPICAL CROSS SECTIONS

The figures below show the typical cross sections of the roadway alignment based on cut and/or fill conditions at elevation differences above and below 15’. See table one for the NDOT Design Guide and AASHTO Green Book criteria for cut and fill conditions. The cross sections below also assume speeds greater than 45mph, resulting in shoulder widths of 10’ and an addition 2’ where guardrail is applicable.

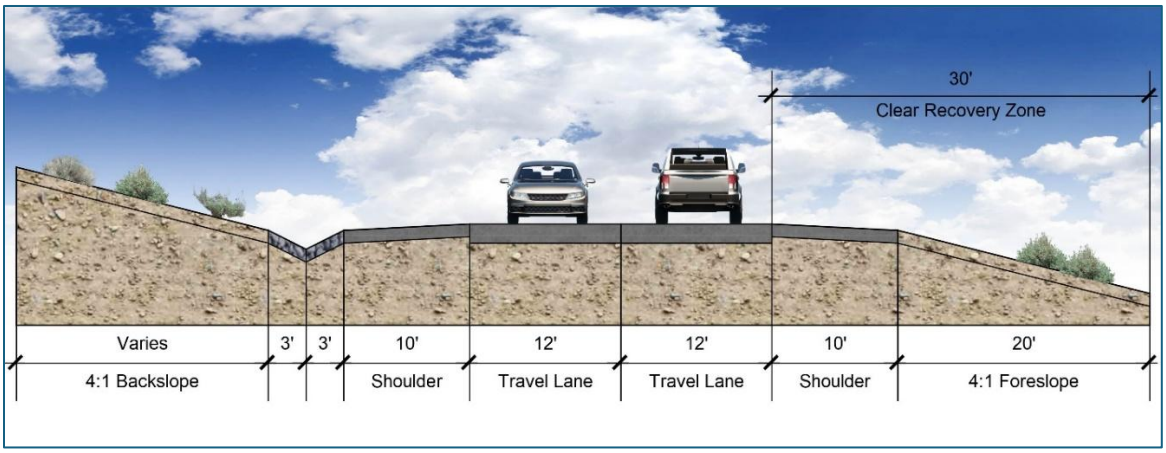


Figure 2: Cut and fill condition with elevation change less than 15'.

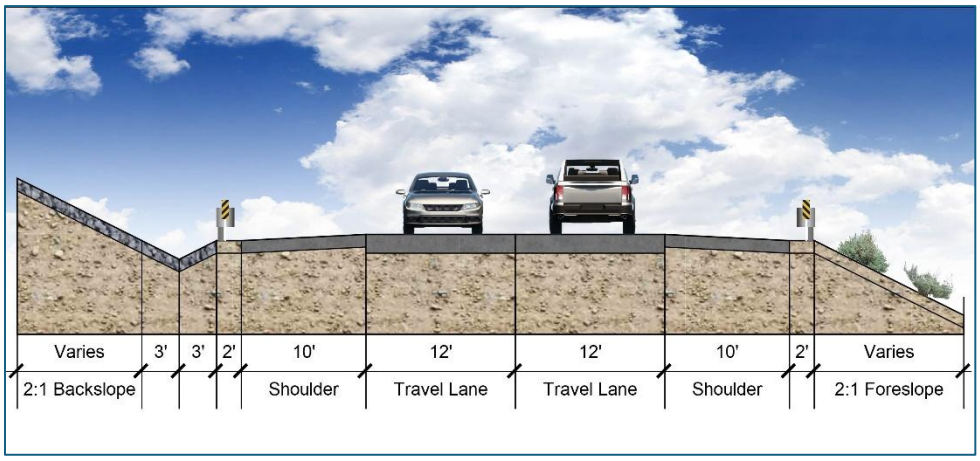


Figure 3: Cut and fill condition with elevation change greater than 15'.

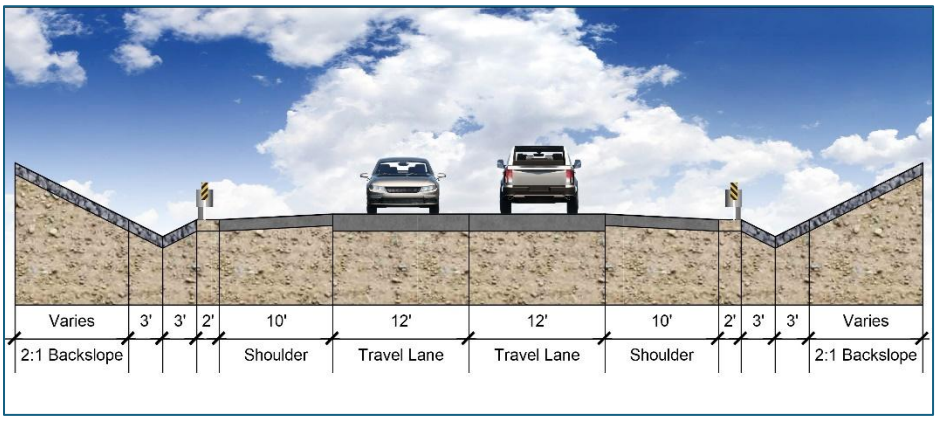


Figure 4: Full cut condition with elevation change greater than 15'.

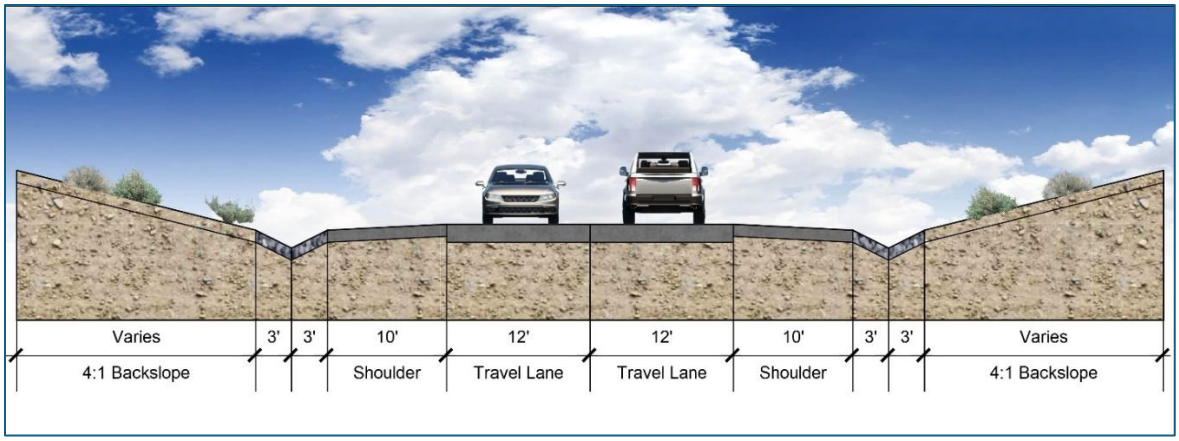


Figure 5: Full cut condition with elevation change less than 15'.

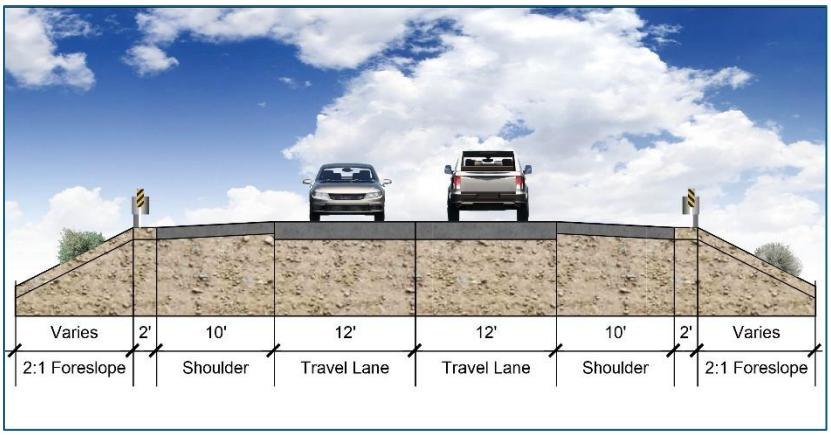


Figure 6: Full fill condition with elevation change greater than 15'.

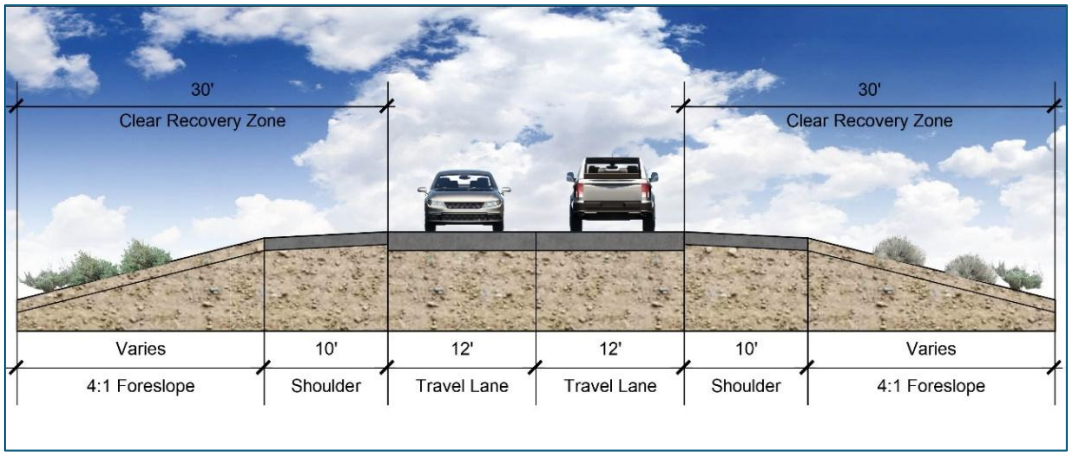


Figure 7: Full fill condition with elevation change less than 15'.

APPENDIX E:
TECHNICAL ADVISORY COMMITTEE MEETING MATERIALS AND SUMMARIES

La Posada-TRIC Connection Alignment and Feasibility Study
Kick-Off Meeting Minutes

2/12/2025

1. Introductions and Study Team

Attendance:

Wood Rodgers
Bryan Gant, PE, Project Manager
Katie Moses, Planner
Mario Tambellini, Project Engineer
Leslie Burnside, Senior Env. Planner
Mike Davidson, Principal Engineer

RTC Washoe County
Bryne Byrne, Project Manager
Dale Keller, Deputy Executive Director
Amanda Callegari, Engineering Mgr.
Michele Payne, Property Analyst

Storey County
Austin Osborne, County Manager
Jason Wierzbicki, Public Works Director
Kathy Canfield, Planning Manager

CDM Smith
Brian Stewart
Lynnette Russell, Sr. Project Manager

MJT Consulting
McKenna Temen, Outreach Specialist

City of Sparks
Amber Sosa, City Engineer
Jim Rundel, Assistant Community Services Director
Andrew Jayankura, Transportation Mgr.

HDR
Nicholas Eggen, PM Structures group
Blake Schmitt, Bridge Engineer
Chris Williges, Economics and Statistics

DOT
Christopher Kuhn, Sr. Project Manager

2. Study Area, Purpose and Need
    a. Not intended to compete with the capacity potential of I-80, just more to augment its capacity and reliability - especially with I-80 planned widening.
    b. Employment has increased 4 times from 2015 to 2023.
    c. Traffic volumes have increased 58%.
    d. Average weekday speeds on I-80 drop by 40% in the AM peak and 46% in the PM peak.

e. 7 deaths on I-80 between Vista Blvd. and USA Parkway over 5 years.
f. Incidents can cause speeds on 1-80 to drop by over 90% or halt traffic all together.
g. 85% of trips from the Truckee Meadows service area to TRIC start north of I-80
    i. I-80 is the only east/west connection. No alternative route.
    ii. Increased demand on Vista Blvd., Sparks Blvd., Pyramid Hwy, etc.
    - *Comment that purpose and need needs to reflect the resiliency factor of this new connection.*

3. Study Goals and Objectives
    a. Reduce congestion
    b. Increase reliability
    c. Support economic growth
    d. Inform regional decisions

4. Previous Planning Endeavors
    a. Other Studies
        i. EDAWN and City of Sparks have conducted very high-level alignment evaluations for different purposes. Neither was an in-depth transportation analysis.
        ii. I-80 Corridor Study looked at a high-level, conceptual analysis of other connection alignments
        iii. Potentially something in RTC archives in 2018 (web cam drive of potential alignment)

5. Project Scope Overview

Current RTC Contract

Step 1 *(Current Effort)* *Corridor Traffic Evaluation*	Data Collection and Initial Field Review
	Develop Constraints Mapping
	Travel Demand Modeling
	Land Use Scenarios *(optional)*
	Geotechnical Mapping
Step 2 *Alignments and Analysis*	Topographic Survey
	Corridor Evaluation (Quantm)
	Benefit-Cost Analysis
	Sketch-Level Toll Feasibility *(optional)*
	Hydrology Report
Step 3 *Corridor Refinement*	Corridor Refinement
	Right-of-Way & Utilities
	Environmental Analysis *(Pre-NEPA/PEL)*

Agency and Stakeholder Coordination
Public Outreach

- *Question regarding TDM to use for the need. We would focus on the study area and do additional analysis around the study area.*

6. Agency Coordination and Participation
    a. Technical Advisory Committee (TAC): 3 +/- Meetings During Step 1.
    b. Local agencies, NDOT, BLM, TMRPA, Utilities, Tribes, etc.

7. Concurrent/Adjacent Project Coordination
    a. Draft EA for I-80 East - will go to FHWA and public - should be available for public review in upcoming months.
    b. Existing, or proposed, utility corridors within the area.

    - *Zayo? From Apple center?*

    c. Pieces of 'middle mile' project - Ryan Hornback at NDOT may know more.
    d. Send request to Chris Kuhn for any available studies related to South Meadows Extension Feasibility Study.
    e. Power lines - many in the area.
    f. BLM - Research existing ROW grants, etc

    - *UP Passenger Rail. NDOT is initiating a study.*
    - *Pieces of 'middle mile' project - Ryan Hornback at NDOT may know more.*

8. Public Outreach
    a. Prepare a Public Outreach Plan for review.
    b. One (1) public information meeting.
        i. Include NABs and CABs
        - *City of Sparks does not have NABs or CABs, so would need to come up with a different approach to engage City of Sparks residents.*
        - *Will need to put forth special effort to engage Sparks/Spanish Springs residences.*
        - *Need to be very clear about what we are looking to receive input on and what we're going to do with it. Be able to consider implementing what the public suggests.*
    - *La Posada is very busy now, so it is anticipated that public will be very interested in the project.*

- *Outreach probably makes most sense around Step 3 of the process - more info available.*
- *I-80 public hearing - tentative April-May '25 - pending guidance from new administration. Maybe provide flyer for I-80 public hearing*

9. Study Schedule Review

Step 1 Corridor Evaluation and Traffic	3-6 Months
Step 2 Alignment and Analysis	4-5 Months
Step 3 Feasibility Refinement	3-4 Months

10. Next Steps (4 Week Lookahead)
    a. Assemble background data and information
    b. Calibrate the TransCAD Travel Demand Model (TDM)
    c. Initiate TDM Forecasts

11. Comments/Questions?
    - *HDR - One suggestion is to look at user benefits when using TransCAD model. WR to have specific coordination regarding this.*
    - *NDOT - Will you be evaluating multiple locations? Yes*
    - *Apple is open to discussions, and potentially a road tying into their access road.*
    - *More important to make the connection, rather than a large 4-lane facility if it's not needed - $500-600 million won't happen.*
    - *Reevaluate any previously determined constraints, previous efforts likely driven based on land development.*

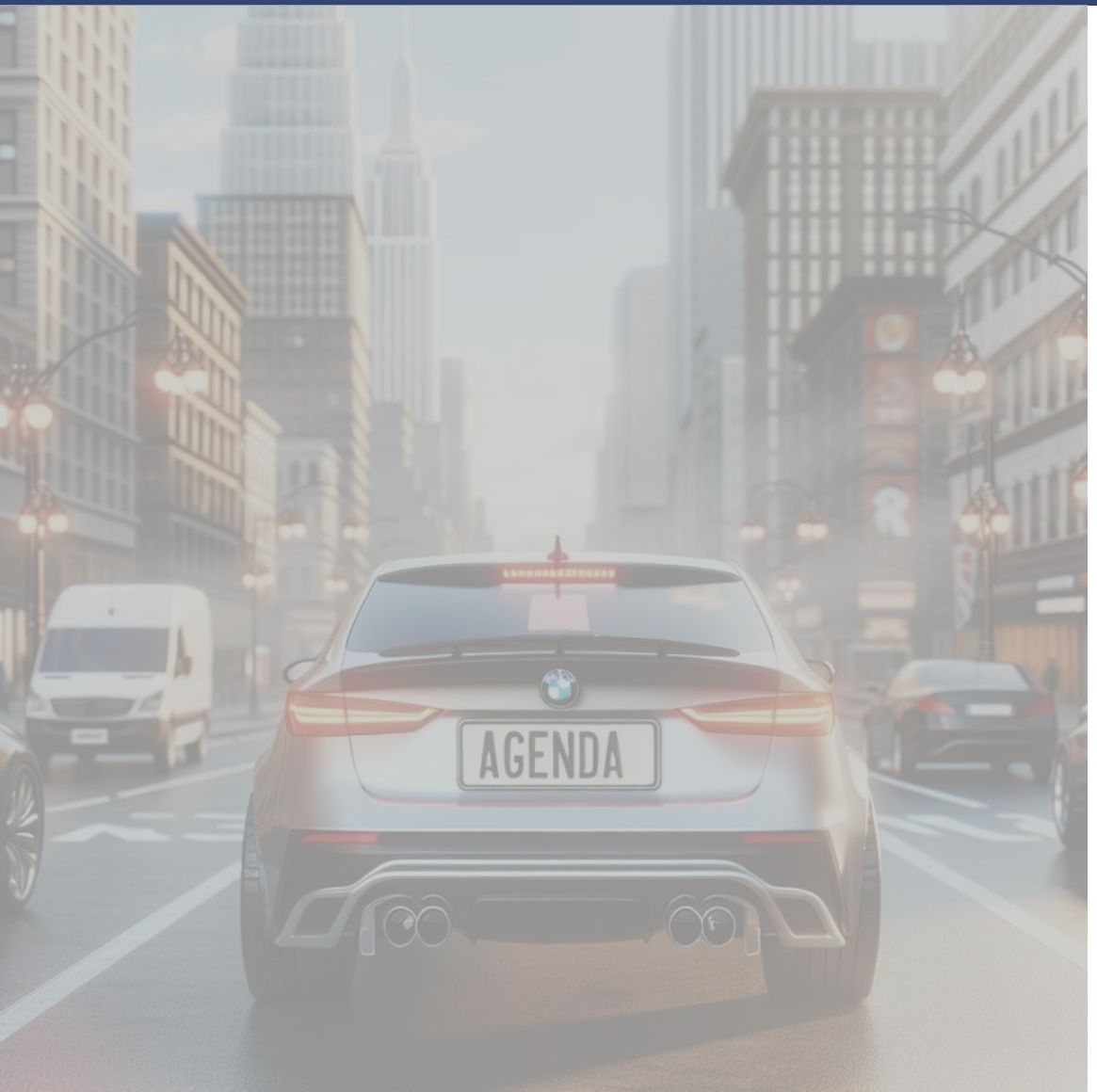
La Posada-TRIC Connection Alignment and Feasibility Study

Project Kick-Off Meeting

February 12, 2025



Meeting Agenda



- Introductions and Study Team
- Study Area, Purpose and Need
- Study Goals and Objectives
- Previous Planning Endeavors
- Project Scope Overview
- Agency Coordination and Participation
- Concurrent/Adjacent Project Coordination
- Public Outreach
- Study Schedule Review
- Next Steps (4 Week Lookahead)

Introductions and Study Team

STAKEHOLDERS

-City of Sparks	-NV Energy
-Washoe County	-SHPO
-Storey County	-TRIC
-FHWA	-Tesla
-BLM	-Apple
-Resource Agencies	-TMRPA
-Tribes (5)	-Governer's Office

Principal-in-Charge/Project Manager

- Bryan Gant, PE*

QA/QC

- Jason Lemons, PE(CA)

LEGEND
- Wood Rodgers, Inc.
- HDR
- CDM Smith
- BEC
- MJT Consulting
- Newfields
- Trimble
- G2 Archeology
- Caliper
- *Key Staff

Alt. Development
- Mike Davidson, PE*

Roadway Alignments
- Brian Martinezmoles, PE
- James Pangburn, PE(CA)
- Megan Berry, PE

Quantm Optimization
- Trimble (Quantm)
- Lorenzo Sanchez

Cost Estimates
- Keith Ferguson, PE

Surveying & Mapping
- Kevin Almeter, PLS
- Michael Detwiler, PLS, CP

Traffic Modeling
- Mario Tambellini, PE(CA)*
- Caliper

Structures
- Craig Smart, PE
- Troy Martin, PE, CPM
- Chris Hodge, PE

Geotechnical
- Mickey Smith, PE
- Justin McDougal, PE
- Jesse Ruzicka

Drainage
- James Springgate, PE

PEL/NEPA
- Zach Bentzler*

PEL Documentation
- Michael LaBianca, AICP

Cultural Resources
- Brock Giordano, RPA(ID)
- Ann Keen
- G2 Archeology

BLM Resources
- Danny Rakestraw

Biological Resources
- Vivian Sam

Waters of the US
- Danny Rakestraw

Section 4(f)/6(f)
- Diane Nulton

Hazardous Materials
- Stefanie Costa Rica, CEM

Land Use Evaluation
- Laurie Cummings, AICP, CTP, ENV SP

Quality Control
- Tim Chamberlain

Strategic Services
- Brian Stewart, PE, PMP*

Land Use/Master Planning
- Andy Durling, AICP*
- Stacie Huggins

Risk Analysis
- Blane Long, CVS
- Jim Gallegos, PE, PMP

Cost/Benefit Analysis
- Roberto Alvarado-Vazquez, EIT
- Chris Williges

Tolling & Revenue
- Terri Slack, PMP*
- Travis Dunn, PhD

Constructibility
- Keith Ferguson, PE
- Judy Tortelli, PE

Alternative Delivery
- John Munoz

Legislative Support/P3
- Gail Lewis

Grant Funding
- Chris Primus
- Derek Kirkland, AICP

Right-of-Way
- Alis Wishner, SRWA, RW-NAC

Outreach & Engagement
- Bryan Gant, PE*

Public Outreach
- McKenna Temen
- Lauren Ball
- Amber Harmon

BLM Coordination
- Mark Hall, PhD, RLA*

Tribal Coordination
- Leslie Burnside

NDOT Coordination
- Lynnette Russel, PE, PMP

FHWA Coordination
- Jessica Hekter, AICP

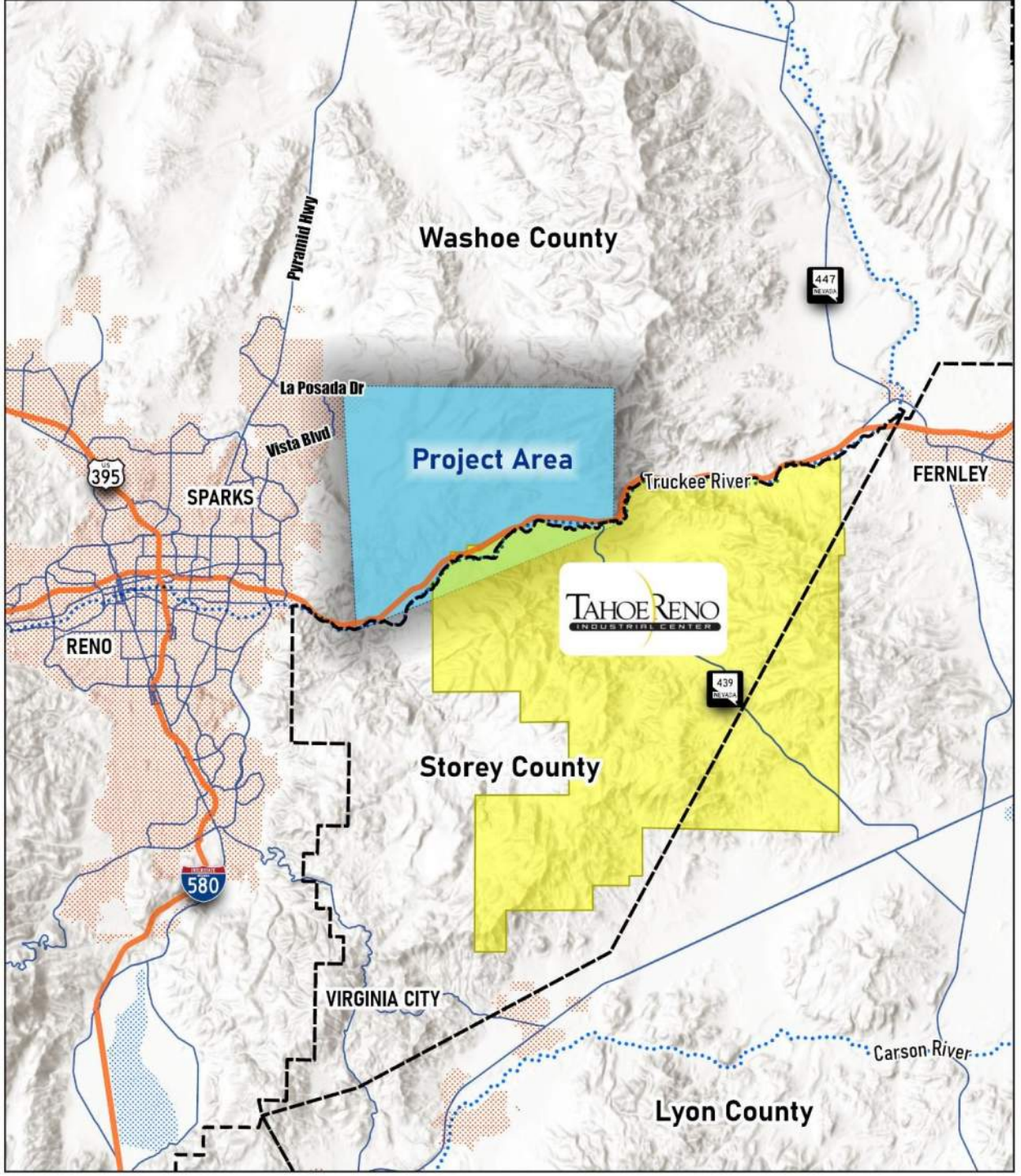
Visualizations
- Devin Crowley



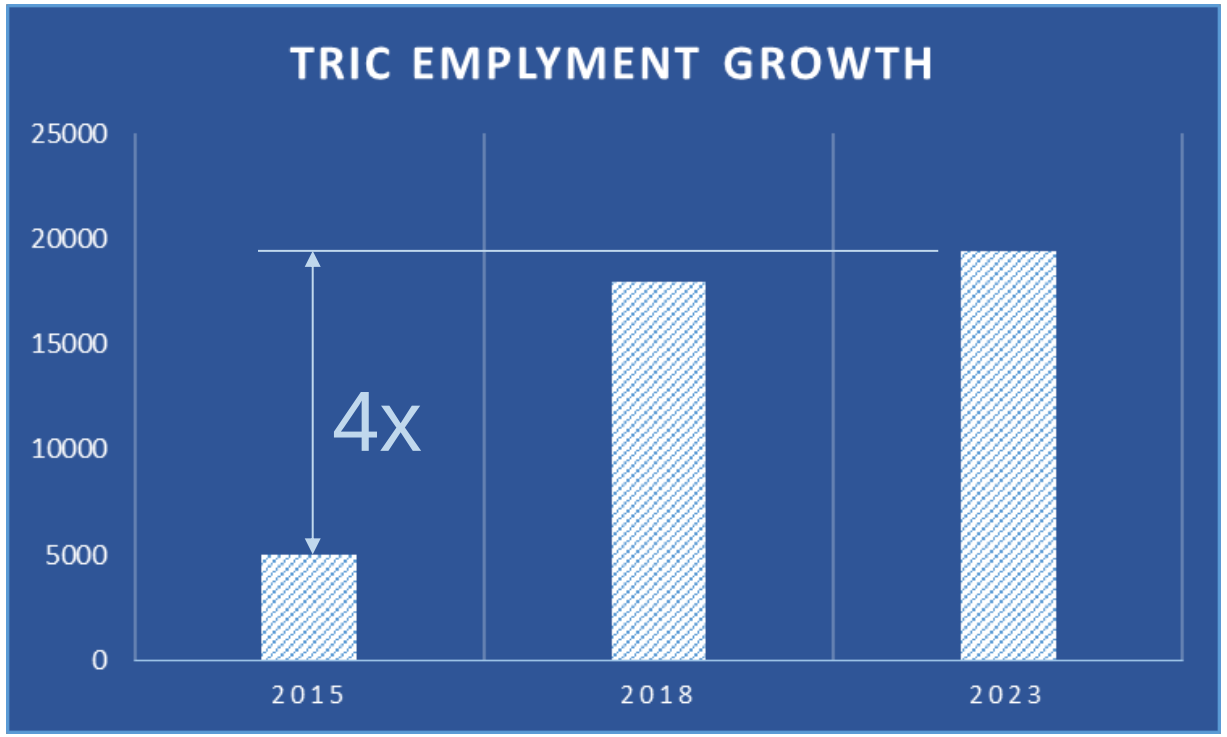
Study Area

Study Limits:

- South – Interstate 80
- North – Just north of La Posada Dr.
- West - Eastern Edge of Urbanized Sparks
- East – USA Parkway



Project Purpose and Need



Project Need:

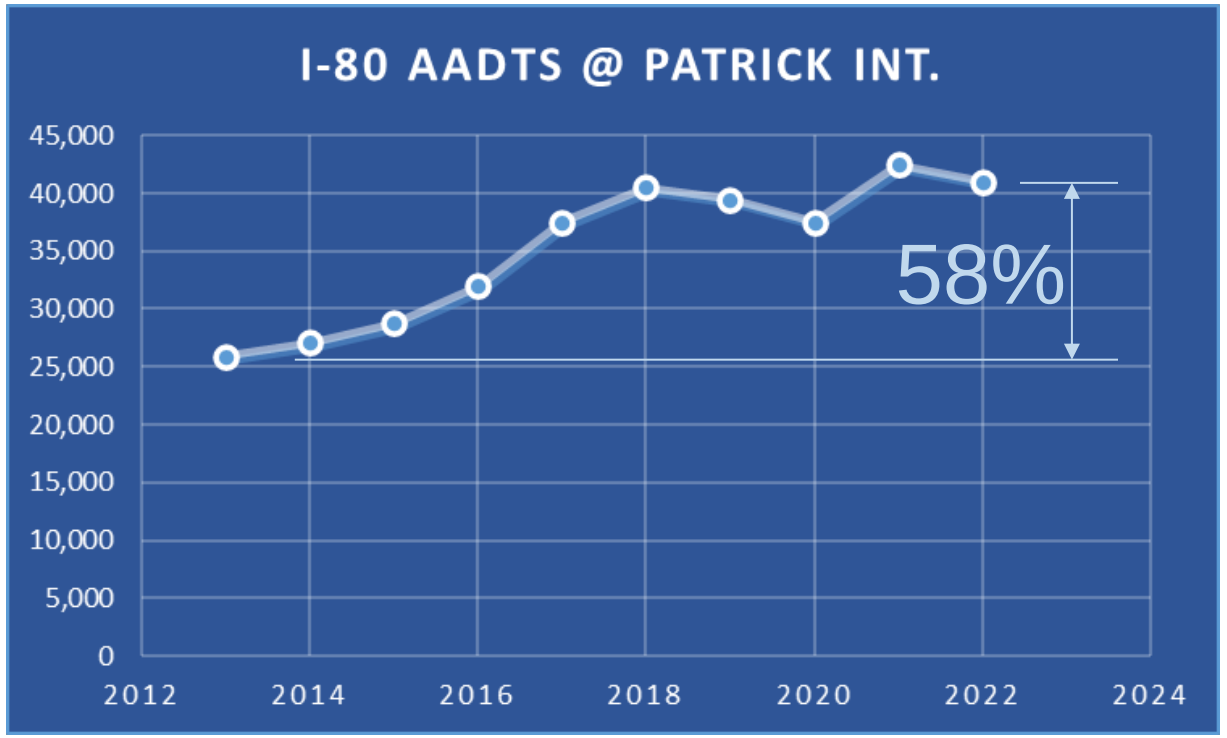
*TRIC employment increased by nearly **4** times between 2015 and 2023*

Wikipedia/Bureau of Labor Statistics

Project Need:

***58%** traffic growth on I-80 between 2013 and 2022*

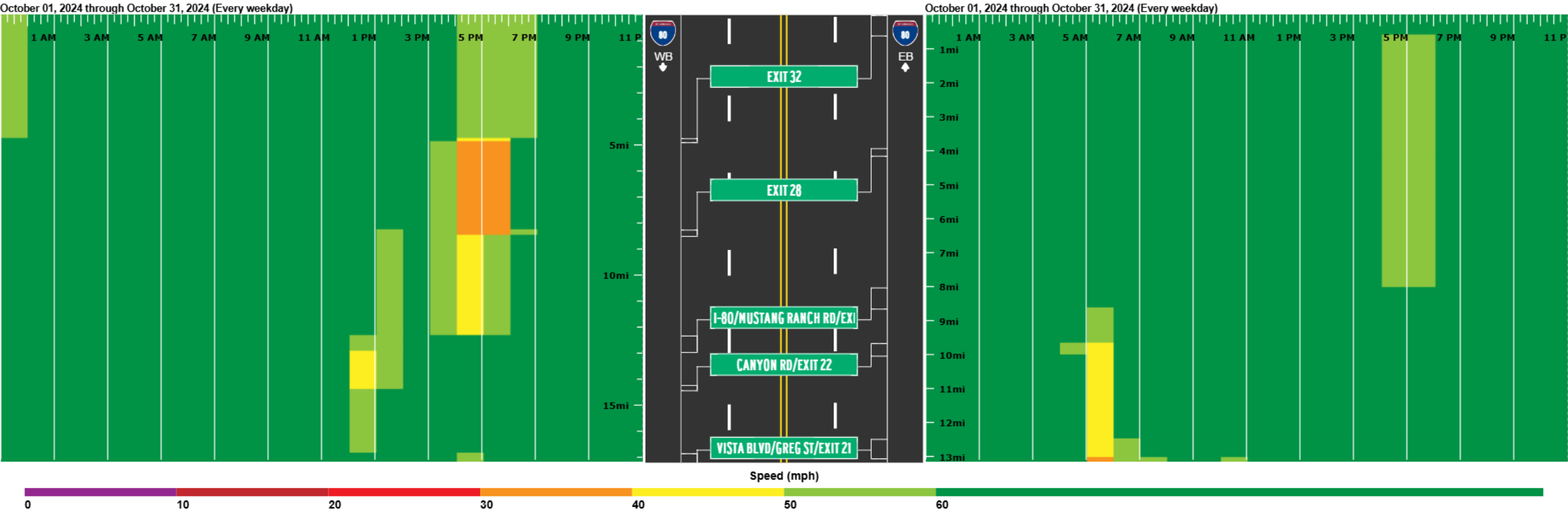
NDOT Trina



Project Purpose and Need

Speed for I-80 between VISTA BLVD/GREG ST/EXIT 21 and EXIT 32 using NPMRDS from INRIX (Trucks and passenger vehicles) data

Averaged by 1 hour for October 01, 2024 through October 31, 2024 (Every weekday)



Project Need:

Avg. weekday speeds on I-80 drop by 40% in the AM peak, and 46% in the PM peak.

INRIX

Project Purpose and Need





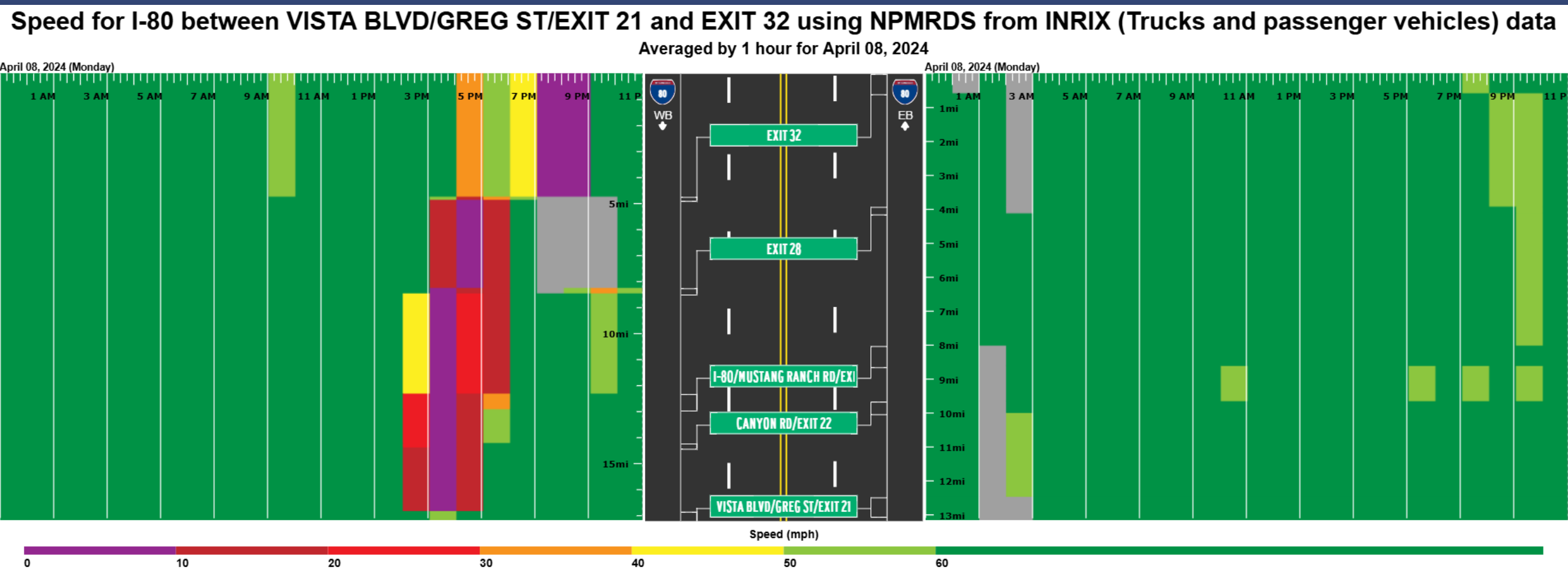


Project Need:

7 deaths on I-80 between Vista Dr. and USA Parkway (2016-2020)

NDOT Traffic Safety Engineering

Project Purpose and Need



Project Need:

Incidents can cause speeds on I-80 drop by over 90% or halt traffic all together.

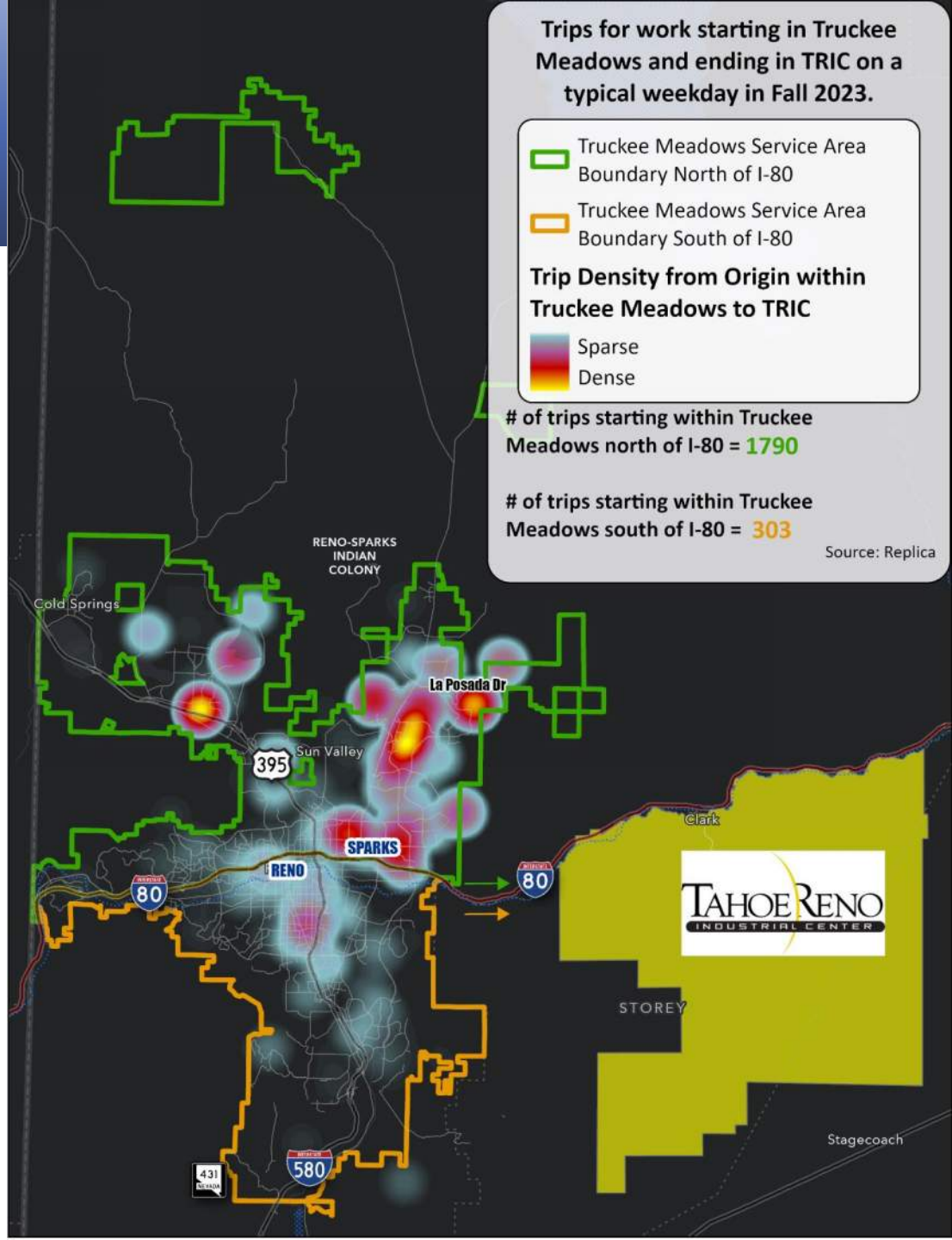
INRIX

Project Purpose and Need

Study Need:

85% of trips from the Truckee Meadows service area to TRIC start north of I-80

- *I-80 the only east/west connection, no redundancy or alternate routes.*
- *Increases demand on Vista Dr., Sparks Blvd., Pyramid Hwy.*



Study Goals and Objectives



Reduce Congestion



Support Economic Growth



Increase Reliability

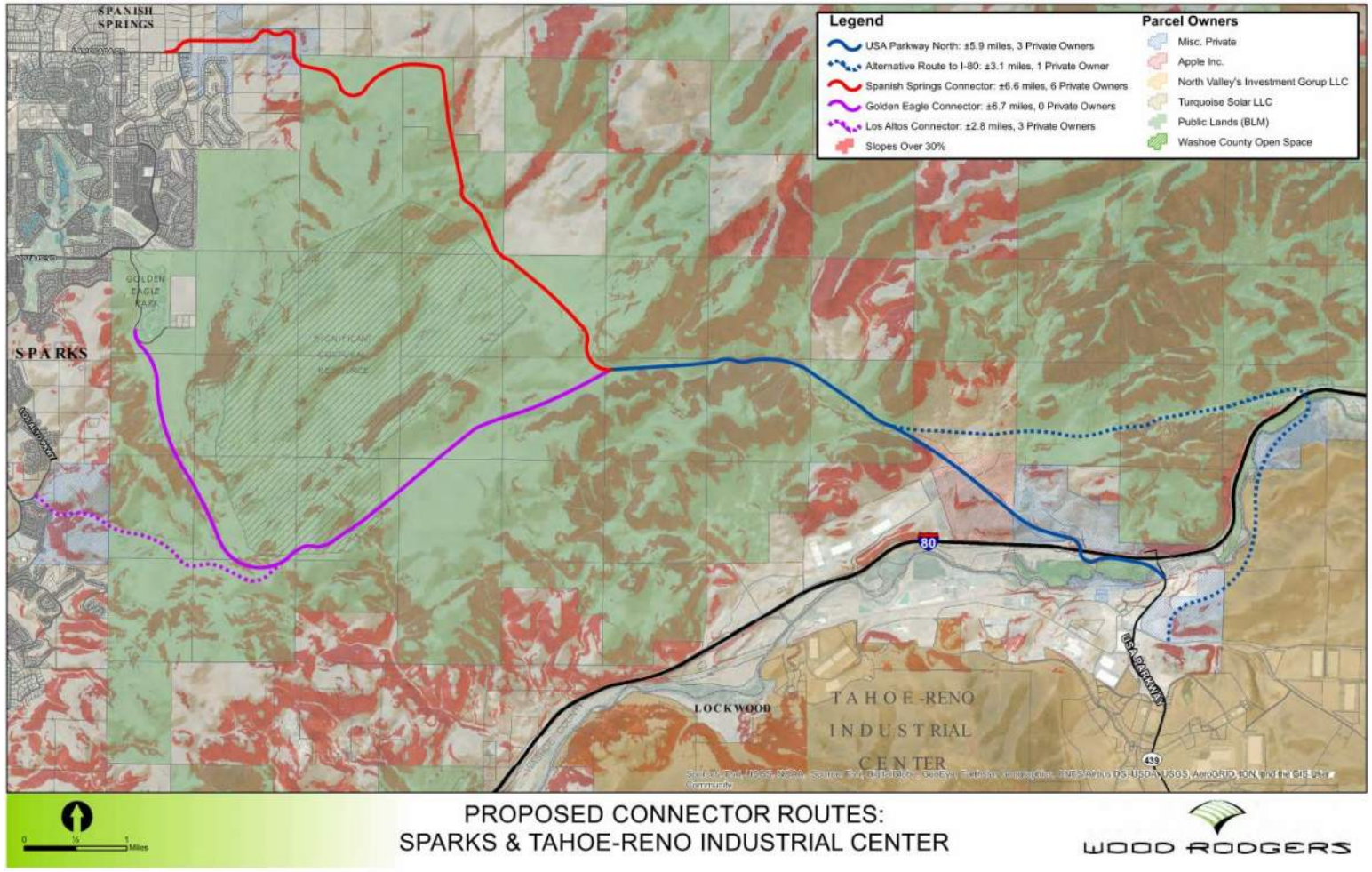


Inform Regional Decisions

Previous Planning Endeavors

High-level planning efforts:

- EDAWN
- City of Sparks
- Others?



Study Scope Overview

Step 1

Corridor Traffic Evaluation

What kind of traffic would new connection(s) attract?

Step 2

Alignments and Analysis

Where are some initial alignment corridors?

Step 3

Alignments and Analysis

What does overall feasibility look like?

Study Scope Overview

Current RTC Contract	Step 1 *(Current Effort)*	Data Collection and Initial Field Review	Agency and Stakeholder Coordination Public Outreach
		Develop Constraints Mapping	
		Travel Demand Modeling	
		Land Use Scenarios *(optional)*	
	Step 2	Geotechnical Mapping	
		Topographic Survey	
		Corridor Evaluation (Quantm)	
		Benefit-Cost Analysis	
		Sketch-Level Toll Feasibility *(optional)*	
	Step 3	Hydrology Report	
		Corridor Refinement	
		Right-of-Way & Utilities	
		Environmental Analysis *(Pre-NEPA/PEL)*	
		Feasibility Report	

TAC Roles and Responsibilities

The TAC is the venue to collaborate the process, inputs, and outputs.

- Provide input on the process
- Coordinate data needs
- Share technical input
- Collaborate on outreach

Concurrent/Adjacent Project Coordination

Are there any current and/or past relevant projects or studies underway that the team should be aware of??



Public Outreach



Public outreach includes:

- Developing a Public Outreach Plan
- One (1) public meeting
- Stakeholder coordination
- One-on-one meetings

Study Schedule

We Are Here

Feb. 2025	3-6 Months	+4-5 Months	+3-4 Months

Step 1 Corridor Evaluation and Traffic

Step 2 Alignments and Analysis

Step 3 Feasibility Refinement

PEL/NEPA (Future)

Stakeholder and Public Engagement

Next Steps

Study next steps (4 week lookahead):

- Assemble background data and information
- Calibrate the TransCAD Travel Demand Model (TDM)
- Initiate TDM Forecasts

QUESTIONS???

Bryan Byrne, PE
Project Manager

Regional Transportation Commission
of Washoe County

bbyrne@rtcwashoe.com
775.335.1865

Building A Better Community Through Quality Transportation
rtcwashoe.com

Northeast Connector Alignment and Feasibility Study
Technical Advisory Committee Meeting #3 Minutes

7/24/2025

1. Introductions and Study Team

Attendance:

Wood Rodgers
Bryan Gant, PE, Project Manager
Mario Tambellini, Project Engineer
Leslie Burnside, Sr. Env. Planner
Mike Davidson, Principal Engineer
Anthony Lopez, Assistant Engineer

RTC Washoe
Bryne Byrne, Project Manager
Dale Keller, Deputy Executive Director
Amanda Callegari, Engineering Mgr.
Michele Payne, Property Analyst

Storey County
Austin Osborne, County Manager
Kathy Canfield, Planning Manager
Lara Mather, Business Development

CDM Smith
Lynnette Russell, Sr. Project Manager

City of Sparks
Amber Sosa, City Engineer
Andrew Jayankura, Transportation Manager

HDR
Nicholas Eggen, PM, Structures group
Blake Schmitt, Bridge Engineer
Chris Williges, Economics and Statistics

NDOT
Christopher Kuhn, Sr. Project Manager

Washoe County
Michon Reede, Associate Engineer

2. Study Overview

The purpose of the meeting was to review the study area, purpose, and goals. Revisit TAC roles and responsibilities. Present level one corridor traffic screening results. Discuss conceptual alignment evaluation and outline next steps.

Study Area: Bounded by I-80 (South), La Posada (North), Sparks urban edge (West), and USA Parkway (East).

Purpose: Improve connectivity between the Tahoe-Reno Industrial Center (TRIC) and Sparks/Spanish Springs.

Need: I-80 congestion, lack of alternate east-west routes, and high commuter demand from Truckee Meadows to TRIC.

3. Goals & Objectives

Reduce congestion, support economic growth, improve transportation reliability, and inform regional planning decisions.

4. TAC Roles & Responsibilities

Collaborate on the study process and data. Share technical input. Coordinate public outreach.

5. Traffic Screening & Modeling

A project-specific travel demand model was calibrated using the RTC Washoe 2022 model as a base. The model was calibrated following the NDOT Traffic Forecasting Guidelines. Origin-destination data from Replica platform was used as part of the calibration. Seven corridor alternatives were analyzed for Average Daily Traffic (ADT) as the foundation of level one screening.

Seven corridor alternatives and combinations were modeled to test potential traffic benefits:

- Alternative 1: La Posada Connector – 4,575 ADT
- Alternative 2: Vista Blvd. Connector – 3,919 ADT
- Alternative 3: Los Altos Parkway Connector – 3,224 ADT
- Alternative 4: Prater Way Connector – 3 ADT
- Alternative 5: La Posada & Vista Connector – 3,509/2,230 ADT (used to test both corridors together)
- Alternative 6: La Posada & I-80 Connector – 4,434/52 ADT (used to test demand for N/S travel)
- Alternative 7: Vista Blvd. Connector with La Posada Connection – 3,952/139 ADT

Alternatives 1-4 are really standalone alternatives and alternatives 5-7 were run to test other options. Takeaways include 1) the La Posada Connector attracted the highest ADT with Vista Boulevard close, attracting 14% less ADT than La Posada. Los Altos was third at 30% less ADT than La Posada and Prater Way attracts almost no traffic.

Based on these modeling results, there was agreement to screen out Alternatives 3-7 and advance Alternatives 1-2 to level two screening.

6. Conceptual Alignment Evaluation

Preliminary alignment analysis was started using the Quantm Alignment Optimization Tool. The model considers terrain, environmental constraints (ACEC, NCA), and cost. Key findings: Quantm favored the plateau north of La Posada for elevation gain, bringing that concept further north than originally envisioned, although La Posada options in the top five do go south akin to the Vista Boulevard corridor alignment. The Vista Boulevard corridor alternative goes south of the ACEC and generally favors lower overall terrain than La Posada. The Vista Boulevard option showed lower conceptual cost (~14% less than La Posada). Travel time impacts traffic volume significantly and travel times/ADTs may change with further corridor alignment refinement.

7. Stakeholder Feedback

The TAC expressed interest in evaluating Waltham/Patrick interchange as an eastern terminus due to increased traffic and TRIC development. In addition, it was suggested to test a western connection between Los Altos and Wingfield Parkway, south of the Red Hawk Hills golf course.

8. Next Steps

Run additional traffic model iterations. Finalize geometric criteria and cross-sections. Integrate environmental and other constraints into corridor evaluation. Coordinate with RTC on funding discussions. Consider public outreach before end of 2025 to clarify alignment options and gather feedback.

Sparks-TRIC Connection Alignment and Feasibility Study

Technical Advisory Committee Meeting #2

July 24, 2025



Meeting Agenda

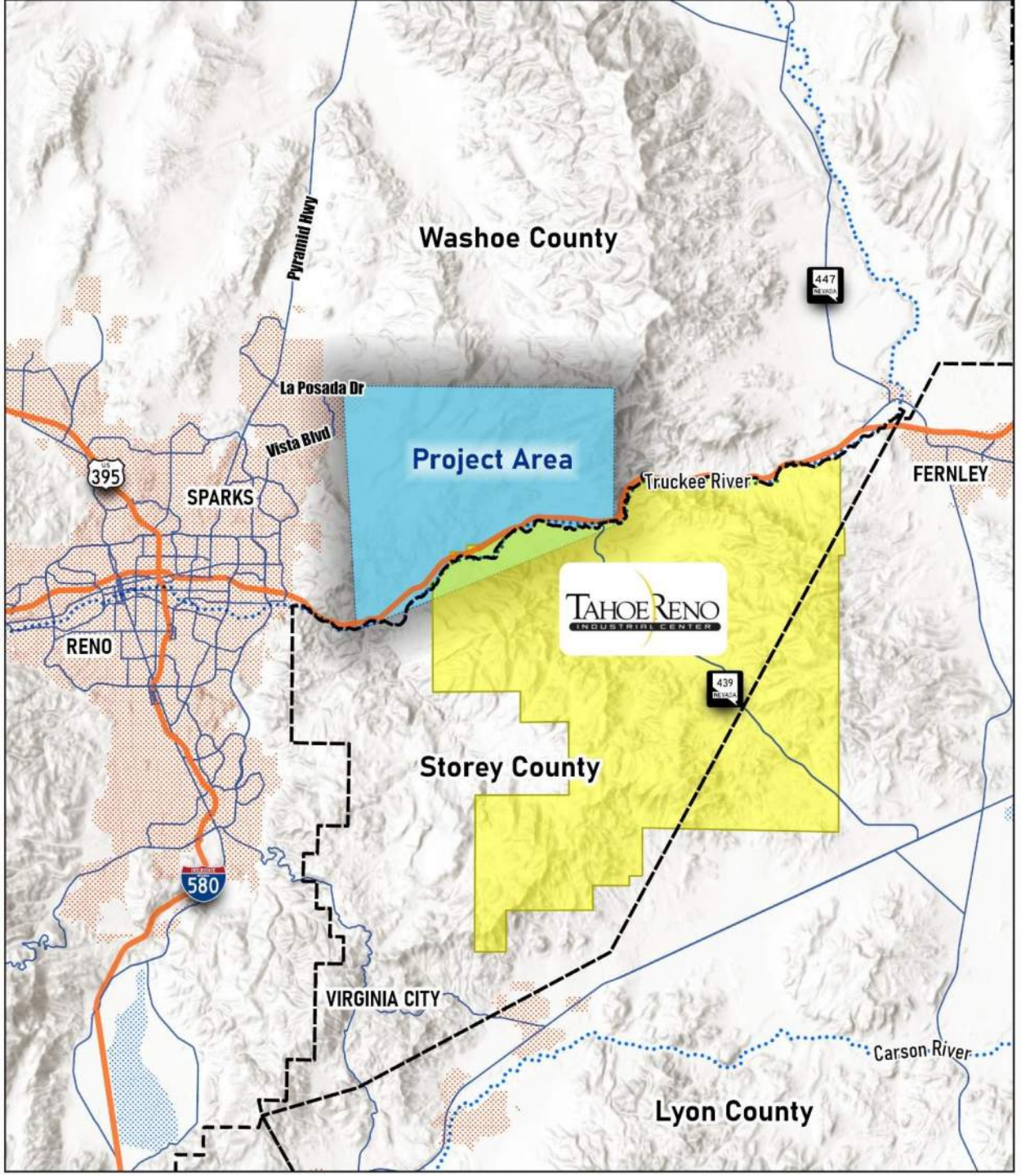


- Introductions
- Study Area, Purpose and Need
- Study Goals and Objectives
- TAC Roles and Responsibilities
- Study Schedule Review
- Corridor Traffic Screening
- Conceptual Alignment Evaluation
- Next Steps

Study Area

Study Limits:

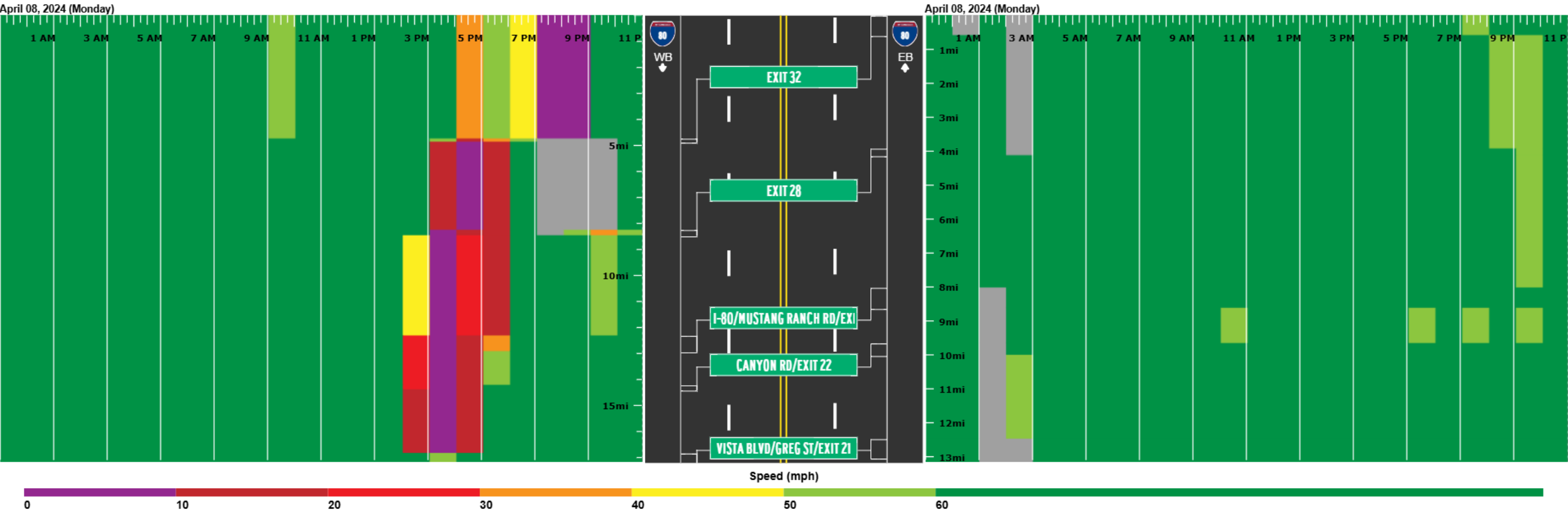
- South – Interstate 80/Truckee River
- North – Just north of La Posada Dr.
- West - Eastern Edge of Urbanized Sparks
- East – USA Parkway



Project Purpose and Need

Speed for I-80 between VISTA BLVD/GREG ST/EXIT 21 and EXIT 32 using NPMRDS from INRIX (Trucks and passenger vehicles) data

Averaged by 1 hour for April 08, 2024



Project Need:

Incidents can cause speeds on I-80 drop by over 90% or halt traffic all together.

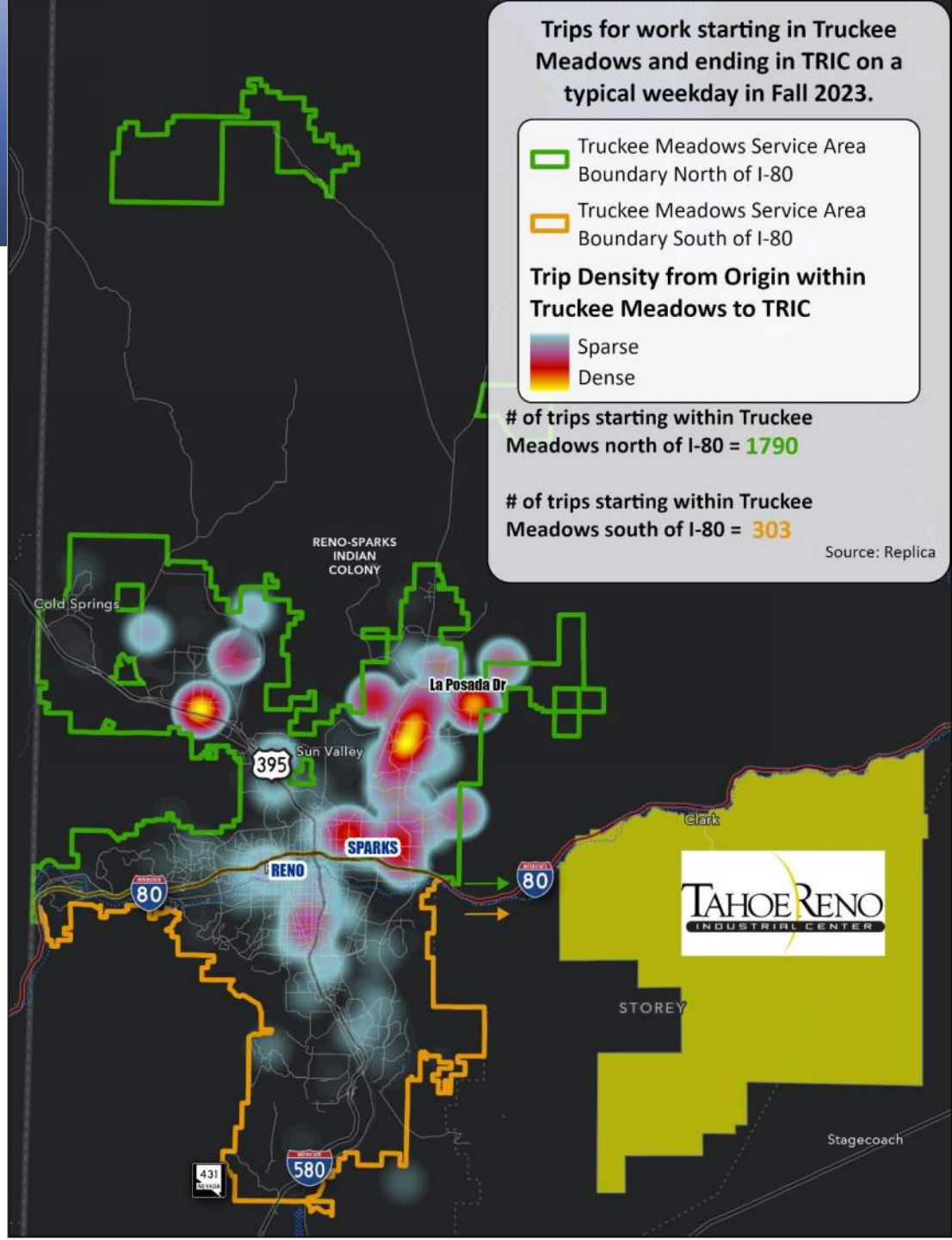
INRIX

Project Purpose and Need

Study Need:

85% of trips from the Truckee Meadows service area to TRIC start north of I-80

- *I-80 is the only east/west connection, no redundancy or alternate routes.*
- *Increases demand on Vista Dr., Sparks Blvd., Pyramid Hwy., etc.*



Study Goals and Objectives



Reduce Congestion



Support Economic Growth



Increase Reliability



Inform Regional Decisions

TAC Roles and Responsibilities

The TAC is the venue to collaborate the process, inputs, and outputs.

- Provide input on the process
- Coordinate data needs
- Share technical input
- Collaborate on outreach

Study Schedule

We Are Here

Feb. 2025	3-6 Months	+4-5 Months	+3-4 Months

Step 1 Corridor Evaluation and Traffic

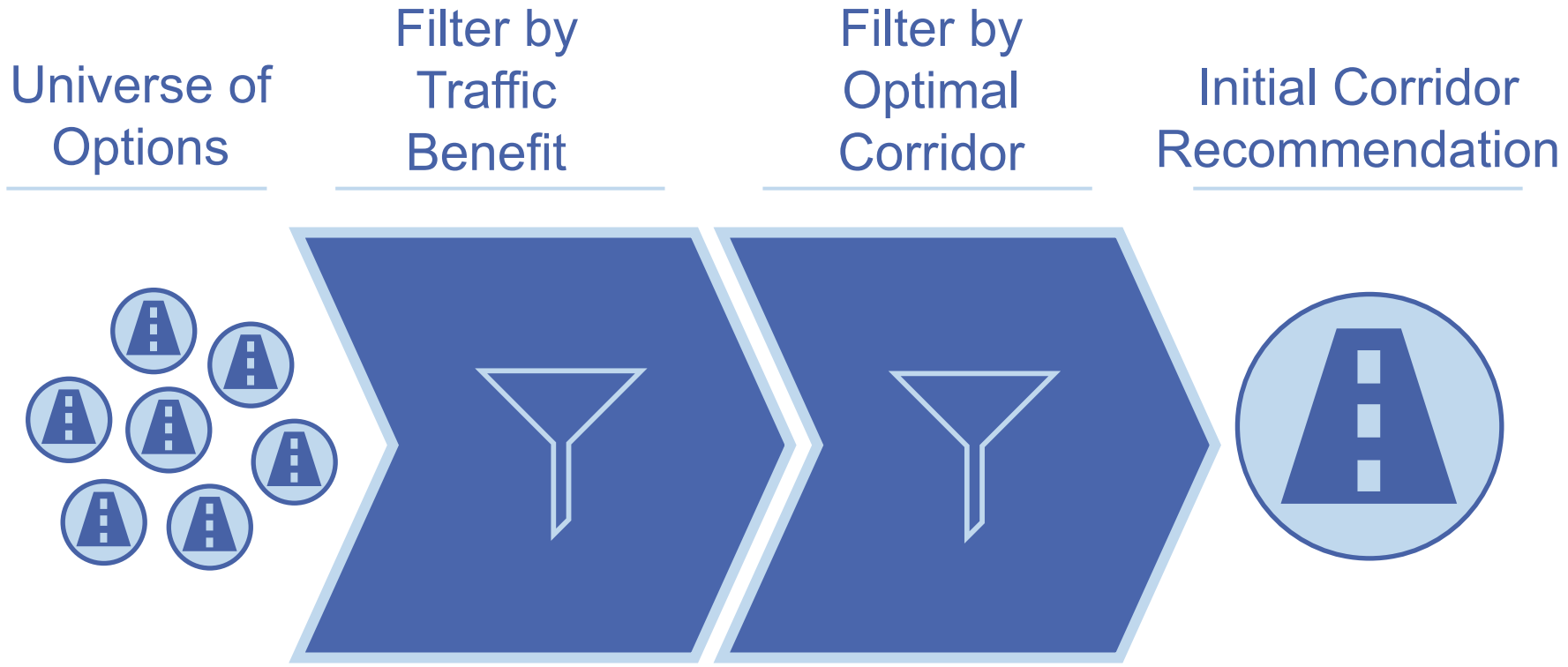
Step 2 Alignments and Analysis

Step 3 Feasibility Refinement

PEL/NEPA (Future)

Stakeholder and Public Engagement

Corridor Screening Process



Travel Demand Modeling

Performed a Study Area Calibration of the Base Year 2022 RTC Washoe TDM using NDOT Traffic Forecasting Guidelines:

- *Study area consisted of Pyramid Highway to the USA Parkway, and I-80 to La Posada Drive.*
- *Roadway/link volumes were calibrated against NDOT TRINA traffic counts.*
- *Origin-destination trips were calibrated against GPS big-data from the Replica platform.*
- *The calibrated TDM met all NDOT validation criteria.*



Alternative 1: La Posada Connector



Alternative 2: Vista Blvd. Connector



Alternative 3: Los Altos Pkwy. Connector



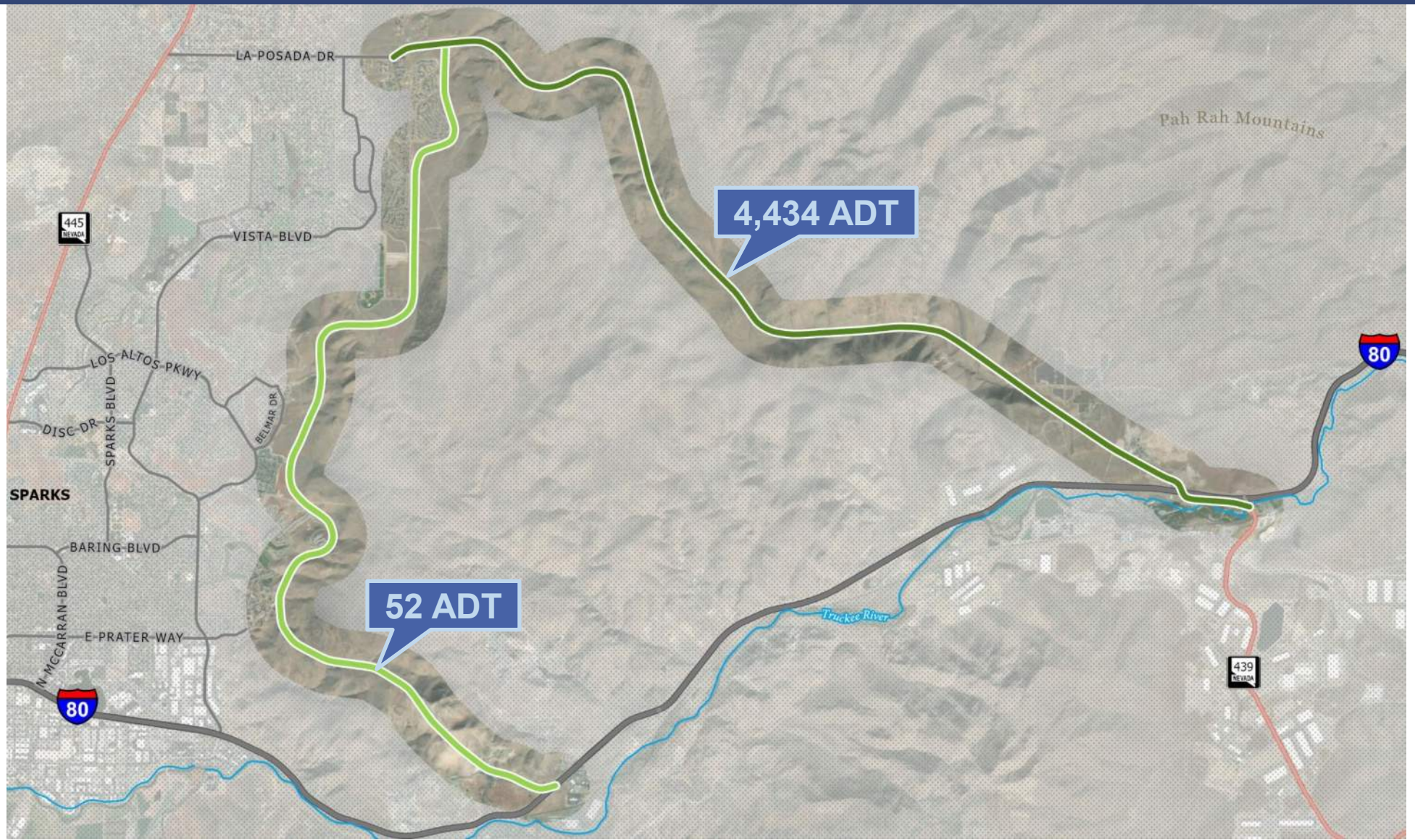
Alternative 4: Prater Way Connector



Alternative 5: La Posada & Vista Blvd. Connectors



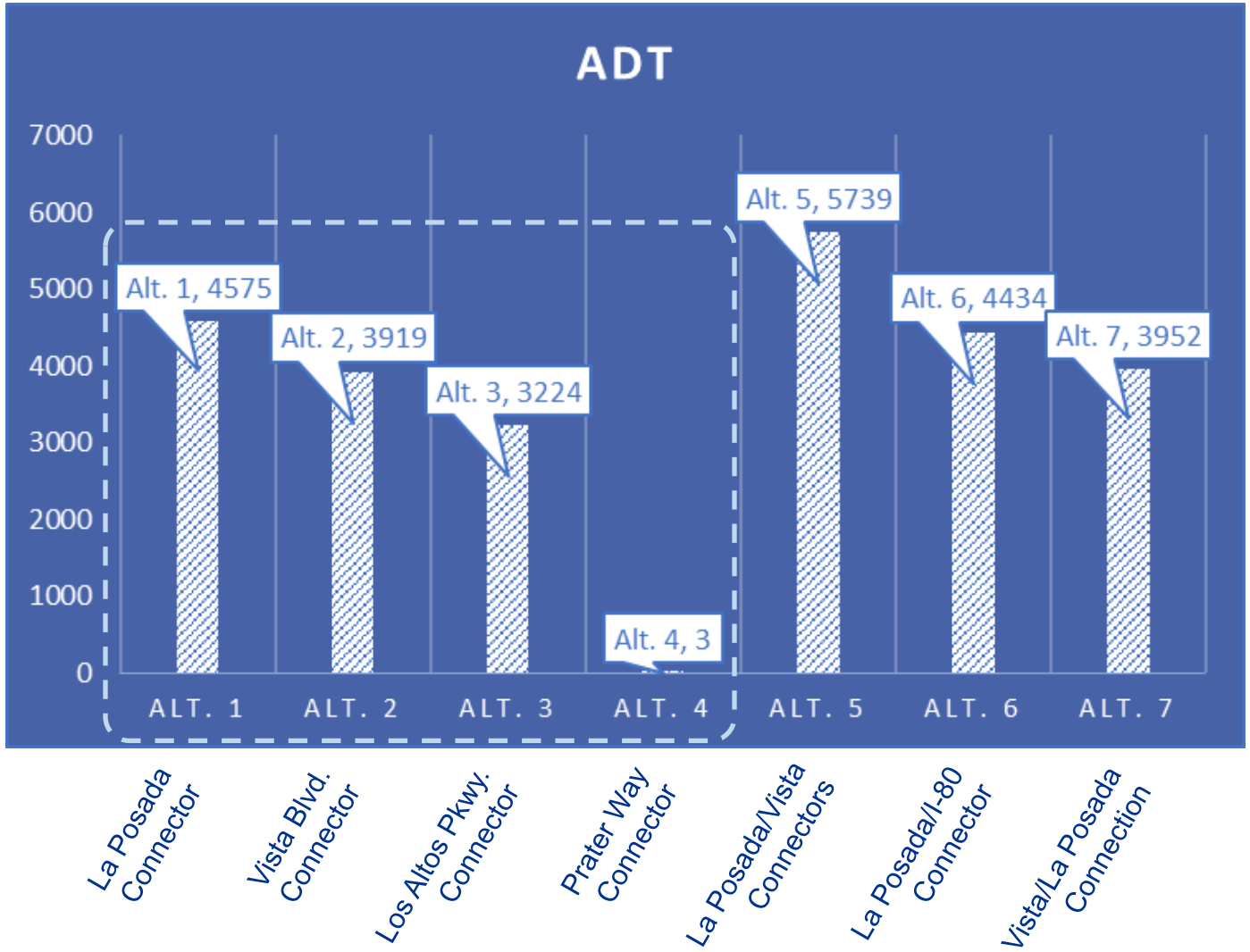
Alternative 6: La Posada & I-80 Connectors



Alternative 7: Vista Blvd. Connector with La Posada Connection



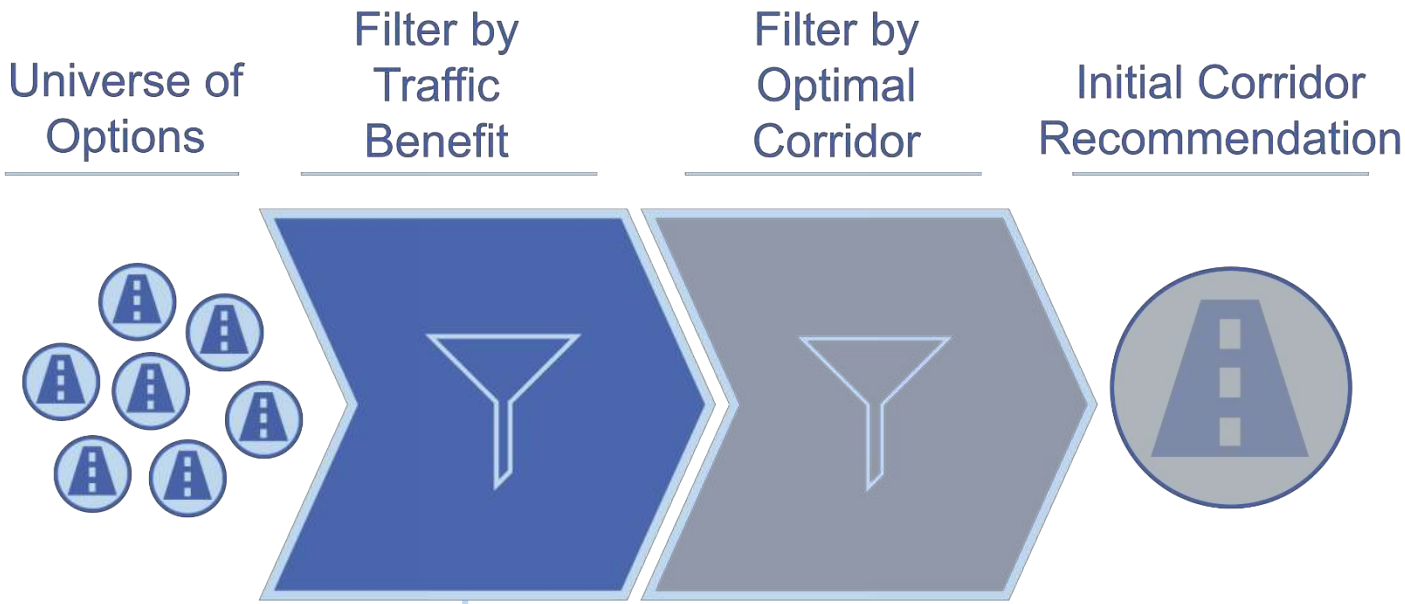
ADT Comparison



Alt.1-4 ADT Comparison:

- La Posada connection highest at **4,575 ADT**
- Vista connection close, attracting **14%** less ADT than La Posada
- Los Altos connection third at **30%** less ADT than La Posada
- Prater Way attracts almost **0** volume

Filter and Screen by Traffic Benefit



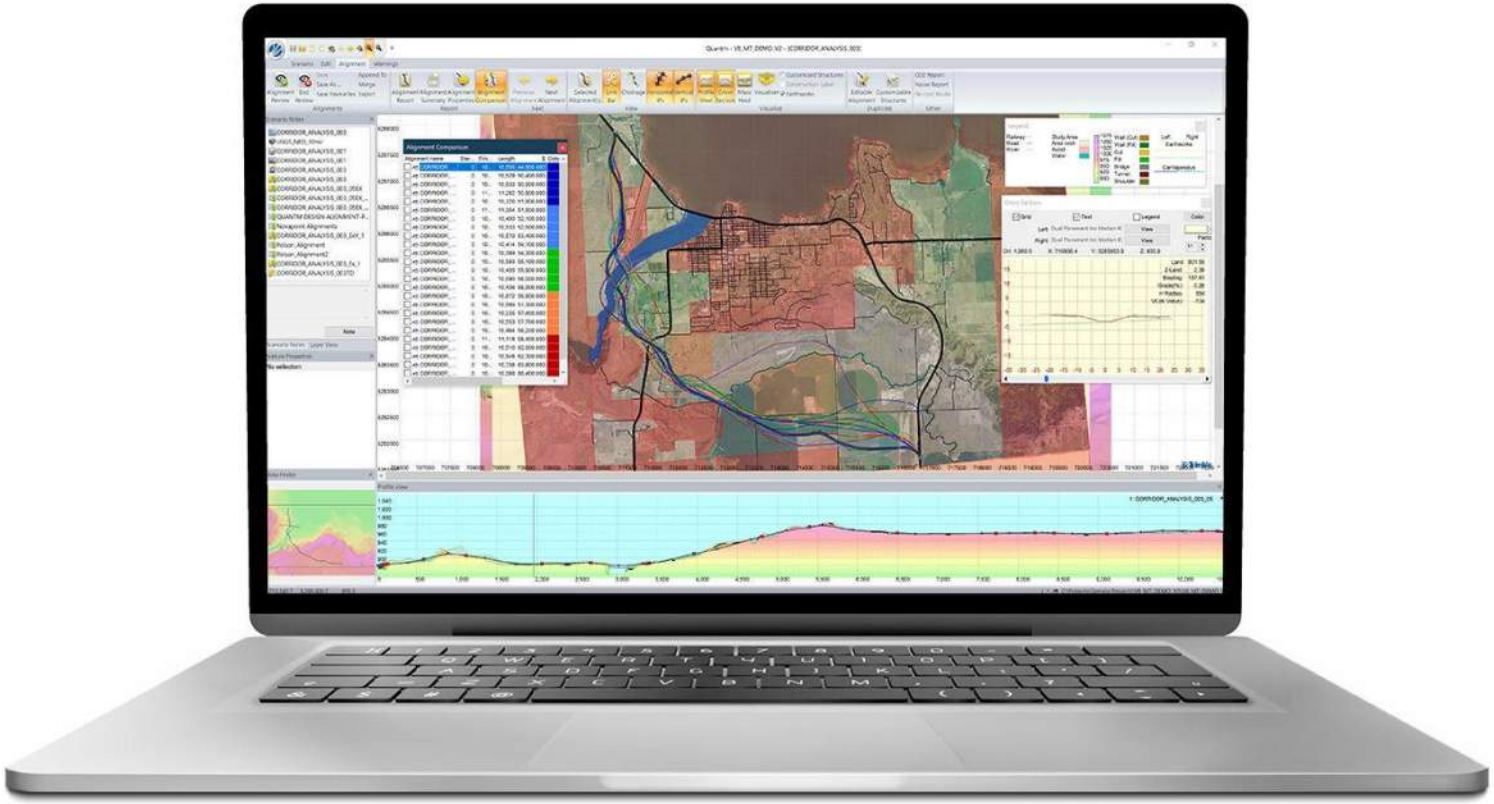
Screen out due to Traffic:

- ~~Los Altos Connector~~
- ~~Prater Way Connector~~
- ~~N/S I-80 Connector~~

Optimal Corridor Screening Process

Screening Factors & Approach:

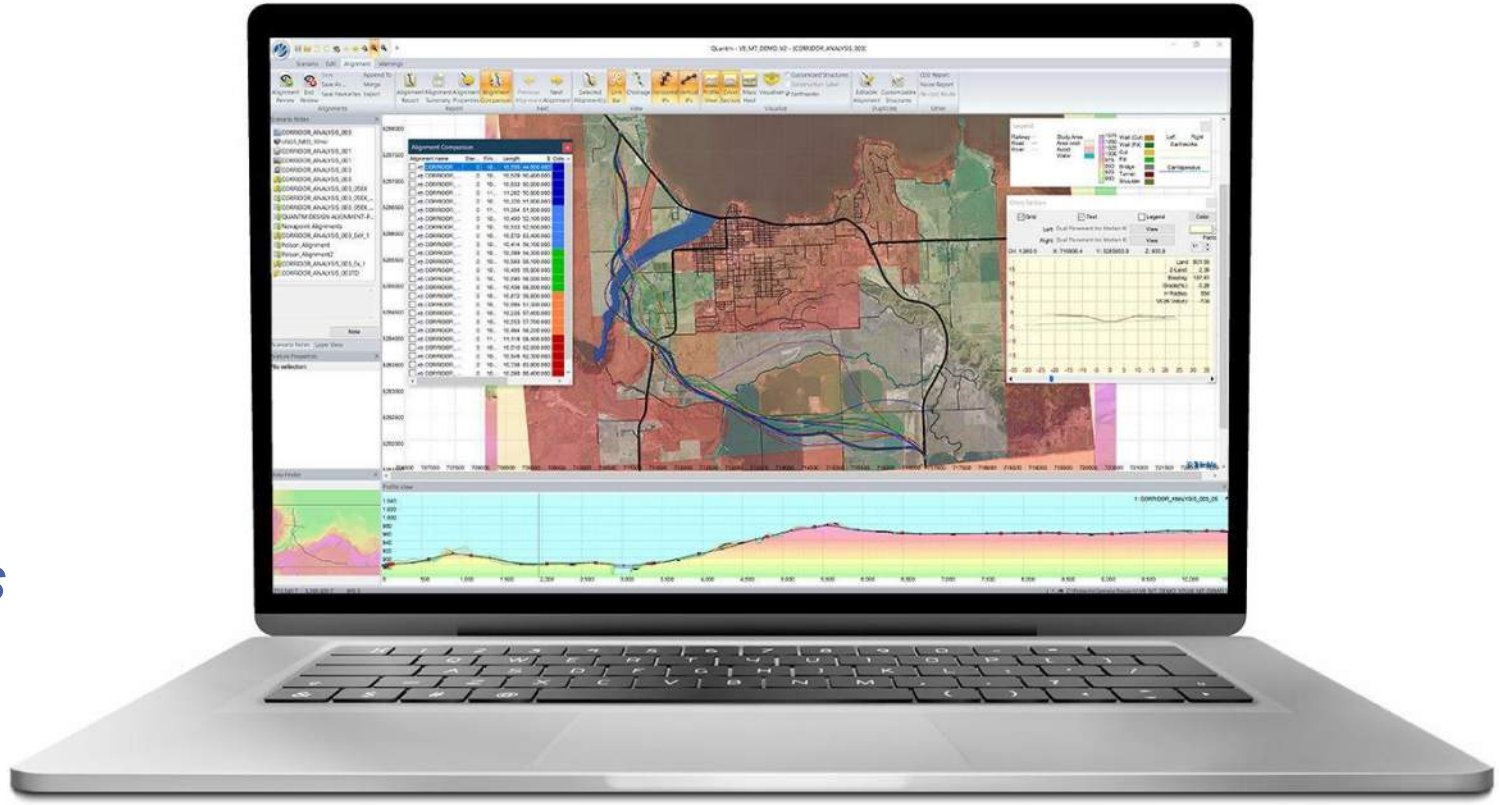
- *Constraint avoidance and environmental*
- *Earthwork and cost*
- *Constructability, maintainability, and other factors*
- *Apply Quantm alignment optimization tool*



Source: Trimble

Quantm Data Inputs

- *Terrain (e.g. USGS topo, Lidar)*
- *Costs (cut, fill, bridge, tunnel, walls, etc)*
- *Geometric criteria*
- *Proposed cross-sections*
- *Constraints and avoidance areas*
- *Waypoints and preference areas*

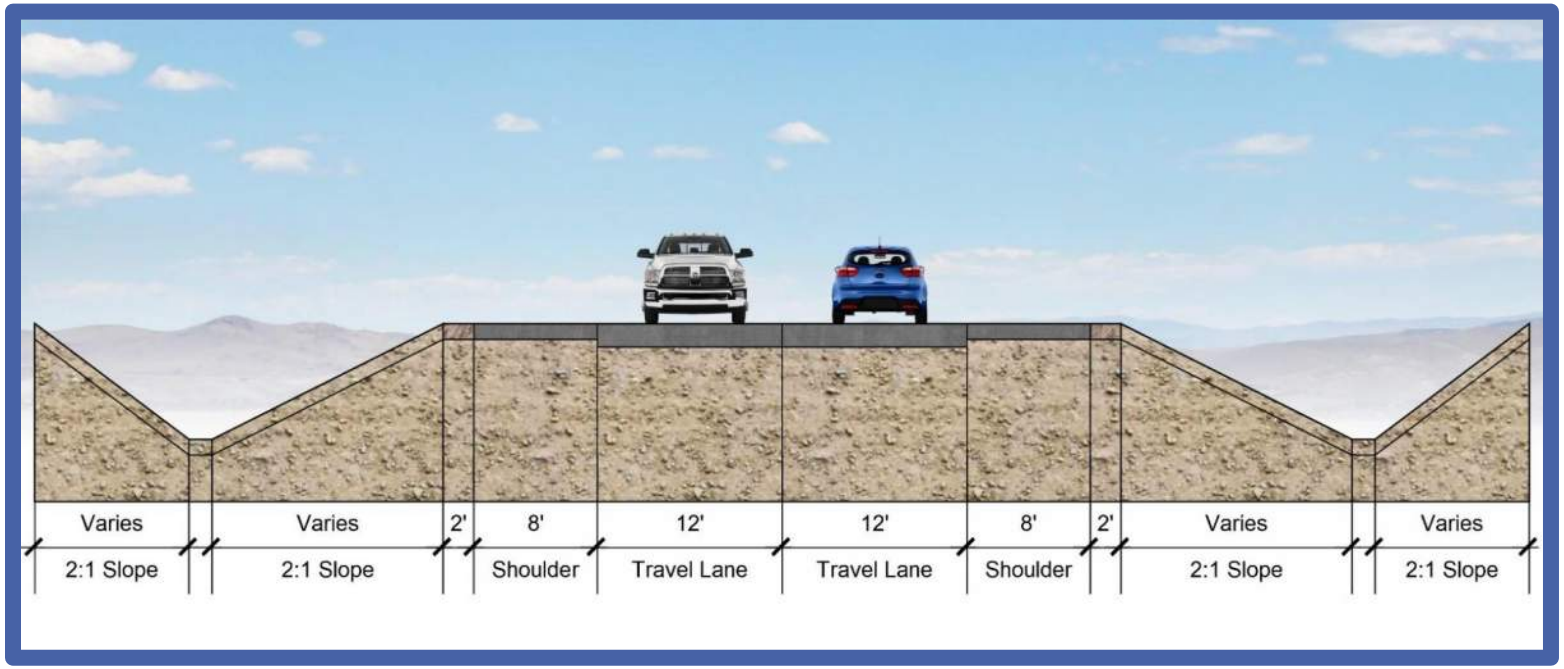


Source: Trimble

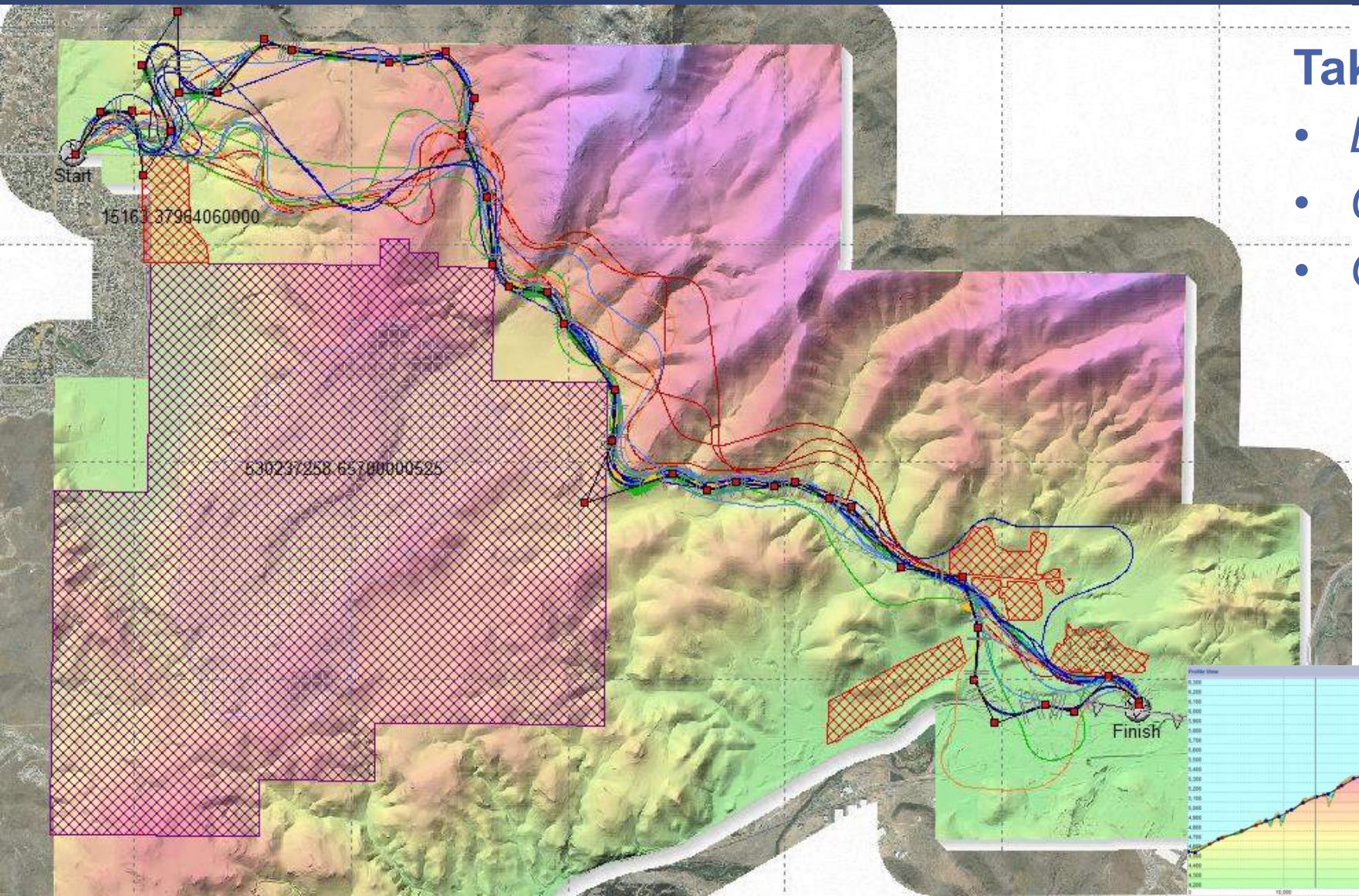
Conceptual Quantm Alignment Assumptions

Criteria Used for Spring 2025 Conceptual Analysis:

- *Ran 35mph and 45mph posted speeds (design speed +10mph). Adopted 45mph.*
- *Assumed same cross-section throughout given time constraints*
- *1.5' flat bottom ditch*
- *6% max vertical grade*
- *6% eMax*



Quantm Results: La Posada Avoiding NCA



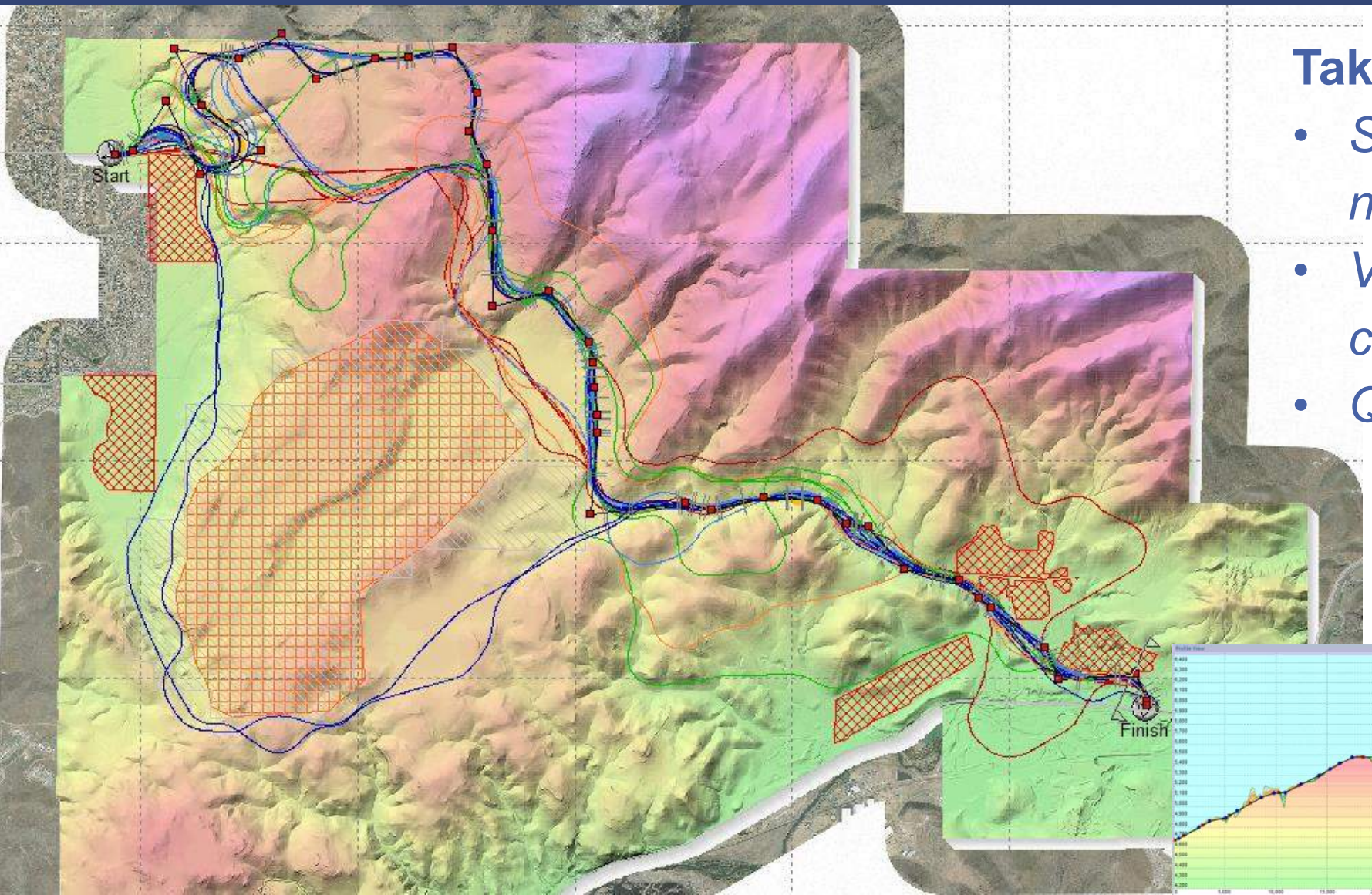
Takeaways:

- *Likes plateau to the north*
- *Creates longer travel times*
- *Quantm cost = **$133M****

** Quantm costs include earthwork, pavement, and retaining walls only*



Quantm Results: La Posada Avoiding ACEC



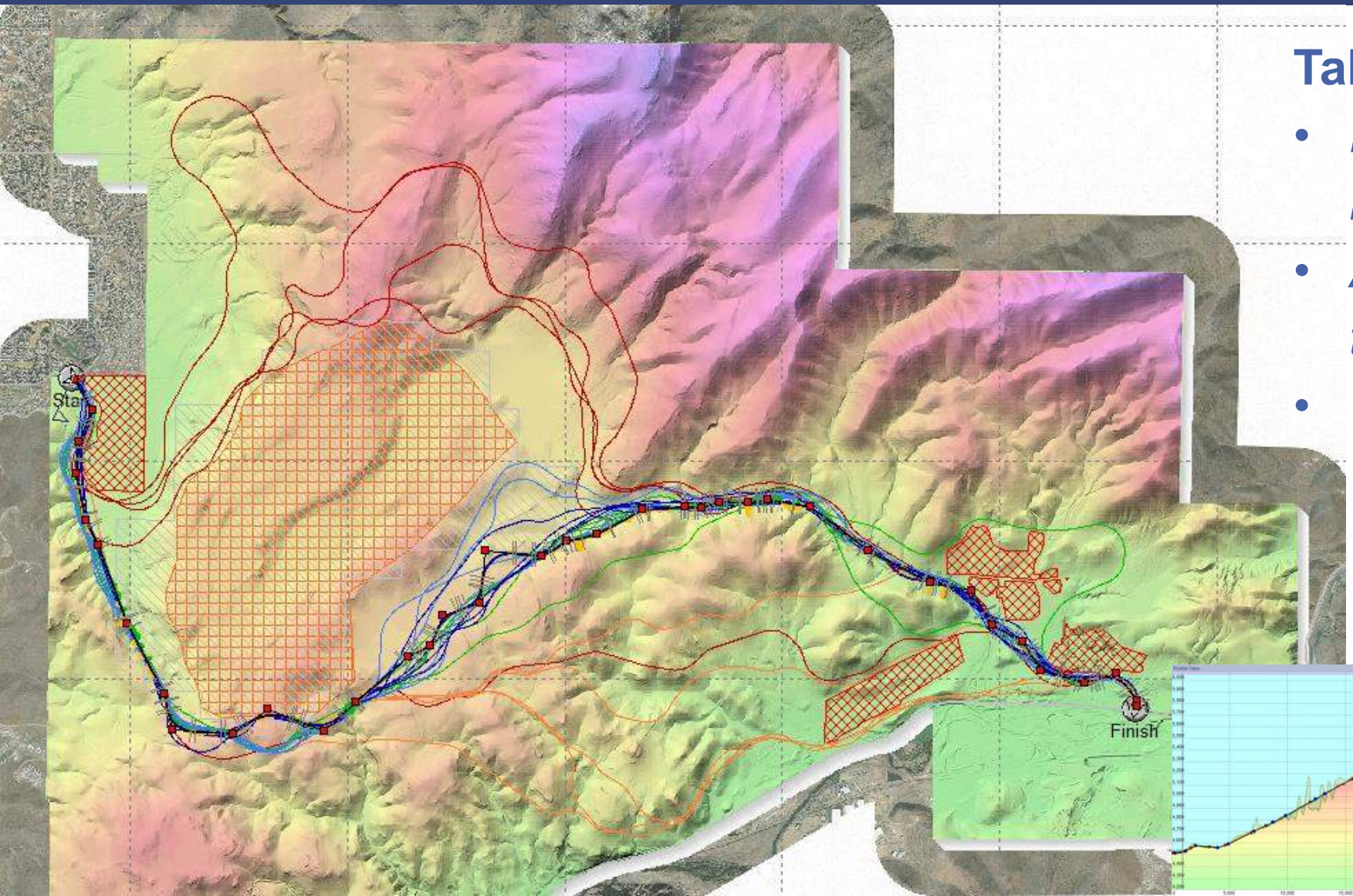
Takeaways:

- *Still likes plateau to the north*
- *Vista Blvd. alignment corridor in the top 5*
- *Quantm cost = **$98.9M****

** Quantm costs include earthwork, pavement, and retaining walls only*



Quantm Results: Vista Blvd. Avoiding ACEC



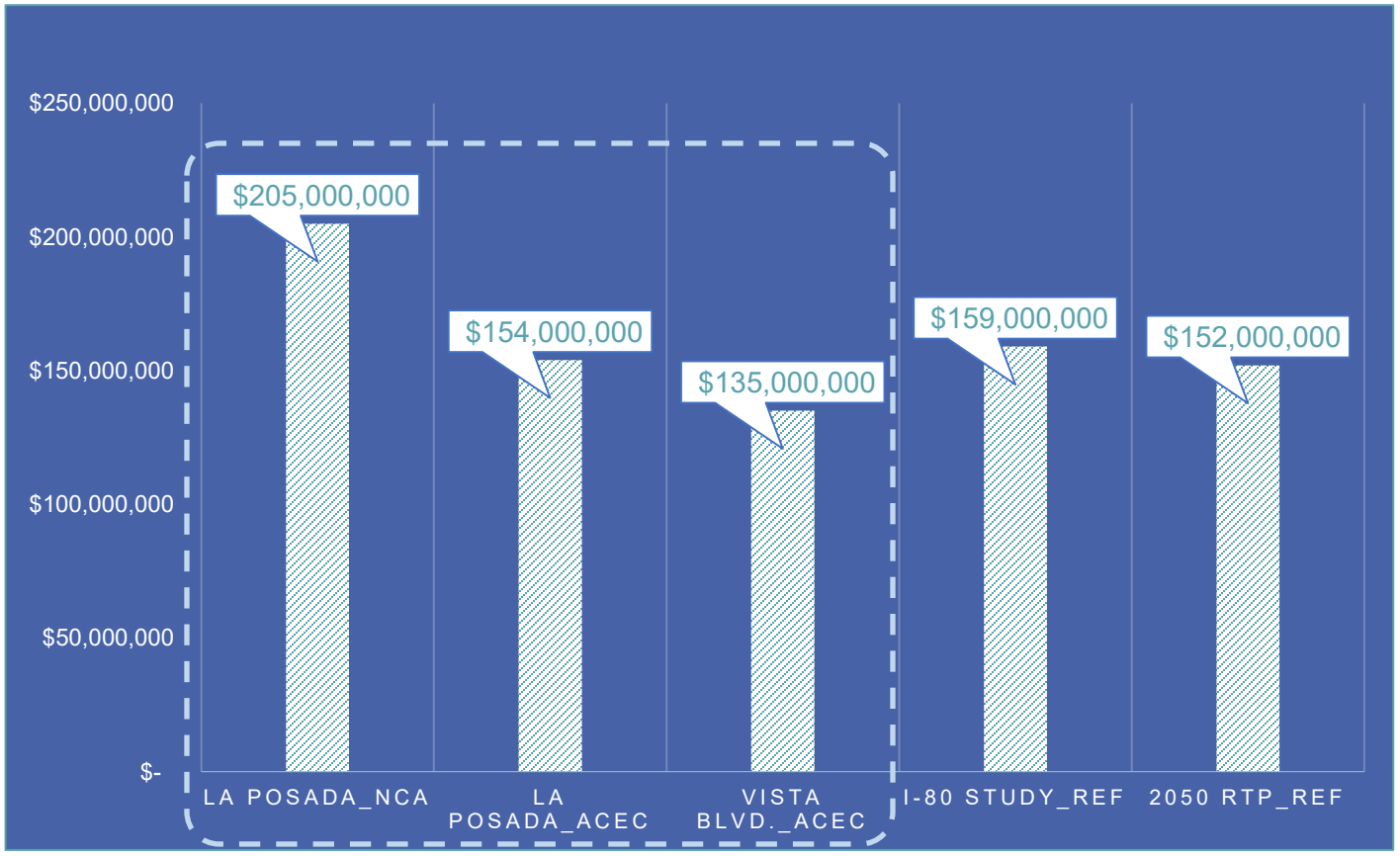
Takeaways:

- *Hugs ridge bottoms regardless of max grade*
- *Avoids significant topography*
- *Quantm cost = **$82.7M****

** Quantm costs include earthwork, pavement, and retaining walls only*



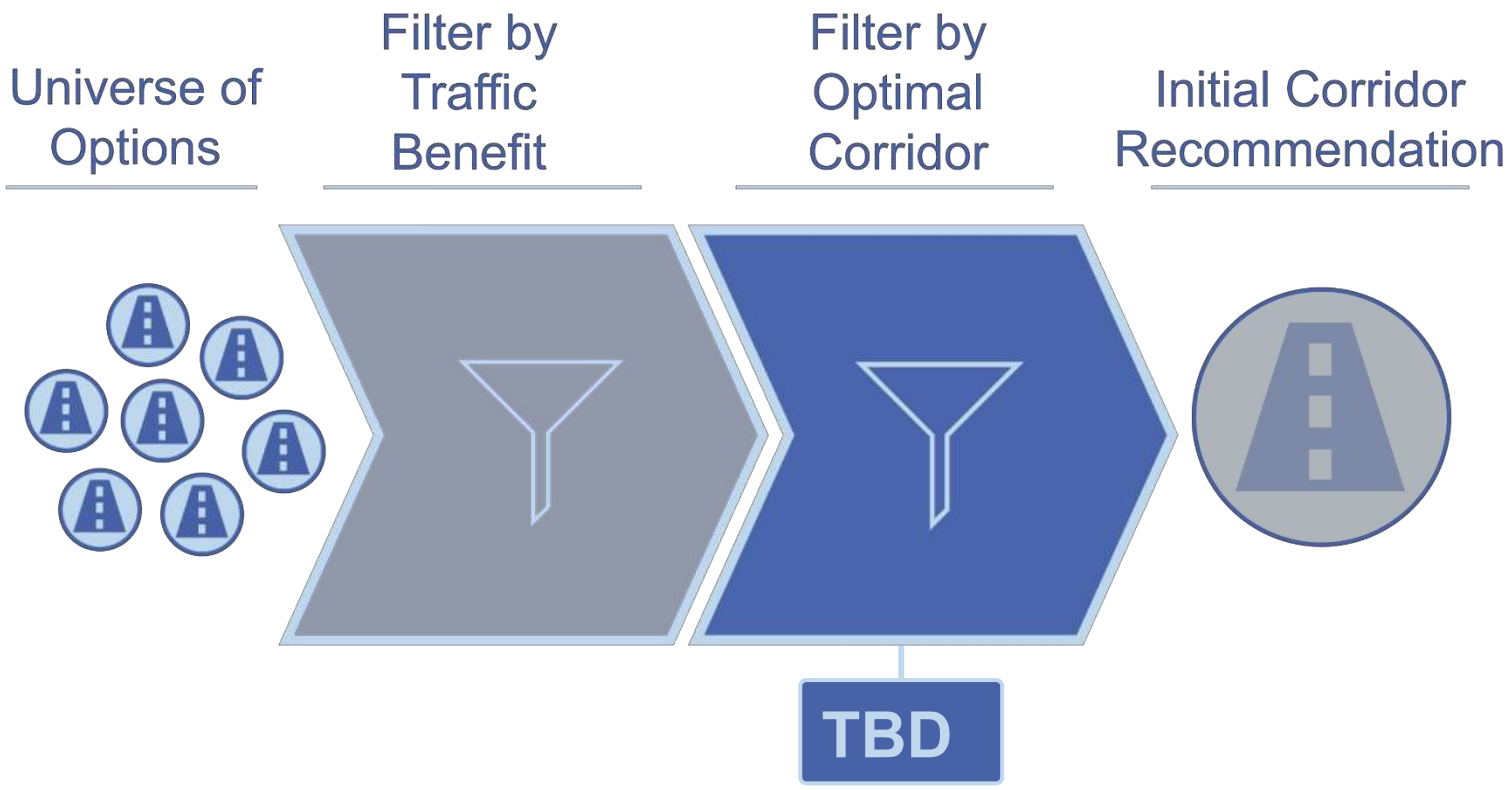
Conceptual Quantm Cost Comparison



Takeaways:

- Avoiding the NCA increases the La Posada option cost by **33%**
- Avoiding the NCA increases the Vista Blvd. option cost by **52%**
- Vista Blvd. option is **14%** less than La Posada option (ACEC)
- ACEC avoidance costs are within range of previous estimates

Filter and Screen by Alignment Analysis



Next Steps

- Finalize geometric criteria
- Advance corridor evaluation and screening
- Add constraints layers
- Additional project-level calibration
- Continued RTC support regarding funding

Northeast Connector Alignment and Feasibility Study
Technical Advisory Committee Meeting #3 Minutes

10/20/2025

1. Introductions and Study Team

Attendance:

Wood Rodgers
Bryan Gant, PE, Project Manager
Mario Tambellini, Project Engineer
Leslie Burnside, Sr. Env. Planner
Mike Davidson, Principal Engineer
Alison Agneray, Sr. Env. Planner
Anthony Lopez, Assistant Engineer
Noor Felyi, Assistant Engineer

RTC Washoe
Bryne Byrne, Project Manager
Dale Keller, Deputy Executive Director
Amanda Callegari, Engineering Mgr.
Michele Payne, Property Analyst

Storey County
Austin Osborne, County Manager
Jason Wierzbicki, Public Works Director
Cathy Canfield, Planning Manager

BLM
Kimberly Dow, District Manager
Shedra Rakestraw, Asst. Field Manager
Criztopher Miralles,

MJT Consulting
McKenna Temen, Outreach

City of Sparks
Amber Sosa, City Engineer
Andrew Jayankura, Transportation Manager

HDR
Nicholas Eggen, PM, Structures group
Blake Schmitt, Bridge Engineer
Joseph Wiesner, Bridge Engineer
Lani DeBisschop, Bridge EIT

NDOT
Christopher Kuhn, Sr. Project Manager

Washoe County
Michon Reede, Associate Engineer

2. Study Overview

Study Area: Bounded by I-80 (South), La Posada (North), Sparks urban edge (West), and USA Parkway (East).

Purpose: Evaluate feasibility of a new connector between Sparks and the Tahoe-Reno Industrial Center (TRIC) to help relieve I-80 congestion and improve regional mobility.

Goals: Reduce congestion, support economic growth, improve transportation reliability, and inform regional planning decisions.

3. Corridor Alternatives

Two corridors advanced from Level 1 screening: La Posada Extension and Vista Boulevard Connection (via Golden Eagle Park). Based on input from the previous TAC meeting, a Vista Boulevard Connection (via South of Red Hawk Golf Course), was tested in the travel demand model and not found to attract as much traffic as the La Posada Extension and Vista Boulevard Connection (via Golden Eagle Park) options, and therefore, screened out.

4. Level 2 Screening Criteria & Evaluation

Seven criteria were used: Environmental Impact, Traffic Performance, Right-of-Way Impacts, Utility Impacts, Constructability, Maintainability, and Community Impact/Stakeholder Preference.

Environmental Impact

Vista Corridor had fewer impacts on sage-grouse habitat. La Posada had higher visual resource impacts. Both had minimal impacts on waters, species, springs, and flood zones. Neither corridor appears to have sizeable environmental impacts in the context of a project of this magnitude.

Traffic Performance

Vista attracted more traffic (ADT ~4,400 vs. ~2,600 for La Posada) and had shorter travel times. The length needed to reach grade for La Posada increases that option's travel time and resulting traffic. This is a reduction in projections compared to Level 1. Traffic modeling used RTC's regional travel demand model calibrated for 2050.

Right-of-Way Impacts

La Posada: 225+/- acres of private property impacted across 24 parcels. Vista: 51+/- acres impacted across 5 parcels. La Posada is clearly more impactful to private property.

Utility Impacts

Vista had higher estimated utility relocation costs due to alignment overlap with fiber and gas lines, whereas La Posada intersects NV Energy lines at more of an angle. The differences are found in the west half of the corridors as the east halves are very similar.

Constructability

Vista scored better due to fewer bridges and drainage crossings. La Posada required more complex construction. However, both are readily constructable.

Maintainability

Both corridors scored similarly, with La Posada requiring more guardrail maintenance. Both corridor could easily be maintained.

Community Impact

Initial scoring favored Vista, but after discussion, both were scored equally. Concerns were raised by the City of Sparks about increased traffic through neighborhood roads and Golden Eagle Regional Park access impacts.

5. Cost Estimates

La Posada: $360–$397 million. Vista: $215–$238 million. Vista is more cost-effective due to shorter length and easier terrain.

6. Stakeholder Feedback

City of Sparks requested further analysis of traffic distribution and Golden Eagle Regional Park access. A follow-up workshop was scheduled with Sparks staff. Subsequent to the TAC meeting, it was agreed that these concerns warrant additional study of the Vista Corridor west termini and tie-ins at Golden Eagle Regional Park and La Posada should both be evaluated further.

7. Next Steps

Draft Feasibility Report target delivery to RTC by early November. Stakeholder review following RTC's initial internal review. Public outreach planned for December. Initial recommendation to be presented at the public meeting. RTC to work with Sparks on presenting findings to City Council.

Northeast Connector Alignment and Feasibility Study

Technical Advisory Committee Meeting #3

October 20, 2025



Meeting Agenda

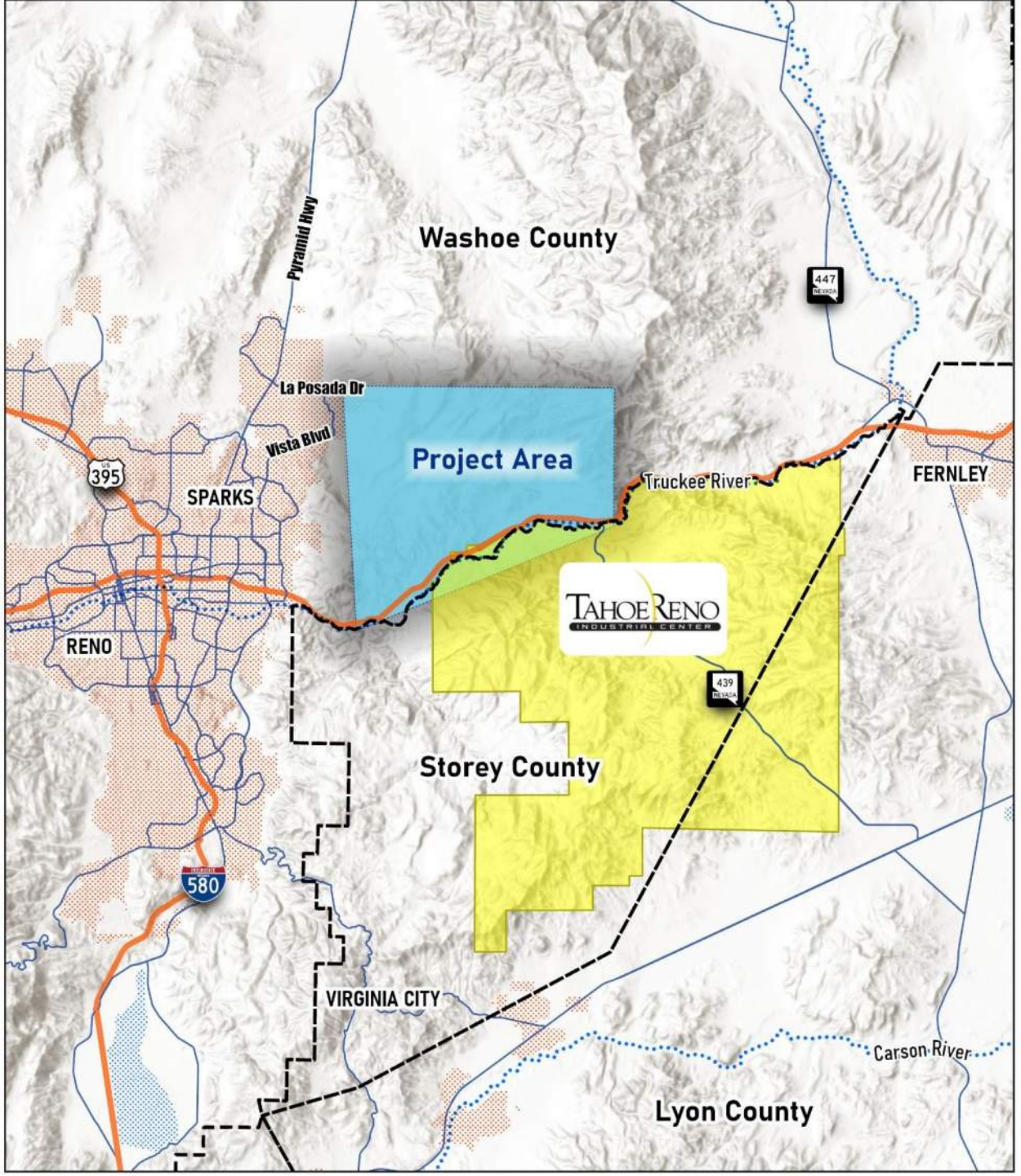


- Introductions
- Study Area, Study Goals
- TAC Roles and Responsibilities
- Study Schedule Review
- Leve 1 Screening Recap
- Level 2 Corridor Screening
- Next Steps

Study Area

Study Limits:

- South – Interstate 80/Truckee River
- North – Just north of La Posada Dr.
- West - Eastern Edge of Urbanized Sparks
- East – USA Parkway



Study Goals and Objectives



Reduce Congestion



Support Economic Growth



Increase Reliability



Inform Regional Decisions

TAC Roles and Responsibilities

The TAC is the venue to collaborate the process, inputs, and outputs.

- Provide input on the process
- Coordinate data needs
- Share technical input
- Collaborate on outreach

Study Schedule

We Are Here

Feb. 2025	+5 Months	+3-4 Months

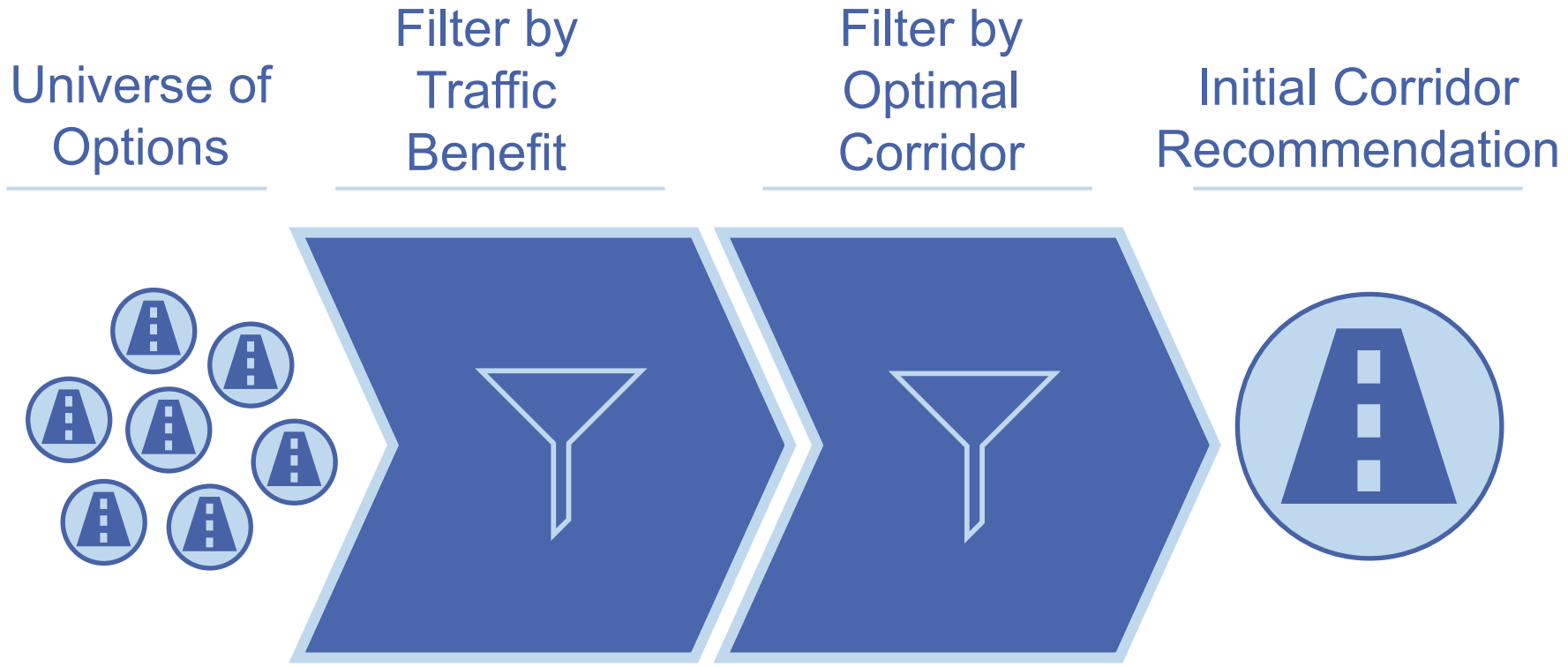
Step 1 Corridor Evaluation and Traffic

Step 2 Alignments and Analysis

PEL/NEPA (Future)

Stakeholder & Public Engagement

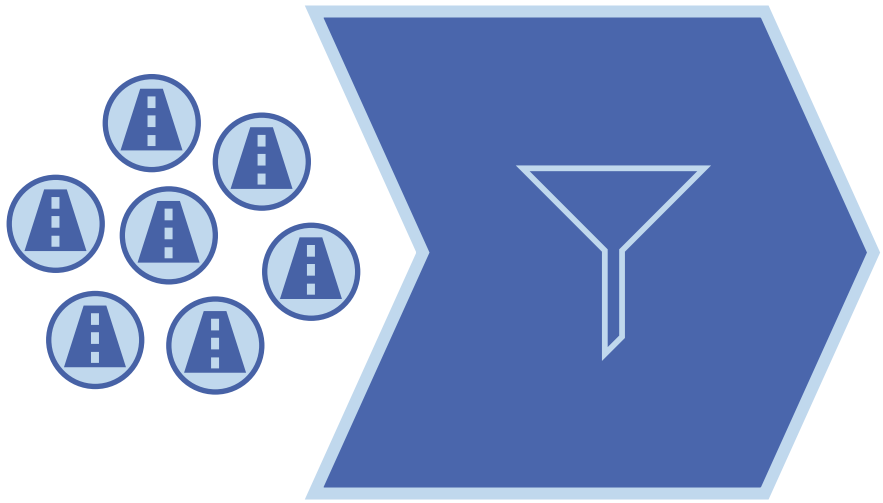
Corridor Screening Process Recap



Corridor Screening Process Recap

Universe of Options

Filter by Traffic Benefit













Corridor Screening Process Recap



Vista, Golden Eagle

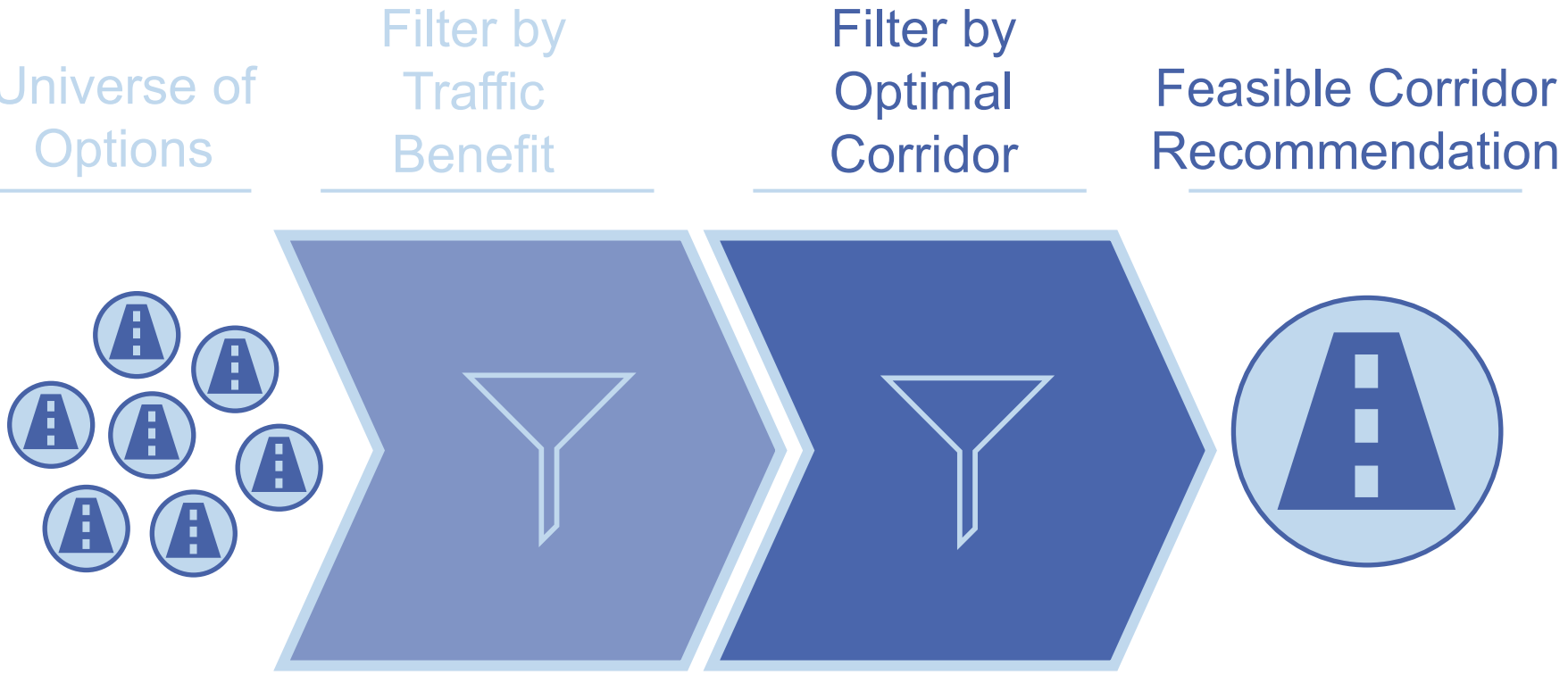
4,478

Vista, Red Hawk

2,470

ADT

Corridor Screening Process



Optimal Corridor Screening Criteria

- Environmental Impact
- Right-of-Way Impact
- Constructability
- Community Impact & Stakeholder Preference
- Travel Time & Average Daily Traffic
- Utility Impacts
- Maintainability

Optimal Corridor Screening: Environmental Impact

Screening Factor:

Environmental Impact

Screening Criteria:

Does the corridor have numerous and/or sizeable impacts to natural resources?

Screening Criteria Scoring:

3 No sizeable or relatively numerous impacts to resources

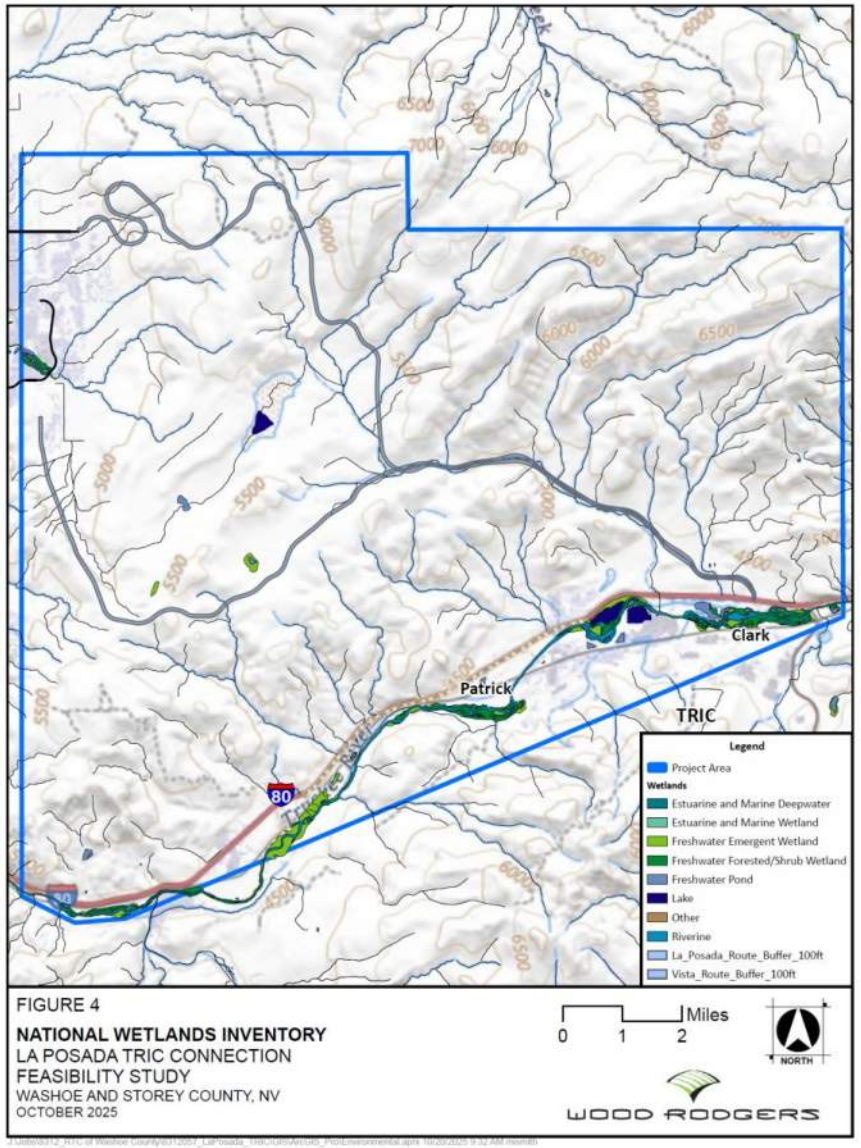
2 Some impacts and/or sizeable impact(s) that can readily be mitigated

1 Numerous impacts and/or sizeable impact(s) that are difficult to mitigate

Environmental Resources

Environmental Resource	Evaluation	La Posada	Vista
Waters of the US	Number of waterways crossed		
Species and Habitat	Area impacted		
Sage Grouse Habitat	Area of priority/priority+ habitat impacted		
Springs	Number of springs impacted		
FEMA Flood Hazard	Area impacted		
Grazing Pastures	Area of livestock grazing allotment		
Wells	Number of wells impacted		
Visual Resource Inv.	Area of Class II-IV impacted		
Visual Resource Sensitivity	Area of Moderate/High value impacted		
Mining Claims	Number of claims impacted		
Herd Areas	Area impacted		
Cultural Resources	Risk of impact to sensitive sites		
Score			

Environmental Resources: Waters of the US | Species and Habitat



No. of 1st, 2nd, or 3rd order waterways crossed:

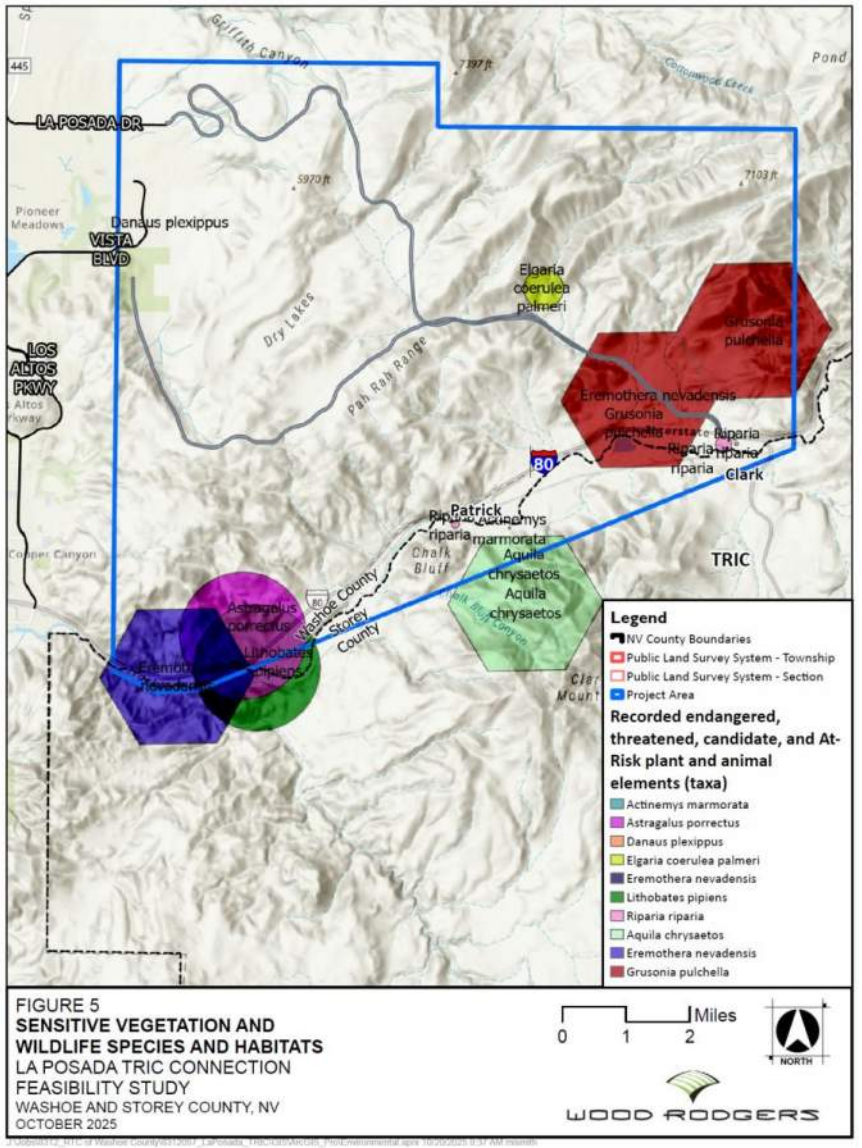
La Posada	
20	❸

Vista	
18	❸

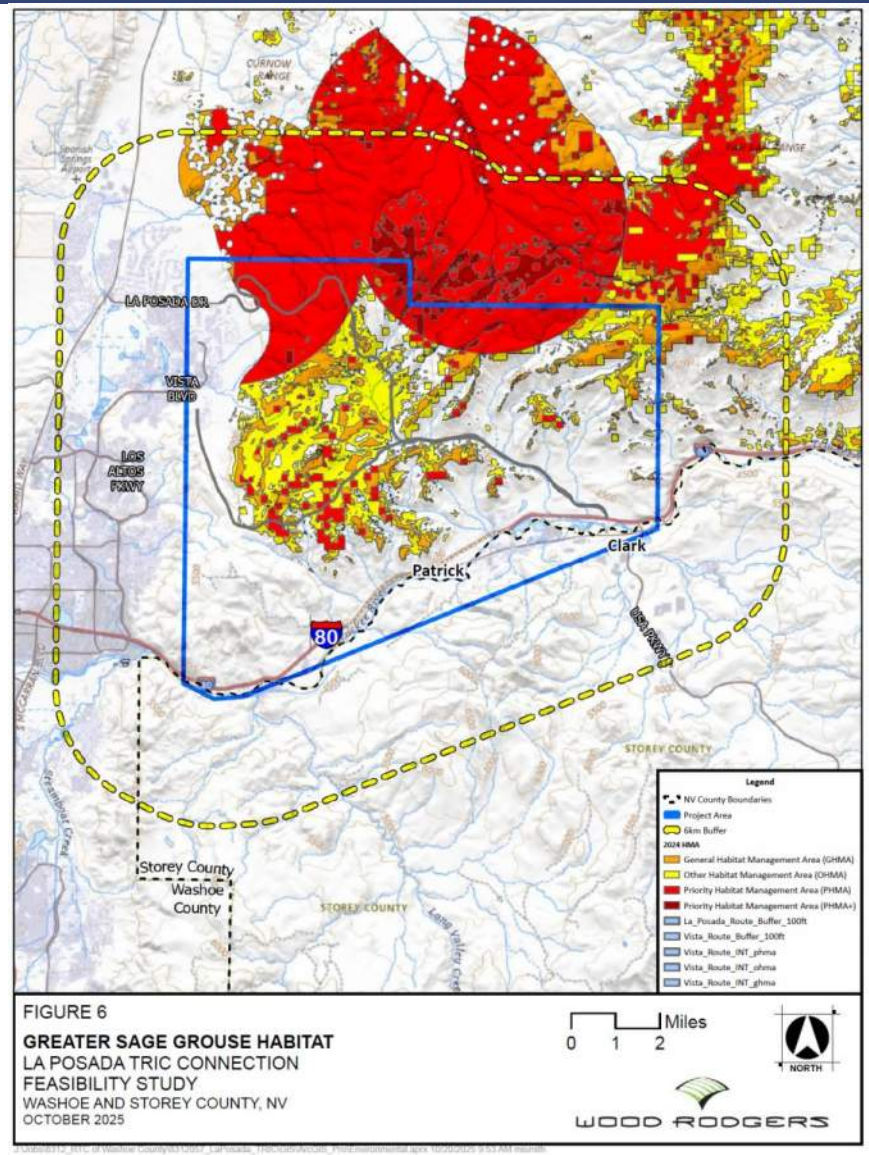
Acres of species and habitat impacted:

La Posada	
0.08	❸

Vista	
0.02	❸



Environmental Resources: Sage Grouse Habitat | Springs



Acres of priority or priority+ habitat impacted:

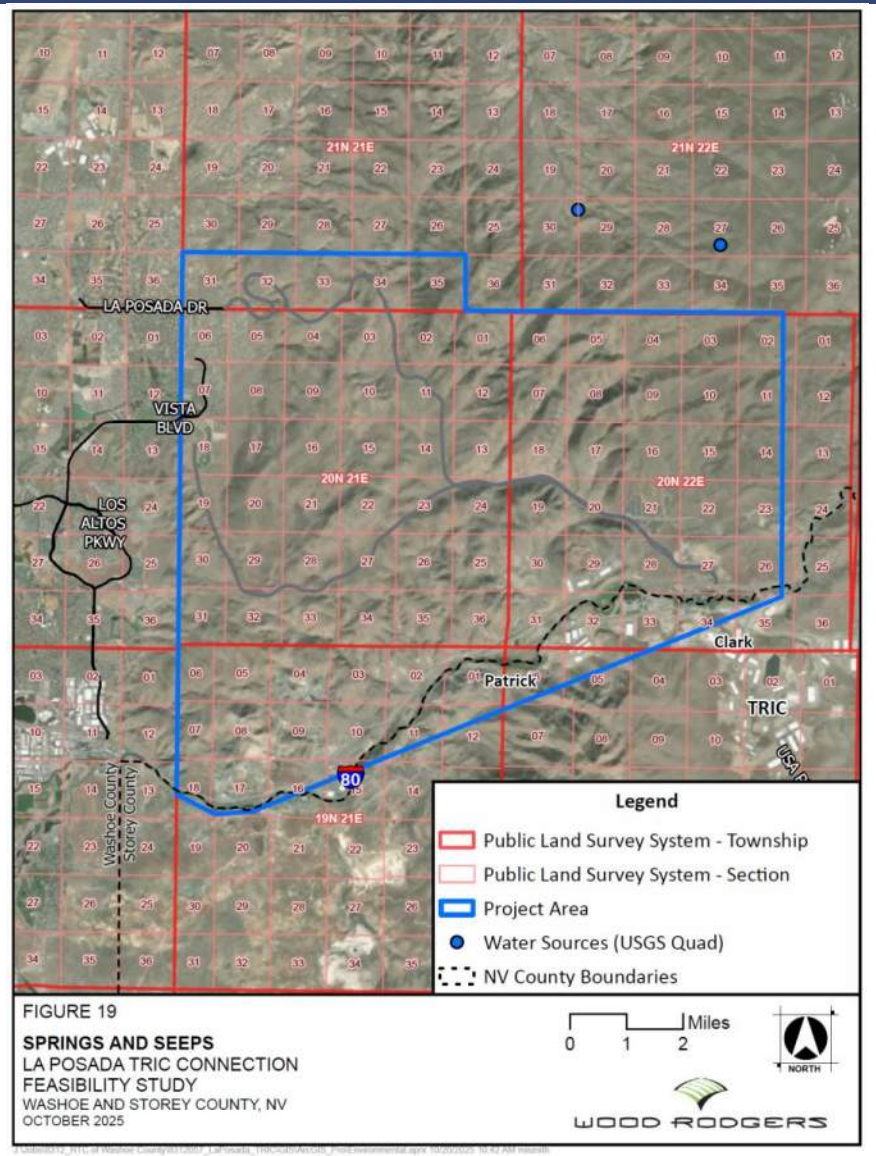
La Posada	
102	1

Vista	
13.6	3

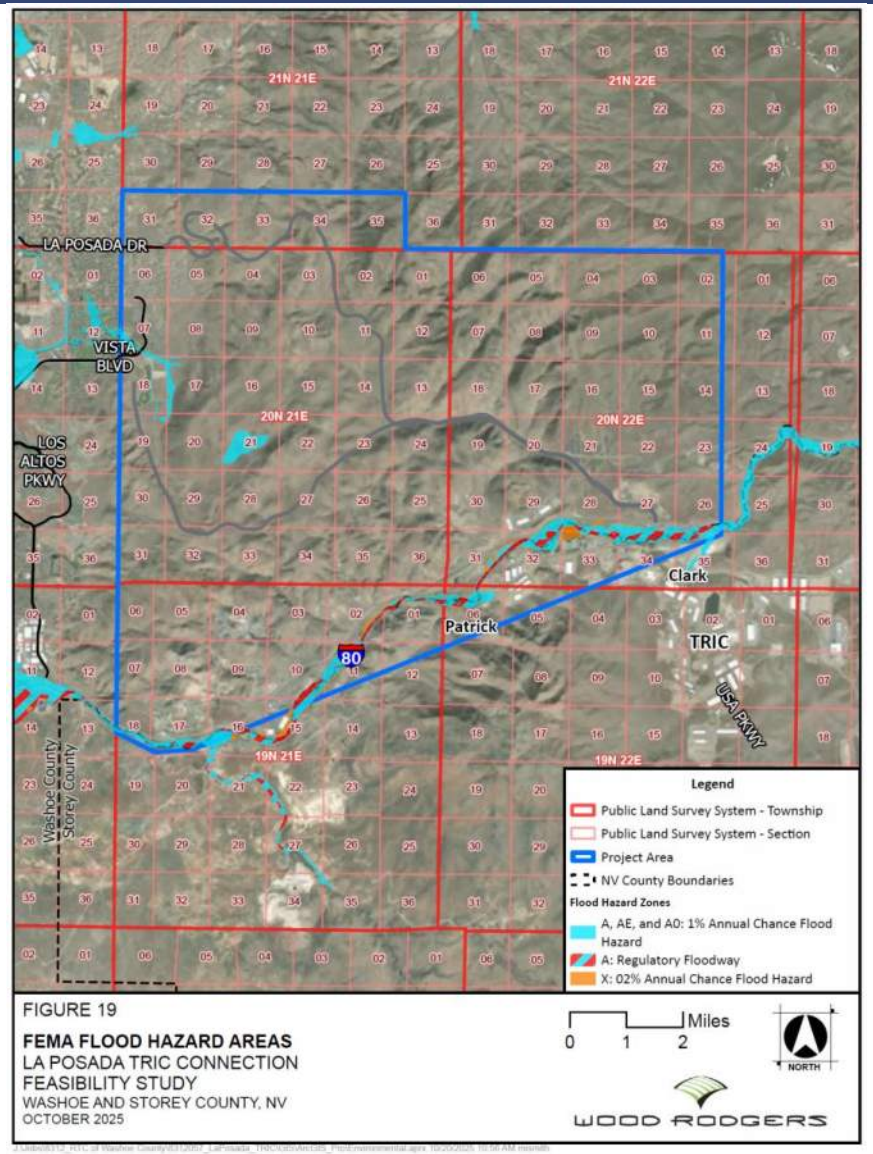
No. of springs and seeps impacted:

La Posada	
0	3

Vista	
0	3



Environmental Resources: Flood Zones | Grazing Area



Acres of flood hazard zone impacted:

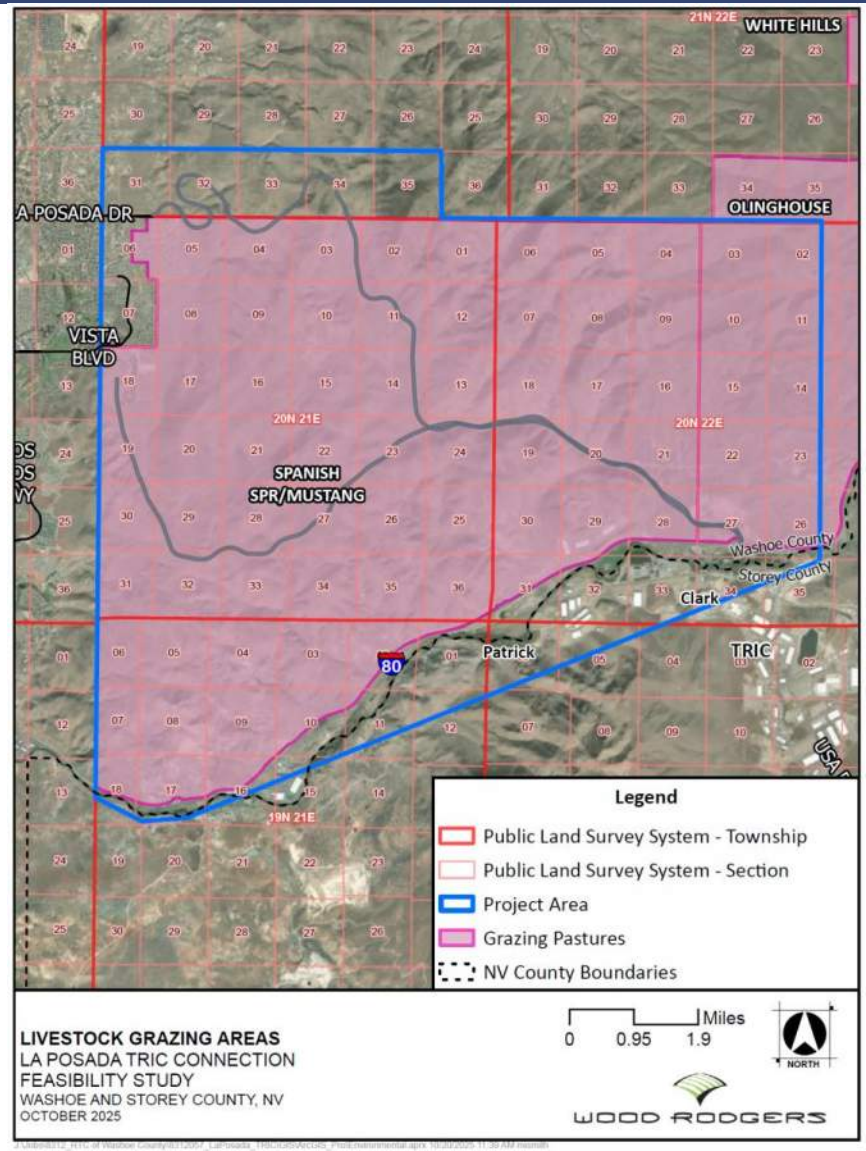
La Posada	
0	3

Vista	
0	3

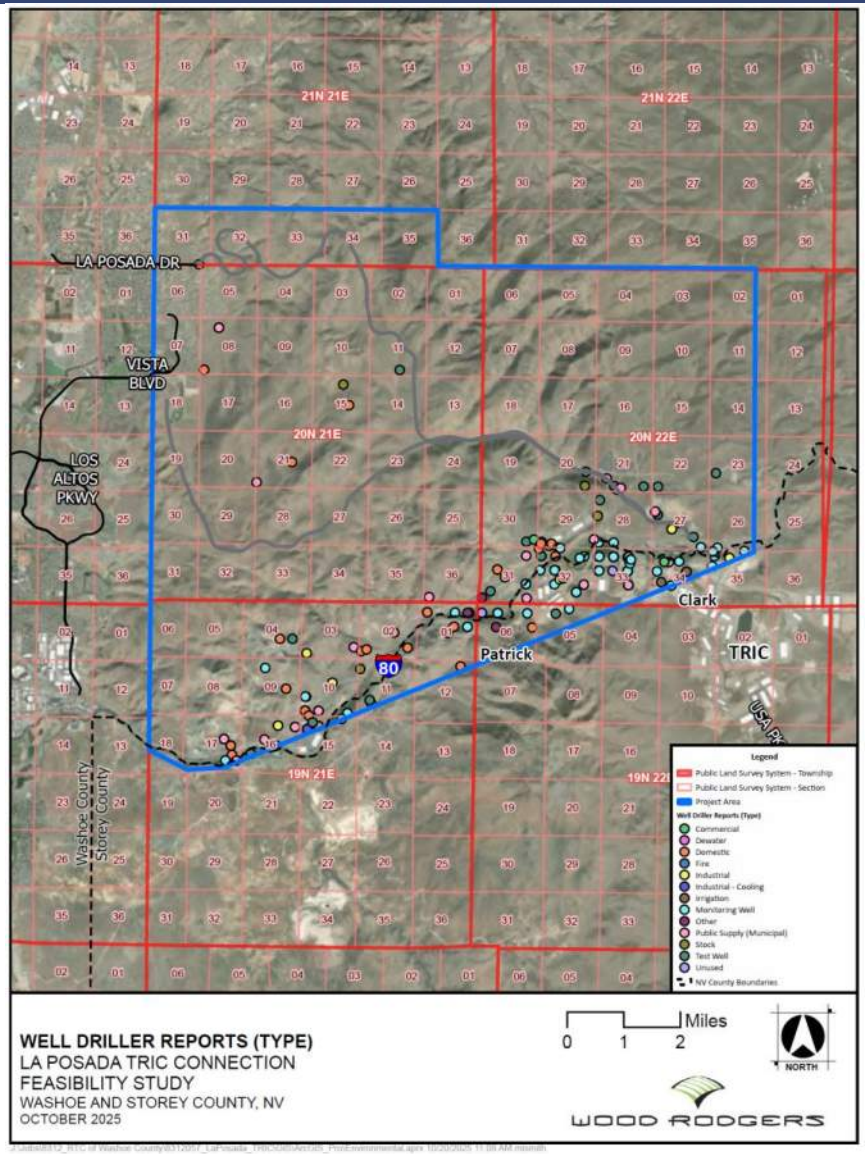
Acres of livestock grazing allotment:

La Posada	
252	1

Vista	
306	1



Environmental Resources: Wells | Visual Resource Inventory



No. of wells impacted:

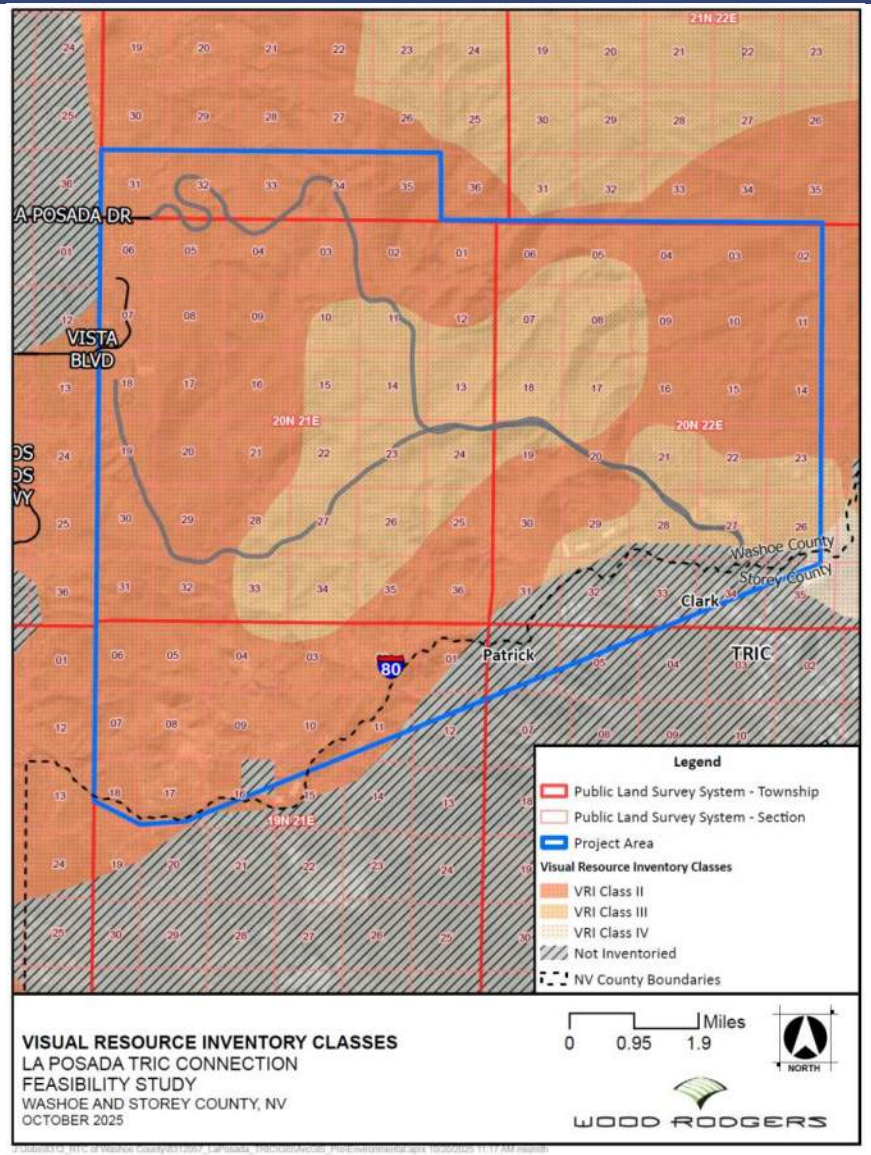
La Posada	
4	2

Vista	
5	2

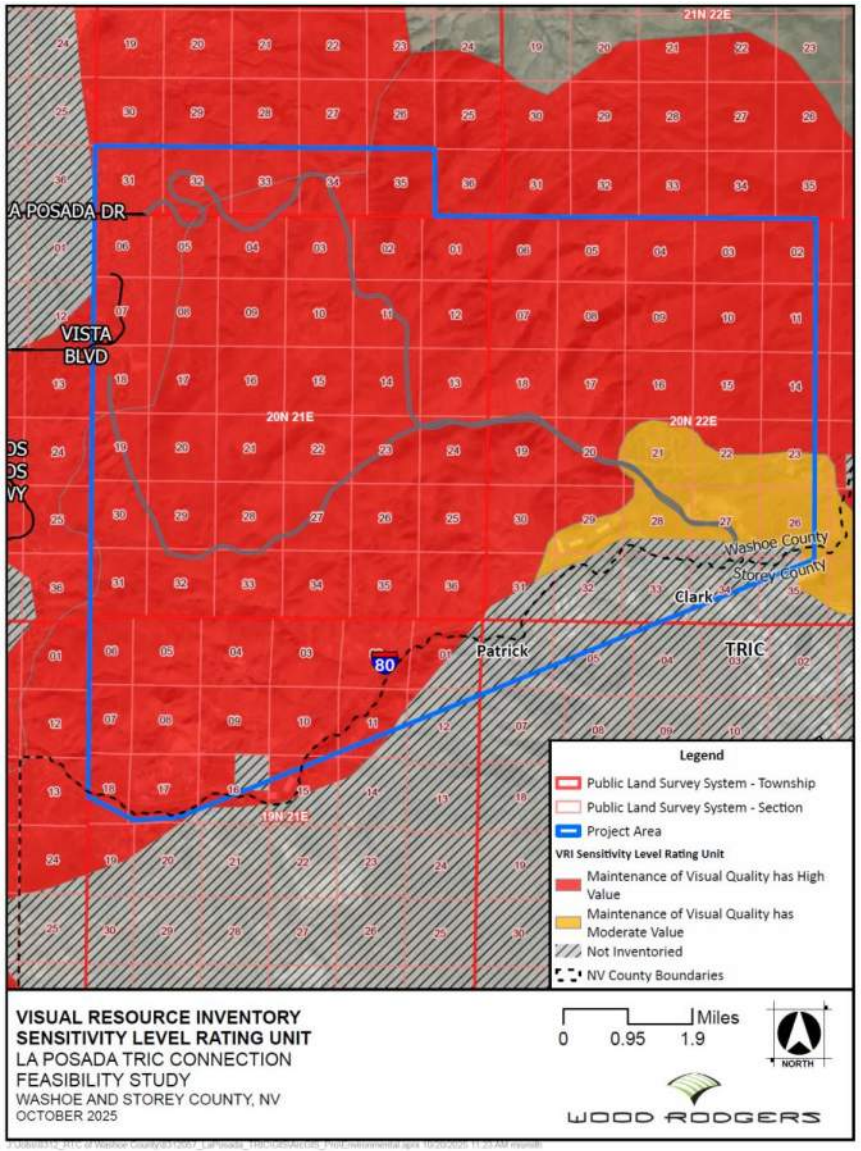
Acres of Class II-IV impacted:

La Posada	
356	1

Vista	
307	1



Environmental Resources: Visual Resource Sensitivity | Mining Claims

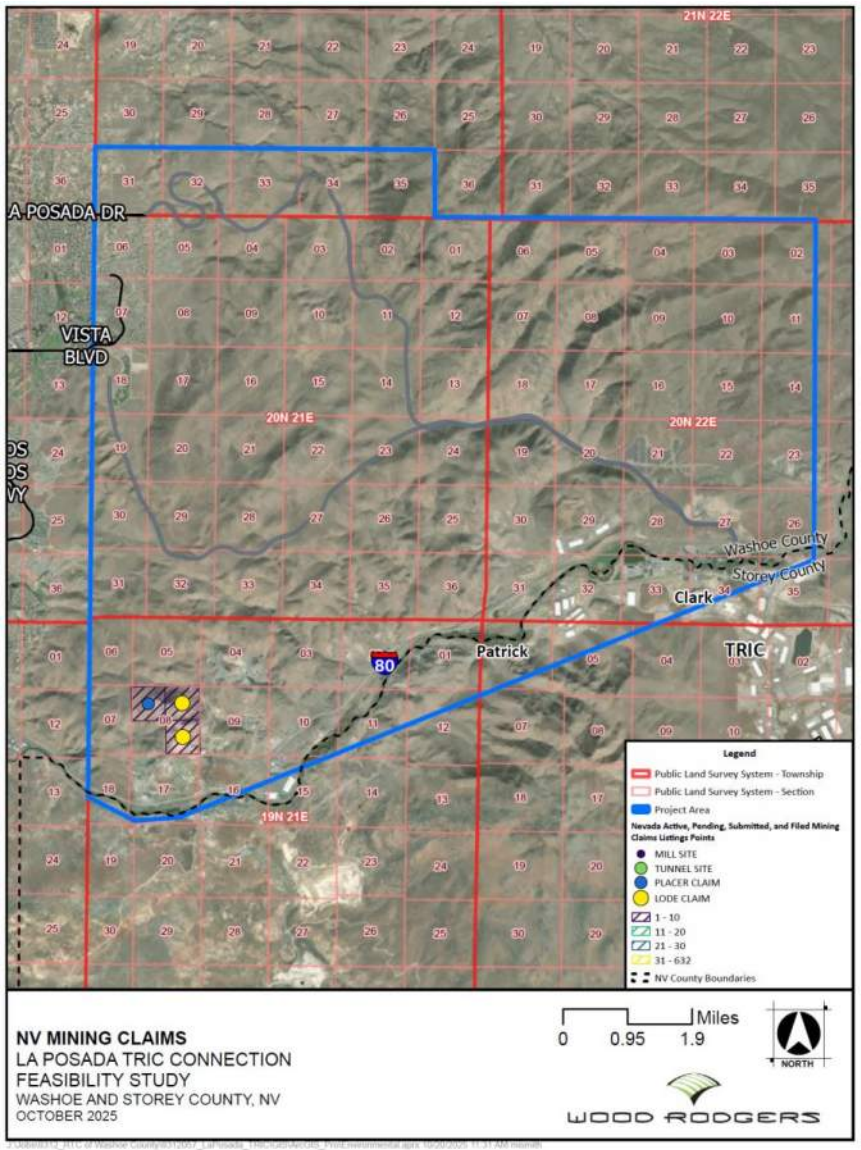


Acres of Moderate / High value impacted:

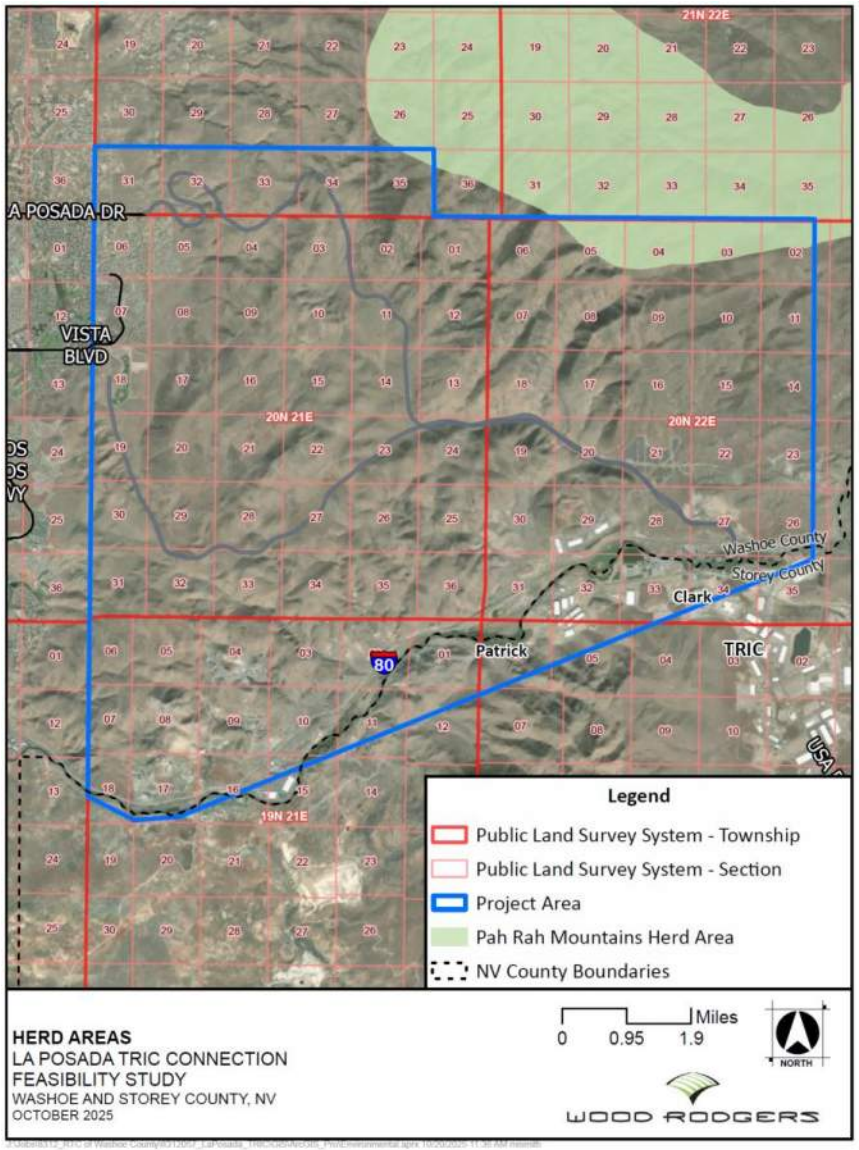
La Posada	
356	1
Vista	
306	1

No. of claims impacted:

La Posada	
0	3
Vista	
0	3



Environmental Resources: Herd Area | Cultural Resources



Acres of herd area impacted:

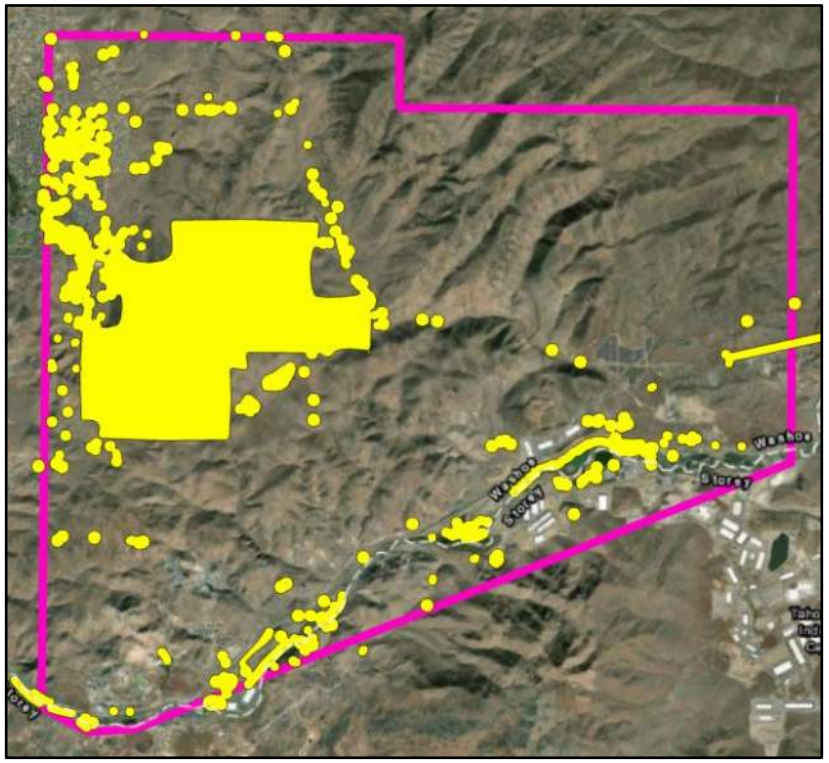
La Posada	
0	3

Vista	
0	3

Risk of impact to sensitive sites:

La Posada	
High	1

Vista	
Mod	2



Environmental Resources

Environmental Resource	Evaluation	La Posada	Vista
Waters of the US	Number of waterways crossed	3	3
Species and Habitat	Area impacted	3	3
Sage Grouse Habitat	Area of priority/priority+ habitat impacted	1	3
Springs	Number of springs impacted	3	3
FEMA Flood Hazard	Area impacted	3	3
Grazing Pastures	Area of livestock grazing allotment	1	1
Wells	Number of wells impacted	2	2
Visual Resource Inv.	Area of Class II-IV impacted	1	1
Visual Resource Sensitivity	Area of Moderate/High value impacted	1	1
Mining Claims	Number of claims impacted	3	3
Herd Areas	Area impacted	3	3
Cultural Resources	Risk of impact to sensitive sites	1	2
Score		2.08	2.33

Optimal Corridor Screening: Travel Time and ADT

Screening Factor:

Travel Time and Average Daily Traffic (ADT)

Screening Criteria:

Estimated travel time and ADTs based on the 2050 travel demand model

Screening Criteria Scoring:

3. Highest combined score of prorated values for travel time and ADT

2. Lowest combined score of prorated values for travel time and ADT

Travel Time and ADT

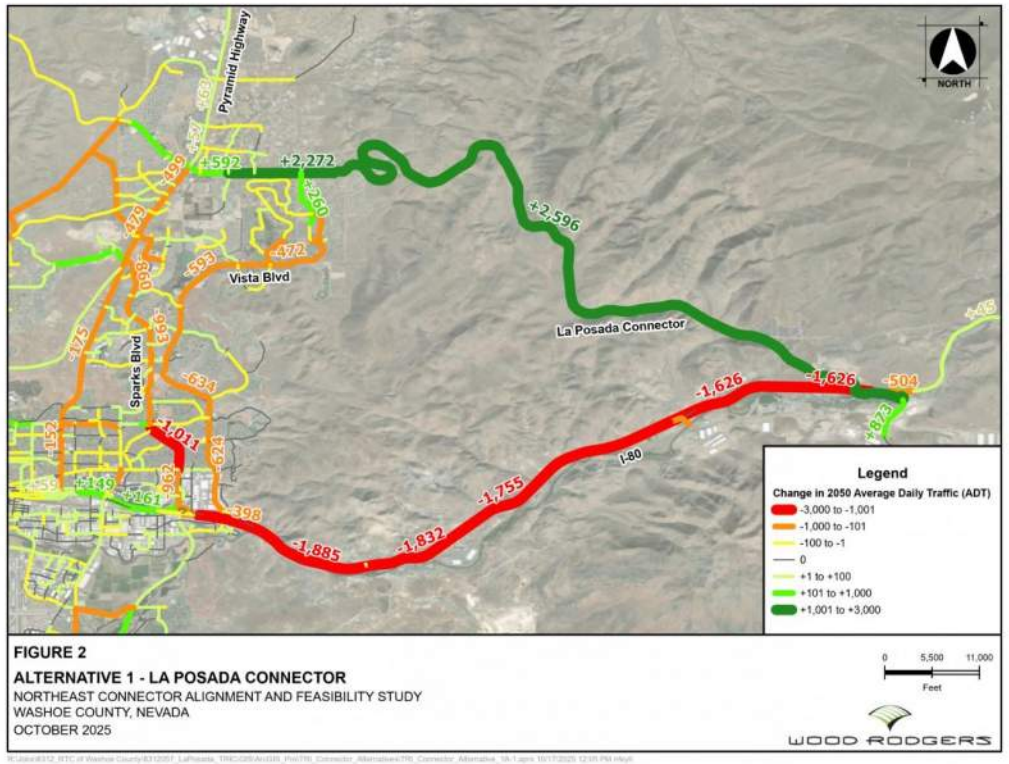


FIGURE 2
ALTERNATIVE 1 - LA POSADA CONNECTOR
NORTHEAST CONNECTOR ALIGNMENT AND FEASIBILITY STUDY
WASHOE COUNTY, NEVADA
OCTOBER 2025

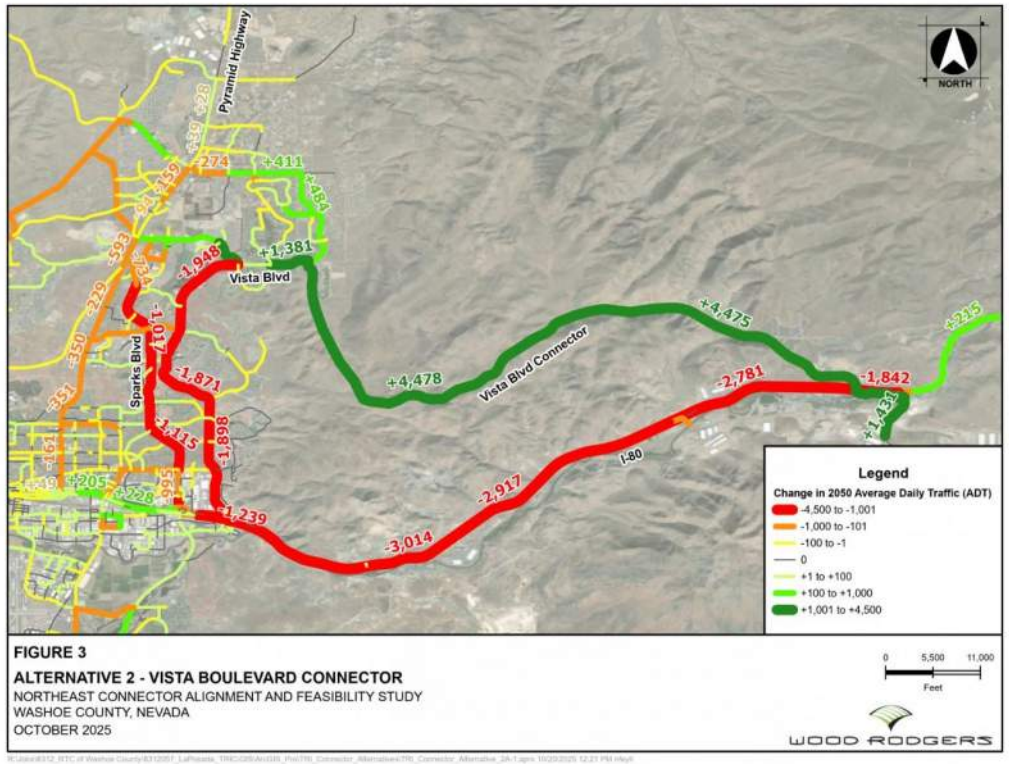


FIGURE 3
ALTERNATIVE 2 - VISTA BOULEVARD CONNECTOR
NORTHEAST CONNECTOR ALIGNMENT AND FEASIBILITY STUDY
WASHOE COUNTY, NEVADA
OCTOBER 2025

	La Posada	Vista
ADT	2,597	4,478
Travel Time (min)	21.6	19.7
Score	**4.48**	**6**

Optimal Corridor Screening: Right-of-Way Impact

Screening Factor:

Right-of-Way Impact

Screening Criteria:

Total corridor impact (acres) to privately owned property

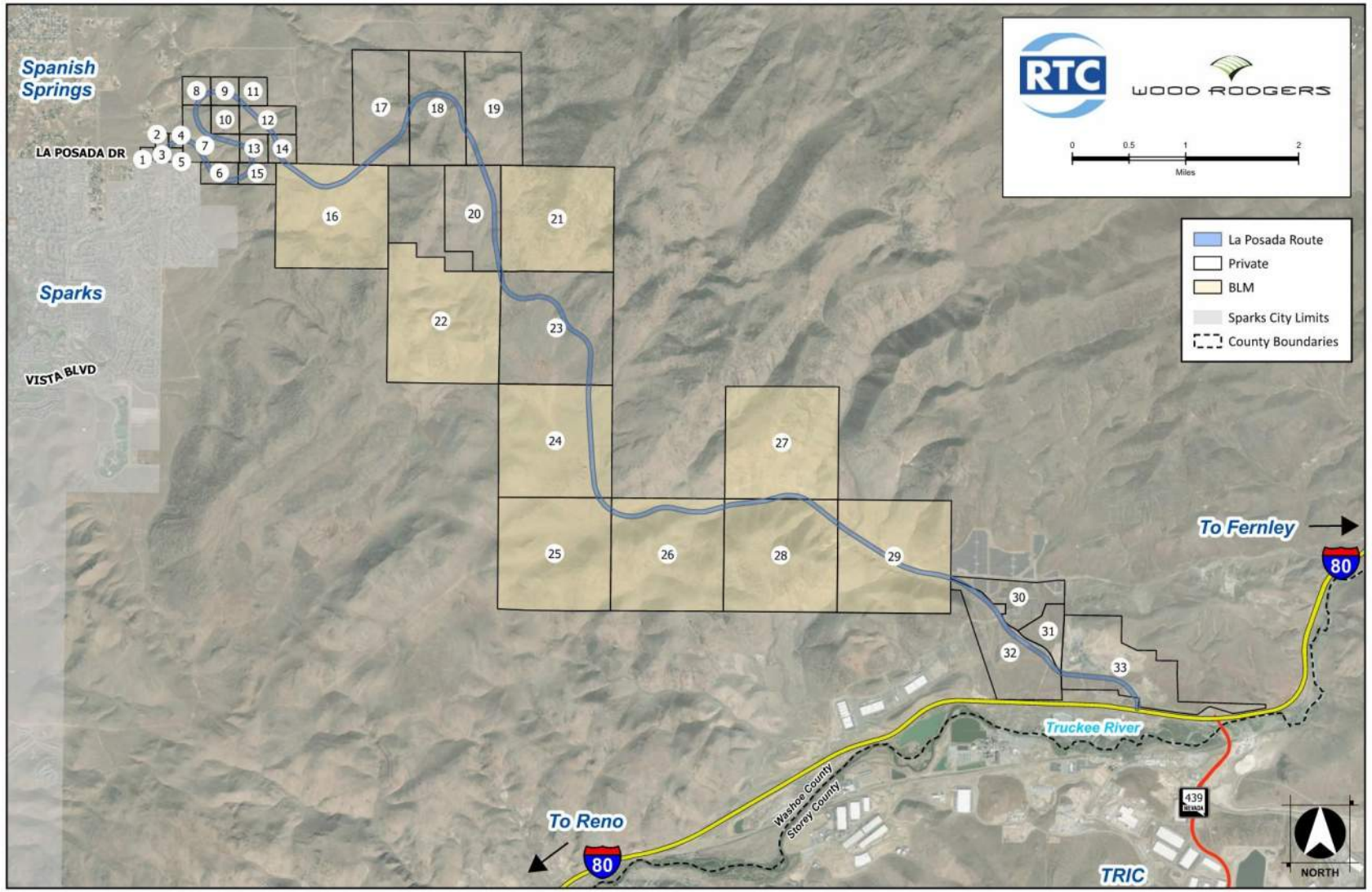
Screening Criteria Scoring:

3 0-50 Acres

2 50.1-100 Acres

1 >100.1 Acres

Right-of-Way: Private Property Impacts

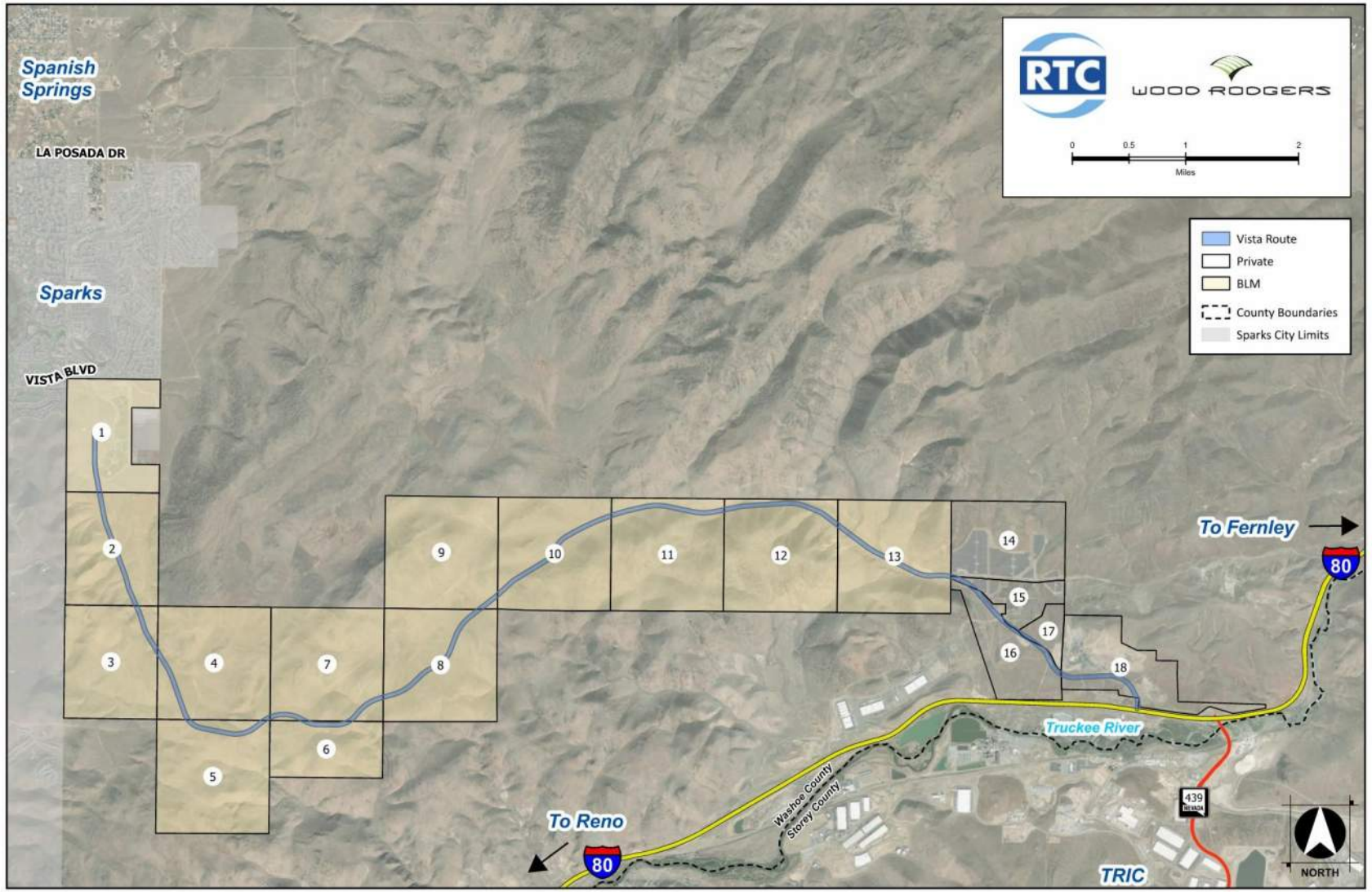


La Posada Corridor:

- 33 impacted parcels
- 24 private parcels
- 225.53 Acres of private property impacted

1

Right-of-Way: Private Property Impacts



Vista Corridor:

- 18 impacted parcels
- 5 private parcels
- 51.14 Acres of private property impacted

2

Optimal Corridor Screening: Utility Impacts

Screening Factor:

Utility Impacts

Screening Criteria:

Total number of utility impacts and to what degree?

Screening Criteria Scoring:

3 <5 utilities impacted and/or ≤$1M in utility impacts

2 6-10utilities impacted and/or $1M-$2M in utility impacts

1 >10 utilities impacted and/or $2M in impacts

Utility Impacts

Utility Impacts:

- *Focus on the new corridor segments as both will have similar impacts at the termini*
- *Three (3) notable utilities between Sparks and Apple*

	La Posada	Vista
No. of Utils	3	3
Estimated Cost	$1M	$1.5M
Score	**3**	**2**







Optimal Corridor Screening: Constructability

Screening Factor:

Constructability

Screening Criteria:

Qualitative evaluation of construction ease including Geotech, access, drainage, MOT, etc.

Screening Criteria Scoring:

3. No major obstacles to construction
2. Some impediments but readily mitigated
1. Sizeable challenges to construction requiring creating approaches

Constructability

Factor	Evaluation	La Posada	Vista
Geotech	Geotech Memo noted no significant differences in the corridors	3	3
Construction Access	Open land with good access	3	3
Drainage	20 vs 18 crossings	2	3
Traffic Control (MOT)	Minor MOT required at termini	3	3
Structures	46,900 sf vs 25,600 sf	1	2
Retaining Walls	5,600 sf vs 22,600 sf	2	1
Average		**2.33**	**2.5**
Score		**2**	**3**



Optimal Corridor Screening: Constructability

Screening Factor:

Maintainability

Screening Criteria:

Qualitative evaluation of maintenance ease including structures, drainage, roadside, snow removal, etc.

Screening Criteria Scoring:

3 No unique or maintenance-heavy conditions or features

2 Some unique or maintenance-heavy conditions or features but not an undue maintenance burden

1 Unique or maintenance-heavy conditions or features that create an undue maintenance burden

Maintainability



Factor	Evaluation	La Posada	Vista
Drainage	20 vs 18 crossings	2	3
Structures	46,900 sf vs 25,600 sf	1	2
Retaining Walls	5,600 sf vs 22,600 sf	2	1
Guardrail	27,200’ vs 17,000’	1	2
Average		**1.5**	**2.0**
Score		**2**	**2**

Optimal Corridor Screening: Community Impact & Stakeholder Preference

Screening Factor:

Community Impact & Stakeholder Preference

Screening Criteria:

Qualitative evaluation of impacts to neighborhoods and general stakeholder sentiment.

Screening Criteria Scoring:

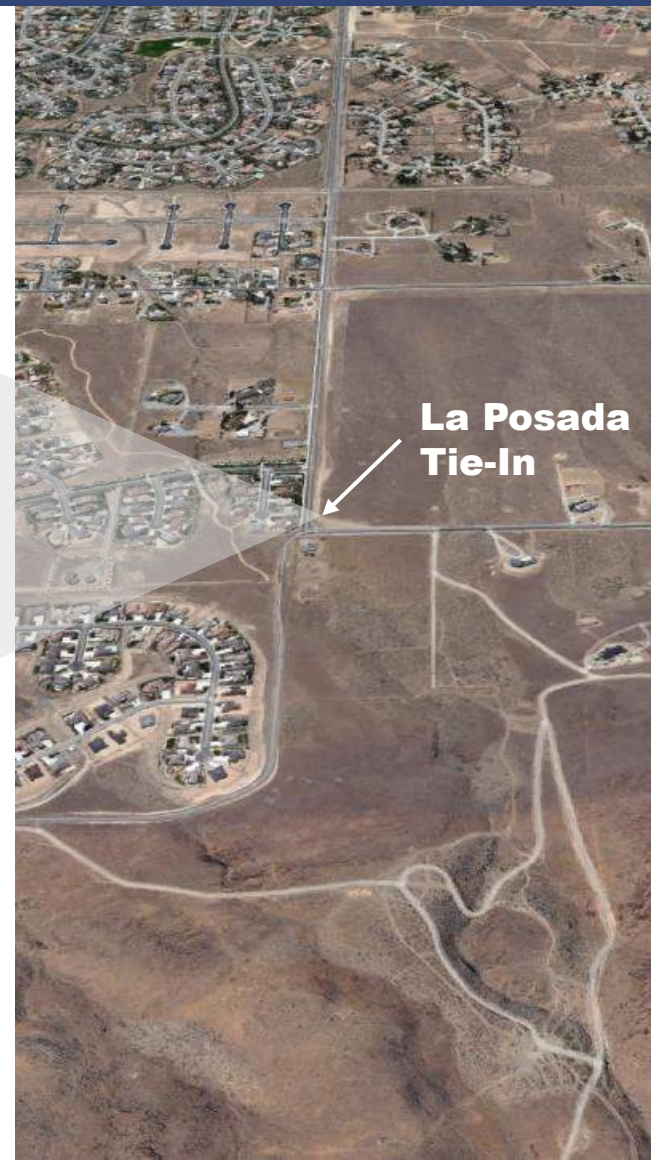
3 Minor, generally non-physical impacts and generally positive stakeholder support

2 Some physical impacts and disruptions, split of support/non-support among stakeholders

1 Sizeable physical impacts and disruptions with majority non-support among stakeholders

Community Impact: La Posada Western Terminus





Community Impact: Vista Western Terminus

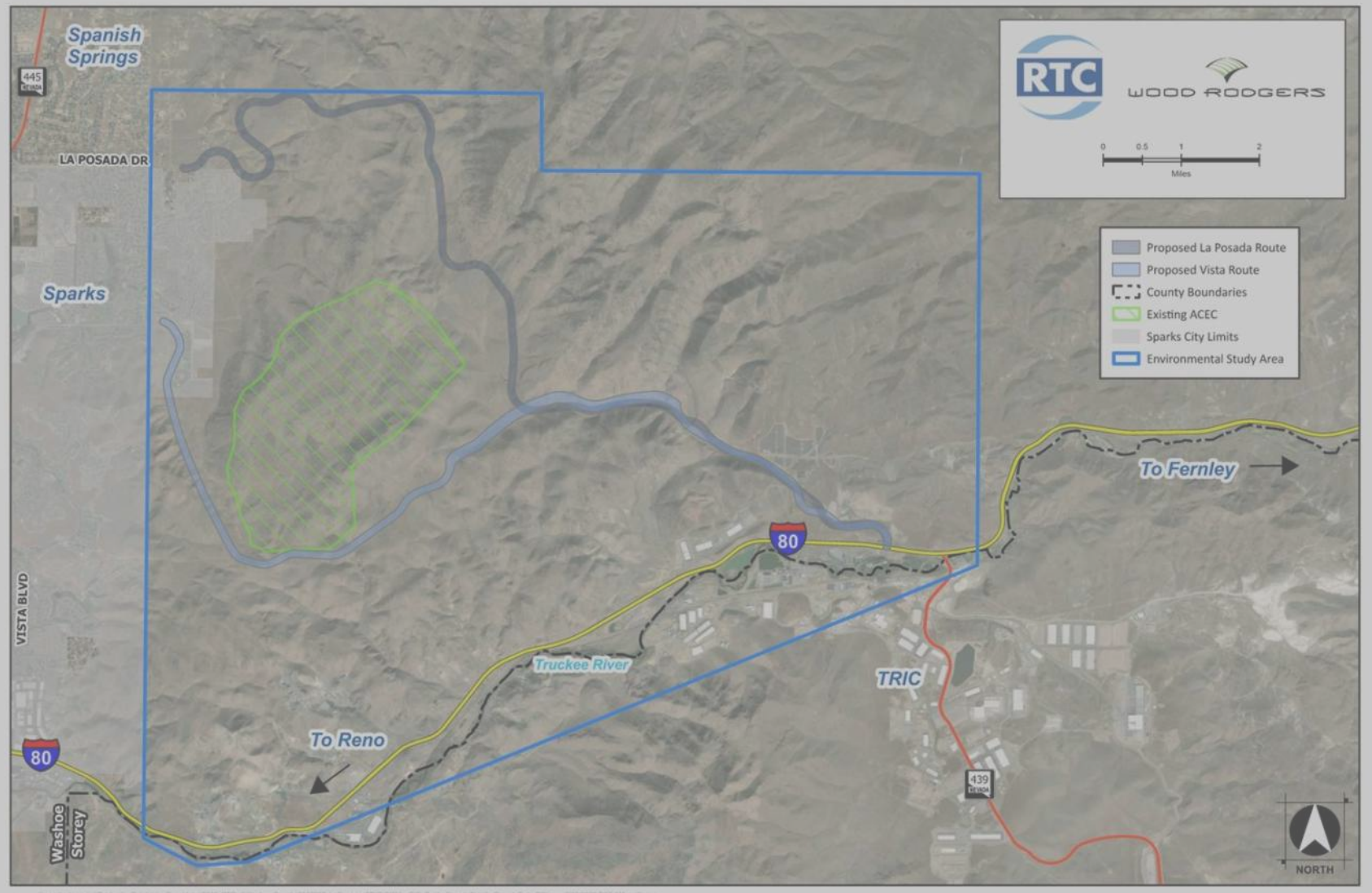




Optimal Corridor Screening Summary

Screening Factor	La Posada	Vista
Environmental Impact	2	2
Travel Time and ADT	2	3
Right-of-Way Impact	1	2
Utility Impact	3	2
Constructability	2	3
Maintainability	2	2
Community Impact & Stakeholder Preference	2	2
Score	**14**	**16**

Conceptual Cost Estimates



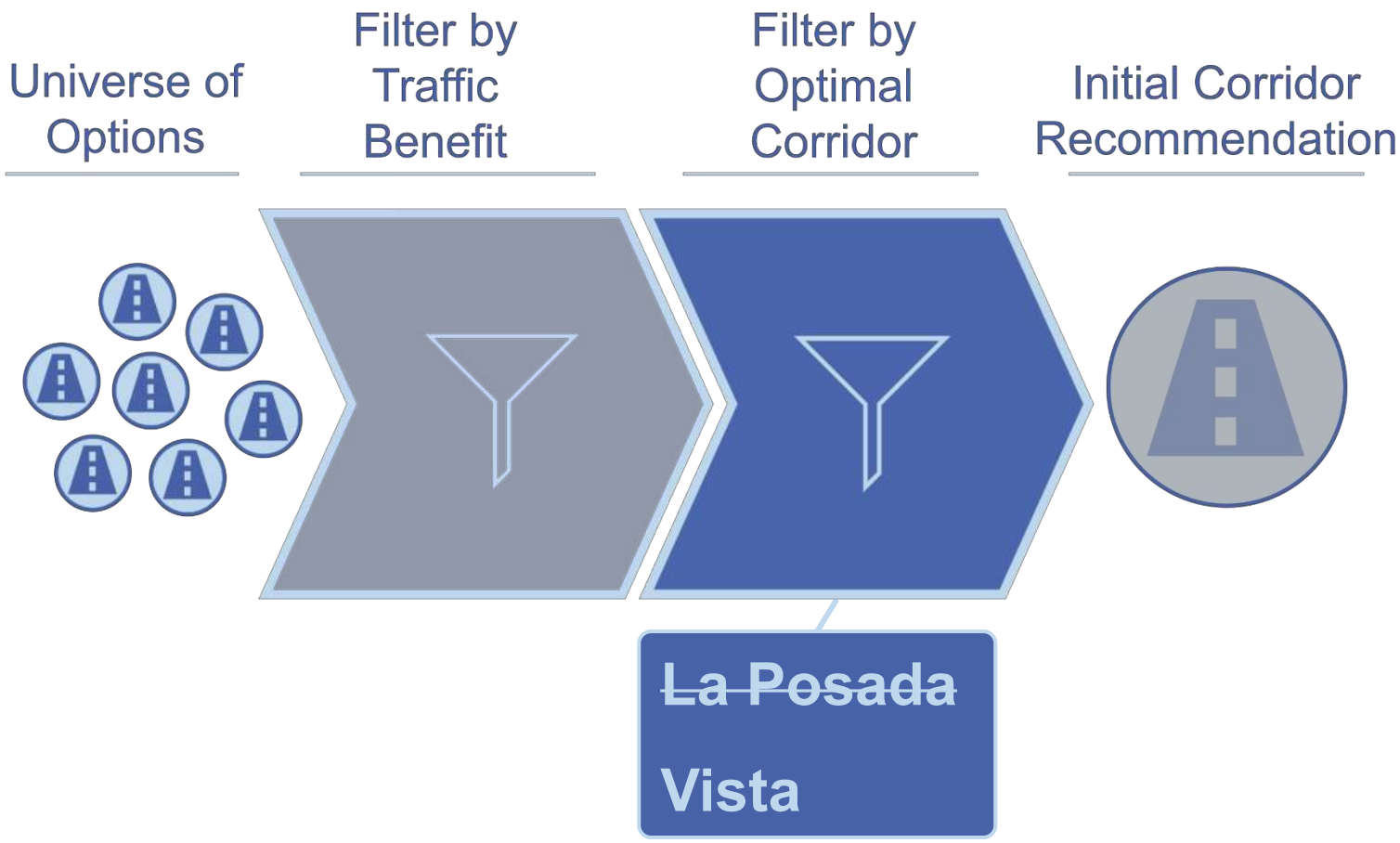
La Posada Corridor

$360M - $397M

Vista Corridor

$215M - $238M

Filter and Screen by Alignment Analysis



Next Steps

- Finalize Draft Feasibility Study
- TAC Review Draft Study
- Planned Public Meeting: December 2025
- Continued RTC support regarding funding
- RTC Determine Next Steps

QUESTIONS???

Bryan Byrne, PE
Project Manager

Regional Transportation Commission
of Washoe County

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Building A Better Community Through Quality Transportation
rtcwashoe.com

APPENDIX F:
PUBLIC OUTREACH SUMMARY

APPENDIX G:
TRAFFIC DEMAND MODEL CALIBRATION MEMO

Memorandum

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

To: Regional Transportation Commission of Washoe County

From: Mario Tambellini, PE, TE
Noor Feyli

Date: April 25, 2025

Subject: **RTC Washoe Travel Demand Model Calibration**
La Posada-TRIC Connection Alignment and Feasibility Study

INTRODUCTION

This memorandum has been prepared to describe the calibration and validation process of the Regional Transportation Commission of Washoe County (RTC Washoe) Travel Demand Model (TDM) for use in the La Posada – Tahoe Reno Industrial Center (TRIC) Connection Alignment and Feasibility Study. Included is a discussion of the following:

- Project Background and Limits
- Existing Conditions Data
- Model Background
- Validation Criteria
- TDM Calibration Process and Results
- Origin-Destination Calibration

Final validation results are included in Attachment A at the end of this memorandum.

PROJECT BACKGROUND AND LIMITS

The TRIC is an extensive industrial development located approximately 13 miles east of Sparks, Nevada on State Route (SR) 439 (USA Parkway). Approximately 80% of TRIC commuters originate from the Reno/Sparks area and make their commute via I-80. Additionally, approximately 80% of this traffic originates north of I-80 in the Truckee Meadows area. TRIC has continued to see substantial growth which has generated a significant increase in safety and congestion concerns along the I-80 corridor.

The La Posada to TRIC Connection is a potential new alignment that would establish an alternate route, provide additional connectivity, and potentially alleviate congestion while improving reliability on I-80 between the Reno/Sparks area and the TRIC. The La Posada to TRIC Connection Project is included in the RTC Washoe 2050 Regional Transportation Plan in the 2031-2050 timeframe.

The La Posada to TRIC Connection would generally start in the Spanish Springs or northeastern Sparks area, connecting to a one of a number of potential existing roadways in the area including La Posada Drive. The La Posada to TRIC Connection would then extend east and terminate at a connection with SR 439 (USA Parkway) near I-80.

As part of the Alignment and Feasibility Study being performed for the La Posada to TRIC Connection, build and no build traffic data is needed for the La Posada to TRIC Connection study area under horizon year 2050 conditions. The project study area is defined as all major roadways that would experience a significant change in travel patterns and/or volumes due to construction of the proposed La Posada to TRIC Connection. Roadways anticipated to be affected by the project include major parallel routes (I-80), roadways being

considered as potential western/eastern termini (La Posada Drive, Vista Boulevard, Los Altos Parkway, Prater Way, USA Parkway), and major connecting roads between the proposed connector and I-80 (Pyramid Highway, Sparks Boulevard, McCarran Boulevard).

The RTC Washoe TDM was selected as the best tool to estimate traffic data for the project. Since the RTC Washoe TDM is a large, regional model, it is good practice to perform a study area calibration and validation of the Base Year 2022 scenario to ensure the model is reliably modeling traffic in the project area. This memorandum details the process of the RTC Washoe TDM study area validation.

EXISTING CONDITIONS DATA

Existing conditions traffic volume data was obtained for all freeway mainline segments (between interchanges) and freeway on- and off-ramps for I-80 between Pyramid Way and USA Parkway. Traffic volume data was also obtained for Pyramid Way, McCarran Boulevard, Sparks Boulevard, Vista Boulevard, La Posada Drive, USA Parkway, Eagle Canyon Drive, Highland Ranch Parkway, Prater Way, Baring Boulevard, and Los Altos Parkway. Latest available year 2023 Annual Average Daily Traffic (AADT) data was obtained for all facilities from the Nevada Department of Transportation (NDOT) Traffic Records Information Access (TRINA) application available online.

Origin-destination (OD) Spring 2024 trip data was obtained from the location-based services data vendor Replica. Replica data is based on multiple anonymous data sources including GPS and cell phone data. Additional information on Replica can be found here: https://replicahq.com/about/.

MODEL BACKGROUND

The RTC Washoe TDM is maintained by the Regional Transportation Commission of Washoe County. The RTC Washoe TDM was most recently updated by Caliper Corporation and RTC Washoe in 2024/2025 to incorporate latest available land use and roadway improvement data, update model scenarios, expand the model area to include the City of Fernley, incorporate more detailed non-motorized and special market components, and perform a regional validation, among other upgrades. The current version of the TDM has scenario years of 2022 (base year), 2025, 2030, 2040, and 2050.

Wood Rodgers received a copy of the latest RTC Washoe TDM from RTC Washoe via email on March 11, 2025. The TDM was last updated and calibrated to run using TransCAD version 10.0, build 40615 software for all analysis.

VALIDATION CRITERIA

Before using the RTC Washoe TDM to forecast traffic data, the study area links in the base year 2022 model had to be calibrated and validated against existing AADT counts obtained from NDOT TRINA. TDM forecasting thresholds contained in *NDOT Traffic Forecasting Guidelines* (dated August 2012) were used when validating the base year 2022 TDM within the study area. In particular, individual TDM link volumes within the study area were compared against NDOT's Percent Deviation Thresholds defined in Table 1.

Table 1. Link Percent Deviation Thresholds

AADT Range	Maximum Allowable Percent Deviation
< 50,000	+/- 10%
50,000 - 249,999	+/- 7.5%
≥ 250,000	+/- 5%
Note: AADT = Annual Average Daily Traffic	

In addition, Coefficient of Variation of Root Mean Square Error (CV[RMSE]) values were calculated separately for groups of study area links that fell within six ranges of AADTs, as recommended by NDOT guidelines. Each calculated CV(RMSE) was then compared against NDOT's maximum allowable CV(RMSE) thresholds defined in Table 2.

Table 2. Link CV(RMSE) Thresholds

AADT Range	Maximum Allowable Percent Deviation
< 5,000	45%
5,000 - 9,999	35%
10,000 - 14,999	30%
15,000 - 19,999	25%
20,000 - 49,999	20%
≥ 50,000	10%

Several other statistics were calculated to determine accuracy of overall volumes within the base year TDM study area. Percent deviation was calculated for the groups of links that fell within the AADT ranges defined in Table 1. Correlation Coefficient, Root Mean Square Error (RMSE), and overall Model to Count Ratios were calculated for the total study area volumes and compared against thresholds used by other agencies (such as Caltrans). This step was done to ensure that the base year TDM did not have an overall deficit or surplus of volumes within the study area.

TDM CALIBRATION PROCESS AND RESULTS

Iterative refinements that included adjustment of network link speeds, capacities, turn penalties, and geometries were performed on the base year 2022 RTC Washoe TDM scenario to achieve acceptable levels of validation between traffic counts and forecasted traffic volumes under daily conditions within the study area. The base year 2022 TDM was validated for daily link volumes on 72 roadway segments, including freeways, ramps, and arterials. A detailed daily validation summary report is included as Attachment A at the end of this memorandum. The resulting validation statistics are summarized in Table 3**,** Table 4**,** and Table 5 below and on the following page**.**

Table 3. AADT Range CV(RMSE)

Existing AADT Range	Max Allowable CV(RMSE)	Model CV(RMSE)	Met Target?
< 5,000	45%	41%	YES
5,000 - 9,999	35%	14%	YES
10,000 - 14,999	30%	13%	YES
15,000 - 19,999	25%	13%	YES
20,000 - 49,999	20%	13%	YES
≥ 50,000	10%	7%	YES
Note: Max Allowable CV(RMSE) based NDOT Traffic Forecasting Guidelines (August 2012)			

Table 4. AADT Range Percent Error

Roadway Functional Classification	% Error Target	Total Count (AADT)	Total Model Volume (ADT)	% Error	Met FC Target?
< 50,000	< +/-10%	1,152,550	1,144,994	-1%	YES
50,000-249,999	< +/-7.5%	364,500	358,946	-2%	YES
Total:		**1,517,050**	**1,503,940**	**-1%**	-
Note: % Error Targets based NDOT Traffic Forecasting Guidelines (August 2012)					

Table 5. Overall Project Corridor Targets

Overall TDM Validation Statistic (Total Number of Links Analyzed = 72)	Link Validation Target	Validated Model Results	Met Validation Criteria?
Correlation Coefficient	> 88%	99%	YES
Percent Root Mean Square Error (%RMSE)	< 40%	13%	YES
Overall TDM Volume to Count Percent Error	< +/-5%	-1%	YES
Percent of Project Corridor Links Meeting Percent Deviation Target	76%		
Note: Overall TDM Link Validation Targets based on Caltrans Travel Forecasting Guidelines (November 1992)			

As shown in Table 3, Table 4, and Table 5, the calibrated base year 2022 RTC Washoe TDM generates results that meet or exceed NDOT's model validation criteria in the study area. 76 percent of Project Corridor links meet the individual link percent deviation criteria defined in Table 1. However, model forecasts for all facilities were generally found to reasonably estimate existing AADT conditions and further refinements were deemed to be infeasible.

ORIGIN-DESTINATION CALIBRATION

The *NDOT Traffic Forecasting Guidelines* do not require that trip origin-destination patterns in a TDM be validated for a project analysis. However, since the Project is primarily intended to serve commute patterns between northern Reno/Sparks and the TRIC, a high-level validation of the RTC Washoe TDM origin-destination travel patterns was performed in the study area for informational purposes.

The area contained in the RTC TDM was divided into eight (8) origin-destination subareas. The eight (8) origin-destination subareas are shown in Attachment B. Using Replica data, the total number of commute trips traveling to the TRIC were summarized by which subarea they originated in. RTC Washoe TDM forecasted commute trips traveling to the TRIC were also summarized by the subarea they originated in and compared against Replica data. The resulting TRIC commute trips by origin subarea are shown in Table 6 on the following page.

Upon initial review, it was found that the RTC Washoe TDM forecasted slightly low existing daily volumes and commute trips to TRIC in the Spanish Springs area (Subarea 2) compared to counts. Therefore, model inputs in Subarea 2 were adjusted to increase vehicle trips in the area.

As shown in Table 6, the calibrated RTC Washoe TDM forecasts origin-destination travel patterns between Reno/Sparks and TRIC that generally match Replica origin-destination data reasonably well, with a few differences. One difference of note for the Project is that even after calibration, the RTC Washoe TDM underestimates commute trips to TRIC originating in the Spanish Springs area (Subarea 2), but overestimates commute trips to TRIC originating in the Central Sparks area (Subarea 4). Therefore, post-processing adjustments may be applied to La Posada to TRIC Connection traffic forecasts from the RTC Washoe TDM to account for the observed origin-destination differences.

Table 6. Origin-Destination Trips by Subarea Summary

Subarea	Replica		Travel Demand Model	
	Number of Origin Trips	Percent of Trips from Subarea to TRIC	Number of Origin Trips	Percent of Trips from Subarea to TRIC
1	1,105	13.5%	1,195	14.6%
2	2,165	26.4%	1,669	20.4%
3	593	7.2%	1,030	12.6%
4	1,763	21.5%	2,458	30.0%
5	1,095	13.4%	877	10.7%
6	834	10.2%	270	3.3%
7	332	4.0%	202	2.5%
8	314	3.8%	499	6.1%
Total	**8,201**	**100.0%**	**8,200**	**100.0%**

ATTACHMENT A

BASE YEAR (2022) RTC WASHOE TRAVEL DEMAND MODEL VALIDATION TABLE

ATTACHMENT A

Base Year (2022) RTC Washoe Travel Demand Model Validation
La Posada -TRIC Connection Alignment and Feasibility Study

#	Route	Roadway Segment	Functional Classification (FC)	TRINA ID	Exist AADT TRINA Count	Base Year Model AADT Volume	Diff (Base Year Model AADT Volume - Exist AADT Count)	Diff Squared	Allowable Link % Deviation (+/-)	Link % Deviation (Base Year Model AADT - Exist AADT Count)	Link % Deviation Met?
1	I-80 Mainline	b/w Pyramid Way and McCarran Boulevard	Freeway	0311220	92,500	82,034	-10,466	109,529,843	7.5%	-11.3%	NO
2		b/w McCarran Boulevard and Sparks Boulevard	Freeway	0310810	51,000	53,784	2,784	7,749,704	7.5%	5.5%	YES
3		b/w Sparks Boulevard and E Greg Street	Freeway	0310620	60,500	61,402	902	814,083	7.5%	1.5%	YES
4		b/w E Greg Street and Canyon Road	Freeway	0311110	49,500	61,203	11,703	136,950,788	10.0%	23.6%	NO
5		b/w Lockwood Road and Mustang Ranch Road	Freeway	0310070	51,500	52,768	1,268	1,606,654	7.5%	2.5%	YES
6		b/w Mustang Ranch Road and Waltham Way	Freeway	0310071	42,000	44,008	2,008	4,031,125	10.0%	4.8%	YES
7		b/w Waltham Way and USA Parkway	Freeway	0312290	39,500	42,232	2,732	7,462,456	10.0%	6.9%	YES
8	EB I-80 Ramps & Connectors	EB I-80 On-Ramp from Pyramid Highway	Ramp	0310055	3,000	3,147	147	21,755	10.0%	4.9%	YES
9		EB I-80 Off-Ramp to Pyramid Highway	Ramp	0310306	9,400	9,978	578	334,414	10.0%	6.2%	YES
10		EB I-80 Off-Ramp to McCarran Boulevard	Ramp	0310310	10,800	11,687	887	787,522	10.0%	8.2%	YES
11		E/B I-80 On-Ramp from the SR659 (E McCarran Blvd)	Ramp	0310040	3,450	3,823	373	139,458	10.0%	10.8%	YES
12		E/B I-80 Off-Ramp to Sparks Boulevard	Ramp	0310830	12,900	11,458	-1,442	2,079,109	10.0%	-11.2%	NO
13		E/B I-80 On-Ramp from Sparks Boulevard	Ramp	0310814	3,800	3,782	-18	328	10.0%	-0.5%	YES
14		E/B I-80 Off-Ramp to Vista Boulevard	Ramp	0310044	9,600	7,302	-2,298	5,278,783	10.0%	-23.9%	NO
15		E/B I-80 On-Ramp from Vista Boulevard	Ramp	0310047	4,600	7,822	3,222	10,380,754	10.0%	70.0%	NO
16		E/B I-80 Off-Ramp to USA Parkway	Ramp	0311073	8,650	7,252	-1,398	1,953,403	10.0%	-16.2%	NO
17		E/B I-80 On-Ramp from USA Parkway	Ramp	0311074	1,800	1,088	-712	506,920	10.0%	-39.6%	NO
18	WB I-80 Ramps & Connectors	W/B I-80 On-Ramp from Pyramid Highway	Ramp	0310304	11,500	16,160	4,660	21,713,574	10.0%	40.5%	NO
19		W/B I-80 Off-Ramp to Pyramid Highway	Ramp	0310048	2,500	3,296	796	634,017	10.0%	31.9%	NO
20		W/B I-80 Loop On-Ramp from McCarran Boulevard	Ramp	0310469	2,850	3,249	399	158,891	10.0%	14.0%	YES
21		W/B I-80 On-Ramp from McCarran Boulevard	Ramp	0310311	7,700	7,434	-266	70,869	10.0%	-3.5%	YES
22		W/B I-80 Off-Ramp to McCarran Boulevard	Ramp	0310042	4,250	5,489	1,239	1,534,917	10.0%	29.2%	NO
23		W/B I-80 On-Ramp from Sparks Boulevard	Ramp	0310792	12,000	11,169	-831	690,969	10.0%	-6.9%	YES
24		W/B I-80 Off-Ramp to Sparks Boulevard	Ramp	0310815	3,850	3,837	-13	181	10.0%	-0.3%	YES
25		W/B I-80 On-Ramp from Vista Boulevard	Ramp	0310052	7,900	7,430	-470	221,228	10.0%	-6.0%	YES
26		W/B I-80 Off-Ramp to Vista Boulevard	Ramp	0310049	4,200	6,711	2,511	6,302,637	10.0%	59.8%	NO
27		W/B I-80 On-Ramp to USA Parkway	Ramp	0311076	9,200	11,718	2,518	6,342,192	10.0%	27.4%	NO
28		W/B I-80 Off-Ramp from USA Parkway	Ramp	0311075	1,800	1,848	48	2,323	10.0%	2.7%	YES
29	Pyramid Highway	b/w E Street and F Street	MajorArterial	0310334	25,400	24,057	-1,343	1,803,995	10.0%	-5.3%	YES
30		b/w J Street and K Street	MajorArterial	0310336	31,500	28,935	-2,565	6,579,105	10.0%	-8.1%	YES
31		b/w York Way and Roberta Lane	MajorArterial	0310337	24,100	25,464	1,364	1,859,984	10.0%	5.7%	YES
32		b/w Emerson Way and Queen Way	MajorArterial	0310338	54,500	55,421	921	847,405	7.5%	1.7%	YES
33		b/w Villa Jimenez Way and Disc Drive	MajorArterial	0310340	54,500	53,537	-963	926,719	7.5%	-1.8%	YES
34		b/w Shoppers Way and Los Altos Parkway	MajorArterial	0311127	39,500	43,043	3,543	12,550,991	10.0%	9.0%	YES
35		b/w Sparks Boulevard and Wingfield Hill Road	MajorArterial	0311128	40,500	43,538	3,038	9,232,000	10.0%	7.5%	YES
36		b/w Robert Banks Boulevard and Dakota Hills Drive	MajorArterial	0311041	39,000	36,074	-2,926	8,559,922	10.0%	-7.5%	YES
37		b/w Sunset Springs Road and Calle De La Plata	MajorArterial	0311032	18,700	17,102	-1,598	2,555,075	10.0%	-8.5%	YES
38		b/w Calle De La Plata and Sha Neva Road	MajorArterial	0311034	10,300	9,670	-630	397,374	10.0%	-6.1%	YES
39		b/w Sha Neva Road and Horizon View Ave	MajorArterial	0312270	9,500	9,670	170	28,772	10.0%	1.8%	YES
40	McCarran Boulevard	b/w Lincoln Way and E Prater Way	MajorArterial	0310517	29,900	29,798	-102	10,459	10.0%	-0.3%	YES
41		b/w E Prater Way and Gleeson Way	MajorArterial	0312320	22,600	23,329	729	531,008	10.0%	3.2%	YES
42		b/w E York Way and Baring Boulevard	MajorArterial	0310316	15,500	14,734	-766	586,992	10.0%	-4.9%	YES
43		b/w Probasco Way and Dana Way	MajorArterial	0310466	18,400	18,302	-98	9,615	10.0%	-0.5%	YES
44		b/w 4th St and Pyramid Highway	MajorArterial	0310467	22,500	21,188	-1,312	1,721,826	10.0%	-5.8%	YES

ATTACHMENT A

Base Year (2022) RTC Washoe Travel Demand Model Validation
La Posada -TRIC Connection Alignment and Feasibility Study

#	Route	Roadway Segment	Functional Classification (FC)	TRINA ID	Exist AADT TRINA Count	Base Year Model AADT Volume	Diff (Base Year Model AADT Volume - Exist AADT Count)	Diff Squared	Allowable Link % Deviation (+/-)	Link % Deviation (Base Year Model AADT - Exist AADT Count)	Link % Deviation Met?
45	Sparks Boulevard	b/w McCabe Park Street and E Prater Way	MajorArterial	0312300	34,500	27,412	-7,088	50,239,758	10.0%	-20.5%	NO
46		b/w E Prater Way and Express Street	MajorArterial	0310720	26,400	24,651	-1,749	3,057,857	10.0%	-6.6%	YES
47		b/w Springland Drive and Howard Drive	MajorArterial	0310721	22,700	19,201	-3,499	12,241,912	10.0%	-15.4%	NO
48		b/w Baring Blvd and Shadow Ln	MajorArterial	0311061	24,300	25,770	1,470	2,160,428	10.0%	6.0%	YES
49		b/w Shadow Lane and Vintage Hills Parkway	MajorArterial	0311062	24,800	25,824	1,024	1,048,105	10.0%	4.1%	YES
50		b/w Disc Drive and Winery Drive	Local	0311137	22,800	22,406	-394	155,543	10.0%	-1.7%	YES
51		b/w Kiley Parkway and Pyramid Highway	MajorArterial	0311132	15,300	16,622	1,322	1,747,080	10.0%	8.6%	YES
52	Highland Ranch Pkwy	west of Pyramid Highway	Arterial	0311126	13,900	13,398	-502	252,270	10.0%	-3.6%	YES
53	Vista Boulevard	b/w W/B off-ramp of I-80 and Brierley Way	MajorArterial	0310050	29,600	27,363	-2,237	5,002,164	10.0%	-7.6%	YES
54		b/w Loop Road and Cola Ct	MajorArterial	0311157	23,300	21,029	-2,271	5,155,533	10.0%	-9.7%	YES
55		b/w Frisco Way and Jitney Drive	MajorArterial	0310713	23,200	23,587	387	150,136	10.0%	1.7%	YES
56		b/w Baring Boulevard and Alpland Lane	MajorArterial	0311064	21,800	21,011	-789	622,660	10.0%	-3.6%	YES
57		b/w Iratcabal Dr/Domaine Dr and Basco Way	MajorArterial	0311136	22,000	14,544	-7,456	55,593,248	10.0%	-33.9%	NO
58		b/w Los Altos Parkway and Vista Del Rancho Parkway	Arterial	0311140	28,100	22,816	-5,284	27,922,938	10.0%	-18.8%	NO
59		b/w Vista del Rancho Pkwy & Wingfield Springs Rd	Arterial	0311135	22,900	23,317	417	174,194	10.0%	1.8%	YES
60		East of of Wingfield Hills Road	Arterial	0311133	21,200	21,593	393	154,596	10.0%	1.9%	YES
61	Eagle Canyon Drive	West of Pyramid Way	Arterial	0311130	15,700	10,854	-4,846	23,485,901	10.0%	-30.9%	NO
62	La Posada Drive	b/w Terra Del Sol Parkway and Stonebrook Parkway	Arterial	0311131	11,400	11,276	-124	15,381	10.0%	-1.1%	YES
63	USA Parkway	south of I-80 USA Parkway Interchange	MajorArterial	0311077	23,400	21,873	-1,527	2,330,478	10.0%	-6.5%	YES
64	Prater Way	b/w Pyramid Way and 6th Street	MajorArterial	0310497	12,600	13,119	519	268,886	10.0%	4.1%	YES
65		b/w E I Street and McCarran Blvd	MajorArterial	0310500	14,700	13,675	-1,025	1,051,443	10.0%	-7.0%	YES
66		b/w McCarran Blvd and Woodside Dr	MajorArterial	0310314	18,100	19,444	1,344	1,805,383	10.0%	7.4%	YES
67		b/w Howard Dr and E Greenbrae Dr	MajorArterial	0310684	13,400	13,887	487	236,782	10.0%	3.6%	YES
68		b/w Sparks Blvd and Lillard Dr	MajorArterial	0310687	8,350	8,061	-289	83,501	10.0%	-3.5%	YES
69	Baring Blvd	b/w McCarran Blvd and Sparks Blvd	MajorArterial	0310717	12,700	11,810	-890	792,510	10.0%	-7.0%	YES
70		b/w Sparks Blvd and Vista Blvd	MajorArterial	0310715	7,850	8,450	600	360,401	10.0%	7.6%	YES
71	Los Altos Parkway	b/w Sparks Blvd and Vista Blvd	MajorArterial	0311147	16,100	17,081	981	963,164	10.0%	6.1%	YES
72		b/w Vista Blvd and Santa Barbara Ave	Arterial	0311139	7,300	6,895	-405	163,811	10.0%	-5.5%	YES
				TOTAL:	**1,517,050**	**1,503,940**	**-13,110**	**572,736,200**		**Total "YES":**	**55**

Note: Dir = Direction, FC = Functional Classification, FC # = Functional Classification Number, AADT = Annual Average Daily Traffic, Diff = Difference, Exist = Existing, NB = Northbound, SB = Southbound
Diff Squared = [Diff (Base Year (2022) Model AADT - Exist AADT Count)]^2
Allowable Link % Deviation (+/-) is based on NDOT Traffic Forecasting Guidelines (August 2012)
Link Deviation % Met = If absolute value of Percent Difference is less than the Allowable Link Deviation Percentage **or** the absolute value of the Difference is less than 500, then "YES", otherwise "NO"

AADT Range CV(RMSE)

Exist AADT Range	Max Allowable CV(RMSE)	Model CV(RMSE)	Met Target?
< 5,000	45%	41%	YES
5,000-9,999	35%	14%	YES
10,000-14,999	30%	13%	YES
15,000-19,999	25%	13%	YES
20,000-49,999	20%	13%	YES
>= 50,000	10%	7%	YES

Notes: CV(RMSE) was calculated and compared to targets as defined NDOT Traffic Forecasting Guidelines (August 2012)

AADT Range Percent Error

Exist AADT Range	Target % Error	Total Model	% Error	Met FC Target?
< 50,000	+/- 10%	1,144,994	-1%	YES
50,000-249,999	+/- 7.5%	358,946	-2%	YES
Total		**1,503,940**	**-1%**	**-**

Notes: Met FC Target = If absolute value of Actual % Error is less than the Target % Error, then "YES", otherwise "NO"
Target % Error for each AADT Range based on NDOT Traffic Forecasting Guidelines (August 2012)

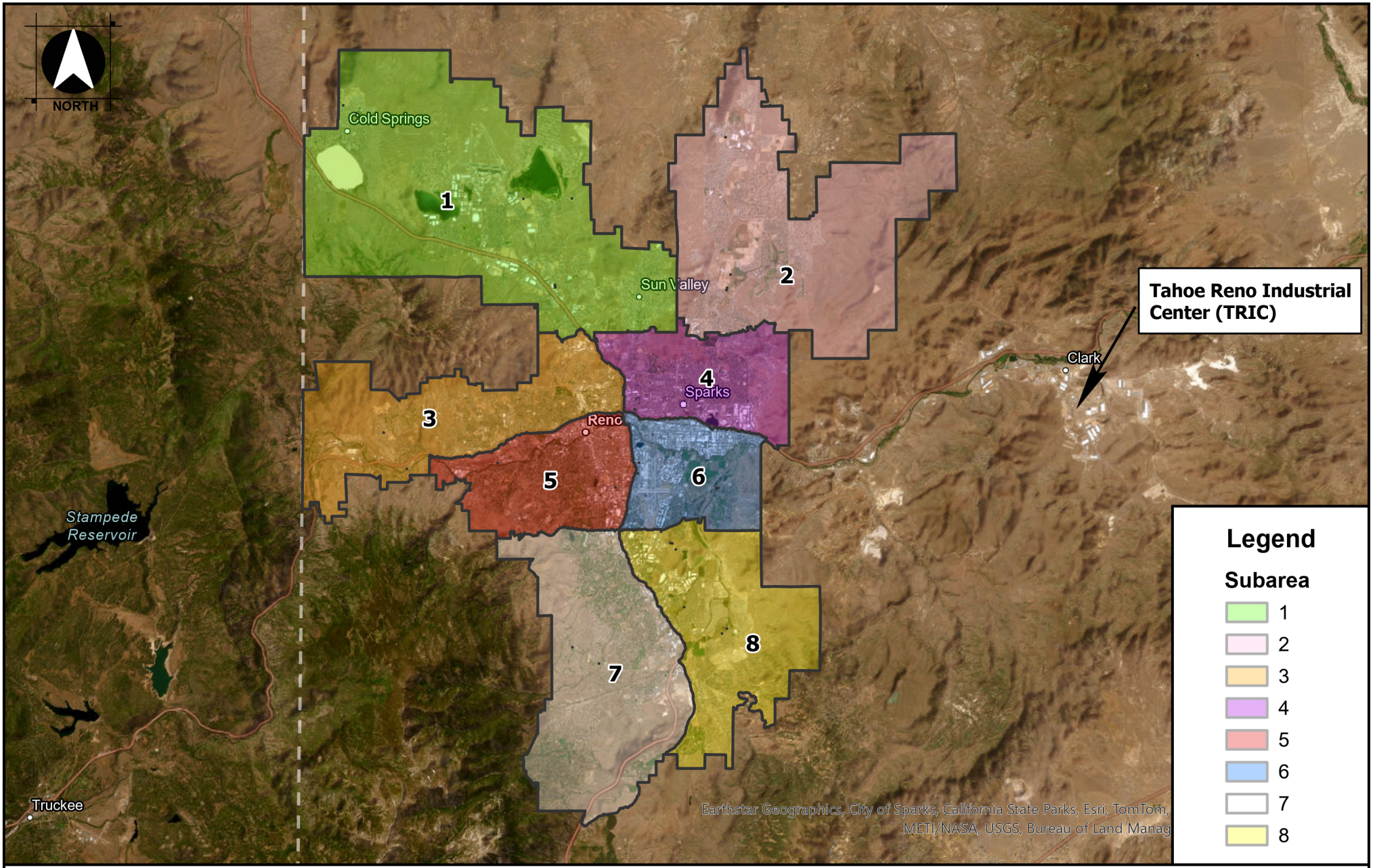
Overall Project Corridor Targets

Validation Statistic	Target	Model	Met Target?
Correlation Coefficient	> 88%	99%	YES
Root Mean Square Error (%RMSE)	< 40%	13%	YES
Model to Count Ratio	< 5%	-1%	YES
Total Links	72		
% of Links Meeting % Deviation	76%		

Notes: %RMSE = [(Difference Squared)/(Total Links - 1)]^(0.5)/[(Total Exist AADT Count)/(Total Links)], and is based on Model Validation and Reasonableness Checking Manual, dated February 1997.
Correlation Coefficient, %RMSE, and Model to County Ratio targets are based on Caltrans Travel Forecasting Guidelines (November 1992)

ATTACHMENT B

RENO/SPARKS TO TRIC ORIGIN-DESTINATION SUBAREAS



ATTACHMENT B

RENO/SPARKS TO TRIC ORIGIN-DESTINATION SUBAREAS

LA POSADA -TRIC CONNECTION ALIGNMENT AND FEASIBILITY STUDY

WASHOE COUNTY, NV

APRIL 2025

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APPENDIX H:
ENVIRONMENTAL ANALYSIS METHODOLOGY MEMO

TECHNICAL MEMORANDUM: ENVIRONMENTAL SCREENING METHODOLOGY

PURPOSE

This memorandum outlines the environmental evaluation framework applied to assess potential alignment alternatives for the proposed Northeast Connector highway. It defines the specific environmental measures used to identify and characterize resources that may be affected by corridor development. The findings presented here are intended to complement the Environmental Impact Due Diligence Report (EIDD), which provides a broader inventory of environmental resources within the study area. Additional screening and scoring methodologies are detailed in Section 2 of the Northeast Connector Feasibility Report.

The environmental data referenced in this memorandum was obtained from publicly accessible sources suitable for desktop analysis. These sources provided baseline information for preliminary evaluation. As the project advances into formal coordination under the National Environmental Policy Act (NEPA), resource specialists from the Bureau of Land Management (BLM) will contribute to the refinement of baseline data through field verification and agency consultation.

ANALYSIS AREA

The analysis area for this evaluation was established as the total area where potential highway alignment alternatives were being considered, and within which all project actions would be located, and all potential direct impacts would occur. For this Project, the analysis area is approximately 77,885-acre area (refer to ***Figure 1****: Project Area Map* below).

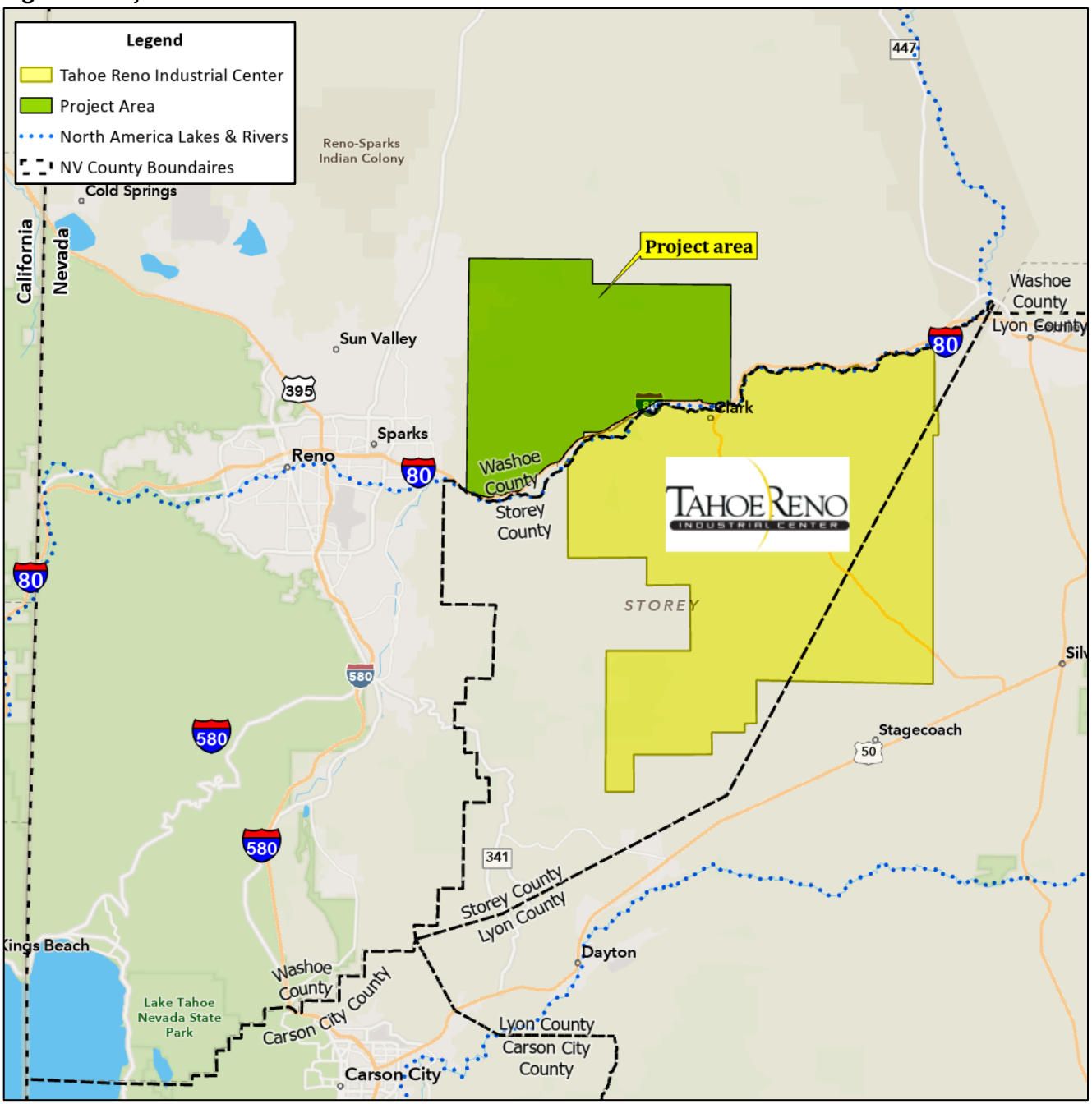
Following level one screening the two alternatives (Vista and La Posada) were identified as the two most feasible routes and thus progressed to the level two screening which included the environmental analysis. The route area used to determine potential direct impacts to environmental resources was the mapped route alternative with a 100ft buffer on each side of the center line, creating a 200ft wide corridor boundary for both corridor alternatives.

AVOIDANCE AREAS

For some resources, specifically the Pah Rah High Pasin Petroglyph Area of Critical Environmental Concern (ACEC), the potential impacts or the constraints on the Project may be sufficiently significant that avoidance of the resource was warranted. Both route alternatives were evaluated with a 200-foot buffer and avoidance of corridor overlap was considered to the extent practicable. Although the Vista route alternative's buffer does have a small but negligible overlap (0.58 acres) with the outer edge of the mapped ACEC, discussions with project engineers have indicated that if required, full avoidance can be achieved during the design process. Other resources, such as some cultural resources or occupied migratory bird

nests, avoidance would be warranted; however, information on the location and status of these resources is not currently available to establish avoidance areas.

Figure 1: Project Area



ENVIRONMENTAL RESOURCES & QUALITATIVE MEASURES

WATER OF THE UNITED STATES

The National Wetlands Inventory (NWI) is a database of all the NWI wetlands and other aquatic habitats within the identified project area subject to regulation under Section 404 of the Clean Water Act, or other State and Federal statutes.

Source: National Wetlands Inventory; U.S. Fish and Wildlife Service (USFWS)

Measure: Shortest distance between the corridor alternative's boundary and a mapped aquatic resource. *Proximity.*

Measure: The number of first, second, or third order waterways (connected to the Truckee River) the corridor alternative either contains or crosses. *Direct impact.*

Direct Impact: YES

SENSITIVE VEGETATION, WILDLIFE SPECIES, AND HABITAT

A data inquiry submitted to the Nevada Division of Natural Heritage (NDNH) revealed that there are nine (9) endangered, threatened, candidate, and/or at-risk plant and animal species recorded within or near the project area.

Source: Nevada Division of Natural Heritage data inquiry

Measure: Shortest distance between the corridor alternative boundary and the boundary of the identified species habitat (9 measures for each corridor alternative). If the proximity measure was zero, direct impacts were quantifiable (see below). *Proximity.*

Measure: Total area of corridor alternative which overlaps potential sensitive species habitat. *Direct impact.*

Direct Impact: YES

GREATER SAGE GROUSE HABITAT

Pursuant the Bureau of Land Management's (BLM's) 2024 Habitat Management Area (HMA) maps the project area does contain Greater Sage-Grouse Habitat. Each corridor alternative was analyzed for impact to sage-grouse habitat. HMAs have varying degrees of classification: General HMA (GHMA), Other HMA (OHMA), Priority HMA, and Priority+HMA (PHMA+). The area of each route that overlaps each different classification of HMA was measured.

Source: Bureau of Land Management (BLM) 2024 Habitat Management Area (HMA) Maps

Measure: Total area of corridor alternative which overlaps each of the four types of BLM Habitat Management Areas (HMAs) identified within the project area. *Direct impact.*

- Corridor alternative area which overlaps General HMA (GHMA)
- Corridor alternative area which overlaps Other HMA (OHMA)
- Corridor alternative area which overlaps Priority HMA (PHMA)
- Corridor alternative area which overlaps Priority+ HMA (PHMA+)

Direct Impact: YES

SPRINGS (USGS QUAD)

The United States Geological Survey topographical quad maps include data regarding water resources. Although there are no identified USGS water resources with the identified project area, there are two springs just outside the project area, in proximity to the site.

Source: USGS 7.5 Minute Quadrangles

Measure: Shortest linear distance between the corridor alternative boundary and both of the two identified water sources, averaged. *Proximity.*

Direct Impact: NO

FEMA FLOOD HAZARD AREAS

The project area contains varying degrees of FEMA hazard zones including X (0.2% Annual Chance Flood Hazard) A, AE, and AO (1% Annual Chance Flood Hazard), and AE (Regulatory Floodway). The closest distance between the corridor alternative and FEMA Hazard Zone A (Regulatory Floodway) was measured. It is worth noting the Regulatory Floodway contained within the project area is the Truckee River, and both route alternatives terminate in relatively the same location and have the same proximity to the Truckee River. Although it is important to know the routes proximity to FEMA A zones, this measure, being equal for both routes, does not affect the environmental feasibility score for the route.

Source: Federal Emergency Management Agency. (n.d.). *Flood hazard area maps*. FEMA Flood Map Service Center. Retrieved September, 2025, from https://msc.fema.gov/portal/home

Measure: Shortest linear distance between the corridor alternative boundary and FEMA Flood Zone A (Regulatory Floodway). *Proximity.*

Direct Impact: NO

GRAZING ALLOTMENTS

The BLM has identified two livestock grazing allotments within the project area, the Spanish Springs/Mustang and the Olinghouse. The two identified grazing allotments make up the vast majority of the identified potential project area. The measure chosen for this environmental indicator is the area of the corridor route contained within one of the two identified grazing allotments within the project area. It is worth noting that since the grazing allotments cover the vast majority of the project area, it is likely the measure is the same or similar the actual area of the route itself.

Source: Bureau of Land Management. (2025). *BLM National Grazing Pasture Polygons* [Map]. U.S. Department of the Interior. Retrieved September, 2025

Measure: Area of the corridor route which overlaps a mapped BLM grazing allotment. *Direct impact.*

Direct Impact: YES

WELLS (NDWR)

There are 218 wells within the project area, as permitted by NDWR, classified into 13 different types of wells. Direct impacts were measured by identifying the number of mapped wells within each of the corridor boundaries. Four wells occur within the La Posada corridor and five within the Vista corridor.

Source: Nevada Division of Water Resources. (2025). *Well Driller Reports (Well Logs)* [Dataset]. Nevada Department of Conservation and Natural Resources. Retrieved September 2025

Measure: Number of mapped drilled wells within the boundary of the corridor alternative. *Direct impact.*

Direct Impact: YES

VISUAL RESOURCE INVENTORY (VRI) CLASS

Visual resource classes are categories assigned to public lands to portray a relative value of the visual resource, ultimately used as a management tool inline with management objectives. The project area contains three of the four visual resource inventory classes identified by the BLM: Class II, Class III, and Class IV. There is also a portion of the project area that is classified as "not inventoried." Each route was analyzed for the area of the route overlapping each respective VRI Class as well as areas identified as "not inventoried."

Source: **Bureau of Land Management.** (n.d.). *BLM National Visual Resource Inventory Classes Polygon*. ArcGIS Hub. Retrieved September 2025

Measure: Total area of corridor alternative which overlaps VRI Class II-IV. *Direct impact.*

- Area of corridor route which overlaps VRI Class II.
- Area of corridor route which overlaps VRI Class III.
- Area of corridor route which overlaps area identifies as “not inventoried.”

Direct Impact: YES

VISUAL RESOURCE SENSITIVITY LEVEL RATING

Within the VRI process, the BLM evaluates public land with regard to visual sensitivity. Sensitivity is determined by evaluating types of potential viewers for a specific area, public interest in the area, adjacent land uses, and the presence of any special areas. Sensitivity levels are described by the BLM as high, medium, or low. The project area contains VRI areas that have high and moderate sensitivity ratings, with much of the project area classified with a high sensitivity value.

Source: **Bureau of Land Management.** (n.d.). *BLM CO VRI Sensitivity Level Rating Unit Polygons*. Data.gov. Retrieved September 2025

Measure: Area of corridor route which overlaps HIGH value Visual Quality Maintenance area. *Direct impact.*
Measure: Area of corridor route which overlaps MODERATE value Visual Quality Maintenance area. *Direct impact.*

Direct Impact: YES

MINING CLAIMS

There are two mining claims (Lode Claim, Placer Claim) located within the identified project area, but both are outside of the boundary of both of the identified corridor route alternatives. The closest linear distance from the corridor boundary to the mining claim was measured.

Source: **Nevada Division of Minerals.** (n.d.). Mining Claims (NDOM) [Map]. Nevada Division of Minerals Open Data Site. Retrieved September 2025.

Measure: Shortest linear distance between the corridor route boundary and the nearest mapped NDOM mining claim. *Proximity.*

Direct Impact: NO

HERD MANAGEMENT AREAS

The project area contains a portion of the Pah Rah Mountains Herd (Management) Area, which is part of the BLM's national dataset of wild horse and burro herd areas. The dataset includes polygon features representing original herd areas across BLM-managed lands, including Nevada. No portion of either corridor route alternative overlaps the mapped herd management area within the project area. As such, the closest linear distance between the corridor route and the Pah Rah Mountains Herd Area was used as a measure.

Source: **Bureau of Land Management.** (2025). *BLM OR Wild Horse and Burro Herd Area Polygons Hub* [Map]. Data.gov. Retrieved September 2025.

Measure: Shortest linear distance between the corridor route boundary and the mapped Pah Rah Mountains Herd Management Area. *Proximity.*

Direct Impact: NO

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) PAH RAH HIGH BASIN PETROGLYPH

The project area contains the Pah Rah High Basin Petroglyph Area of Critical Environmental Concern (ACEC) a portion of the Pah Rah Mountains Herd Area, which is part of the BLM's national dataset of wild horse and burro herd areas. The dataset includes polygon features representing original herd areas across BLM-managed lands, including Nevada. Neither route poses to substantially impact the ACEC. Although the 200 ft wide corridor buffer offset for the Vista alternative has negligible (0.58 acres) overlap to the edge of the ACEC, conversations with project engineers have indicated this negligible overlap can be easily removed during the design process. As such, the closest linear distance between the corridor route and the ACEC was used as a measure as well.

Source: **Bureau of Land Management.** (2013). *Carson City District Resource Management Plan Revision, Area of Critical Environmental Concern. Report on the Application of the Relevance and Importance Criteria*

Measure: Area of the corridor route which overlaps the Pah Rah High Basin Petroglyph ACEC. *Direct Impact.*

Measure: Shortest linear distance between the corridor route boundary and the ACEC boundary. *Proximity.*

Direct Impact: Negligible.

CULTURAL RESOURCES

A Class I Archive Search overview assessment was conducted for the project area which indicated that cultural resources do exist within the project area. Although information regarding cultural resource locations is confidential, it was possible to analyze potential impacts of the corridor routes on existing mapped survey areas. To represent impact, the area of corridor route area which overlaps mapped cultural resources was calculated. It is important to note, the archaeologist has indicated that based on the findings of existing surveys, the study area has a high sensitivity for cultural resources.

Source: Nevada Cultural Resource Inventory System

Measure: Area of corridor route which overlaps with existing cultural resource inventory area. *Direct Impact.*

Direct Impact: YES

Table X: Environmental Analysis Data Measures		
	Corridor Alternative	
	Vista	La Posada
Waters of the United States		
Proximity to Regulated Floodway	0.14 mi	0.14 mi
Waterways Crossed	18	20
Sensitive Vegetation/Wildlife/Habitat		
Sensitive Habitat Impacted [1][2]	54.62 acres	53.52
Proximity to Actinemys marmorata	3.1 miles	3.14 miles
Proximity to Astragalus porrectus	2.0 miles	4.68 miles
Proximity to Danaus plexippus	1.03 miles	1.45 miles
Proximity to Elgaria coerulea palmeri	0.20 miles	0.12 miles
Proximity to Eremothera nevadensis Impact [1] to Eremothera nevadensis Habitat [3]	0 miles 0.08 acres [3]	0 miles 0.02 acres [3]
Proximity to Lithobates pipiens	2.56 miles	5.03 miles
Proximity to Riparia riparia	0.06 miles	0.04 miles
Proximity to Aquila chrysaetos	2.62 miles	2.92 miles
Proximity to Grusonia pulchella Impact[1] to Grusonia pulchella Habitat [3]	0 miles 54.54 acers [3]	0 miles 53.50 acres [3]
Greater Sage-Grouse Habitat Impact [1]		
General HMA (GHMA)	9.2 acres	10.39 acres
Other HMA (OHMA)	50.50 acres	55.07 acres
Priority HMA (PHMA)	13.58 acres	102.75 acres
Priority +HMA (PHMA+)	0 acres	0 acres
Springs		
Proximity to Mapped Water Source 1	4.8 miles	3.76 miles
Proximity to Mapped Water Source 2	5.08 miles	5.08 miles
Springs Impacted	0	0
FEMA Flood Hazard Areas		
Proximity to Regulated Floodway	0.18 miles	0.18 miles
Regulated Floodway Impacted [1]	0 acres	0 acres
Grazing Allotments		
Grazing Allotment Impacted [1]	305.70 acres	251.67 acres
Wells		
Number of Wells Impacted [1]	5	4
Visual Resource Inventory Class		
VRI Cass II Impacted [1]	111.63 acres	192.88 acres
VRI Class III Impacted [1]	195.16 acres	163.51 acres
VRI Class IV Impacted [1]	0 acres	0 acres
VRI “not inventoried” impacted [1]	0.19 acres	0.19 acres
Visual Resource Sensitivity Rating		
HIGH Value Visual Quality Maintenance Area Impacted [1]	251.28 acres	302.14 acres
MODERATE Value Visual Quality Maintenance Area Impacted [1]	55.51 acres	54.26 acres
Mining Claims		
Proximity to Mining Claim	2.41 miles	6.25 miles

Mining Claims Impacted [1]	0	0
Herd Management Areas		
Proximity to Pah Rah Mountains Herd Area	3.32 miles	1.29 miles
Areas of Critical Environmental Concern (ACEC) – Pah Rah Basin Petroglyph ACEC		
Pah Rah Basin Petroglyph ACEC Impacted [1]	0.58 acres [4]	0 acres
Average Distance to Pah Rah Basin Petroglyph ACEC	1.79 miles	2.23 miles
Cultural Resources		
Percent of Corridor Area Impacting [1] Cultural Resource Survey Areas	23.43%	15.46%

[1] For purposes of this data set, Impact is defined as whether any portion of the corridor overlaps an area of the identified resource.
[2] Both routes impact two mapped sensitive species habitats. The total area of impact for both impacted habitat areas are added together to create this measure.
[3] Impact to the individual species habitats were added together to create the Sensitive Species Habitat Impact measure. Measures with this footnote were combined to create a total impact across all species habitat.
[4] The corridor offset (200 ft buffer) has a negligible overlap (0.58 acres) to the far edge of the ACEC boundary, which is likely a buffer area for the petroglyph basin as well. Project engineers have indicated this minor buffer overlap could be easily removed during design.

APPENDIX I:
CONCEPTUAL COST ESTIMATES

RTC NORTHEAST CONNECTOR FEASIBILITY - CONCEPTUAL COST ESTIMATE
REGIONAL TRANSPORTATION COMMISSION
RTC PROJECT 8312057

Prepared by Wood Rodgers
10/30/2025

				VISTA TAKEOFF		LA POSADA TAKEOFF	
ITEM NO.	**ITEM DESCRIPTION**	**UNIT**	**UNIT COST**	**QUANTITY**	**TOTAL COST**	**QUANTITY**	**TOTAL COST**
1	PROVIDE TRAFFIC CONTROL	LS	$ 3,000,000.00	1	$ 3,000,000.00	1	$ 2,500,000.00
2	MOBILIZATION	LS	$ 14,000,000.00	1	$ 14,000,000.00	1	$ 14,000,000.00
3	CUT MATERIAL (VISTA)	CY	$ 46.00	1,281,000	$ 58,926,000.00		
4	CUT MATERIAL (LA POSADA)	CY	$ 55.00			2,351,000	$ 129,305,000.00
5	BORROW MATERIAL	CY	$ 40.00	273,200	$ 10,928,000.00	856,100	$ 34,244,000.00
6	FILL MATERIAL	CY	$ 3.00	900,000	$ 2,700,000.00	2,150,000	$ 6,450,000.00
7	DUMP	CY	$ 5.00	204,500	$ 1,022,500.00	262,000	$ 1,310,000.00
8	PAVEMENT	CY	$ 400.00	54,339	$ 21,735,674.07	63,144	$ 25,257,629.63
9	BASE MATERIAL	CY	$ 100.00	108,678	$ 10,867,837.04	126,288	$ 12,628,814.81
10	MASS HAUL	CY*MILE	$ 2.00	1,776,300	$ 3,552,600.00	3,890,000	$ 7,780,000.00
11	UTILITY MODIFICATION	LS	PER ALT	1	$ 1,500,000.00	1	$ 1,000,000.00
12	SIGNAGE AND STRIPING	MI	$ 50,000.00	12.6	$ 640,000.00	14.7	$ 740,000.00
13	GALVANIZED GUARDRAIL	LINFT	$ 140.00	17,000	$ 2,380,000.00	27,200	$ 3,808,000.00
14	BRIDGE	SQFT	$ 600.00	25,600	$ 15,360,000.00	46,900	$ 28,140,000.00
15	RETAINING WALL	SQFT	$ 150.00	22,600	$ 3,390,000.00	5,600	$ 840,000.00
16	VISTA BLVD TRAFFIC IMPROVEMENTS	LS	$ 250,000.00	1	$ 250,000.00		
17	LA POSADA REALIGNMENT IMPROVEMENTS	LS	$ 300,000.00			1	$ 300,000.00
18	USA PARKWAY TRAFFIC IMPROVEMENTS	LS	$ 2,000,000.00	1	$ 2,000,000.00	1	$ 2,000,000.00
19	GOLDEN EAGLE PARK ACCESS MANAGEMENT IMPROVEMENTS	LS	$ 2,000,000.00	1	$ 2,000,000.00		
20	ROW FENCING	LINFT	$ 30.00	134,000	$ 4,020,000.00	156,000	$ 4,680,000.00
21	ITS	LS	$ 3,000,000.00	1	$ 3,000,000.00	1	$ 3,000,000.00
22	STORMWATER INFASTRUCTURE	LS	$ 18,100,000.00	1	$ 18,100,000.00	1	$ 18,100,000.00
23	TEMPORARY POLLUTION CONTROL	LS	$ 3,000,000.00	1	$ 3,000,000.00	1	$ 3,000,000.00
24	DUST CONTROL	LS	$ 3,000,000.00	1	$ 3,000,000.00	1	$ 3,000,000.00
		SUBTOTAL		$ 185,373,000		$ 302,084,000	
		30% CONTINGENCY		$ 55,612,000		$ 90,626,000	
		CONST. TOTAL		**$ 240,985,000**		**$ 392,710,000**	
		RIGHT-OF-WAY		$ 770,000		$ 3,390,000	
		NEPA/DESIGN (5.5%)		$ 13,255,000		$ 21,600,000	
		CONSTRUCTION ADMIN. (8%)		$ 19,279,000		$ 31,417,000	
		GRAND TOTAL		**$ 274,289,000**		**$ 449,117,000**	

All costs are preliminary for feasibility purposes only