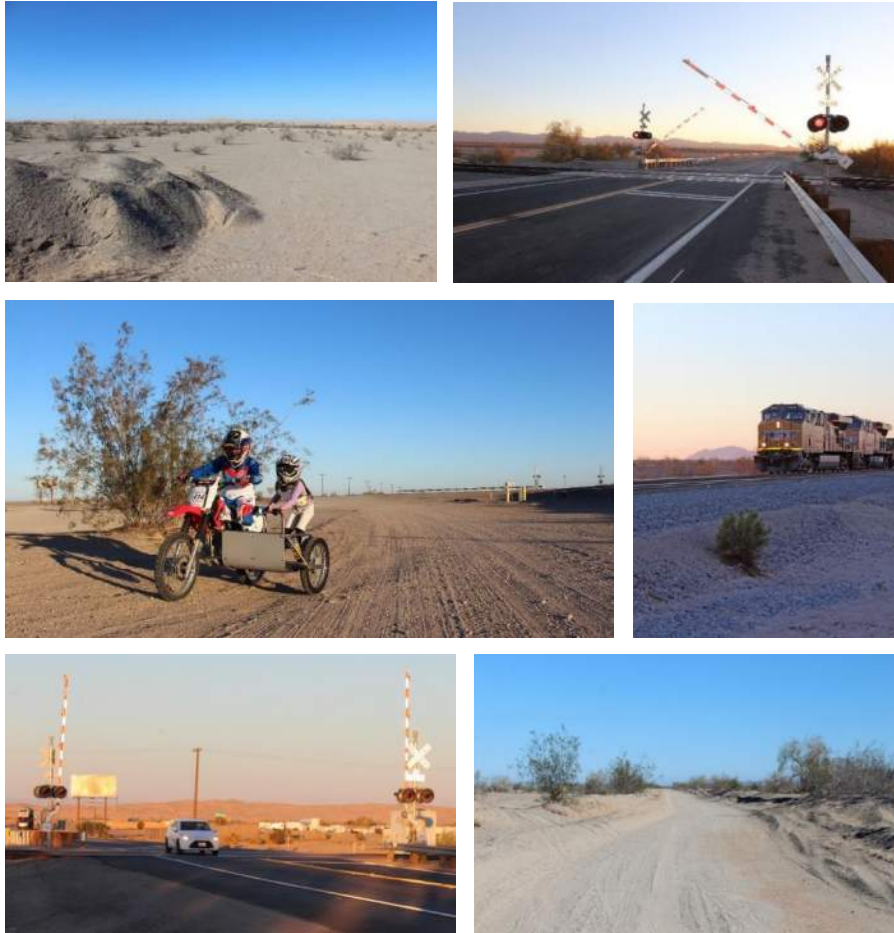


**SR 78 / Glamis Multiuse Grade Separated
Crossing Feasibility Study
Final Study Report**



Prepared for:
Project Sponsor
Imperial County Transportation Commission
and
Grant Administrator
California Department of Transportation

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1 Executive Summary

The Imperial County Transportation Commission (ICTC), in partnership with key project stakeholders, have undertaken a 12-month study of the feasibility of constructing a grade-separated crossing for Off-Highway Vehicle (OHV) users across the Union Pacific Railroad (UPRR) rail line at the Imperial Sand Dunes Recreation Area (ISDRA). The study was initiated in response to the need for a safe and legal crossing. No legal method of crossing the tracks currently exists for OHV users other than pushing the OHV by hand along the shoulder of SR 78. Additionally, a new at-grade crossing of the rail line is not feasible as it would not be approved by the regulatory body responsible for rail crossings or by UPRR.

The public and stakeholder outreach for the study included significant involvement by a Technical Working Group (TWG), public workshops held on site at the ISDRA and virtually, and an online survey. The TWG was comprised of key stakeholders. Through a series of meetings, this group provided input and reviewed all reports developed through the study. The concerns and preferences of the stakeholders were taken into consideration and discussed as part of the study process. A public workshop event was held at the ISDRA Glamis Sand Dunes to solicit input from users at the study location. Concurrently with the workshop, an online survey was offered with nearly 5,000 OHV users participating. The study results are also being presented through a pair of virtual public meetings.

This study evaluated the feasibility of a grade-separated crossing including developing and assessing alternatives, identifying impacts, and estimating costs and financial feasibility. The study began by defining crossing requirements and criteria against which the different alternatives would be compared.

A list of alternatives was considered based on the type of grade-separated crossing, overcrossing or underpass, and the location of the crossing within the study area. Four alternatives were selected to be developed in more detail and scored against the study criteria. These four alternatives represented the primary locations and included three overcrossings and one underpass. The detailed alternatives were located in two general areas, adjacent to SR 78 and near Wash 10, approximately 2 miles to the south of SR 78.

Each alternative was developed to a conceptual level including layout, structure type, drainage improvements needed, and approach trail layout. The alternatives were scored against the study criteria and a conceptual level cost estimate was developed for each, including costs for planning and design, construction, and maintenance. The four primary alternatives, their scores and project costs are shown in Figure 1.

The most feasible alternative was determined to be alternative 78T-O, which is the alternative near SR 78 that would construct an OHV trail overcrossing the rail line. This alternative had the highest weighted score and a project cost of \$12 Million. The primary advantages of this alternative are that it would have minimal impact to the rail line, it is located in an area of heavy OHV use, and it would provide access to connecting trails without impacting traffic on existing roads such as Wash Road.

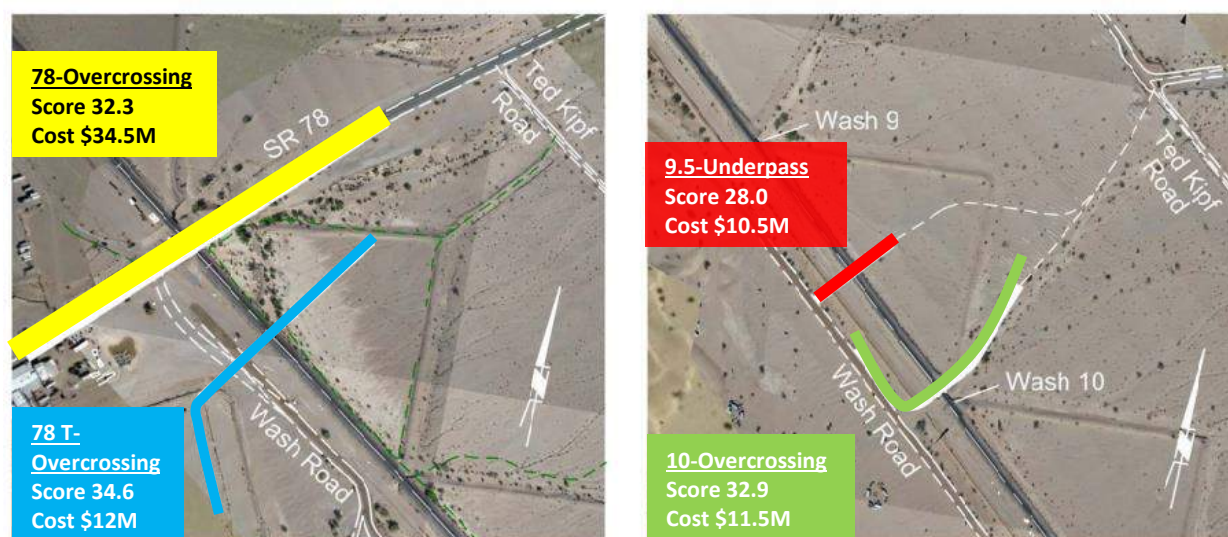


Figure 1 - Crossing Alternatives Summary

The key recommendations of the study are numbered below in order of priority:

1. Public agency ownership of the proposed crossing should be established as the next step for the project development. This ownership may be a joint ownership between multiple agencies.
2. Funding of the project is currently undefined. Several grant opportunities are available for this type of project, and steps to prepare applications for these opportunities should be explored. The funding resolution should be led by the public agency owner of the Alternative 78 T – Overcrossing (78T-O) is the most feasible alternative based on the results of this study. However, the other feasible alternatives, or variations of them, may also be considered or refined further into the planning process.
3. The development of the crossing should be coordinated with the proposed development of the private properties located around the intersection of SR 78 and the rail line.
4. Changing the use designation of a portion of Ted Kipf Road, which is an Imperial County-maintained road that is not currently legal for OHV travel, is key to achieving the access goals of the project once a crossing is constructed. This recommendation applies to all alternatives.

This Study Report integrates the summaries of all deliverable reports and their findings together with comments received from project partners, stakeholders, and the public.

2 Problem Summary

2.1 Study Purpose and Objectives

The purpose of the State Route 78 (SR 78)/Glamis Multiuse Grade Separated Crossing Feasibility Study is to lay the groundwork and map out a direction for providing a safe crossing for OHV users across the UPRR

rail line at the ISDRA. The Project objectives and outcomes of the study include developing a summary of existing information, identifying feasible engineering alternatives for grade separated crossings and the constraints, costs, and risks of each alternative, and establishing a path forward for a preferred alternative including identification of agency responsibility, funding mechanisms, anticipated costs, and risks throughout the project life.

This report presents a Problem Statement to reflect the issues related to the crossing of the UPRR rail by OHV and other multimodal users. Based on initially available information and in coordination with the ICTC, the concerns or definitions of the problem from the view of the different stakeholders is summarized.

2.2 Study Area

The Study Area is located in the unincorporated community of Glamis, in eastern Imperial County, California. Glamis is within the ISDRA Planning Area that is managed by the Bureau of Land Management (BLM) (BLM, 2013). The Imperial Sand Dunes are more than 40 miles long, with an average width of 5 miles, and lie on soft alluvial fan material emanating from the Cargo Muchacho and Chocolate Mountains to the north and east. The dunes are generally bounded to the west by the new Coachella Canal and to the east by the UPRR. The Chocolate Mountains to the northeast and two areas adjacent to the northwest portion of the ISDRA are designated as Military Lands, where active bombing activities occur and OHV access is prohibited.

The Study Area is within the eastern portion of the ISDRA Planning Area and is approximately 3 miles long and 2,000 feet wide (Figure 2). It is bisected by the UPRR from SR 78 in the north to approximately Wash 15 in the south, encompassing Ted Kipf Road to the east. Wash Road, which is a BLM-maintained dirt road used to access campsites and other Points of Interest (POI) within the ISDRA, bounds the Study Area to the west (Figure 3). High resolution aerial photography of the Study Area is provided in Appendix A. The ISDRA contains sensitive biological and cultural resources. Portions of the dunes have been closed or restricted to OHVs in order to protect cultural resources and habitat that supports several endemic and sensitive biological species. The western half of the Study Area is designated as an unrestricted open OHV use area, while the half east of the railroad tracks is designated as a limited OHV use area. Open use areas are areas where all types of vehicle use are permitted at all times, anywhere in the area. Limited OHV use areas that surround the dunes require vehicles to travel on designated routes (Figure 4). An extensive network of designated routes of travel originate from the ISDRA and extend east to the Chocolate, Black, and Cargo Muchacho Mountains, the Arizona border, and the Colorado River (Figure 3).

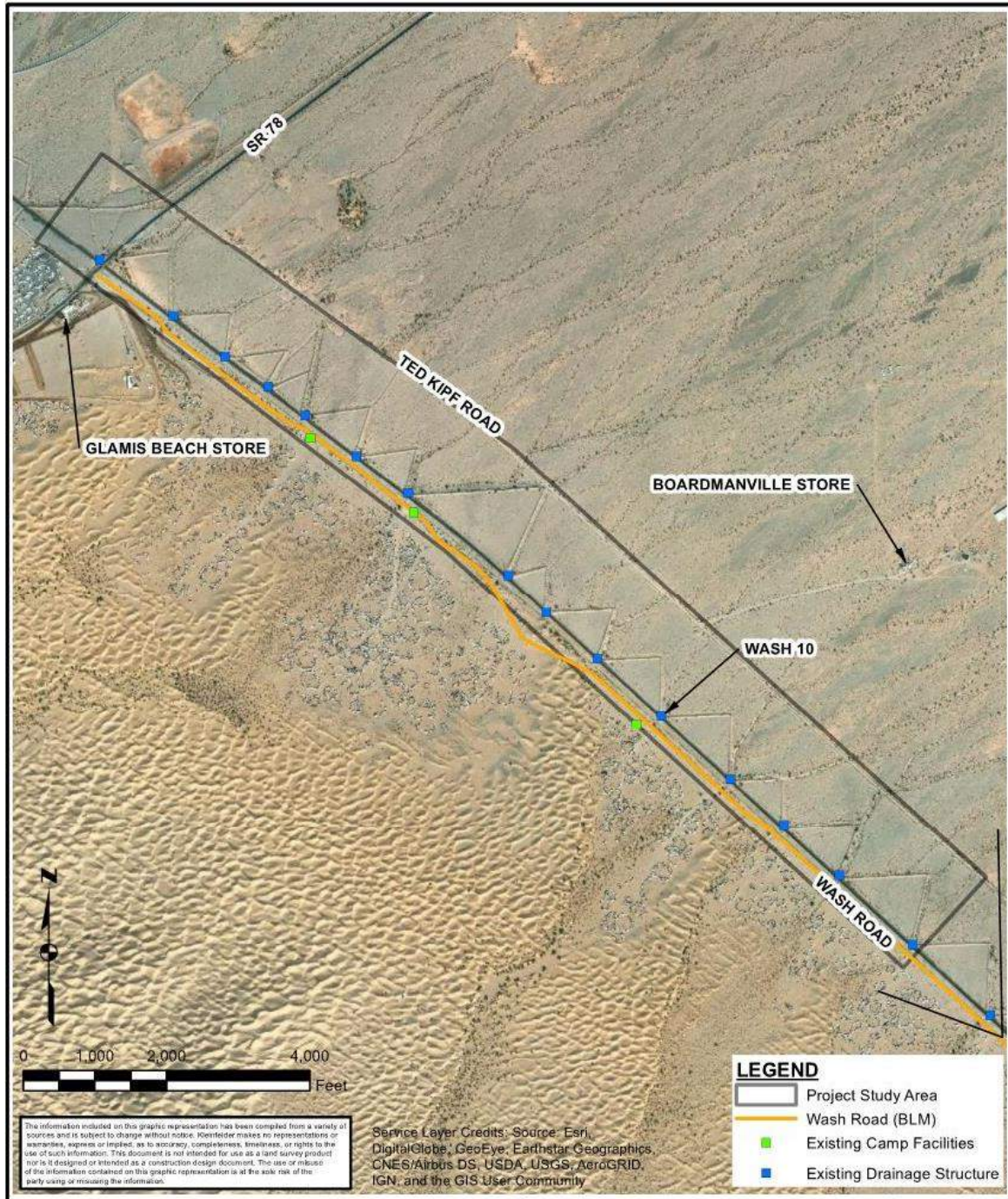


Figure 2 - Study Area Map

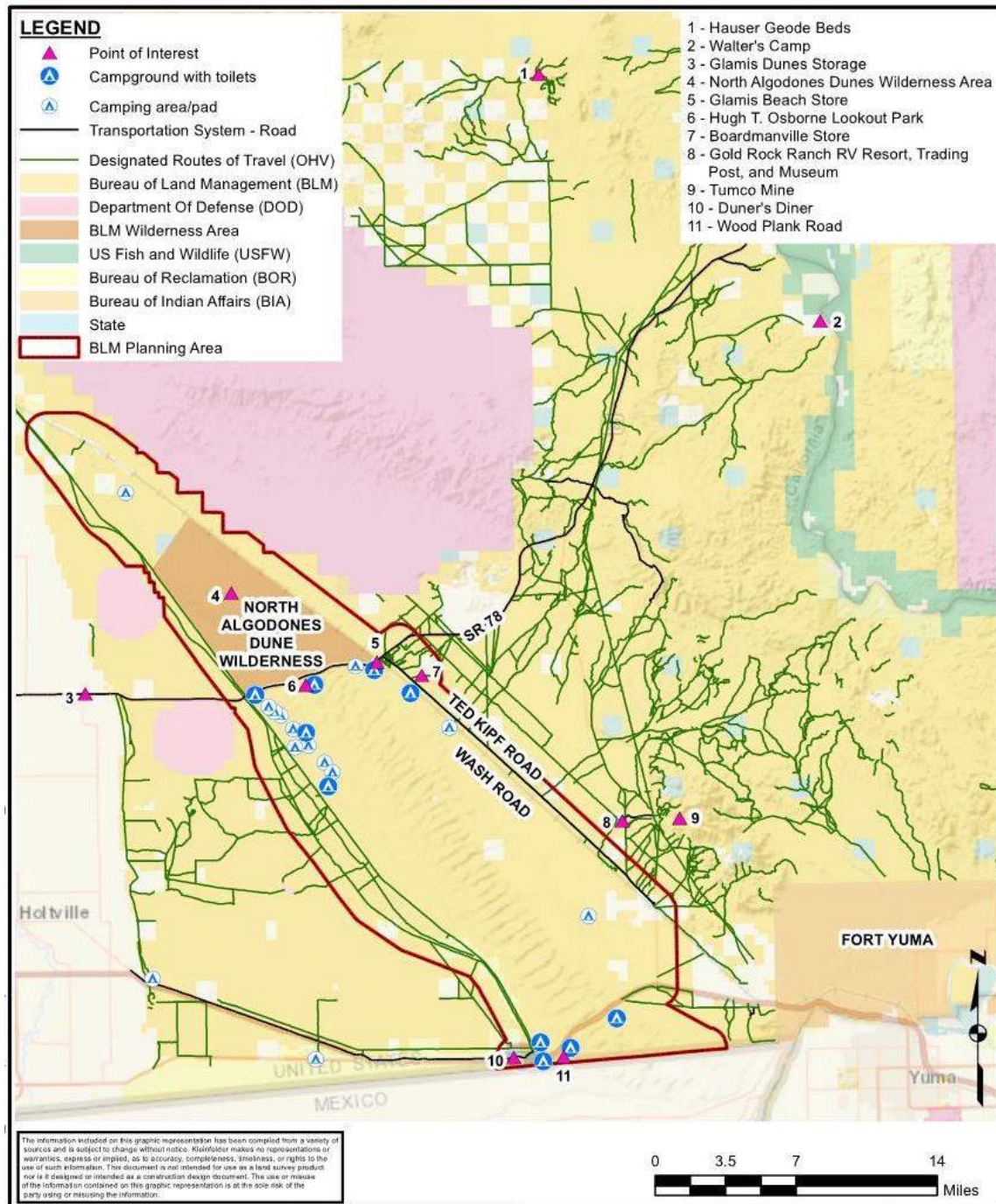


Figure 3 - Vicinity Map

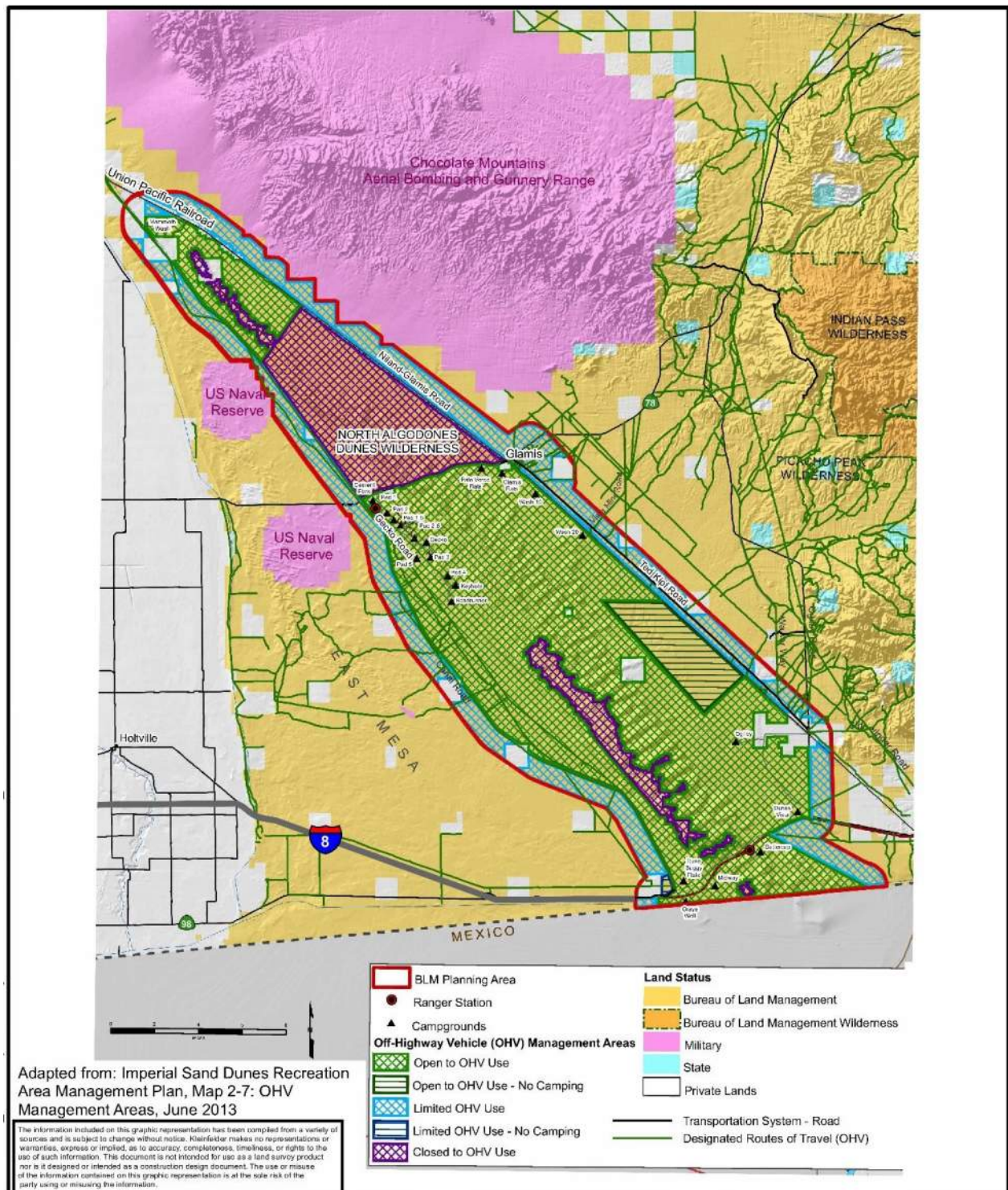


Figure 4 - OHV Management Area

Near the Study Area, SR 78 is a two-lane highway located at approximate Milepost (MP) 41 within Imperial County (County). This route is also known as the Ben Hulse Highway and has a functional classification of Minor Arterial Highway according to current California Highway System maps. The 2017 Traffic Census data indicates an Average Annual Daily Traffic (AADT) of 1,550 vehicles westbound and 1,650 vehicles eastbound with peak monthly ADT of 1,800 and 1,850, respectively.

The UPRR route running through the Study Area is a portion of the UPRR Yuma Subdivision Mainline in the vicinity of Control Point (CP) Glamis. The route is single-track at the south end of the Study Area and switches to a double-track route within the Study Area at CP Glamis located at UPRR MP 698.78 approximately 0.5 miles southeast of the intersection with SR 78. The Study Area includes the UPRR line from approximately MP 698.12 to MP 701.20.

The existing crossing of SR 78 and the UPRR line is an open, gated, at-grade crossing of the double-track mainline and has the following identifications:

SR 78 Existing At-Grade Crossing	
RSSIMS Crossing ID	XING IMP-1009
DOT Crossing Number	760 753C
CPUC Crossing Number	001B-698.20

Ted Kipf Road, running parallel to the rail line right of way (ROW) along the eastern edge of the Study Area, is a County maintained two-lane unimproved road. The road is a prescriptive road indicating it is legal for OHVs to cross but not to drive along it. On the north side of SR 78, Ted Kipf Road switches over to the western side of the rail line ROW.

Wash Road, running parallel to the rail line along the western side of the Study Area, is a BLM developed and maintained unimproved road running from SR 78 southeast to Ogilby Road. Traffic data along the road is currently unavailable, but anecdotally it is recognized as a significant route for recreational users during the peak usage season in the area.

2.2.1 Description of Other Features in the Study Area Vicinity

The majority of the ISDRA offers camping and expansive sand dune OHV recreation. The BLM provides trash facilities, law enforcement, emergency medical services, and toilet facilities. Well-known recreation sites within the ISDRA include, but are not limited to, Buttercup Valley, Gecko and Roadrunner campgrounds, Glamis Flats, Gordons Well, Dunebuggy Flats, Mammoth Wash, Ogilby, and Osborne Overlook. The North Algodones Dunes Wilderness is a resource protected zone closed to OHV recreation; however, it offers recreation in the form of horseback riding, hiking, camping, photography, and wildlife viewing. The Osborne Overlook provides opportunities for watching OHV activity. The Study Area also offers commercial vending and heritage tourism opportunities in the vicinity. Vendor row (alternatively known as the mall) is an area in Glamis Flats that has been historically used for vending of commercial

goods and services. The vendors set up their sites along the south side of SR 78 between the Glamis Flats off-ramp and the Glamis private property line. Rows of vendors often form, facing each other with OHV traffic flowing between them. Additional rows, similar in design, generally follow along the west private property boundary of Glamis. Other key POI for ISDRA users include Boardmanville Trading Post, the Glamis Beach Store, the Gold Rock Ranch OHV Park and Museum, Glamis Dunes Storage, Tumco Gold Mine, Hauser Geobeds, Walter's Camp and the Colorado River, Duner's Diner, and Wood Plank Road (Figure 3).

2.2.2 Bureau of Land Management Camping Facilities

Vehicle camping at the ISDRA is permitted in all areas designated as open to all vehicle use, with sites available on a first-come, first-served basis. The main camping areas are Buttercup; Midway and Gray's Well campgrounds along Gray's Well Road south of I-8; and Gecko and Roadrunner campgrounds along Gecko Road south of SR 78. The main camping areas offer parking pads, toilets, and trash facilities. The camping areas can accommodate large, motorized camping units such as recreational vehicles, toy haulers, semi-truck/trailer combinations, and fifth wheel trailers. Camping on public lands away from developed recreation facilities is referred to as dispersed camping. Most of the remainder of public lands are open to dispersed camping, as long as they do not conflict with other authorized uses or in areas posted "closed to camping," or in some way adversely affects wildlife species or natural resources. Dispersed camping is allowed on public land for a period not to exceed 14 days within a consecutive 28-day period. Vehicle camping is also allowed within 300 feet of a designated OHV route except within sensitive areas where the limit is 100 feet.

2.2.3 Glamis Beach Store/Polaris Property

The four corners adjacent to the intersection of SR 78 and the UPRR line are private property within the Study Area and are owned by Polaris Inc. The property currently includes the Glamis Beach Store and other associated buildings, RV storage, and a cell tower; all located on the western side the UPRR ROW; however, the built-up facilities currently sit outside of the Study Area. The Study Area includes portions of the following parcels identified by APN: 039-310-026 (northwest of intersection), 039-310-022 (northeast of intersection), 039-310-023 (southeast of intersection), 039-310-029 (southwest of intersection). As discussed below, Polaris is currently planning extensive development of the property.

2.2.4 Drainages

Several decades ago, UPRR's predecessor, Southern Pacific Transportation Company, constructed a series of chevron dikes on the north side of the Yuma Subdivision tracks in the Study Area to channel desert stormwater toward culverts or "washes" under the tracks (Figure 1). Stormwater, when present, flows in the direction of lower topography, generally moving from east to west with ground elevations along Ted Kipf Road on the eastern side of the Study Area, typically 12 to 15 feet higher than the elevation immediately west of the UPRR ROW. A detailed topographic map is included in Appendix A. These improvements were added to help prevent track washouts after rainstorms. These drainages were not originally designed or intended to be used as pedestrian or vehicular crossings.

2.2.5 Utilities

Liquid petroleum products are delivered to and are transported through the County via a buried 20-inch Santa Fe Pacific Pipeline owned and operated by Kinder Morgan. This line is generally located within the UPRR ROW to the west of the tracks through the Study Area. The utility easement follows the northwest to southeast trend of Imperial Valley.

Fiber optic lines also run underground through the UPRR ROW on the western side of the tracks within the Study Area.

2.3 Project Background

Within the ISDRA Planning Area, a 17-mile section runs north to south, located between SR 78 and Ogilby Road. UPRR operates a rail line that travels through this section and bisects certain recreation and camping areas. To the west of the rail line, BLM has designated an open riding area for OHVs, as well as a camping area. The designated camping area is also located to the east of the rail line. Both camping areas are operated under the same system and have the same fees. ISDRA visitors must cross the UPRR rail line to travel between the two areas. The BLM only offers restrooms and waste facilities on the west side of the railroad tracks.

Historically, a below grade wash structure wide enough for OHVs, just south of SR 78 known as Wash 10, was maintained for travel between the western and eastern portions of the ISDRA on either side of the rail line tracks. The access was designated by a sign on the eastern side of the UPRR rail line that informed OHV riders to continue riding on designated routes of travel only. Wash 10 was maintained by the previous owner of the small store and bar called the Boardmanville Trading Post (Boardmanville) via an informal agreement. Three at-grade maintenance access points, known as Ruthven, Clyde, and Cactus, were used by OHV users as crossings. The maintenance accesses were designated by two tall, wooden posts located just far enough apart for an OHV to proceed through. Designated routes of travel for OHVs, established by BLM, on the eastern side of the rail tracks lead directly to these crossing points, suggesting that these points were at some point widely recognized.

In 2009, UPRR physically closed the informal crossings and indicated they were not authorized for public use. The Wash 10 structure does not meet minimum clearance standards and the at-grade crossings were constructed solely as private railroad maintenance crossings for the railroad's sole use.

Since the closure of Wash 10 and the other crossings, no designated crossings for OHVs are within the 17 miles between SR 78 and Ogilby Road. This has resulted in OHV users crossing over the actual rail line tracks at unprotected, unregulated, and uncontrolled crossing points. The current situation is considered to be a major safety issue that has resulted in several critical injuries and deaths.

2.4 Stakeholder Problem Statements

Since 2009, discussions pertaining to the implementation of a solution for providing additional OHV access and/or an alternative crossing for SR 78 and UPRR at the ISDRA have been ongoing. A variety of

stakeholders have been involved in discussions and are currently involved in the TWG as part of this study. Each stakeholder represents a different perspective and views different challenges with respect to the problem and the implementation of a potential solution.

To date, a solution has not yet been identified because the interests of the various stakeholders have not yet aligned, no public agency has been identified as an appropriate and willing road authority for a project, law and public policy limit the options for some stakeholders to participate or make concessions, and the lack of available funding for constructing and maintaining an appropriate structure.

The perspectives of the various stakeholders have been documented at several meetings including an April 16, 2010 meeting regarding the closure of Wash 10, expressed at several Imperial County Board of Supervisor's meetings, a November 17, 2016 meeting regarding the crossing and use of SR 78, the first TWG meeting held on October 24, 2019, and a meeting between ICTC and the BLM regarding its involvement in the study. The following is a summary of issues and concerns from each stakeholder group perspective as presented in these meetings.

2.4.1 The Bureau of Land Management

The BLM oversees the ISDRA and the extensive OHV trail network that extends throughout eastern Imperial County to the Arizona border. BLM has a variety of concerns related to a potential new OHV crossing. BLM has identified a variety of environmental issues that should be considered in the design of a grade-separated crossing in the area including but not limited to sensitive resources, drainage, and air quality impacts. BLM has designated the areas on the east side of the UPRR tracks for limited use as they are concerned about impacts to natural and cultural resources in the area. Any proposed structure that is meant to aid in OHV crossing in the area adjacent to public land will need to consult with the BLM regarding resource protection, drainage considerations, and access to approved OHV routes. Additionally, air quality impacts would need to be addressed as the Study Area is part of a non-attainment basin. Previous studies by BLM suggest that increased use of crossings, such as Wash 14, has resulted in greater emissions. Should users be encouraged to use additional crossings, similar increases in emissions would be anticipated and would need to be mitigated.

The BLM has also chronicled a number of public safety concerns in the area, including OHV users driving under the influence and traveling with street vehicles. UPRR's closure of access to Wash 10 has aided in the reduction of the number of enforcement violations and related safety concerns in the area and has reduced such public safety concerns through diminished use. BLM has taken the position that a combination of the access closure, safety education, and the construction of the UPRR sand fence have contributed to safety improvements in the area. BLM does not want to take ownership for a legal crossing in the area. However, the lead on the project will need to coordinate with BLM with regards to the management of safety concerns as BLM rangers respond to a majority of emergency calls in the area. The BLM's first priority is the safety of its employees, followed by the safety of the public users of the ISDRA.

Safety considerations related to traffic flow of OHVs are of concern to the BLM. It is the BLM's stance that the introduction of a legal crossing would impact existing traffic patterns in the area. During the peak

season, traffic congestion along the Wash Road is a significant problem for the approximately 150,000 to 200,000 visitors. The project design should consider how changes to traffic flow might adversely impact the area. The BLM has also recommended that an evaluation of combined-use roadway classifications in combination with a crossing should be explored.

2.4.2 County of Imperial

The County's mission is to provide extensive, high-quality public services to increase the quality of life for County residents. The ISDRA is considered to be a unique natural and recreational resource that is a significant contributor to the County's local economy. The County has emphasized the need for strong decision-making criteria for the project that takes into consideration the needs of the key public agencies involved. In order for the proposed project to be sustainable and successful, the County encourages significant discussion pertaining to the operation and maintenance of a grade-separated crossing. A potential revenue stream to support the project through design, implementation, and maintenance should be considered.

The County has indicated that proposed design solutions involving Ted Kipf Road should consider the complex history of road maintenance between the County and the BLM as well as the potential approvals required by California Highway Patrol. Prior discussions between the County and the BLM regarding the potential to redesignate Ted Kipf Road as a combined use road have resulted in changes to designation. Existing agreements regarding use and encroachment of Ted Kipf Road should be taken into account and any use adjacent to the road may require BLM approval. Ultimately, the County envisions the study as a vehicle to support funding requests for a future project.

2.4.3 California Department of Transportation

The California Department of Transportation (Caltrans) manages California's highway and freeway lanes and aims to provide a safe, sustainable, integrated, and efficient transportation system. Caltrans is primarily concerned with safety and the current practice of vehicles being pushed across the railroad. Per California Vehicle Code Section 38027, "a motor-driven cycle issued a plate or device pursuant to Section 38160 may be moved, by nonmechanical means only, adjacent to a roadway, in such a manner so as to not interfere with traffic upon the highway, only for the purpose of gaining access to, or returning from, areas designed for the operation of OHVs, when no other route is available. The Department of Transportation or local authority may designate access routes leading to off-highway parks as suitable for the operation of OHVs, if such access routes are available to the general public only for pedestrian and off-highway motor vehicle travel."

Caltrans has identified the need to better understand the ROW in the area in order to identify involvement of public agencies during project design.

2.4.4 Imperial County Transportation Commission

The ICTC exercises basic initiative and leadership in the transportation planning and programming process within Imperial County. ICTC's role in the study is as a neutral mediator with the purpose of facilitating

the process of project design and implementation. As such, the importance of identifying the public agency that will take the lead on the project is emphasized, as the ICTC has identified itself as a neutral party. The ICTC's interests include the design of a feasible solution. The ICTC underscores the importance of an inclusive process throughout design and implementation. The ICTC is in support of a smaller, simpler project concept.

2.4.5 Union Pacific Railroad

UPRR is North America's largest railroad franchise, covering 23 states across the western United States. UPRR operates a rail line that travels through the ISDRA and bisects certain recreation and camping areas. The primary objective of UPRR is to protect their property from any encroachment and to ensure the safety of their operations. As such, the certainty of UPRR boundaries should be maintained as part of project design and implementation.

UPRR notes that the use of Wash 10 as a crossing for OHVs had been ongoing since 1990 through an alleged informal permission granted by a railroad employee to representatives of Boardmanville to keep sand cleared out of the wash to provide a convenient route to Boardmanville. The informal permission to access Wash 10 had been revoked by UPRR in 2009. Wash 10 did not meet the CPUC's General Order 26-D minimum clearance requirements for a road that crosses under railroad tracks. Closures of such crossings have aided in the reported reduction in the number of enforcement violations and related safety concerns in the Study Area.

A major concern brought forth by UPRR is the potential that construction may adversely impact freight operations. UPRR's transit routes in the Study Area have been identified as critical freight rail routes in California. UPRR maintains that it will be crucial to minimize the impacts to train transit during construction. UPRR has identified a grade-separating crossing as the preferred crossing type in the Study Area. Construction of an underpass would require a shoofly, which would be costly for UPRR and would adversely impact freight operations. At-grade crossings would be unlikely to advance through the California Public Utilities Commission (CPUC) process and would be disputed by UPRR due to adverse impacts to freight operations. UPRR's position is that a public agency must take the lead on any access proposal such that the lead agency accepts responsibility for maintenance and liability following the completion of the project.

2.4.6 California Public Utilities Commission

The CPUC regulates services and utilities, protects consumers, safeguards the environment, and assures Californians' access to safe and reliable utility infrastructure and services. The CPUC also has authority to approve construction of new or modified rail crossings. The major concern articulated by CPUC is the current illegal use of OHVs crossing the UPRR tracks. The CPUC has also indicated that a new at-grade crossing would not be approved in the area. The CPUC requires that a public agency takes the lead on requesting a new public crossing and assumes responsibility of constructing and maintaining the crossing.

2.4.7 American Sand Association

The American Sand Association (ASA) is a nonprofit organization consisting of dune-riding enthusiasts who are dedicated to protecting and monitoring the ISDRA. ASA's primary objective is to unite, inform, and mobilize the sand dune community to protect the right to ride on all public lands in a responsible, environmentally balanced manner. With respect to the proposed crossing, ASA's goal is to conceive of a project that will provide safe crossing for OHV users in the ISDRA. ASA has emphasized the importance of OHV access on public lands and noted that since the closure of Wash 10, no designated crossing for OHVs has existed within the 17 miles between SR 78 and Ogilby Road. The lack of a designated crossing has posed a major safety issue in the ISDRA.

ASA prefers to expend efforts on smaller, simpler projects rather than focusing on solutions that may be cost prohibitive. The study should consider alternatives that avoid the further complication of existing issues at the railroad crossing and SR 78 intersection involving private property owners.

2.4.8 Polaris Properties

Polaris is a large manufacturer of OHVs and organizes an annual event in the ISDRA called Camp RZR. Polaris is in the process of proposing a large-scale development project in the vicinity of the proposed crossing. The project description is underway and is currently scheduled to be brought to the Imperial County Board of Supervisors by December 2020. Polaris has voiced concerns with any impacts the study may have on their proposed developments. Land use designations and boundaries for the proposed development can be adjusted prior to the start of the California Environmental Quality Act (CEQA) process. Polaris has indicated that the site diagnostics that have been performed in the area for the proposed development may change if a grade-separated crossing were to be introduced.

2.4.9 Boardmanville Property

The Boardmanville Trading Post is located on the east side of the railroad on private property adjacent to the ISDRA. Boardmanville has offered services to OHV users in the area for over 30 years and is located on designated routes of travel identified on maps provided to users. A major concern brought by Boardmanville is the loss of access to the east side of the UPRR tracks despite the frequent use of the east side by campers and OHV users. A designated camping area exists to the east of the rail line and is indicated as such on OHV user maps. Restrooms and waste facilities are only located west of railroad, necessitating the access to a crossing in the area for campers on the east side of the tracks. The property owner is also concerned about OHV user safety associated with ongoing illegal crossings of SR 78 and the railroad tracks. Users on the east side of the tracks also periodically require emergency services access in the area. Currently, emergency access is confined to the major roads such as Ted Kipf Road, SR 78, and Ogilby Road. In order to increase accessibility and decrease delays in response times, a crossing should be designed to accommodate emergency vehicle access.

3 Public and Stakeholder Involvement

A public outreach plan was prepared in partnership with the TWG and key stakeholders. The plan served as a guide for the engagement process with the public and stakeholders and considered best practices utilized by all parties; addressed all outreach activities undertaken by our team, the ICTC, and stakeholder agencies; and outlined the best approach for synchronizing outreach efforts based on the technical work prepared. The following sections summarize the main components of the public outreach plan.

3.1 Public Workshops

Two public workshops are part of the outreach effort to give the public an opportunity to provide input and comment on the potential OHV crossing in the ISDRA.

Workshop No. 1 was an on-site engagement held on January 18, 2020 in the Main Staging Area at the Glamis Flats campground, near the Glamis Beach Store. To maximize potential participation, the event was hosted in conjunction with the annual Sand Dunes Clean-Up event. The objective was for visitors to learn about the project, learn about the online survey, and learn how they could participate. They were also able to provide input on preferred areas for crossings, size of crossings, and other important considerations from a user perspective, and were encouraged to sign up for project updates and announcements about future involvement opportunities.



Key results from Workshop No. 1 activities included:

- Participants primarily identified Wash 10 as a preferred crossing location
- A small crossing would be sufficient
- Several destinations on the east side were identified as points of interest, including: Boardmanville, Vista Mine Wash, Colorado River, Walter's Camp, Tumco Mine/Gold Rock Ranch Area, Imperial Gardens, Picacho Cemetery, Palo Verde, and camping and sightseeing in general

Key values identified by participants included: Safety, access, and a clean area to camp (which was likely influenced by the workshop being held in conjunction with a clean-up event).

Workshop No. 2 was two virtual public meetings held on October 21 and 24, 2020. The meetings presented Glamis users and the public with an overview of the most feasible project alternative, provided an opportunity for feedback on the most feasible alternative, and directed participants to the ICTC online input portal. The virtual format allowed participants to join from anywhere and provided tools for

submitting questions and comments. Along with an overview of the first outreach that included the user survey and the on-site input opportunity, participants were able to ask questions and offer comments through a moderated question and answer session. Participants were also instructed on the process of submitting input through the ICTC online input portal. A video recording of the presentation was made available via the ICTC website one week prior to virtual public meetings. The video covered the same topics as the virtual public meetings and participants were encouraged to view the video recording prior to submitting input through the ICTC input portal.

Additional information regarding the public workshops is included in Appendix C.

3.2 Online Survey

An online OHV User Survey was administered as part of the study to better understand OHV recreation and user preferences in the vicinity of the Study Area. The objectives of the survey were to obtain information from users to influence the location and design of potential crossing structures and to inform users of the overall purpose and need for the project. The survey examined visitation, the types of recreational vehicles used, key points of interest, patterns of recreation use, and willingness to pay for a new crossing structure.

The survey was administered through the online survey platform, Survey Gizmo, from January 1 through January 31, 2020. A unique Uniform Resource Locator (URL) address was created for online access. The online survey was secured using reCAPTCHA and restricted such that only one survey could be taken per IP address.

Public participation and outreach for the survey was coordinated with the TWG, ASA, LANDS Imperial County, and other stakeholder organizations. Survey notifications were posted online using websites, online forums, and social media. An advertisement was also included in the S&S Off Road Magazine's January 2020 issue and printed flyers were posted at local businesses. Cards with details on how to participate in the survey were distributed at Public Workshop No. 1.

Public outreach was performed, with the assistance of stakeholders who have ties to the full range of ISDRA Glamis users, to publicize the project and involvement opportunities; however, it is acknowledged that an online survey format has limitations. The intent of survey was to include as many ISDRA Glamis users as possible to provide public input for the study rather than identifying and selecting a discrete sample of users to participate in the survey as would be required for a scientific research study.

3.3 Survey Results Summary

The survey had a total of 9,938 views. Of those that viewed the survey, 4,021 respondents completed all questions of the survey, and 918 respondents partially completed the survey by answering at least one question. The majority of the surveys were completed on a mobile device.

It should be noted that this type of online survey is helpful in gathering input from users and those actively interested in the Project. It should not be considered comparable to a random study of a population,

including a population of OHV users of the ISDRA. Because outreach and advertisement of the survey was largely provided by stakeholders through social media, the participating population of the survey should be considered to be those most interested in the crossing. As an indication of this, in response to the question: ‘On a scale of 0 to 5, how important is it to you that an OHV crossing of the tracks be constructed in the area of the existing crossing?’ 87 percent of respondents indicated it was ‘very important’ or ‘extremely important.’

Based on the origin of the IP addresses, more than half of the survey respondents were in California at the time the survey was taken. Because most of the surveys were taken on mobile devices, the location where the survey was taken does not necessarily correlate to the place of residence. The survey included several types of questions:

- Closed-ended questions: Questions that had a discrete answer set from which to choose.
- Scaled questions: Closed-ended questions presented in a scale or range, such as 0-5 rating of not important; a little or somewhat important; very important; and extremely important.
- Single or multiple response questions: Some questions allowed only a single response, while other questions allowed respondents to give more than one response or choose all that applied.
- Open-ended questions: Questions in which no answer is presented to respondents; rather, a fill-in response with anything that comes to mind from the question. Open ended responses were included for several of the multiple response questions.

Survey results suggest the following:

- More than 58 percent of users who participated in the survey visited the ISDRA 15 or more days in any given year. More than 26 percent visited ISDRA for 30 days or more. Similarly, more than 50 percent of respondents indicated that they visited 5 or more times each year.
- The OHV users bring a 4WD truck (51.5 percent), recreational vehicle for camping (69.8 percent), dune buggy/sand rail (44 percent), 2 or 4 seat side-by-side (71.6 percent), and/or all-terrain vehicles (43.5 percent).
- More than half of participants indicated ‘Always’ or ‘Often’ operating an OHV on the eastern side of the UPRR tracks.
- Approximately 2/3 of respondents reported ‘Always’ or ‘Often’ operating an OHV within the washes along Ted Kipf Road.
- Some support for a surcharge or user fee was noted. 39 percent ‘Strongly’ or ‘Moderately’ support a surcharge and 34 percent ‘Strongly’ or ‘Moderately’ oppose a surcharge, and the remainder were neutral or did not know.

A comprehensive online survey summary is included in Appendix D.

3.4 Technical Working Group Process

Conflicting interests between stakeholders was a key challenge for this project. Stakeholder concerns, particularly the inability to reach a consensus based on multiple obstacles, including lack of authority, legal and policy constraints, and funding, did not allow the project to move forward.

To help resolve conflicting interests, this study implemented a TWG comprised of key stakeholders to discuss concerns, provide input on the study, and build consensus on the study results. Several parties will be involved in the development and approval of the project and many of these parties participated in the TWG sessions to provide input on the study development. The TWG participants included:

- Imperial County
- Caltrans
- Union Pacific Railroad
- California Public Utilities Commission
- Imperial County Transportation Commission
- Private Property Owners within the Project Study Area
- OHV User Groups

Professionally facilitated TWG meetings focused on clear expectations and solutions that were used to aid in decision making and consensus building. A series of five TWG meetings were held, each with a specific focus, clearly defined agenda, and goals. In between the scheduled TWG meetings, the project's key deliverables were being prepared, such as reports, memos, and surveys. These materials were submitted for review prior to the TWG meetings and followed by a discussion at the next TWG meeting. Participation in the TWG meetings was consistent from all parties. This was a significant benefit to the process.

The TWG meetings held for this project and key discussion points of each meeting are listed below:

- TWG Meeting No. 1 – Roles and responsibilities; decision making process
- TWG Meeting No. 2 – Evaluation criteria and weighting determination
- TWG Meeting No. 3 – Identify three to four alternatives to study in depth
- TWG Meeting No. 4 – Review alternatives with scoring; identify responsible agency, cost, and risks
- TWG Meeting No. 5 – Identify preferred alternative; identify policy needs

3.5 Common Comment Responses

Several comments were made, and questions asked by the public regarding the project. These came through the outreach efforts noted above as well as in discussions with stakeholders. This section summarizes many of the common comments and questions regarding the project.

Why can't an existing wash be dug out and used as it was in the past?

The washes are a part of UPRR's railroad infrastructure and property and are located within their property boundary. They were originally used under an informal agreement that has not continued. The study is examining feasible crossing concepts, however, reopening the washes for access was considered in the study. The development of a legal crossing would need to meet current railroad crossing guidelines, including those for crossing structures. The existing washes would not meet those requirements.

Wouldn't an at-grade crossing be cheaper and easier to build?

Yes, but the issue with an at-grade crossing is not the cost, but rather safety and the approvals needed for the crossing. At-grade crossings present a safety hazard to crossers and railroad operators. The CPUC is charged with approving all railroad crossings around the state. A concerted effort is being made throughout the state to eliminate at-grade crossings. The introduction of a new at-grade crossing would not be approved by the CPUC or supported by the UPRR within their ROW.

What is the BLM's involvement in the project?

Although the Project involves public lands within the ISDRA, the BLM is not involved in or a sponsor of the project. If a responsible entity decides to sponsor the project, the BLM will work with that entity on issues related to public lands. The BLM was consulted during the study and provided comments on the reports prepared as part of the study. However, they did not participate as members of the TWG.

How long will it take to build a crossing?

The preliminary Project schedule is presented in Section 6.4 of this report and additional details can be found in the appendices. Key decisions, including who will own the crossing, have not yet been made; therefore, the timeline of even the preliminary schedules will not start until that question is answered. The process of planning, designing, permitting, and constructing a significant infrastructure element such as a railroad crossing is a process of many years.

Wouldn't a crossing under the railroad tracks be simpler to build than a big bridge?

Not usually. Because railroad operations have the priority and obligation to maintain their operations, constructing a structure that passes underneath the railroad requires that railroad operations continue during construction. Unlike roadway construction, where a temporary detour is relatively straightforward to construct, a railroad detour (known as a shoofly) has strict standards and little flexibility. Additionally, along the railroad area in question, a large pipeline utility sits underground and may conflict with an

underpass structure. An underpass structure was considered as part of the study and is discussed in summary in Section 5.

4 Alternative Analysis Process

4.1 Criteria Development

As part of the evaluation process, a criterion and scoring method was used to compare different project alternatives. This comparison is intended to provide a simple method of comparing the alternatives against the often-conflicting objectives or impacts of the project. The evaluation process is a subjective assessment, however, using a criterion and scoring method allows for some comparison and measure of the performance of each alternative.

The evaluation process consists of two steps:

- Develop criteria – presented in this section, and
- Score the alternatives against the criteria – presented in Section 65 following the description of each alternative.

The weighted sum of the criteria scores is the performance score, a measure of how well the alternative meets the project goals and minimizes negative impacts. The criteria are selected with the project goals in mind and independently of the alternatives for consideration. The criteria and the weighting were developed with the input of the TWG and the consultant team.

The criteria are split into two groups: Pass/Fail Criteria and Weighted Criteria.

4.1.1 Pass/Fail Criteria

Pass/Fail Criteria are benchmarks any alternative must pass to be considered valid. These can be considered the basic performance criteria of any alternative. Two Pass/Fail Criteria were considered:

- *Provide a Safe Crossing* – Does the crossing provide a safe and legal method for OHV users as well as pedestrians or other recreational users to cross the UPRR tracks? It must be grade separated and provide adequate safety features for users and stakeholders.
- *CPUC Clearance and Safety Approvals* – Is the alternative configured to meet the requirements of the relevant governing bodies? The alternative must be able to meet the grade separated crossing requirements of the CPUC, local building codes, and any BLM requirements.

4.1.2 Weighted Criteria

Weighted criteria are those where the alternative may perform better or worse depending on the details of the alternative. For each of the weighted criteria, the alternatives are given a score from 1 to 5. The

scoring of each alternative against the weighted criteria is provided in Section 5.7 following the detailed description of each alternative.

Connectivity – How well does the alternative provide access to points of interest and improved connectivity to Designated Routes of Travel on the east side? Are the connections direct and easy to follow? A high scoring alternative would provide a clear, direct connection exactly where users want to go. A low scoring alternative would provide an indirect path, may force significant non-intuitive connections, and would require extra trail length.

Traffic on Existing Roads – What are the safety and functionality impacts to SR 78, Wash Road, and Ted Kipf Road during all seasons, including peak season? Does the alternative worsen traffic or create a crossing that negatively impacts the safety of users on all roads? A high scoring alternative would have no impact or may improve conditions on the existing roads.

Rail Operations During Construction – How will construction of the project impact railroad operations? How many slow orders, absolute work windows (track closures) will be needed? How long of a period of time will the construction impact operations? A high scoring alternative would have little to no impact on rail operations.

Conflicts within Rail Right of Way – Will any permanent structures, easements or additional requirements occur within the railroad ROW that will limit or burden future UPRR expansion? A high scoring alternative would have no permanent impacts within the ROW.

Conflicts with Private Right of Way – Will any permanent impacts, easements or conflicts occur within existing private property that may conflict with current or future development? The alternative may require easement onto or purchase of a piece of private property. A high scoring alternative would have no permanent impacts within the private ROW.

Maintenance and Operation Efforts – How significant will the future effort of maintenance and operations be for the final configuration? This includes drainage features, debris removal, and structure maintenance and inspection as well as additional maintenance of adjoining roads. A high scoring alternative will have minimal future maintenance requirements. A low scoring alternative will be expected to have regular and significant maintenance needs.

Sensitive Resources – How will the alternative impact sensitive resources in the area? This includes impacts during construction and impacts from increased OHV use on the east side. The resources may be cultural, biological, air quality, or other environmental resources. A high scoring alternative will have minimal impacts.

Aesthetics – Will the crossing detract from the user experience or adversely affect scenic vistas or viewsheds? A high scoring alternative will not affect either of these elements.

Because some performance objectives are considered more critical than others, the criteria were weighted against each other using a Paired-Comparison method of weighting. This weighting was

produced using the input of the TWG members and is shown in Table 1. A description of the Paired-Comparison method and the inputs received from the team are provided in Appendix E of this report. This method does allow for some criteria to be weighted at zero (as is the case for the Aesthetics criterium) if that criterium is seen as less important than all others considered.

Table 1 – Criteria Weighting

Criteria	Weighting %
1. Connectivity	11
2. Traffic on Existing Roads	11
3. Rail Operations During Construction	21
4. Conflicts within Rail ROW	24
5. Conflicts with Private ROW	4
6. Maintenance and Operations Efforts	18
7. Sensitive Resources	11
8. Aesthetics	0
Total	100

4.2 Preliminary Environmental Planning Considerations

An understanding of the expected impacts and considerations from an environmental planning and feasibility perspective is key to developing and evaluating crossing alternatives. These considerations will need to be addressed in order to move forward with permitting, design, construction, and operation of the project. To aid in comparing alternatives, the sections below highlight the resources where the project alternatives would be expected to perform with significant differences.

These sections were taken from the Project Environmental Constraints Memo which is included as Appendix F to this report. The full Constraints Memo is intended to identify the environmental documents that would be required under CEQA for actions by state and local agencies and the National Environmental Policy Act (NEPA) for actions by federal agencies.

These are preliminary assessments of potential impacts to various resources for the purposes of environmental planning and budgeting of the project. The topic areas discussed below will need a more detailed study once the preferred project alternative is identified and the full environmental studies phase of the project is initiated. Additional studies could also be identified during project scoping pursuant to CEQA and NEPA requirements or to support policies that would need to be established to facilitate funding or authorizations for the project.

4.2.1 Agency Ownership

The CPUC requires that a public agency takes the lead on requesting a new public crossing and assumes responsibility of constructing and maintaining the crossing. This agency would also take a lead role in subsequent phases of the project development including planning, permitting and project approval, ROW acquisition, design, construction, and maintenance.

For this study, Caltrans and Imperial County are the agencies whose missions align with the project goals. The BLM has specifically stated they will not be the lead agency for this project but will coordinate with the lead in meeting federal requirements for this project.

4.2.2 Community Impacts

The Study Area is used extensively from October to May for camping and OHV recreation. Community impacts would likely be positive as safety would be improved for all forms of transportation crossing from one side of the UPRR to the other, including emergency service vehicles. The proposed project would facilitate cohesion by improving connectivity and access to additional BLM lands. The Glamis Beach Store, Boardmanville Store, and associated OHV serving facilities would benefit from the improved safety of the grade separation project.

For Alternatives 78-O and 78T-O, the ingress/egress to the Glamis Beach Store, or other potential future development within the property boundaries, could be adversely affected during project construction. The circulation of OHV traffic in the vicinity of the Glamis Beach Store, and other future developments proposed under the Draft Glamis Specific Plan, could adversely affect business access or operations. The alternatives near Wash 10 are not expected to have adverse effects on ingress/egress or circulation of existing or proposed commercial businesses.

4.2.3 Visual and Aesthetic

SR 78 has not been designated by Caltrans as part of the state scenic highway system. The ISDRA provides dramatic desert scenery with sand dunes, desert washes, and views of distant mountains. The BLM has adopted Visual Resource Management (VRM) classifications for the Study Area. For example, VRM Class I objective is to preserve the existing character through natural change or very limited management activity that does not attract attention while VRM Class IV provides for activities that require major modification to the existing character of the landscape.

The nearby North Algodones Dunes Wilderness Area, north of SR 78 and west of the UPRR ROW, is designated as VRM Class I. The project Study Area is VRM Class III on the east side of the UPRR ROW and Class IV on the west side of the UPRR ROW.

A Visual Impact Assessment (VIA) would not be warranted for a proposed undercrossing of the UPRR, as an undercrossing would not be highly visible and would be similar in appearance to the 14 existing undercrossing locations that are designed exclusively for flood control purposes. However, for alternatives that propose an overcrossing, the overcrossing would need to have a 23'-4" clearance over the UPRR

tracks, which would create a highly visible structure that could block or alter distant views. Therefore, a VIA would need to be prepared for these alternatives to determine the extent of the potential impact on the visual environment, including potential impacts to the existing views of the sand dunes and distant mountains. The VIA would need to address both BLM and Caltrans requirements for Alternatives 78-O and 78T-O. Only BLM VIA guidelines would apply to Alternative 10-O as it would not be highly visible from SR 78 or any other Caltrans properties.

4.2.4 Hydrology and Floodplain

The majority of the Study Area consists of an alluvial fan containing multiple washes that have been directed by earthen berms to flow beneath the UPRR at 14 locations identified as Washes 1–14. The terrain becomes nearly level on the west side of the UPRR and the washes continue to the west until ending within the Algodones Dune Complex. The depth to water within the Study Area is approximately 90 to 100 feet below ground surface. The Study Area is not within a sole-source aquifer. Groundwater is not anticipated to be encountered during project construction.

While the Study Area is dry much of the year, brief and intense rainfall can cause powerful floodwaters to turn what are typically dry washes into flash flood zones.

Because washes are typically the easiest routes of travel in the desert, and because any undercrossing of the UPRR would create a low point, hydrology and drainage issues will be one of the most important issues to address with the design of any project alternative moving forward. While an overcrossing would largely avoid hydrology and floodplain issues, an undercrossing would be subjected to periodic inundation and sedimentation.

4.2.5 Water Quality and Stormwater

The ISDRA Resource Area Management Plan (RAMP) states that BLM activities or authorized activities shall not degrade surface or groundwater by identifying and protecting surface waters, where possible, and preserving and enhancing natural conditions and hydrology of washes.

All project alternatives would be expected to prevent or reduce water quality degradation through implementation of applicable Best Management Practices (BMP) to protect water quality or other specific mitigation measures. Additionally, alternatives that maintain authorized vehicle routes in a manner that promotes natural hydrology and protect water quality would be preferable.

4.2.6 Air Quality

The BLM is currently working within an approved plan that sets forth control measures to help curb particulate matter with an aerodynamic diameter of 10 microns or less emissions.

An air quality technical study would be required for any of the selected project alternatives. Impacts would likely be significant and mitigation measures would be required including a dust control plan. None of the

alternatives has clear advantage over the others. The air quality study would be required for lands under the jurisdiction of the BLM, Caltrans, and the County.

4.2.7 Cultural Resources

RECON performed a records search at the California Historical Resources Information System, South Coastal Information Center at San Diego State University and a letter was sent to the Native American Heritage Commission (NAHC) requesting they search their files to identify spiritually significant and/or sacred sites or traditional use areas in the project vicinity.

The record search indicated that 27 cultural resources investigations have been conducted and 11 cultural resources identified within the one-mile search radius from the Study Area (see Table 1 in Appendix B). The Study Area itself has not been surveyed in the past. The historic sites previously identified within the one-mile search radius include historic trash scatters, a cemetery, and features associated with the railroad. The prehistoric sites are comprised of a lithic scatter and a ceramic scatter. Five sites are located within or immediately adjacent to the Study Area. Of these, only one, the Historic Southern Pacific Railroad site (now known as the UPRR), has been evaluated and recommended as eligible for listing as a historic site. This resource would be impacted by all four alternatives. The other four resources within the Study Area have not been evaluated.

Historic aerial photographs from 1961 and 1996 were examined for structures over 50 years of age. None were identified.

If either Alternative 78-O or 78T-O is chosen, several identified cultural resources would likely require formal evaluation to determine if impacts would be considered adverse. Additional resources are within the Study Area but not in the footprint of any of the alternatives.

Based upon a reconnaissance of aerial photographs and noting the existing disturbances such as the construction of the dikes for flood control, the construction of the railroad, a significant amount of off-road vehicle activity, and the scouring of washes and transport of sediment due to rain events, the disturbed condition of the Study Area presents a very low potential for intact cultural resources.

4.2.8 Biological Environment

The sensitivity of biological resources on the western side of the UPRR ROW is low as much of the area between the railroad and Wash Road has been disturbed by development and intensive use. However, much of the project Study Area east of the UPRR ROW exhibits limited recent disturbance and is considered sensitive. For all alternatives, likely biological impacts are a function of the size of the disturbed area east of the UPRR ROW.

Biological surveys for special status/rare plants and wildlife species, particularly Pierson's milk vetch and reptiles such as the desert tortoise, flat-tailed horned lizard, and fringed-toed lizard, are recommended and rare plant surveys would likely be required.

During subsequent project phases a Biological Assessment (BA) addressing the federally listed species should be prepared once the limits of the project alternatives have been defined. This would include protocol surveys for the desert tortoise. Informal consultation should be initiated with the US Fish and Wildlife Service to determine the scope of the BA.

For Alternatives 78-O and 78T-O, which would impact Caltrans and private property, informal consultation with the California Department of Fish and Wildlife should be initiated for potential impacts. Additionally, a Natural Environment Study (NES) would also be required for potential impacts to Caltrans properties. The biological resources studies would need to conform to the requirements of the BLM, Caltrans, and County, depending on the alternative selected and the underlying ownership and management responsibilities.

4.3 Preliminary Engineering Considerations

The following sections outline the primary areas of consideration for design and engineering of the crossing. These include restrictions and guidelines that all alternatives must meet as well as areas that only affect certain alternatives.

4.3.1 Railroad

The UPRR is the central component of the crossing project. The UPRR route running through the study area is a portion of the UPRR Yuma Subdivision Mainline in the vicinity of CP Glamis. The route is single-track at the south end of the study area and switches to a double-track route within the study area at CP Glamis located at UPRR MP 698.78 approximately 0.5 miles southeast of the intersection with SR 78. UPRR currently plans to add an additional track through the study area. The study area includes the UPRR line from approximately MP 698.12 to MP 701.20.

Any structures or approaches built to cross the UPRR line are required to adhere to the Guidelines for Railroad Grade Separation Projects published by the UPRR and BNSF railroads. The guidelines include requirements for clearances including a minimum permanent vertical clearance of 23'-6" above top of rail for any overhead structures and a 21'-6" temporary vertical clearance during construction. Additional guidelines for clearances and depths of footings or other structure components within the UPRR ROW are included in the guidelines. For underpass structures that carry the rail itself, guidelines are in the document for design loading and requirements for all primary components of the bridge, including approach slabs and impact protection. Pursuant to its guidelines, UPRR discourages underpass structures.

Construction of an underpass structure would also require a shoofly (a rail line detour route, to be constructed so that rail operations are not unacceptably interrupted during construction). The proposed shoofly track is to be designed to the current authorized speeds along the line and any temporary structures needed for the shoofly must meet standard American Railway Engineering and Maintenance-of-Way Association (AREMA) design loading.

All temporary shoring systems that impact railroad operations and/or support the railroad embankment shall be designed and constructed per the Railroad Guidelines for Temporary Shoring (UPRR 2004). This

includes a requirement that shoring is not to be closer than 12 feet from the centerline of the nearest track unless special approval from the railroad is acquired.

4.3.2 Utilities

The project is not expected to incorporate any new utilities as part of the project. No lighting or mechanical systems are proposed on the new grade separated crossing alternatives.

The project study area portion running along the UPRR line is identified as a Utility Corridor. A detailed utility search has not been completed as part of this phase of the project; however, a minimum of two utilities within the area have been identified that would potentially be impacted by the project.

Kinder Morgan Fuel Line - Running along the west side of the rail line approximately 35 feet from the westmost rail line is a buried 20-inch fuel products line owned by Kinder Morgan. The depth is uncertain but is likely in the range of 3 feet to 10 feet below ground surface (bgs). The utility is within the UPRR ROW. Any construction that limits access to this utility or imposes additional load onto this utility line may require mitigation measures such as casings or protective coverings.

The overhead alternatives that span the UPRR ROW, would not have permanent impacts on the utility as they would span it. Construction impacts such as falsework placement can be positioned to avoid the utility. The underpass option (9.5-U) would have a direct impact on the utility and likely require the utility to be repositioned to a greater depth. This impact would bring a significant cost and additional construction and planning schedule risk.

Railroad Communication Lines – Communication lines critical to the operation of the railroad run parallel to the rail lines on the west side of the tracks. Interruption of these lines is a paramount safety concern for the rail line. Any planned modifications that would require replacement or relocation of these utilities would add additional construction cost and schedule impacts to the project.

The overhead alternatives would not be expected to impact these utilities. The underpass option would require relocation of the utilities.

4.3.3 Geotechnical

The geologic conditions at the site consist of loose, wind-blown sands of varying thickness, overlying denser sands and gravel at depth. The windblown sands could be near the surface to approximately 10 feet deep within the project study area. In areas of existing drainages and washes, loose sands and gravels may also be present. Soils consist of light brown to light orangish brown fine to medium grain sand and silty sand.

The underlying dense sands could provide suitable bearing capacity to support proposed bridge structures on spread footing foundations. However, depending on drainage and localized scouring and erosion, deep foundations such as cast-in-drilled-hole (CIDH) piles may be considered. For the alternatives in this

study, it is assumed that drainage and foundation locations would be placed such that spread footing foundations can be used. This is a significant construction cost and schedule savings.

This Glamis area has significant seismic shaking levels and seismic behavior of the structures would be an important aspect of the design. However, a low risk of liquefaction or lateral spreading hazards is expected to be within the area.

Lightly loaded structures such as cast-in-place (CIP) retaining walls or mechanically stabilized earth (MSE) walls could be supported on spread footing foundations provided loose sands are over-excavated and replaced with compacted, engineered fill. The on-site soils could be used as materials for engineered fill and wall backfill.

4.3.4 Structure

Both bridge and retaining wall structures will be a part of the alternative selected. The bridge structure will provide the grade separated crossing of the UPRR.

Overhead structures and retaining walls will be designed according to the AASHTO LRFD Bridge Design Specifications with appropriate Caltrans amendments and the AASHTO Guide Specification for the Design of Pedestrian Bridges. For the alternative that will carry SR 78 over the UPRR as well, standard Caltrans bridge design loading and procedures would be used. For the overhead structures carrying the trail only, the loading considered within the Specification for Pedestrian Bridges will be appropriate. This specification includes provisions for maintenance vehicles and for long spans such as this, and provides sufficient load carrying capacity for OHVs and emergency vehicles capable of operating on the trail system.

For the alternative utilizing an underpass structure, the design of the structure and adjacent retaining walls will be in accordance with the AREMA design guidelines.

Given the exceptionally hot and dry climate of the area, it is expected that standard bridge construction materials such as concrete and steel will perform well. Exposed steel will likely be weathering steel, also known as core-10 steel, to provide corrosion resistant steel without the need for painting. The riding surface on bridge would be a concrete deck surface. This is because the additional weight of adding a dirt or gravel path onto the bridge would be significant, particularly for the spans required for the overcrossing options. Additionally, maintenance and periodic inspection of the bridge would be greatly complicated if a dirt or gravel path is overlaid on the bridge.

For the purposes of this study, retaining walls are assumed for a majority of the approach sections. Where possible, the approaches may be graded with sloped embankments. However, in order to minimize impacts to the adjacent roads, UPRR ROW, and the surrounding environment, it is also assumed that extensive retaining walls would be used. It is assumed that during later design phases of the project, the extent of the walls may be minimized to balance the various impacts.

The riding surface atop the retaining walls may be a dirt surface to allow for a more natural off-road riding experience. This is not a typical design above retaining wall approaches; therefore, special detailing and

coordination would be required during the design phase of the project, as well as proper selection of a retaining wall type that would provide a low maintenance and durable performance with a pervious top surface.

Fall protection barriers and fencing would be required along the retaining walls and the bridge. Within the UPRR ROW, a minimum 8-foot high curved or 10-foot vertical fence is required in accordance with the Guidelines for Railroad Grade Separation Projects. Barrier ends would have appropriate crash-cushions appropriately sized for OHVs.

4.3.5 Drainage

The approach for all alternatives would be to maintain the historical drainage flow as much as possible. The area drains from the east to the west side of the tracks through existing washes running underneath the UPRR rail lines. Stormwater is diverted to these washes by a series of chevron dikes placed along the eastern side of the UPRR rail line. Alternatives placed within or adjacent to these existing washes would have the most significant impact on existing stormwater.

For newly introduced impervious surfaces such as bridge decks, stormwater catch basins would be used to convey stormwater from the deck surface to the surface where it would be properly dissipated. In areas where new walls or embankment would impede historic drainage flows, storm drainpipes would be placed through the walls or embankment.

4.3.6 Roadway and Trail

Existing trails and roads provide the connections to areas of interest on both sides of the tracks for OHV users. Each alternative will intersect with this existing network and must provide access to the network in a recognizable and safe manner.

The new approach routes for the crossing alternatives would consist of dirt trails. These trails are assumed to be similar to many of the existing routes currently open to OHV use on the eastern side. They should be minimally improved dirt trails with sufficient width of bidirectional OHV use. The trails would be configured to limit the changes to the existing drainage where possible.

At the north end of the study area, SR 78 is a two-lane highway approximately located at MP 41 within Imperial County. The route is also known as the Ben Hulse Highway. The route has a functional classification of Minor Arterial Highway according to current California Highway System maps. The posted speed limit is 55 miles per hour. The 2017 Traffic Census data indicates an Average ADT of 1,550 vehicles westbound and 1,650 vehicles eastbound with peak monthly ADT of 1,800 and 1,850, respectively. This road and its crossing of the rail does not legally allow OHVs to drive across the tracks. OHVs are allowed to cross perpendicular to the highway and they can be pushed (non-motorized) across the tracks at the crossing.

Ted Kipf Road, running parallel to the rail line ROW along the eastern edge of the study area, is a County maintained two-lane unimproved road. The road is a prescriptive road, indicating it is legal for OHVs to

cross the road but not drive on it. On the north side of SR 78, Ted Kipf Road switches over to the western side of the rail line ROW. Ted Kipf Road is currently not open to OHV use, however, many of the designated routes intersect the road. These intersections make this road a likely connecting route and would provide improved access to routes on the eastern side of the rail line.

Wash Road, running parallel to the rail line along the western side of the study area, is a BLM developed and maintained unimproved road running from SR 78 southeast to Ogilby Road. This road is a significant route for recreational users during peak usage season in the area for access with their street legal vehicles. Wash Road is not open to OHV traffic.

Each of the alternatives will intersect with Wash Road on the west side of the tracks. This intersection must provide a safe crossing that would not significantly impede traffic along Wash Road during times of high traffic. Good visibility and appropriate signage will be key to the safety of the intersection.

The overhead alternatives require modifications to the current alignment of Wash Road to make space for the approaches to the crossings.

4.3.7 Construction

Construction of each alternative will need to address areas specific to construction in the area. At this stage in the process, many of the construction details are not developed so construction productivity impacts are captured through increased costs for the project.

Productive work periods in the Glamis area are more constrained during the extremely hot summer climate. This will likely reduce overall productivity and extend the total construction duration of the project compared to work periods in more temperate areas.

Working adjacent to the railroad will require flagging at all times when construction is occurring within 25 feet of the nearest rail or if any equipment has the potential to foul anywhere within 25 feet of the nearest rail. This is an additional cost and reduction to productivity, particularly with the use of heavy machinery within the ROW.

5 Alternative Analysis Results

The details and principal features for each alternative are presented in this section. These alternative layouts are conceptual and intended to confirm the overall feasibility of the alternative while providing sufficient detail to understand the general scope of impacts and costs. Considerations for additional alternatives that are not presented in detail are included at the end of this section.

5.1 Initial Alternative Selection

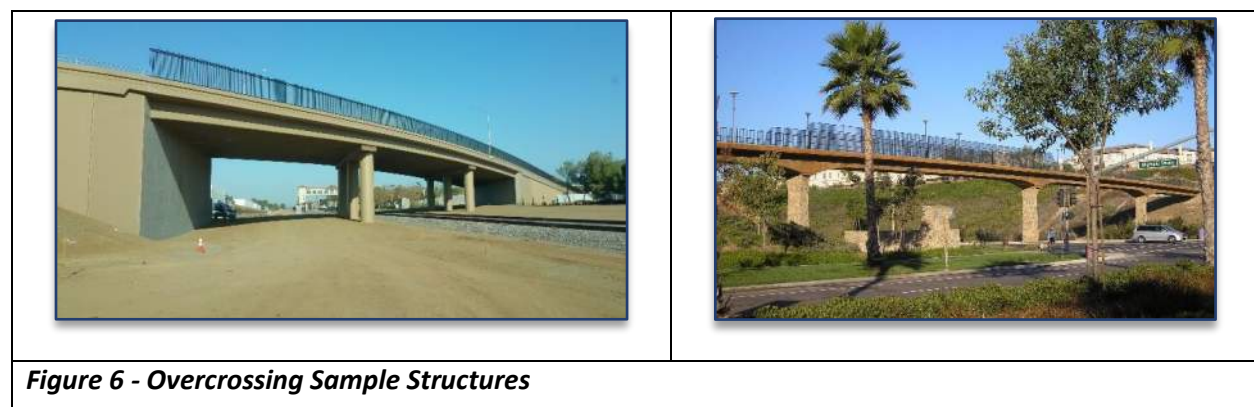
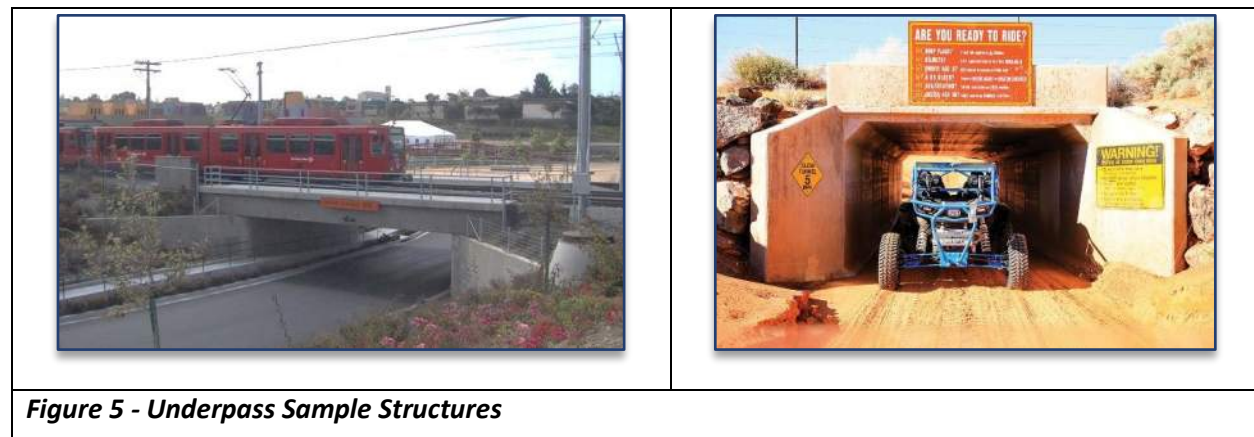
The primary considerations for the alternatives examined were the location of the alternative and the type of crossing.

Based on discussions with the TWG and input received from the public, the most likely locations were around Wash 10 and near SR 78. Significant public support was received for a crossing near Wash 10. This was the historic location of the crossing and provides easy access to the Boardmanville Store. The area to the west of Wash 10 is also a heavily used camping area.

The areas around SR 78 are regularly visited and highly visible to all users. It also has the advantage of being near SR 78 for maintenance access.

The other consideration was if the crossing should be an underpass, where the trail goes underneath the rail line, or an overcrossing where the trail passes over the top of the railroad. In each case it was assumed that the railroad would remain at its current elevation. This is because changing the grade of a rail line requires modification for long distances in each direction due to the grade limitations of a heavy rail line. OHV and other trail underpass structures have been constructed around the state, including recently in Riverside County under SR 138 and operate safely and efficiently.

Examples of sample undercrossings are shown in Figure 5. Examples of sample overcrossings are shown in Figure 6.



5.2 Alternative 78-O

Alternative 78-O would construct a new overhead structure in the current location of SR 78 and carry both SR 78 and a new protected OHV trail lane over the rail line. The layout of this alternative is shown in the figure below with additional figures provided in Appendix A.

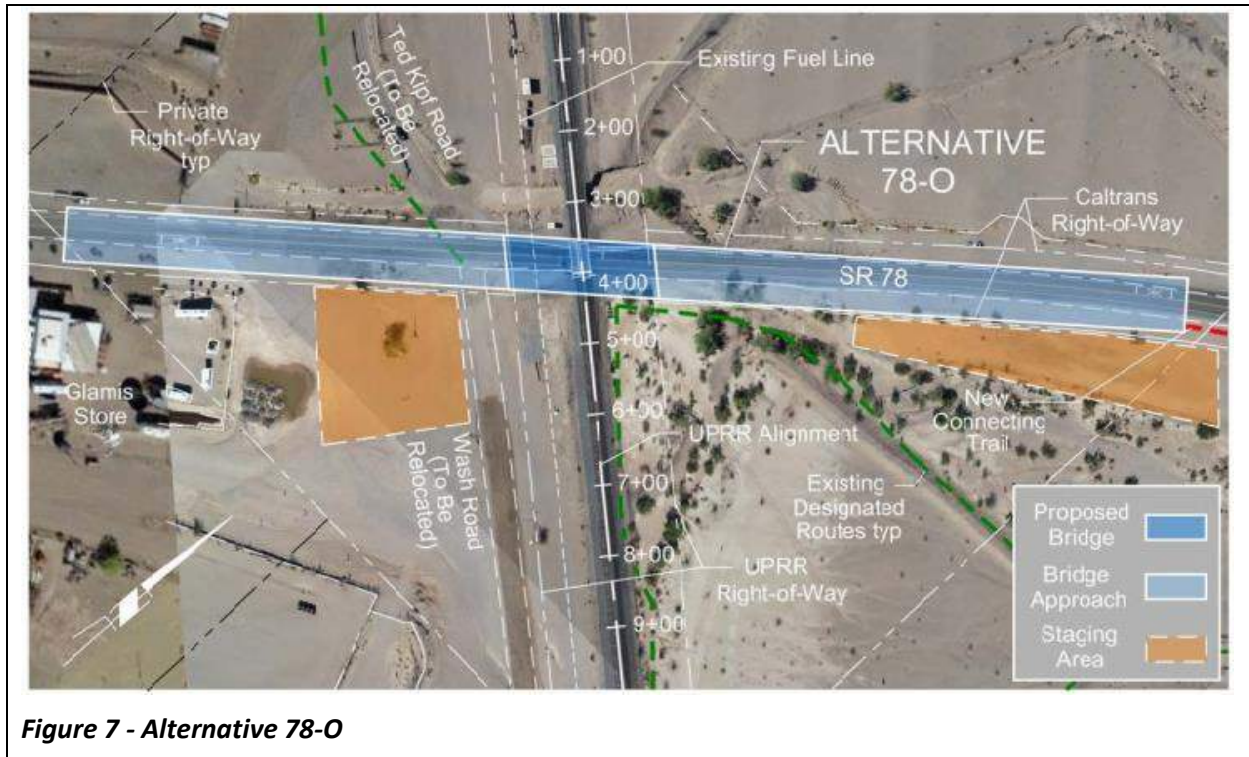


Figure 7 - Alternative 78-O

Alignment – This alternative follows the existing SR 78 alignment. The trail portion of the structure would be located on the south side of the highway. Beginning on the west end near the Glamis Beach Store, the approach would rise steeply to make the required clearance over the rail line and then descend less steeply on the eastern side. Once the approach rejoins the existing grade, a new connecting trail would branch off and intersect with Ted Kipf Road. Similar to other options being considered, in order to connect with many of the existing designated routes terminating at Ted Kipf Road, a modification to Ted Kipf Road or a parallel trail would be needed. The alignment will be required to meet Highway Design Manual criteria including requirements for stopping sight distance, vertical curve, and grade limits of the roadway.

Once OHVs enter the wall-supported approach at either end of the SR 78 alternative, the only exit would be to the opposite side of the rail line. A barrier would separate the OHVs from traffic and cut off any access across SR 78. Bicycle traffic along SR 78 would continue to use the shoulder bike lanes.

The raised alignment of SR 78 would cut off the current access points for Wash Road and the continuation of Ted Kipf Road west of the existing rail crossing. This would require a significant relocation and reconstruction of these roads including placing Wash Road further into the dune area and through a separate part of the private property. A few feasible options for the realignment of Wash Road are shown

in Figure 6 to indicate potential solutions. However, a thorough study of the alternatives and coordination with the affected stakeholders would be needed to arrive at a realignment preference. This would be accomplished during subsequent phases of the project for this alternative.



Structures – The main structure span is assumed to be a 210-foot single span CIP concrete box girder bridge structure approximately 10 feet deep. This is the most common highway bridge construction type in the State of California, although this span length is at the long end of the range for typical bridge construction. The long span also makes the use of precast girders infeasible. Steel girders may be feasible at this span length, however, for the purposes of this study, the more conventional structure type for this span length is assumed. The substructure would be concrete abutments founded on spread footings.

The approaches to the bridge would be retained earth structures supporting the roadway and trail. The walls would range from approximately 3 feet tall at the ends to over 35 feet tall at the bridge abutments. The walls would likely be an MSE-style retaining wall as they are cost effective and flexible in their configurations.

Typical highway crash barriers with appropriate end treatments would be used along the length of the approaches and bridge structure, including an intermediate barrier to separate highway traffic from OHV traffic. Appropriate height fencing would be placed over the UPRR ROW.

Railroad – This alternative would have a minimal impact on the railroad operations. The above grade permanent structure would clear span the UPRR ROW. Abutment walls would be located just outside the ROW. The only potential permanent structure may be the foundation footings which may extend into the ROW. However, these would be located at the edges of the ROW and sufficiently deep to not impede rail operations.

Flagging would be required when working within the ROW or with equipment such as cranes that may foul within 25 feet of the nearest rail. Compared to the other alternatives, the duration of temporary impact to the UPRR would be significantly longer for this alternative due to the staged construction, the overall size of the new bridge, and the CIP concrete structure. A significant amount of falsework would be placed in the UPRR ROW but sufficiently clear of the operating rail line as to not impede regular operations. Cranes would also be operating within the ROW during construction.

The trail approach retaining walls would impede sight lines at the existing at-grade crossing. In coordination with the CPUC, the crossing safety features including signaling, lighting, and crossing arms will likely require safety upgrades and modifications to the existing crossing due to the reduced sight distance at the crossing.

At this location, the rail line is currently a double-track operation with proposed plans to add a third track on the north side of the existing lines.

This option will provide a significant safety improvement in eliminating the at-grade crossing for users of SR 78. This is a significant added benefit outside of the originally stated goals of this project.

Private Right of Way Impacts – While this alternative is within the Caltrans ROW, it would have significant operational impacts to the private property on either side. The construction of the western approach retaining wall would block cross traffic between the parcels on either side of SR 78 and extend partially in front of the existing Glamis Beach Store.

Additionally, current access to the parcels on all four corners of the SR 78 and UPRR intersection is directly from SR 78 along nearly the entire length of the parcels. This access would be eliminated along the east and west approach lengths. The property owner is currently working on plans and approvals for significant development of these parcels including additional commercial and hospitality facilities. This alternative could impact the proposed development and these concerns will be considered as they relate to the crossing alternative development.

The assumed construction staging areas are also likely to be located on the private property parcels.

Utilities – Although few utilities were identified along SR 78, the local connections for the Glamis Beach Store would be impacted by construction of this alternative. Relocation of these utilities is anticipated.

The primary utility corridor running within the UPRR ROW that carries the major fuel line would not be impacted by this alternative.

Stormwater - Historical drainage north and south of SR-78 would continue with minimal impacts. Drainage from bridge roadway and approach would be piped down to existing shoulders.

Construction Staging - Since this alternative reconstructs the existing SR 78 highway in its current alignment, the staging of construction would be the most complex of all alternatives. Both traffic along SR 78 and rail operations would need to be maintained during construction (see Figure 7 below).

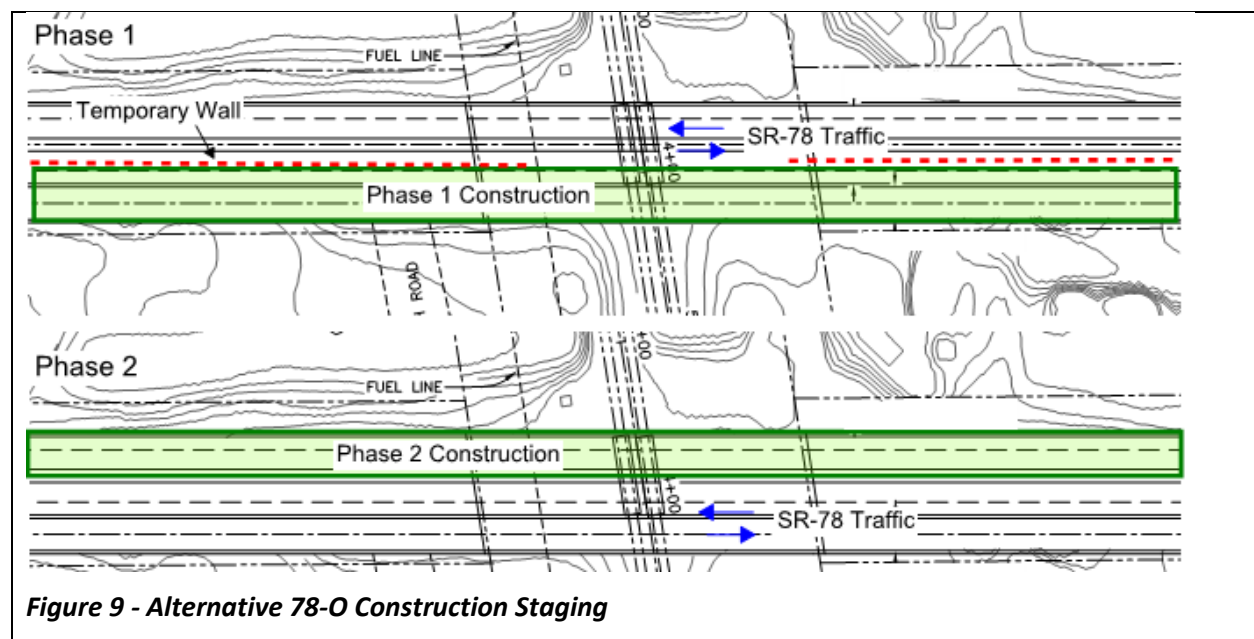
Phase 1 – Traffic would need to be shifted to the north side of SR 78. Additional temporary roadway may be needed as well as modifications to the crossing signals. The southern half of the bridge would be constructed first. The southern approach walls would be constructed in this phase, and a temporary wall would be placed to support the northern edge of Phase 2 traffic.

Phase 2 – Traffic would be shifted to the newly completed southern half of the bridge and approaches. The crossing signals would then be taken out of service. The northern half of the bridge and approach walls would be constructed with the temporary wall buried or abandoned in place.

Phase 3 – Highway traffic would be shifted into the final configuration. The intermediate OHV trail lane barrier would then be placed and then the OHV lane would be opened.

Staging and stockpile areas would be needed on both sides of the UPRR ROW.

Responsible Agency – The lead agency for this alignment can only be Caltrans. The new facility lies entirely within Caltrans ROW and the new SR 78 structure would be a Caltrans facility.



5.3 Alternative 78T-O

Alternative 78T-O would include a new overhead structure located just south of SR 78 and carrying a new OHV trail over the UPRR rail line and Wash Road. The layout of this alternative is shown in the figure below with additional figures provided in Appendix A.

Alignment – Beginning on the south side closest to the existing Glamis Store, the alignment would run northeast, elevate, and then turning to cross Wash Road and the UPRR ROW perpendicular to the rail alignment. On the east side of the rail line, the trail would descend to meet existing grade. Once the alignment reaches existing grade, a new connecting trail would branch off and intersect with Ted Kipf Road. Similar to other options, in order to then connect with many of the existing designated routes terminating at Ted Kipf Road, a modification to Ted Kipf Road or a paralleling trail is needed.

The new connecting trail may follow or parallel the existing wash. The new trail connection would include a 24-foot-wide Class II Base roadway transition of approximately 100 feet in length between the new bridge crossing and existing trails. In later stages of the project, some alignment refinements would likely occur for the curves and the eastern approach interaction with the existing drainage.



Figure 10 - Alternative 78T-O

Structures – The main structure span is assumed to be a 250-foot steel truss superstructure approximately 20 feet deep. The substructure would be concrete abutments founded on spread footings. The truss would be a highly visible focal point in the area given that the top would rise over 50 feet from the typical ground surface. Truss configurations vary, but options such as bow-string trusses or other arch truss variations may be explored during subsequent project phases.

The approaches to the bridge would be retained earth structures supporting the trail. The walls range from approximately 4 feet tall at the ends to over 30 feet tall at the bridge abutments. The walls would likely be an MSE-style retaining wall as they are cost effective and flexible in their configurations. Earthen fill would be placed at the approaches to a height of approximately 10 feet.

OHV appropriate crash barriers would be used on the outsides along the length of the approaches and bridge structure. Appropriate height fencing would be placed over the UPRR ROW.

Railroad – This alternative would have a minimal impact on railroad operations. The above grade permanent structure would clear span the UPRR ROW. Abutment walls would be located just outside the ROW. The only potential permanent structure may be the foundation footings, which may extend into the ROW. However, these would be located at the edges of the ROW and sufficiently deep to not impede rail operations.

Flagging would be required when working within the ROW or with equipment such as cranes that may foul within 25 feet of the nearest rail. Some temporary shoring is expected within the ROW that would be sufficiently clear of the operating rail line to not impede regular operations. During placement of the truss structure components, large cranes would be staged on both sides of the tracks and likely within the ROW. Once the truss framing is in place, work would continue above the tracks in a protected manner.

The trail approach retaining walls would impede sight lines at the existing at-grade crossing. In coordination with the CPUC, the crossing safety features including signaling, lighting, and crossing arms would likely require safety upgrades and modifications to the existing crossing due to the reduced sight distance at the crossing.

At this location, the rail line is currently a double-track operation with proposed plans to add a third track on the north side of the existing lines.

Private ROW – This alternative as currently sited would place the new structures entirely within the existing private ROW. The impacted areas of the ROW are located at the edges of the properties and behind the existing Glamis Store, and the impacted parcel to the east of the rail line is currently undeveloped. On the western side, the location of the trail approach section is currently configured to minimize OHV traffic impacts in front of the store and along Wash Road.

Some refinement of the approach alignment will likely occur in future phases and must be informed and facilitated by the planned development intent in the area. This alternative will interface with and impact the proposed development and these concerns will be considered as they relate to the crossing alternative development. The assumed construction staging areas are also likely to be located on the private property parcels.

This alternative will also have some impact on traffic congestion at the intersections of both Wash Rd and Ted Kipf Rd with SR 78 during high use periods.

Utilities - The primary utility corridor running within the UPRR ROW and carrying the major fuel line would not be impacted by this alternative.

Stormwater - Historical drainage flows and flow patterns would continue with minimal impacts. The proposed crossing location is located within an area of low storm runoff potential. The installation of storm drain pipeline crossings under the proposed bridge and approach would allow historical flows to continue their existing flow patterns.

Construction Staging— Staging of this alternative is relatively straight forward. Staging and stockpile areas would be needed on both sides of the UPRR ROW, minimizing crossing of the tracks by construction personnel. The main span truss would be delivered in pieces and erected using cranes and temporary shoring. Approach wall and drainage facility construction can occur without impacts to UPRR or OHV user operations. Construction access would be directly from SR 78.

Responsible Agency - The likely lead agency for this alignment could be either Caltrans or Imperial County or as a co-owned facility between both entities. The alignment is adjacent to and potentially on the Caltrans ROW making it a feasible structure to fit into their maintenance and operations inventory. However, it does not tie directly to a Caltrans facility and could be configured to largely avoid the Caltrans ROW, making it feasible as a County-owned facility.

5.4 Alternative 9.5-U

Alternative 9.5-U would include a new underpass structure located between Washes 9 and 10, allowing a new OHV trail to pass under the rail line. A new underpass bridge would be placed to carry the rail line. The layout of this alternative is shown in the figure below with additional figures provided in Appendix A.



Figure 11 - Alternative 9.5U

Alignment – Beginning on the west side of the UPRR rail line, the alignment would intersect Wash Road at a T-intersection and drop down passing under the existing rail line perpendicular to its alignment. The alternative would then rise on the east side and a new connecting trail would then descend from the elevated chevron berm and intersect with Ted Kipf Road near the current Boardmanville turnoff. The new trail connection would include a 24-foot-wide Class II Base roadway transition between the new under crossing and existing trails.

Some alignment refinements may be required in later stages of the project development for the new connecting trails due to interaction with the existing drainage.

This alternative would place the crossing in an area currently without a nearby crossing and may improve emergency response times to the camping areas located in this area.

Structures – The new underpass structure would be a standard railroad double-cell box girder ballasted deck bridge with a span of approximately 22 feet. The substructure would be spread footing stem wall abutments. It is likely that the abutments may be built overly wide to facilitate the future double tracking or shifting of the track within the area without requiring modifications to the substructure. The extra width of the abutments would also act as the retaining structures for the approaches.

Along the approaches and butting up to the abutments would be cast-in-place retaining walls. In the event of future triple tracking or shifts beyond the limits of the project abutments, the retaining walls could be removed and replaced with new structure abutments without compromising the adjacent underpass structure.

It is feasible that the structure used could be extended to place more of the alignment under grade and provide additional space within the UPRR ROW above. This would add cost to the structure of the project, particularly if the below grade length exceeds the minimum underground length for a bridge and is categorized as a tunnel. The National Fire Protection Association classifies a tunnel as any structure longer than 75 feet below ground. If the alternative is modified to a length greater than 75 feet, significant additional design measures will be required potentially including ventilation and egress path protections.

A culvert structure was also considered at this location. The culvert is a feasible option to install; however, because construction would be staged in order to maintain rail operations, the bridge structure would provide more space and flexibility for staging and avoid a tunnel effect on the trail. Additionally, the bridge is a typical option given the spans and size of the opening as well as providing flexibility for future changes.

Railroad – Unlike the other alternatives, the majority of the permanent improvements for alternative 9.5-U occur within the UPRR ROW. This includes the rail supporting underpass structure and retaining walls supporting the fill adjacent to the approaches. The retaining walls would also support lateral loading from active rail lines.

For this study, the assumption is that even short-term closures of the railroad are to be minimized. In order to construct the new underpass structure without closing down the rail line, a shoofly would be

constructed. The phasing of this construction is discussed under the Construction Staging heading below. The shoofly would need to be designed to meet the current operating speeds of the rail corridor. It is estimated that in order to make the necessary reversing curves into and out of the shoofly, that shoofly would extend approximately 450 feet in each direction from the undercrossing or 900 feet total. The shoofly would most likely be placed west of the existing rail. Additional fill would be needed to support the shoofly along this entire length. This length of shoofly would be short enough that it would fit between Washes 9 and 10; consequently, no temporary culverts or structures over the existing washes would be needed.

Two short-term rail closures would be required to place trains in service on the shoofly and return them to the mainline. This would require a short-term closure window when the track is taken out of service and the transition made connecting or disconnecting the track with the shoofly section. The timing of this closure window would impose a schedule constraint on the project and need to be requested from and coordinated with UPRR.

Flagging would be required when working within the ROW or with equipment such as cranes that may foul within 25 feet of the nearest rail. Additionally, during staged construction of the alternative, some shoring of the existing rail line would be expected.

Private ROW – This alternative would have no impact to Private ROW.

Utilities - The primary utility corridor running within the UPRR ROW and carrying the major fuel line would be impacted by this alternative. It is expected that in dropping the grade for the approach to the underpass structure, the existing protective cover of the 20-inch petroleum products line would be compromised. It is assumed that this utility line would need to be relocated to a greater depth. This would require a trench excavation for a significant length of pipe likely several hundred feet. It is assumed that the lowering would require a shut-down of the line with adjustments to the pipe itself. This work would likely add considerable schedule constraint to the project as pipeline shutdowns are not simple to maintain.

It is feasible that a protective cover slab over the line or other measure may be incorporated to avoid relocating the utility. At this stage in the study, it is conservatively assumed for cost and impact planning purposes that the utility owner would require relocation.

Stormwater – Historical drainage flows and flow patterns within the surrounding areas would continue with minimal impacts. The proposed crossing location is located within an area of low storm runoff potential. The proposed crossing area would be protected by existing berms currently used to prevent storm runoff to enter this area and control the direction of existing storm runoff flows.

This alternative would create stormwater runoff to be collected at the lowest point of the crossing. This would require underground storage system (perforated 42 inch pipe) to be installed under the trail. This collection system would require periodic maintenance to make sure sediment does not build up and diminish the storm volume capacity.

Construction Staging— Because this alternative requires construction of major components supporting the operating rail line, construction staging would be necessary.

Phase 1 – Construction of the shoofly alignment and rail traffic would be transitioned onto the shoofly.

Phase 2 – With rail traffic on the shoofly, the new undercrossing structure would be constructed in place under the mainline track section. Once the new underpass structure is completed, rail traffic would be transitioned back onto the mainline using the new undercrossing structure.

Phase 3 – Approaches would be constructed.

Staging and stockpile areas would be needed on both sides of the UPRR ROW

Responsible Agency - The likely lead agency for this alignment would be Imperial County. The location is far from the Caltrans ROW and the alignment would tie directly into Ted Kipf Road which is a County facility.

5.5 Alternative 10-O

Alternative 10-O would include a new overhead structure located at Wash 10 and carrying a new OHV trail over the rail line. The layout of this alternative is shown in the figure below, with additional figures provided in Appendix A.

Alignment – Beginning on the west side, the alignment would intersect Wash Road at a T-intersection and then immediately turn south and ramp up steeply parallel to Wash Road. The approach would then make a 90 degree turn and cross the UPRR ROW perpendicular to the rail line. On the east side, the approach would descend generally following the wash. A new connecting trail would then intersect with Ted Kipf Road near the current Boardmanville turnoff.

The new connecting trail may follow or parallel the existing wash. The new connecting trail would include a 24-foot-wide Class II Base roadway transition between the new bridge crossing and existing trails. In later stages of the project, some alignment refinements would likely occur for the curves and the eastern approach interaction between the existing drainage.

This alternative would place the crossing in an area currently without a nearby crossing and may improve emergency response times to the camping areas located in this area.

Structures – The main structure span is assumed to be a 210-foot steel truss superstructure approximately 20 feet deep. The substructure would be concrete abutments founded on spread footings. The truss would be a highly visible focal point in the area given the top of it would rise over 50 feet from the typical ground surface. Truss configurations vary, but options such as bow-string trusses or other arch truss variations may be explored during subsequent project phases.

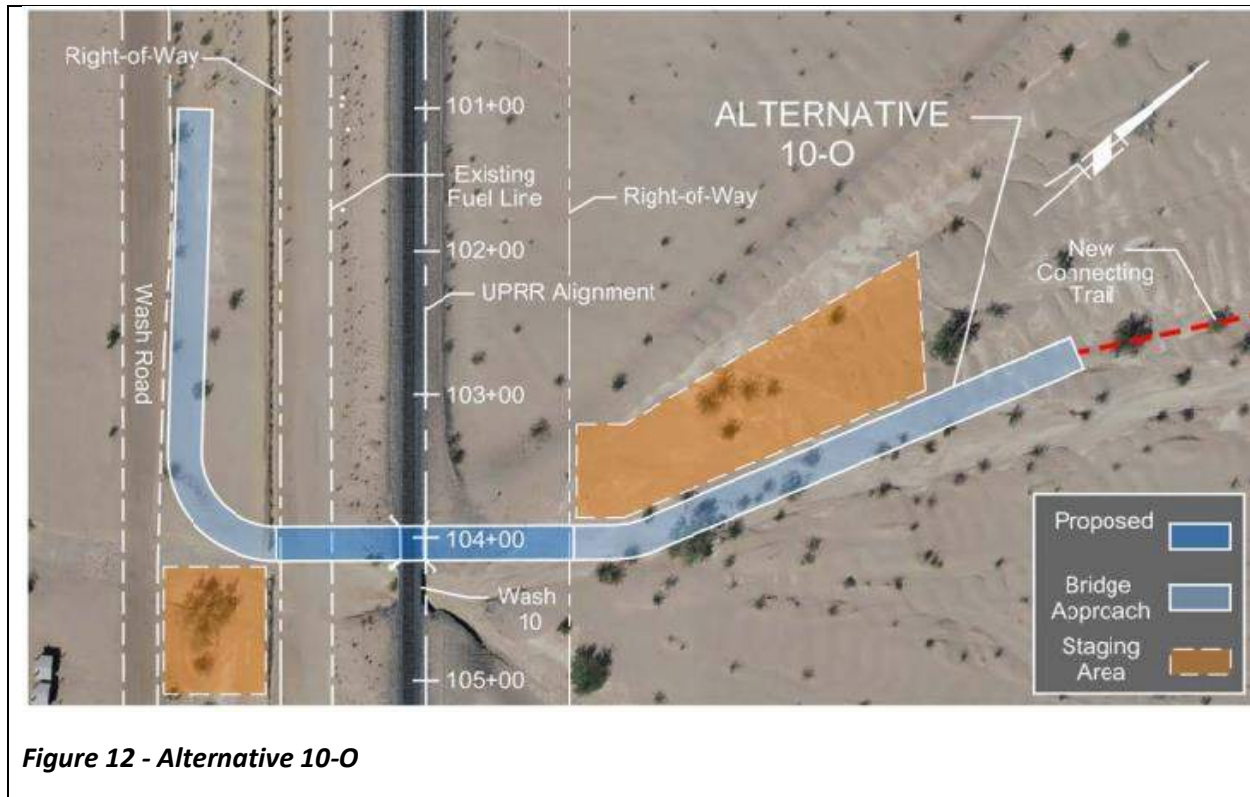


Figure 12 - Alternative 10-O

The approaches to the bridge would be retained earth structures supporting the trail. The walls would range from approximately 4 feet tall at the ends to over 30 feet tall at the bridge abutments. The walls would likely be an MSE-style retaining wall as they are cost effective and flexible in their configurations. This alternative includes earthen fill to be placed at the approaches to a height of approximately 10 feet.

OHV appropriate crash barriers would be used along the length of the approaches and bridge structure. Appropriate height fencing would be placed over the UPRR ROW.

Railroad – This alternative would have a minimal impact on railroad operations. The above grade permanent structure would clear span the UPRR ROW. Abutment walls would be located just outside the ROW. The only potential permanent structure may be the foundation footings, which may extend into the ROW. However, these would be located at the edges of the ROW and sufficiently deep to not impede rail operations.

Flagging would be required when working within the ROW, or with equipment such as cranes that may foul within 25 feet of the nearest rail. Some temporary shoring is expected within the ROW but sufficiently clear of the operating rail line to not impede regular operations. During placement of the truss structure components, large cranes would be staged on both sides of the tracks and likely within the ROW. However, once the truss framing is in place, work would continue above the tracks in a protected manner.

At this location, the rail line is currently a single-track operation with proposed plans to add a second track on the north side of the existing lines.

Private ROW – This alternative has no impact to Private ROW.

Utilities - The primary utility corridor running within the UPRR ROW and carrying the major fuel line would not be impacted by this alternative.

Stormwater – This alternative has the most significant drainage impact. The proposed crossing location is located within an area of high storm runoff potential. To mitigate historical drainage flows and flow patterns, the project would require the installation of a storm drainage collection and discharge system under the proposed bridge crossing and under the railroad.

The proposed trail bridge crossing is located within an existing storm drain crossing under the railroad. The existing storm drain crossing has a watershed tributary area of approximately 426 acres. This watershed area has the potential to produce approximately 378 CFS (cubic feet per second) of stormwater runoff. This alternative would require the installation of two 48-inch diameter concrete inlet pipes, a storm drain concrete junction box, and approximately 200 feet of 72-inch diameter concrete pipe.

Construction Staging – Staging of this alternative would be relatively straight forward. Staging and stockpile areas would be needed on both sides of the UPRR ROW, minimizing crossing of the tracks by construction personnel. The main span truss would be delivered in pieces and erected using cranes and temporary shoring. Approach wall and drainage facility construction could occur without impacts to UPRR or OHV user operations.

Construction access would be along Wash Road on the west and from Ted Kipf Road and along the connecting trail alignment.

Responsible Agency – The likely lead agency for this alignment would be Imperial County. The location is far from Caltrans ROW and the alignment would tie directly into Ted Kipf Road which is a County facility.

5.6 Additional Alternatives

The four alternatives presented above are the Grade Separated Crossings options that capture the areas and crossing types considered most feasible for the project. Other alternatives were proposed but are not included in the detailed study.

At-Grade Crossing – The intention of the feasibility study is to consider grade separated crossing alternatives. However, an at-grade crossing alternative was considered and discussed with the TWG as well. An at-grade crossing (either a new crossing or a modification to the existing SR 78 crossing) was considered to not be viable for several reasons. Primarily that CPUC policy opposes the expansion of at-grade crossings due to safety concerns and history of traffic incidents and fatalities at the location. Additionally, the UPRR would not support a new or expanded at-grade crossing of their ROW.

Undercrossing of SR 78 – An alternative similar to 78-O but with an underpass structure in place of an overpass structure was also considered. This alternative would have less of an impact to the Glamis Beach Store property and shorter approaches. However, the complications with rerouting Wash Road and the

northern portion of Ted Kipf Road discussed with alternative 78-O would persist. Additionally, the rail impacts and maintenance impacts of a major underpass structure would be very significant and difficult to justify the need for an underpass structure in place of an overhead structure. For these reasons it was discussed but not advanced.

5.7 Alternative Scoring

5.7.1 Weighted Criteria

Table 2 presents a summary of the scoring results for each alternative as well as the weighted and unweighted total performance scores. Scores may range from 1 to 5, with 5 being the best feasible performance score for each criteria. The weighted score is normalized so that a perfect score would be 40. A summary of input for each score is provided for all criteria in Table 3.

Table 2 - Alternative Scoring Summary

	78-O	78T-O	9.5-U	10-O
1. Connectivity	2	3	5	4
2. Traffic on Existing Roads	3	4	5	4
3. Rail Operations During Construction	4	5	3	5
4. Conflicts within Rail ROW	5	5	3	5
5. Conflicts with Private ROW	2	3	5	5
6. Maintenance and Operations Efforts	5	4	3	3
7. Sensitive Resources	4	4	3	2
8. Aesthetics	1	2	5	2
Weighted Performance Score	32.3	34.6	28.0	32.9
<i>Unweighted Score</i>	26	30	32	30

Table 3 - Criteria Scoring Detail

Alternative	Score (1 to 5)	Notes
<i>1. Connectivity – How well does the alternative provide access to points of interest and improved connectivity to Designated Routes of Travel on the east side?</i>		
78-O	2	<ul style="list-style-type: none"> Provides very long approaches beginning far from the railroad Places OHV users adjacent to SR 78 Reduces access across SR 78 and to Glamis Beach Store
78T-O	3	<ul style="list-style-type: none"> Places OHV users near to SR 78 Located near highly visible areas at SR 78
9.5-U	5	<ul style="list-style-type: none"> Provides direct and straight access across tracks Located near Boardmanville area of interest Provides access near historic access point Improved emergency response times with crossing located closer to central camping areas

Alternative	Score (1 to 5)	Notes
10-O	4	<ul style="list-style-type: none"> Provides access at historic access point Located near Boardmanville area of interest Requires indirect switchback on western approach Improved emergency response times with crossing located closer to central camping areas
<i>2. Traffic on Existing Roads – What are the safety and functionality impacts to SR 78, Wash Road, and Ted Kipf Road including during peak season?</i>		
78-O	3	<ul style="list-style-type: none"> Cuts off access to current entry points onto Wash Road and Ted Kipf Road north of SR 78, rerouting traffic around Glamis Beach Store Provides significant safety improvement for SR 78 by eliminating at-grade crossing
78T-O	4	<ul style="list-style-type: none"> Reduces sight distance at existing SR 78 crossing of UPRR Some increased congestion around the current intersections with SR 78 Introduces typical trail intersection to Ted Kipf Road
9.5-U	5	<ul style="list-style-type: none"> Provides straight T-intersection with good sight lines No change to SR 78 Introduces typical trail intersection to Ted Kipf Road
10-O	4	<ul style="list-style-type: none"> T-intersection with adjacent curve at intersection with Wash Road in area of Wash Road traffic during peak times No change to SR 78 Introduces typical trail intersection to Ted Kipf Road
<i>3. Rail Operations During Construction – How will construction of the project impact railroad operations?</i>		
78-O	4	<ul style="list-style-type: none"> Minimal direct rail impacts Long duration of construction over tracks Temporary modifications to at-grade signals required
78T-O	5	<ul style="list-style-type: none"> Minimal rail impacts
9.5-U	3	<ul style="list-style-type: none"> Will require short track closures for cut-in of shoofly track Will require two phases of shoring placed directly adjacent to rail lines
10-O	5	<ul style="list-style-type: none"> Minimal rail impacts
<i>4. Conflicts within Rail ROW—Will any permanent structures, easements or additional requirements occur within the UPRR ROW that will limit or burden future UPRR expansion?</i>		
78-O	5	<ul style="list-style-type: none"> No permanent structures Aerial easement only
78T-O	5	<ul style="list-style-type: none"> No permanent structures Aerial easement only
9.5-U	3	<ul style="list-style-type: none"> Future lines will require additional superstructure to be placed Does not eliminate space for future rail lines Can provide pre-built substructure for double-track
10-O	5	<ul style="list-style-type: none"> No permanent structures Aerial easement only
<i>5. Conflicts with Private ROW – Will any permanent impacts, easements or conflicts occur within existing private property that may conflict with current or future development?</i>		
78-O	2	<ul style="list-style-type: none"> Significantly impacts access to all four private parcels within Study Area Requires Wash Road and northern run of Ted Kipf Road to undergo significant rerouting

Alternative	Score (1 to 5)	Notes
78T-O	4	<ul style="list-style-type: none"> Will require ROW acquisition or easement on two parcels
9.5-U	5	<ul style="list-style-type: none"> No impacts to Private ROW
10-O	5	<ul style="list-style-type: none"> No impacts to Private ROW
<i>6. Maintenance and Operation Efforts – How significant will the future effort of maintenance and operations be for the final configuration?</i>		
78-O	5	<ul style="list-style-type: none"> Minimal maintenance for concrete structure Area has little impact on area stormwater drainage Concrete riding surfaces for approaches and bridge
78T-O	4	<ul style="list-style-type: none"> More involved inspections required for steel truss system Area has little impact on area stormwater drainage Concrete riding surface on bridge and optionally on approaches
9.5-U	3	<ul style="list-style-type: none"> Minimal structures maintenance Introduced low point will require periodic sediment clearing Additional stormwater features will require maintenance
10-O	3	<ul style="list-style-type: none"> More involved inspections required for steel truss system Area collects significant stormwater drainage Additional stormwater conveyance features will require maintenance Concrete riding surface on bridge and optionally on approaches
<i>7. Sensitive Resources – How will the alternative impact sensitive resources in the area?</i>		
78-O	4	<ul style="list-style-type: none"> Minimal sensitive resources in the Caltrans ROW and adjacent areas Long duration of construction will increase community impacts Some cultural resources identified near this area Minimal stormwater flow in this area Minimal impacts from connecting trail to Ted Kipf Road in SR 78 ROW
78T-O	4	<ul style="list-style-type: none"> Minimal sensitive resources in the Caltrans ROW and adjacent areas Some cultural resources identified near this area Minimal stormwater flow in this area Minimal impacts from connecting trail to Ted Kipf Road through desert scrub vegetation in a relatively disturbed area just south of SR 78 ROW
9.5-U	3	<ul style="list-style-type: none"> Minimal overall footprint Minimal stormwater flow in this area Sensitive biological resources on east side of UPRR ROW in relatively undisturbed area including potential desert tortoise habitat Requires trail to existing wash and Kipf Road through desert scrub vegetation
10-O	2	<ul style="list-style-type: none"> Footprint is primarily within previously disturbed areas Most significant impact to existing wash hydrology Significant stormwater flow in this area Sensitive biological resources on east side of UPRR ROW in relatively undisturbed area including potential desert tortoise habitat Utilizes existing wash route for connecting trail
<i>8. Aesthetics – Will the crossing detract from the user experience or adversely affect scenic vistas or viewsheds?</i>		
78-O	1	<ul style="list-style-type: none"> Structure will rise high above the surrounding area Tall walls will block ground level views around

Alternative	Score (1 to 5)	Notes
78T-O	2	<ul style="list-style-type: none"> Structure will rise high above the surrounding area Tall walls will block ground level views around
9.5-U	5	<ul style="list-style-type: none"> Insignificant effect Structure will be below existing grade Structure is consistent in appearance with existing washes
10-O	2	<ul style="list-style-type: none"> Structure will rise high above the surrounding area Tall walls will block ground level views around

5.8 Alternative Cost Estimates

This section summarizes cost estimate development for the Alternatives.

Table 4 - Alternative Cost Estimates

		78-O	78T-O	9.5-U	10-O
Capital Cost (Construction / ROW / Contingency)		\$28,000,000	\$9,700,000	\$8,100,000	\$9,300,000
Support Cost (PAED/PSE/ Construction Support)		\$6,500,000	\$2,300,000	\$2,400,000	\$2,200,000
Project Cost		\$34,500,000	\$12,000,000	\$10,500,000	\$11,500,000
Post-Construction Maintenance Cost (in year of const. \$)	20 yr	\$100,000	\$170,000	\$230,000	\$250,000
	30 yr	\$150,000	\$255,000	\$345,000	\$375,000

The cost estimates were escalated based on the assumed layout of each alternative and project estimating assumptions typical to bridge construction in California.

Attachment G to this memorandum includes the Cost Summary, Cost Detail, and Operations and Maintenance Cost Detail for each alternative. The cost items methods and general assumptions are outlined below.

Construction Cost – For each alternative, the construction cost was estimated using planning level quantities from the alternative layout. The cost items were broken out between Civil Items and Structure Items. Civil Items include roadway, trail, drainage, environmental mitigation and monitoring, traffic control for roadway traffic, railroad flagging or shoo-fly items, and any necessary detours. Structure items included bridge and retaining wall. These items were quantified, and an assumed unit cost applied to the quantity. The unit costs were based on Caltrans unit price data as well as Caltrans Construction cost

guides. The unit costs used and assumptions for the different cost items are evident in the cost detail breakdown for each alternative.

Right of Way Cost – A cost for the ROW effort was assumed for each alternative as well. This cost estimates the acquisition, including fees and mitigation of temporary and permanent easements or permanent property acquisitions required for each alternative. It also includes the cost of utility relocations. ROW cost does not include access or development impacts to adjacent private property such as the Polaris property.

Contingency – The assumed contingency was 40 percent of the combined Construction and ROW cost. Based on the conceptual-only level of detail included as part of this study, the 40 percent contingency typical of planning level estimates was used.

Project Approval/Environmental Documentation Support – The PAED cost for each alternative was assumed based on the complexity and effort expected for each alternative. For the overhead crossing alternatives (78-O, 78T-O, and 10-O) a PAED cost of 10 percent of the Capital Cost was used. This is a typical value for standard bridge projects. For the undercrossing alternative (9.5-U) a PAED cost of 15 percent was used because of the additional effort and coordination expected to process an undercrossing structure.

Plans, Specifications, and Estimate Support – The PS&E portion of the project, which includes preparation of construction documents, was estimated based on the expected complexity of the final configuration as well as a function of the overall size of the project. For Alternative 78-O, which is a much larger but not more complex structure, the estimate was 7 percent of the Capital Cost. For the other alternatives, a slightly higher 8 percent of Capital Cost was used.

Construction Support – The Construction Support portion of the project includes construction management, engineering support during construction, and construction inspection. This portion was estimated based on the complexity of the project as well as the diversity of services and stakeholders involved in the final inspection and approval efforts. For the overhead crossing alternatives, a Construction Support cost of 10 percent of the Capital Cost was used. For the undercrossing alignment, a cost of 15 percent was used due to the additional complexity of the UPRR involvement and significant utility relocation.

Maintenance and Operations – The assumed maintenance and operations activities for each alternative were estimated for the first 20 and 30 years of operation for the crossing. Activities included in the estimate are comprised of routine bridge inspections, regrading of unpaved approaches which includes removal of drift sand, maintenance of drainage facilities, and assumed repairs to barriers or fencing due to minor OHV collisions. Major repairs due to a major collision, earthquake, or other extreme event are not included. Costs and frequency assumptions for each maintenance activity vary per alternative based on the effort and complexity of the alternative. For example, drainage maintenance for the SR78-O alternative is minimal and assumed to occur every five years while drainage maintenance for the 10-O

alternative which sits within a significant drainage way and includes more storm drain features is more expensive and assumed to occur each year.

5.9 Identification of Preferred Alternative

The alternative scoring indicates that 78T-O is the preferred alternative. It scores well in the areas with the highest weighting and has the highest overall score. It also benefits from being constructed in an area with minimal sensitive resource areas and minimal long-term drainage concerns. As an overcrossing structure it also minimizes the impacts to the railroad both during and after construction.

Alternative 78T-O does have impacts to the private property parcels owned by Polaris Inc. These properties are in plans for development and how the crossing may interact with the planned development should be a key consideration moving forward.

The cost of this alternative is comparable to the alternatives 9.5U and 10-O. All three trail only crossings have approximate costs of \$10.5 Million to \$12 Million. At the level of detail developed in this study, those costs differences should be considered negligible or within similar range of each other.

6 Implementation and Plan Recommendations

6.1 Project Implementation

This section summarizes the recommended actions needed to bring the project through the initial phases of planning to design, construction, and ultimately operation.

6.1.1 Initial Actions

Several activities can be initiated or continue immediately as part of the project development. These activities will be important to setting the stage for the funding and development portions of the project.

Interparty Ownership Agreement

One of the key decisions to be made regarding a future OHV crossing is the ownership of the crossing. As the crossing is intended to be a public crossing, the CPUC and UPRR require that the owner be a public agency. It was recommended during the TWG meetings that a potential ownership structure for crossing alternative 78T-O could be joint or co-ownership of the facility between the public agencies. The potential also exists for a Public-Private partnership (P3) agreement to be formulated that may meet the project needs and requirements. It is recommended that discussions regarding the structure and details of a co-ownership agreement proceed as early as possible following the completion of the study as this agreement will be key to the decision-making process of the project planning and design.

The following are key items to determine and document in the co-ownership agreement:

- Development and Construction Funding Obligations

- Planning and Construction Oversight
- ROW Acquisition Ownership
- Maintenance Responsibility
- Major Event Damage
- Liability
- Enforcement

Grant Funding Applications

Several grant funding opportunities may be applicable to the project. The application cycles and deadlines for these grants vary by year. However, the documents prepared as part of this study include typical elements for project grant funding applications such as project descriptions, stakeholder input, public outreach, conceptual design, and cost estimates. It is recommended that one of the stakeholder public agencies (Caltrans or Imperial County) take the lead on funding application preparation.

Coordination with Polaris Property

The most feasible crossing alternative currently lies within private property owned by the Polaris company on both sides of the railroad tracks. Polaris is currently working on plans to develop that property through the County. The project development team should continue to review and discuss with Polaris how the projects can interact to avoid conflicts and provide an all-around improved experience for OHV users in the area.

6.1.2 Project Development

Following the identification of funding sources, the project will enter the development phases. A summary of the activities that will occur during these phases is provided below with an assumed duration and listing of activities provided in the development schedule.

Project Approval and Environmental Document Phase

The PAED phase is estimated at 24 months. This initial phase of the project will focus on finalizing the project concept and preliminary layout, identifying environmental considerations and the appropriate environmental documents required under CEQA and NEPA, coordinating agency and stakeholder concerns, and beginning the engineering process.

The environmental document phase is critical to approval of the project and identifying any required mitigations or other actions the project must address to gain environmental approval. For this study, an Environmental Constraints Memo was prepared to provide a preliminary assessment of the environmental topics that will need to be addressed.

Coordination with the BLM will also occur during this initial phase. Any overcrossing or undercrossing will connect and provide additional access to BLM administered lands. The project may require BLM ROW permits or other BLM lands and realty-related permits. Additional coordination with the proposed owner agencies will be required to coordinate items such as trail connections, usage, and enforcement.

The initial step in positioning for the CPUC clearance of the new crossing will be the Field Diagnostic meeting. This site walk will involve officials from CPUC, UPRR, and the owner agencies, and serve to discuss the safety and regulatory items the crossing design will need to address. Ultimately, a formal application to the CPUC will need to be submitted and this meeting will set the process in motion for that critical step.

During this phase, any other interagency agreements related to ownership should be finalized. Memoranda of understanding between other parties, including UPRR, will also be initiated as the total time for these agreements can be at least 36 months.

Plans, Specifications, and Estimate and Right of Way

During the next phase of the project, the detailed design and preparation of plans, construction specifications, and final construction cost estimates (PSE&E) will be prepared. This process will include several iterations of review of the design by the ownership agencies as well as UPRR. These reviews will provide comments to ensure the design is meeting the requirements of current codes and other required provisions. This phase is estimated to take 18 months to complete.

All ROW impacts, both permanent and temporary, will need to be finalized during this phase. This will include easements or acquisitions of private property, any federal land easements or agreements, and aerial easements within the UPRR ROW.

Coordination for utility relocation or other utility impact requirements will also be completed during this phase. The current most feasible alternative is not anticipated to have significant impacts to utilities as it will pass over the major petroleum line within the project area.

Agreements will be finalized and the formal crossing application will need to be approved by the CPUC prior to construction bid documents being finalized.

Construction Phase

Construction of the project is expected to last 12 months. The construction period will overlap the busy season since that is when the weather is most favorable for construction activities. Limitations on some construction activities will be necessary due to wildlife species or weather concerns. These will be determined during the environmental phase and documented in the project specifications.

6.1.3 Operation

Maintenance and operation of the crossing will continue throughout the life of the facility. Annual or bi-annual maintenance activities will include routine bridge inspections, regrading of unpaved approaches

including removal of drift sand, maintenance of drainage facilities, and assumed repairs to barriers or fencing due to minor OHV collisions. Major collisions or damage to the structure is not typical for a concrete bridge structure as they are very durable compared to OHVs or even highway vehicles. However, if major damage were to occur, repairs would be required to provide a safe structure. Temporary closures of the crossing could be used if the damage resulted in an unsafe facility.

If a user fee collection system is initiated to fund part of the project, then the operation of that enterprise will be a significant operational effort for the other parties involved in the fee collection.

The typical design lifespan for infrastructure such as a concrete bridge and retaining wall system is 75 years minimum. However, if the structure is successful in providing a much-used access crossing, the owners should anticipate the need to maintain a crossing for the foreseeable future.

6.2 Policy Recommendations

This section summarizes the recommendations for agreements and policy issues related to the potential project. It is not intended as an exhaustive checklist of agreements, approvals, permits, and other agency or entity coordination efforts that will be required as part of the project development. Rather it is a summary of the significant items that are uncommon or outside of the typical project development process.

Several parties will be involved in the development and approval of the project. As part of this project study, many of these parties participated in a series of TWG sessions to provide input on the feasibility study development.

The primary parties include:

- Imperial County
- California Department of Transportation
- Union Pacific Railroad
- California Public Utilities Commission
- Federal Bureau of Land Management
- Imperial County Transportation Commission
- California Highway Patrol
- Private property owners within the project study area
- OHV user groups

6.2.1 Interparty Agreements

One of the key decisions to be made regarding a future OHV crossing is the ownership of the crossing. As the crossing is intended to be a public crossing, the CPUC and UPRR require that the owner be a public agency or agencies. This owner will need several agreements with the adjacent entities, including UPRR and BLM. These agreements are common for facilities where multiple agencies or organizations intersect and include provisions for issues such as easements, access, liability, maintenance, etc. Close coordination between entities during development of the crossing project will be required to facilitate the resolution of these agreements.

It was recommended during the TWG meetings that one potential ownership structure for crossing alternative 78T-O could be a joint, or co-ownership of the facility between two public agencies. It is recommended that discussions regarding the structure and details of a co-ownership agreement proceed as early as possible in the project development, as this agreement will be key to the decision-making process of the project planning and design.

Following are key items and questions to resolve and document through the co-ownership agreement:

- a) Development and Construction Funding Obligations – Who will oversee the procurement of development and construction funds? Depending on what funding sources are used as part of the project, different agencies may be preferable. Federal funding through grants or other programs are typically administered through Caltrans but applied for by local agencies. If private donations or other locally procured funds are used, additional agreements may be necessary.
- b) Planning and Construction Oversight – Which agency will lead the planning, design, and construction of the project? This includes coordination with UPRR, BLM, and CPUC during project development as well as design and construction. How will responsibilities for reviews, approvals, inspections, and acceptance be shared? This agency will also be responsible for contracting with consultants, contractors, and other service providers that may be needed for the project.
- c) Maintenance Funding and Responsibility – The crossing is expected to require regular maintenance to meet its functional goals. The responsibility to perform and pay for this maintenance is a key concern. Expected maintenance activities are detailed in the Financial Feasibility Memo prepared as part of this study. One option for maintenance funds is a use fee of some type. The potential implementation, collection, and distribution of such a fee should be considered within the agreement.
- d) Major Event Damage – If a major event such as an earthquake, exceptional storm, major collision, or other event which causes major damage to the facility occurs, how will repair or replacement be handled?
- e) Right of Way Acquisition – If ROW is acquired as part of the project, which entity will acquire and maintain it? Will the property ownership be shared? This item should be considered closely with liability considerations.

- f) Liability – In the event of an incident on the crossing structure or within the limits of the crossing easement, how will liability, defense, and indemnification be shared between the agencies?
- g) Enforcement – How will rules and regulations for use of the facility be enforced? How will coordination with the other entities with enforcement responsibility (BLM, UPRR, CHP) occur within and around the proposed crossing area? Who will make the decision as to whether the facility will be shut down due to damage, enforcement concerns, or other concerns?

6.2.2 Policy Recommendations

It is anticipated that the crossing project will comply with current standards and regulations for a facility of this type. However, some use and design policy modifications are recommended.

Use Recommendations

The primary policy change recommendation made by the TWG to help the project meet the intended goal of improving access, is a change to the use regulations of Ted Kipf Road to facilitate connections with other trails on the eastern side of the UPRR line.

The western portion of the study area is designated as an unrestricted open OHV use area, while the portion east of the railroad tracks is designated as a limited OHV use area (see Figure 3). Open OHV use areas typically allow all types of vehicle use anywhere in the area. Limited OHV use areas require vehicles to travel on only designated routes. Existing designated routes are shown in green in Figure 3.

Ted Kipf Road, running parallel to the rail line ROW along the eastern edge of the study area, is an Imperial County maintained two-lane unimproved road. The road is a prescriptive road, indicating it is legal for OHVs to cross the road but not drive on it. Ted Kipf Road is currently not open to OHV use; however, many of the designated routes terminate at the road. These intersections make this road a likely connecting route without which the trail access options are very limited once an OHV has crossed the rail tracks. Without the connecting route along Ted Kipf Road, the rail crossing facility will terminate OHV users with very few continuing options. This will likely lead to additional unauthorized trail cutting and enforcement concerns.

The recommended change to address this missing link is to modify the use designation of a portion of Ted Kipf Road to a dual-use road (also known as a combined-use facility). A dual-use road allows OHV vehicles to legally travel along the road with standard vehicle traffic. These have been implemented in other areas of Imperial County as well as around the state on a limited basis. Dual-use roads are intended to provide links to existing OHV trails and trailheads on federal BLM or US Forest Service lands to provide a unified linkage of trail systems.

The process for implementation of dual-use roads includes identification of the need and limits of a proposed dual-use section. Once the need and limits are proposed, several studies in cooperation with CHP, county, state and BLM officials are needed to verify and approve the need and limits. Key questions

to be answered as part of the studies are: Are improvements needed to the road? How are the limits of the dual-use section communicated to users? How is enforcement performed?

Dual-use designation may include limitations on OHV in order to provide a safe environment for all users. Limitations may include provisions such as:

- Drivers must have in possession a valid driver's license for the vehicle operated
- Riding must be during daylight hours only
- Vehicles must have an operational stop light
- Owners must have vehicle insurance
- Posted speed limits must be obeyed
- Existing designated routes must be used when exiting or entering a dual-use route

Design Recommendations

Railroad crossing regulations as set forth by the CPUC will be a requirement of the project. Standards and practices for design of railroad grade separation structures as defined in the UPRR's Guidelines for Railroad Grade Separation Projects.

The structural design for the bridge, retaining walls, and paths shall also comply with the American Association of State Highway Transportation Officials (AASHTO) design standards as adopted within the State of California and the American Railway Engineering and Maintenance-of-Way Association (AREMA) standards. However, because the facility will be OHV use only and not open to typical highway traffic, some additional provisions are needed.

These include:

- Barrier and fencing guidelines must be appropriate for OHV ranging from mountain bikes and motorcycles to sand rails and trophy trucks
- Live loads on the bridge must be considered; options could range from using pedestrian bridge guidelines with some multi-axle vehicles to assuming the bridge may handle a full weight truck

These provisions should be clarified and documented prior to the commencement of preliminary design.

6.3 Project Financing Options

This section summarizes the most likely funding sources available for the project. However, applicable additional sources may exist or be identified during the development of the project.

6.3.1 Design and Construction Funding

The initial capital cost of project planning, design, and construction is the most significant hurdle to project completion. The conceptual cost for the most feasible alternative is estimated at \$12 Million in current year dollars. Given the unique nature of the project in providing primarily OHV access within federal lands, many of the typical infrastructure funding programs used for roads and bridges are not applicable. Also note that BLM fees and funding are not intended as possible funding sources for the project. However, the unique nature of the project does present certain opportunities within programs targeted at improving access to federal lands or improved rail safety. A combination of the following sources should be considered for funding the project.

The table below presents a summary of the likely major funding sources with a discussion on each.

Table 5 - Funding Program Summary

<i>Funding Program</i>	<i>Description</i>	<i>Application Information</i>	<i>Suitability to SR 78/Glamis Crossing</i>
Federal Lands Access Program	<ul style="list-style-type: none">• Intended to improve transportation facilities that provide access to, are adjacent to, or within federal lands• Emphasis on recreation sites and economic generators	<ul style="list-style-type: none">• Upcoming application anticipated October 2020; subsequent application deadline not yet published• Selection criteria integrates well with the SR 78/Glamis project• Match of 11.47% required	High
Consolidated Rail Infrastructure & Safety improvements	<ul style="list-style-type: none">• National program targeting rail corridor improvements to efficiency and safety	<ul style="list-style-type: none">• Applications typically occur each year• Most recent application deadline was June 2020; 2021 application deadline not yet published• Roadway grade separations are frequently funded• History of safety concerns is important consideration	Medium
CPUC Section 130 and Section 190 Programs	<ul style="list-style-type: none">• Statewide programs for rail crossing improvements• Safety enhancement focused• Section 130 focused on grade separations• Section 190 based on applications from local agencies	<ul style="list-style-type: none">• Program is based on CPUC determined list of most critical roadway grade crossings statewide• Section 190 funds a small number of projects through application process• Priority list developed by CPUC by July 1 each year	Low

Land and Water Conservation Fund	<ul style="list-style-type: none"> • Provides matching grants to local governments aimed at creating, expanding, and developing park and recreation facilities 	<ul style="list-style-type: none"> • Program established in 1964 • Additional funding committed in July 2020 • Next application cycle anticipated February 2022 • Requires non-federal matching funds 	<p>Medium</p>
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Federal Lands Access Program

The program most relevant and applicable to the Glamis Multiuse Grade Separation Crossing project is the Federal Lands Access Program (FLAP). This program is intended to improve transportation facilities that provide access to, are adjacent to, or are located within federal lands, with an emphasis on high-use recreation sites and economic generators, all of which apply to the Glamis Crossing project.

The funds for the FLAP program are apportioned to states, and projects are selected by committees within each state. California receives one of the largest apportionments of approximately \$30 Million per fiscal year. The frequency of calls for projects is determined by the state committee. The previous call for projects in California was in October 2017 with the next scheduled for October 2020. The program does have a local match requirement. For the most recent cycle in California the match amount was 11.47 percent. Other federal funds are not allowed to be used as part of the local match. ROW acquisition and utility relocation can be used as matching funds.

Previous projects have included roadway improvements, box culvert replacements, bridge construction, and bike and pedestrian improvements. Given the high use of the ISDRA and the lack of current access for OHV users, the Glamis Crossing project should be very competitive in this program.

The evaluation criteria for the program are:

- Safety
- Preservation
- Natural Resource Protection
- Funding
- Program Risk

Railroad Safety Improvement Funds

Many opportunities exist for railroad crossing safety improvement project grants. These are typically targeted at improving vehicle crossing safety at existing at-grade crossings with grade separations, improving warning devices, and track improvements. The Multiuse Grade Separation project should be eligible to apply for these funds, particularly since accidents have occurred at this crossing location in the past.

The primary federal grant program is known as the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program. The program funding can be used for planning, environmental studies, and design as well as construction of the infrastructure. In March 2020, the program announced 32 project recipients receiving \$248.5 Million in funds. The projects included pedestrian bridges, roadway grade separation structures, and passenger platform improvements among other items. The Multiuse Grade Separation is a unique project; however, it shares the same overall mission of improving rail corridor safety as this program.

The CPUC administers several funding programs for railroad crossing improvements. The most applicable of these are the Section 130 and Section 190 Grade Crossing Hazard Elimination Program which provides federal funds to local agencies to eliminate hazards at at-grade crossings. The Section 130 program is based on a prioritized list of potential projects statewide developed by the CPUC. The Section 190 program typically funds only three to four projects each year and local agencies are responsible for submitting applications. Because the Glamis Crossing is not expected to grade separate the highway, it may not fare well in either the Section 130 or 190 programs.

It should be noted that if Alternative 78-O, the full grade separation of SR 78 with a combined OHV lane, is pursued, it would integrate much better into the rail safety improvements grant programs and could be very competitive within the Section 190 program.

Land and Water Conservation Fund

In July 2020, the federal government passed the Great American Outdoors Act, a significant legislative effort for funding national public lands. The initial impact of the law is a \$9 Billion fund to be used over the next five years to fix deferred maintenance at national parks, wildlife refuges, forests, and other federal lands. Over two-thirds of this is specifically targeted to the national park system.

In addition to the initial outlay, the bill provides \$900 million per year into the existing Land and Water Conservation Fund (LWCF) which provides funds for federal land programs. The LWCF also provides grants to local governments. The State and Local Assistance program within the LWCF provides matching grants to local governments and states with a target of creating, expanding, and developing park and recreation facilities. The crossing project would fall within the description of this mission. These grants are matching grants, so additional funding would be needed.

According to the recently published information on the LWCF stateside program website, the program has provided over 40,000 grants to state and local governments over the past 40 years totaling \$4.1 Billion. These grants have been used for land acquisition, development, improved access, and planning. The next anticipated funding application cycle is scheduled for February 2022. The Glamis Crossing project includes all these components and should compete well in the LWCF program.

Agency Capital Improvement Programs

In most cases, even if outside funds or grants are available, some local funding matches may be required. Some use of local funds, as a match for grants and grant applications, should be explored. Setting aside

local funding early in the process will often improve grant success rates. These funds can also be used in the early phases of the project to move development forward prior to complete funding being identified.

In the worst-case scenario, in which no outside funds are secured, then the cost may rely wholly on the capital improvement budgets of the owner agencies. For a small county such as Imperial County, the scale of the crossing project cost would make it prohibitive for their budget. Caltrans' overall budget is much larger although they are not likely to have discretionary funds of this order of magnitude. If only the general funding from the owner agencies is relied upon, it is unlikely that the project will be feasible.

User Fee Programs

The concept of a user fee to fund a part of or the whole project should be considered. As part of the study, an online survey was conducted to solicit feedback on the project including questions regarding vehicle use, areas of interest, likelihood of crossing use, and a pair of questions regarding a user fee. One question was 'How supportive would you be to paying a surcharge (such as a crossing toll fee) in order to construct, operate and maintain a new safe OHV crossing?' Of the over 4,000 respondents, 39 percent selected they strongly or moderately support a surcharge, 34 percent strongly or moderately oppose it, and 27 percent were either neutral or did not know. These numbers should be looked at considering the limitations of an online, self-selecting polling population; despite this, they do show that a user fee related to the project received some support.

The implementation of such a program would require careful consideration of the logistics of collecting, monitoring, and accounting for the funds. For example, the BLM utilizes a permit fee system for use of the ISDRA during the busy season, although this program is not intended to be a funding source for the project.

6.3.2 Maintenance Funding

The maintenance and operational costs of the project are much less significant than the initial design and construction costs. However, the available funding sources are limited as well. Very few established grant programs provide ongoing maintenance funds for infrastructure projects such as this project.

Agency Maintenance Budgets

The most likely source for maintenance funds is for the owner agencies to contribute resources from their existing maintenance funds and resources. Both Caltrans and Imperial County currently have road maintenance staff and programs capable of performing maintenance on a grade separated crossing structure. Caltrans currently performs the majority of the bridge inspections throughout the state for both local and state-owned bridge structures. Particularly if the structure is near to SR 78, then including it in the Caltrans inventory for inspection is feasible. The details of how this responsibility may be shared should be clarified as part of the shared ownership agreement for the project.

It should be noted that neither agency currently has an excess of maintenance funds and would prefer that additional funding sources be found to supplement or replace the financial burden on either Imperial County or Caltrans.

The crossing will also create additional usage of the ISDRA on the east side of the tracks which will require additional enforcement and effort from the BLM, the Imperial County Sheriff, and the CHP in an area that was lightly visited previously. This additional effort and cost should be considered, and if possible, be included in efforts to secure additional funding.

User Fee Programs

If a crossing-specific user fee program is introduced to provide capital funds for the initiation of the project, the fee could continue after construction and provide maintenance funds. Also as indicated above, a set time frame for the fee program could be established to provide capital funds as well as maintenance funds for a set length of time, such as 30 years. This is not uncommon in Public-Private Partnership or P3 projects. After the time frame ends, the responsibility for providing maintenance funds would transfer to the owner agency. As noted above, the initial survey performed as part of the study did show slightly higher support for a user fee rather than against.

Land and Water Conservation Fund

The provisions of the Great American Outdoors Act discussed above includes funding in perpetuity to be directed to federal land programs for items including maintenance of facilities. The details of how this funding will be apportioned are not yet known, but it may present an opportunity in the future through the Land and Water Conservation Fund grant program. Developments within these programs should be monitored.

6.4 Development Schedule

The draft project implementation schedule outline for the alternatives shows the same major project phases for each alternative accompanied by a summary of primary activities within those phases.

Table 6 – Alternative Implementation Schedules

Phase	Activities	Phase Duration for Each Alternative (Months)			
		78-O	78T-O	9.5-U	10-O
PAED	<ul style="list-style-type: none"> Funding Procurement Environmental Technical Studies Environmental Document Approval Field Diagnostic with CPUC Permitting and Resource Agency Coordination BLM Agreement Coordination Preliminary Engineering Initiate Agreements and MOUs 	36	24	30	24

PS&E & ROW	<ul style="list-style-type: none"> • Design Completion • Plans, Specifications, and Estimate • Utility Coordination and Relocation Finalized • ROW Acquisition • Formal Crossing Application • Finalize Agreements and MOUs • Prepare Bid Documents 	24	24	24	24
Construction	<ul style="list-style-type: none"> • Construction • Construction Management • Project Opening 	24	12	12	12
Total Duration (Months)		84	60	66	60

6.5 Project Risks

An initial risk matrix for the study is provided as Table 7. The risk matrix includes the following items:

- Risk – Is there an event that may happen in the future and affect the project?
- Risk Category – What phases of the Project will be impacted? Options include Planning, Design, ROW, Construction, Operation
- Risk Likelihood – Does the risk have a high, medium, or low probability of occurrence?
- Risk Impact – What part of the project will change if the risk occurs? Options include scope, schedule, cost, quality. It is understood that many impacts are related (i.e., schedule change leads to cost change) but the primary impact is identified
- Mitigation – What could be done to mitigate the severity or likelihood of the risk?

Given the preliminary nature of the project details, the risks matrix is preliminary to the project and will be refined in future phases of the project. The majority of the risks apply to all alternatives, however there are potentially significant differences in the Risk Likelihood and Impact severity between the Alternatives. As a preferred alternative is identified, the matrix will be refined to reflect that alternative.

In compiling the Project Risks, the Technical Working Group (TWG) was consulted and was given an opportunity to provide risk input.

Table 7 - Project Risk Matrix

ID	Risk	Risk Category	Risk Likelihood	Mitigation Strategy
1	Major weather events during construction lead to Rail impacts	Construction	Low	Clear specifications on rail protection requirements
2	Construction methods or mistakes lead to track closures	Construction	Medium	Clear specifications on rail protection requirements
3	Construction productivity is reduced due to reliance on track windows	Construction	Medium	Clear construction specifications

ID	Risk	Risk Category	Risk Likelihood	Mitigation Strategy
4	Utility conflicts uncovered during construction	Construction	Low	Additional utility search during planning
5	Interference during construction between adjacent projects such as Polaris development and UP maintenance/expansion	Construction	Low	Coordination with adjoining stakeholders
6	Unforeseen geotechnical hazards	Construction	Low	Additional borings during planning/design
7	Construction costs escalate above current funding estimates by the time funding is allocated	Construction	Medium	Additional contingency in cost estimates
8	Seismic structure requirements significantly change design	Design	Low	Finalize agreements prior to completion of planning phase
9	Changes in Design code or CPUC crossing requirements during project development	Design	Medium	Include additional float in design schedule
10	Inability to find or loss of maintenance funding	Operation	Medium	Finalize agreements prior to completion of planning
11	Excessive use of the structure by non-OHVs leads to maintenance problems	Operation	Low	Clarify and clarify enforcement responsibilities
12	Major weather events during operation lead to Rail impacts	Operation	Medium	Clear design requirements
13	Changes in ISDRA usage areas or guidelines limit areas of OHV use	Operation	Low	Clarify and clarify enforcement responsibilities
14	OHV vehicle size and type changes over time limit use of crossing	Operation	Low	Clear signing on structure/paths
15	Changes in environmental document requirements	Planning	Low	Include additional float in environmental schedule
16	Ownership liability remains unresolved between stake holders	Planning	Medium	Coordination with adjoining stakeholders
17	Cultural resources identified in conflict with project area	Planning	Low	Coordination with agencies to mitigate
18	Biological resources identified in conflict with project area	Planning	Low	Coordination with agencies to mitigate
19	Inability to procure construction funding	Planning	High	Develop clear stopping points along the development process for future use when funding may become available
20	Project approvals and permits are not procured within timeframe of funding sources	Planning	Medium	Develop clear stopping points along the development process for future use when funding may become available
21	Unable to reach maintenance agreement	Planning	Low	Finalize agreements prior to completion of planning
22	Private property ownership change results in an uncooperative owner	ROW	Low	Finalize agreements prior to completion of planning
23	Litigation due to an accident on the facility	Operation	Medium	Clear liability agreements

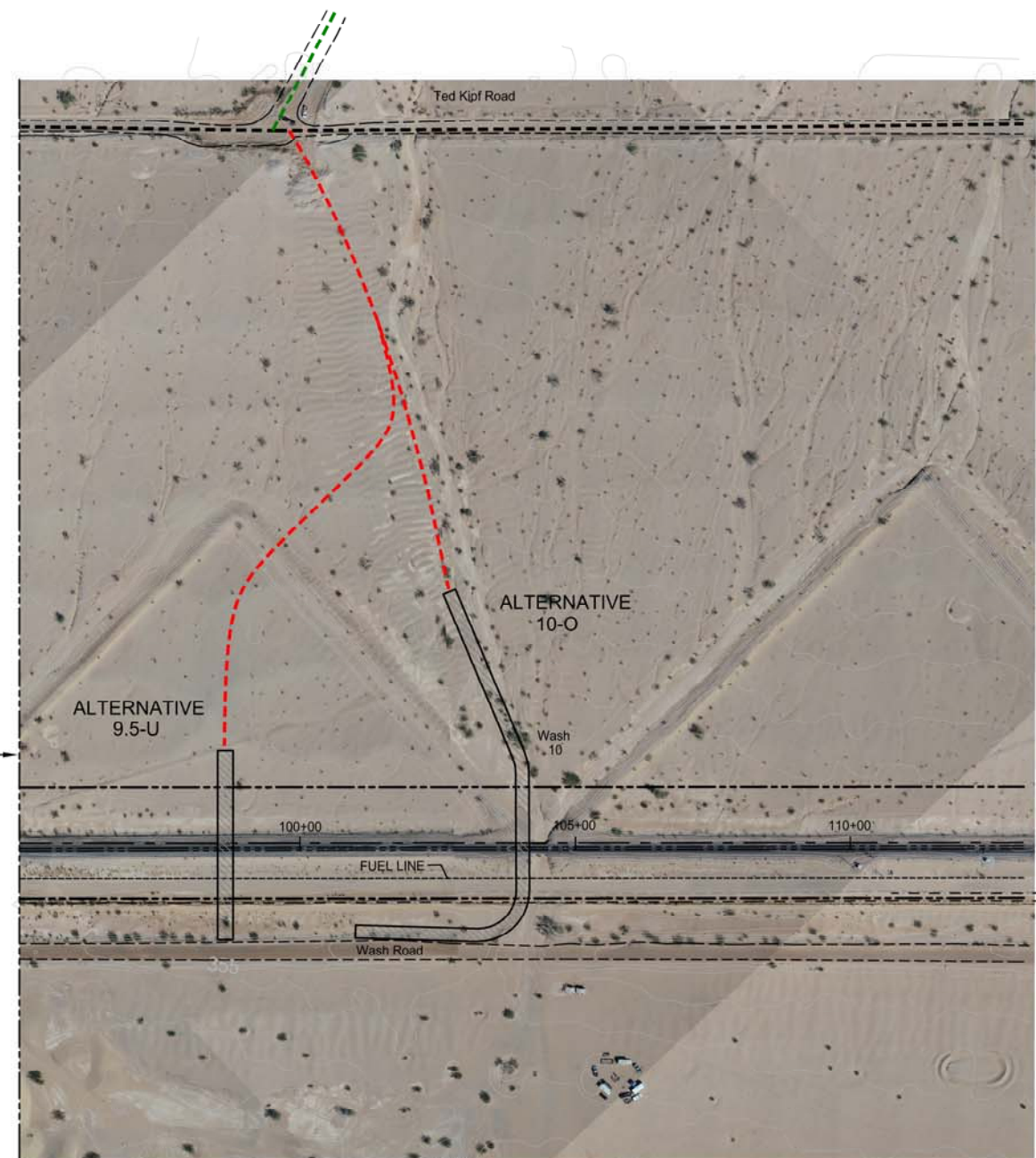
ID	Risk	Risk Category	Risk Likelihood	Mitigation Strategy
24	Litigation by outside party because of environmental impacts	Planning	Medium	Adherence to environmental process and document required
25	ROW procurement of BLM land is not approved	Planning	Low	Clear communication and involvement of BLM in early stages of planning process

APPENDIX A

CONCEPT ALTERNATIVE PLANS








8,000± FEET



PLAN
1" = 150'-0"

LEGEND:

-  - INDICATES ALTERNATIVE LOCATION
-  - INDICATES DESIGNATED ROUTES OF TRAVEL (OHV)
-  - INDICATES NEW CONNECTING TRAIL
-  - INDICATES UPRR RAILROAD AND CALTRANS (SR 78) RIGHT-OF-WAY
-  - INDICATES PRIVATE PROPERTY RIGHT-OF-WAY



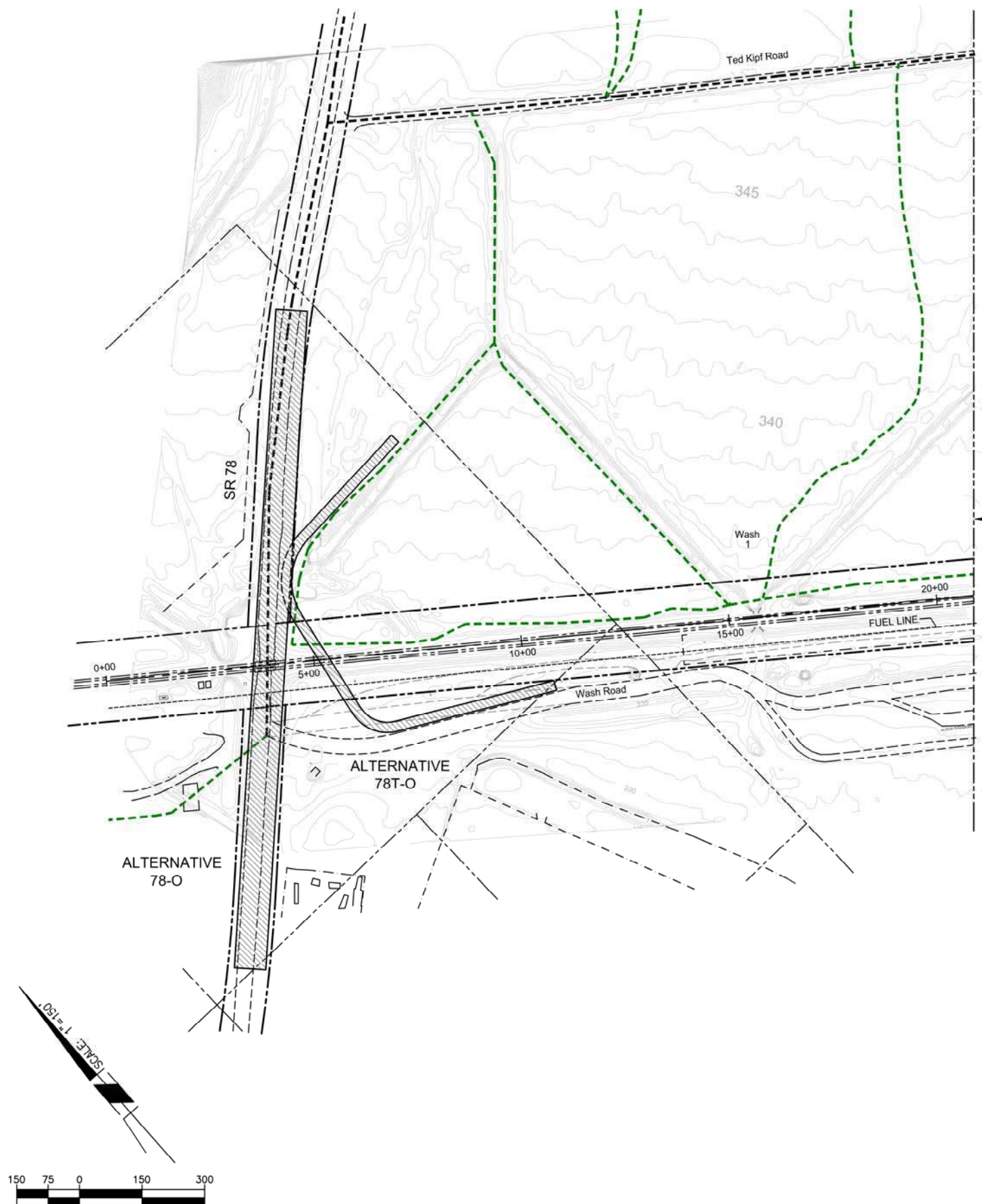
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SR 78 / GLAMIS MULTIUSE GRADE SEPARATED CROSSING FEASIBILITY STUDY

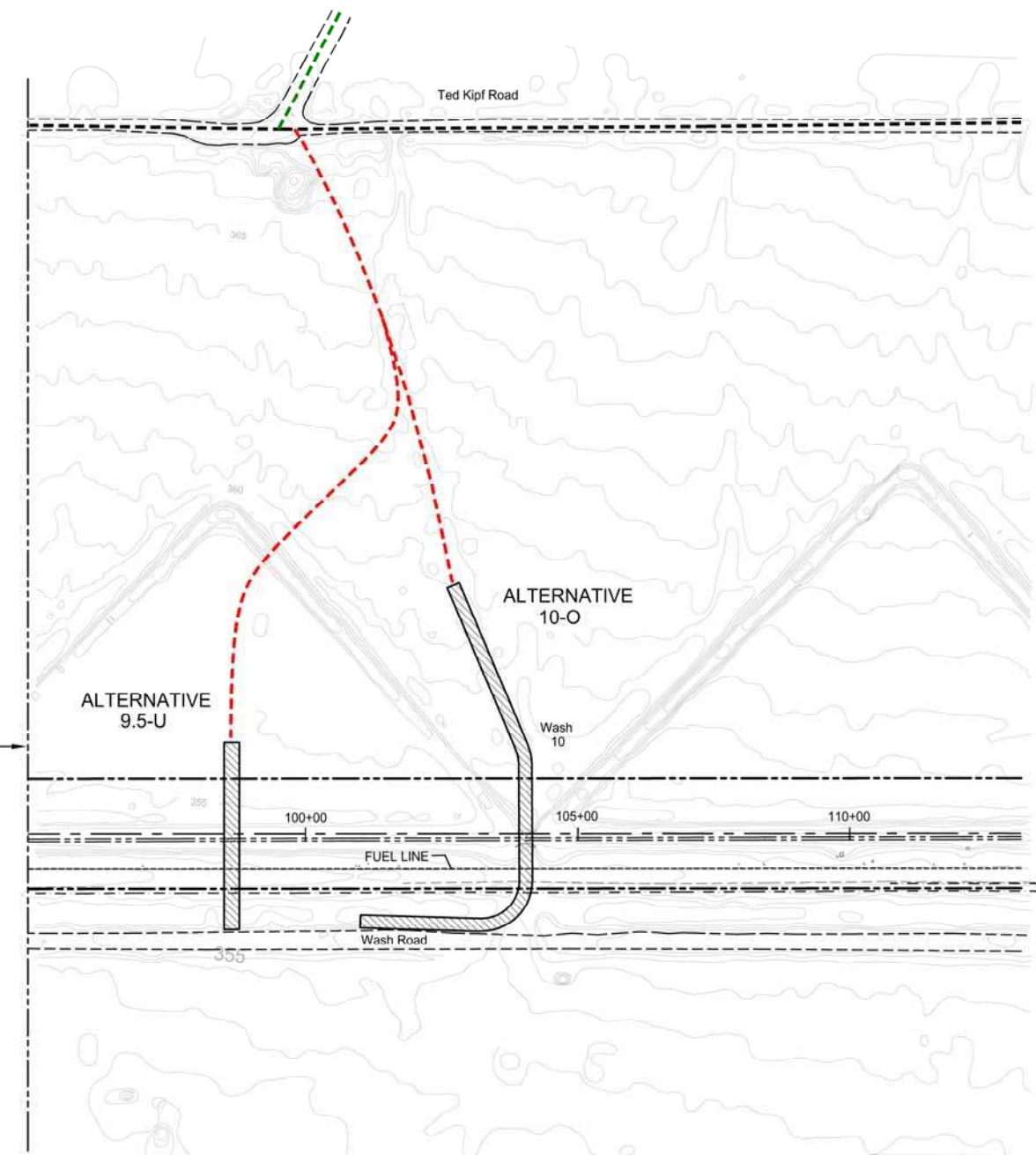
ALTERNATIVE LOCATIONS

STUDY REPORT
APPENDIX A






A1



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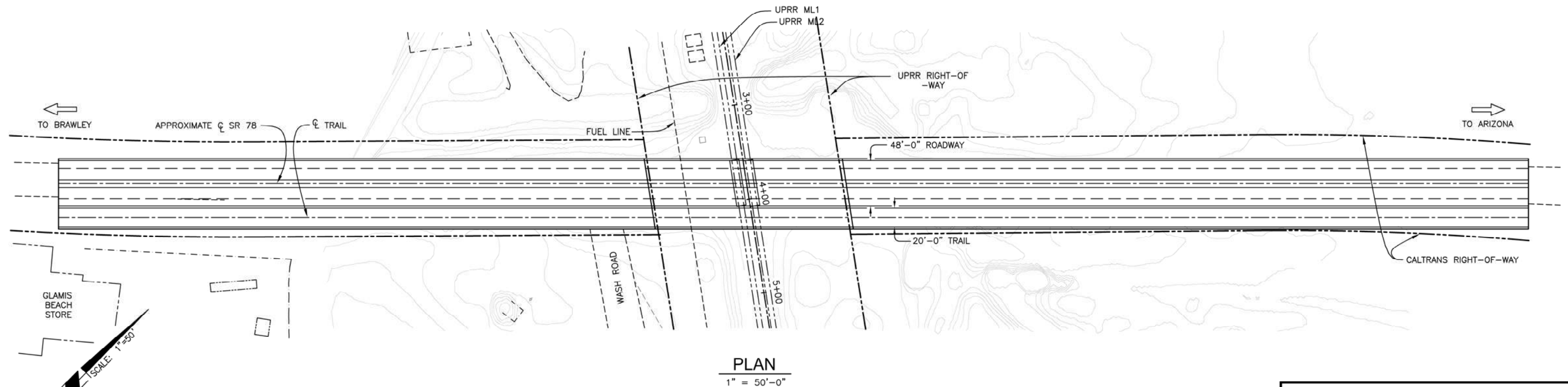
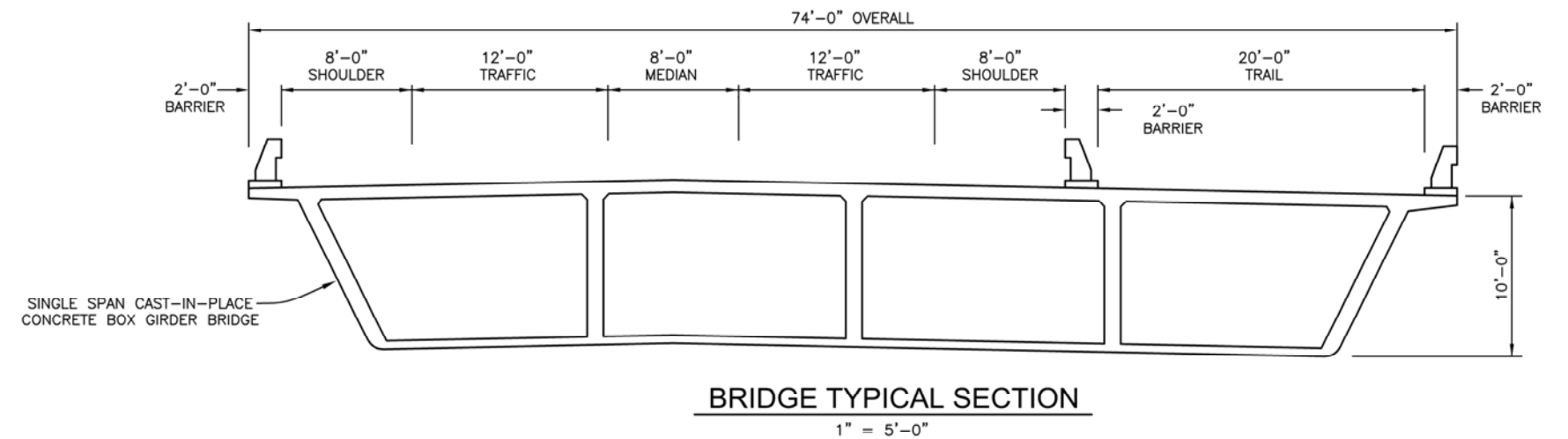
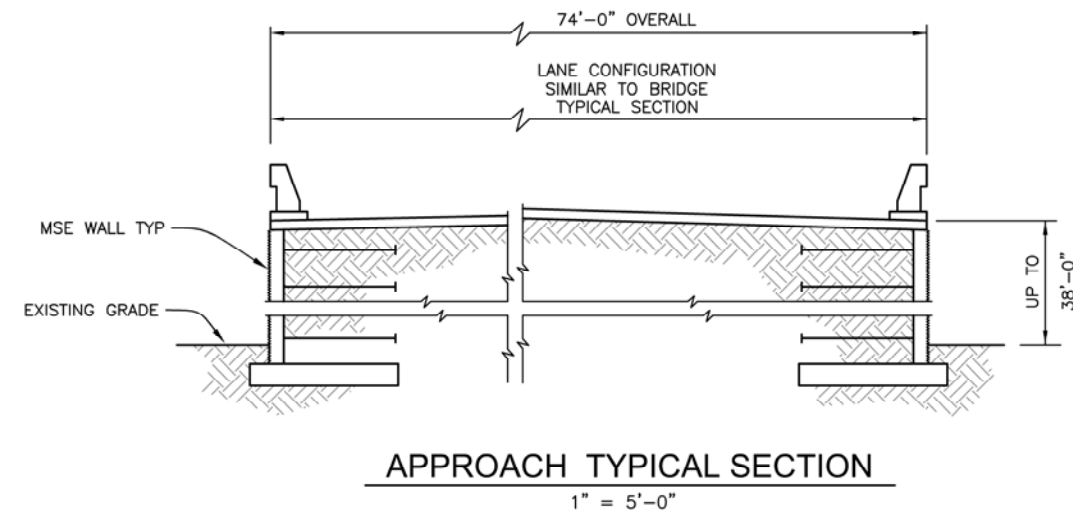
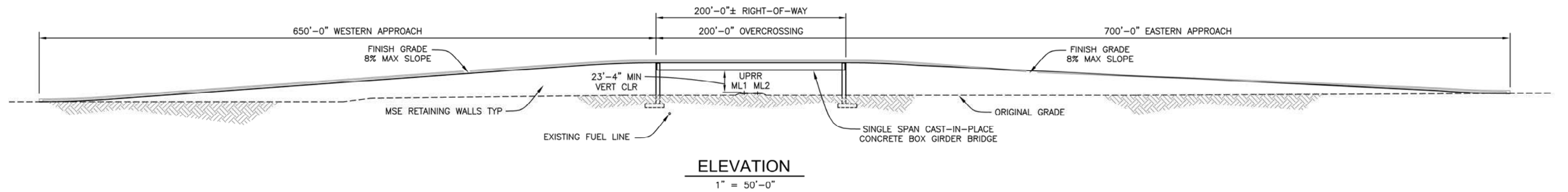
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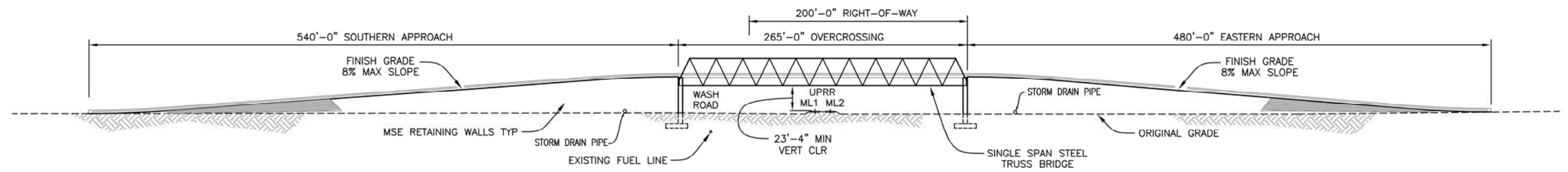
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 -  - INDICATES NEW CONNECTING TRAIL
 -  - INDICATES UPRR RAILROAD AND CALTRANS (SR 78) RIGHT-OF-WAY
 -  - INDICATES PRIVATE PROPERTY RIGHT-OF-WAY



**SR 78 / GLAMIS MULTIUSE
GRADE SEPARATED CROSSING
FEASIBILITY STUDY
ALTERNATIVE LOCATIONS**

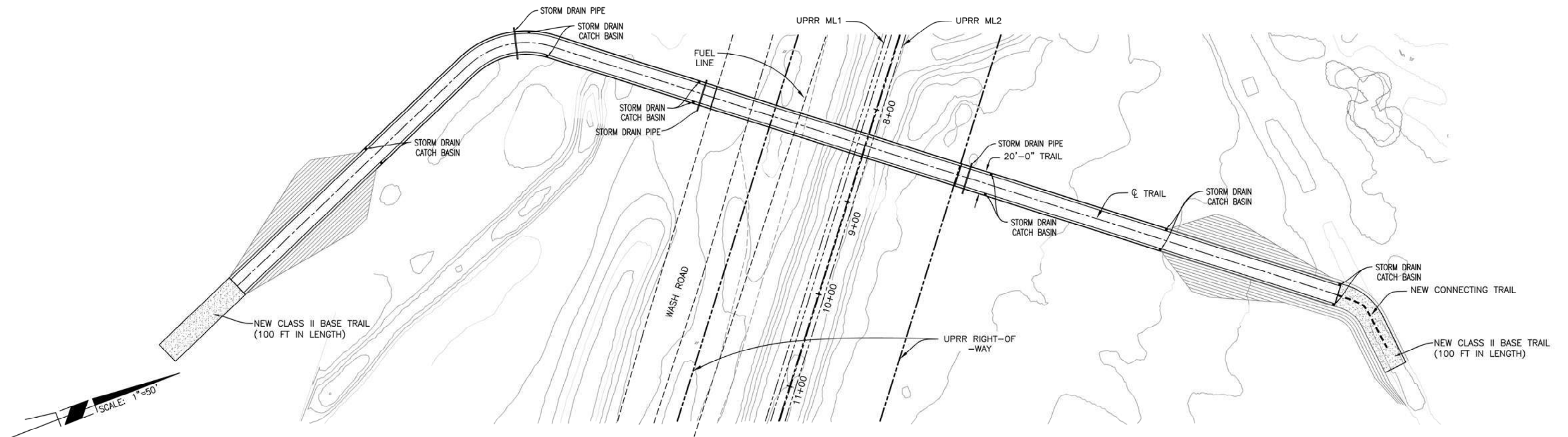
STUDY REPORT
APPENDIX A





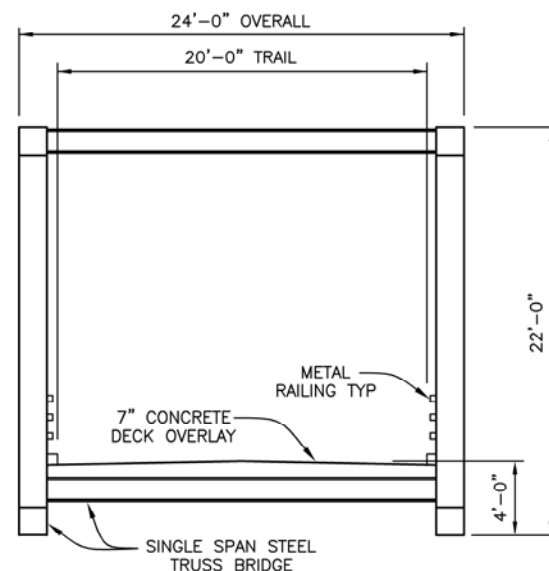
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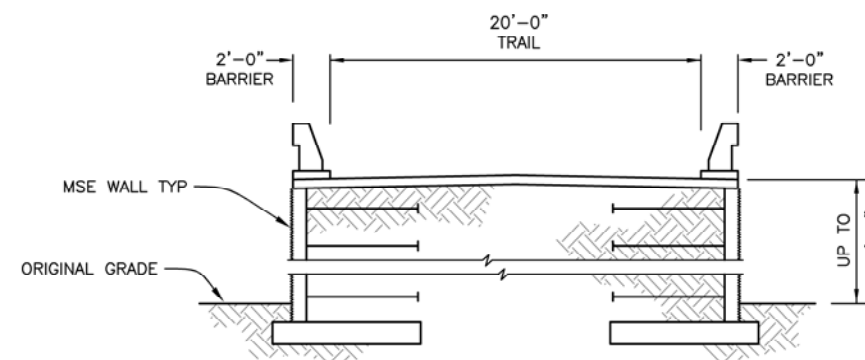
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1" = 50'-0"



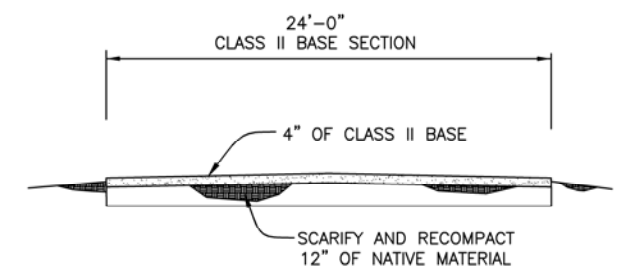
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1" = 5'-0"



APPROACH TYPICAL SECTION

1" = 5'-0"



CLASS II BASE TRAIL ROAD SECTION

1" = 5'-0"

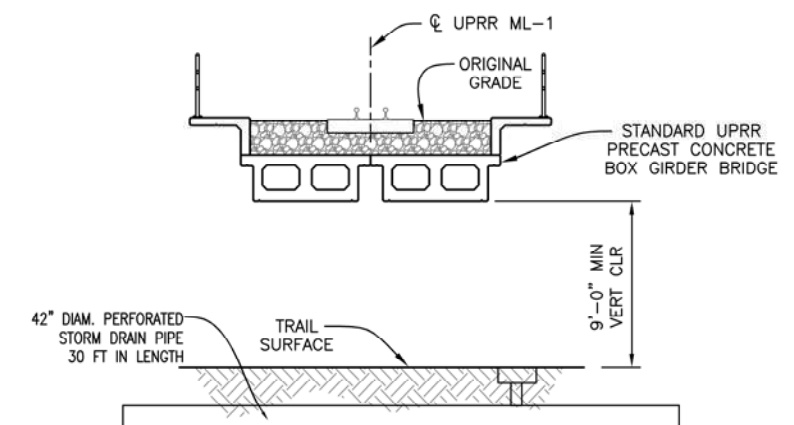
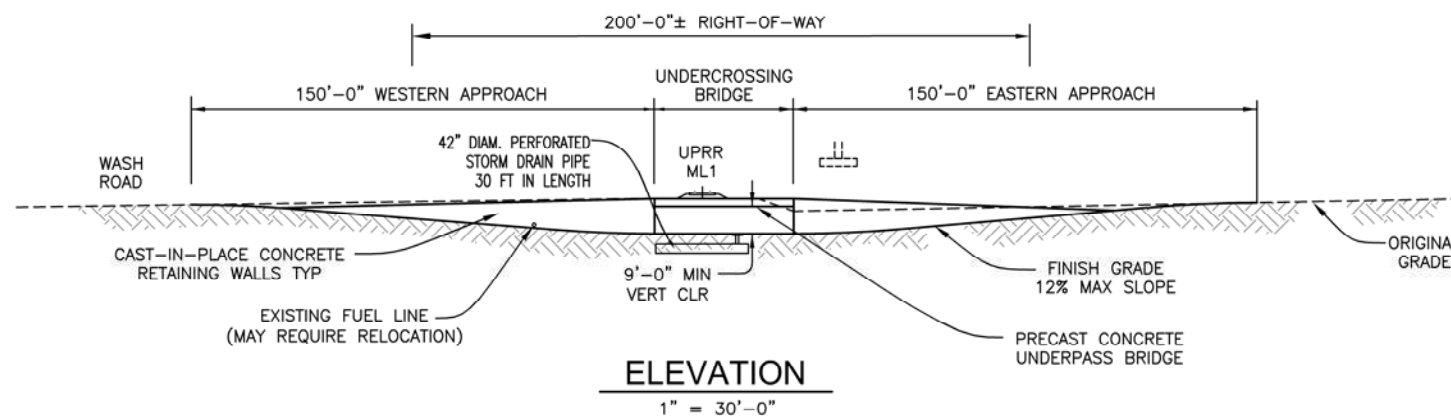
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GRADE SEPARATED CROSSING
FEASIBILITY STUDY
ALTERNATIVE 78T-O**

**STUDY REPORT
APPENDIX A**

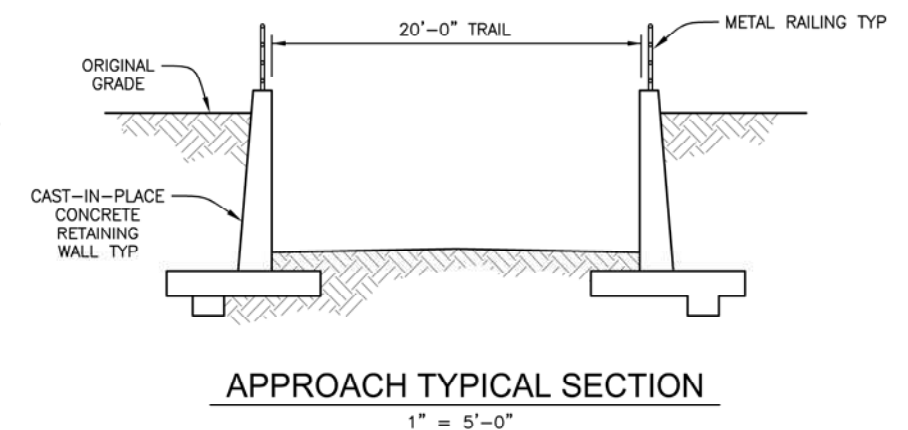
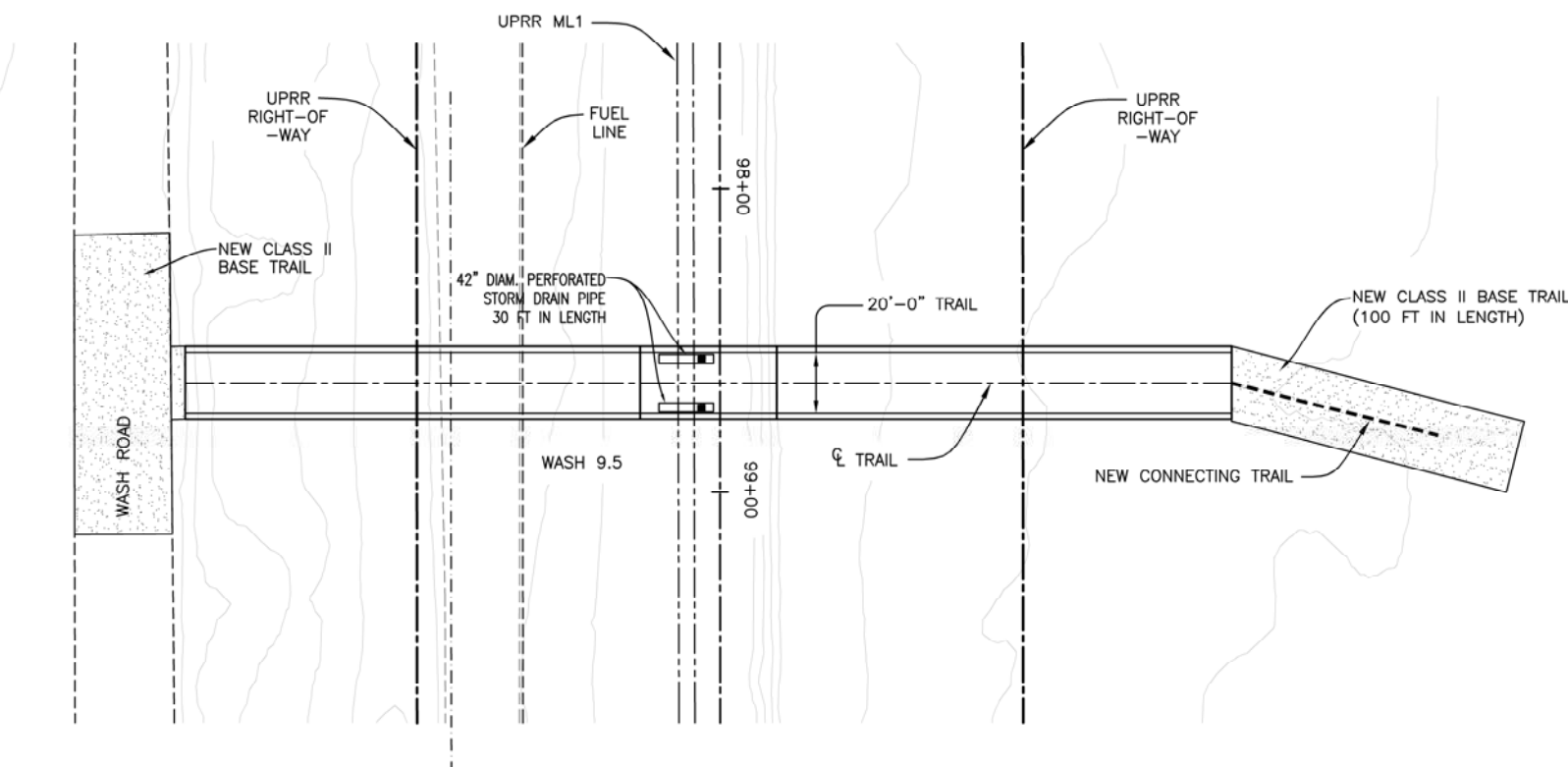
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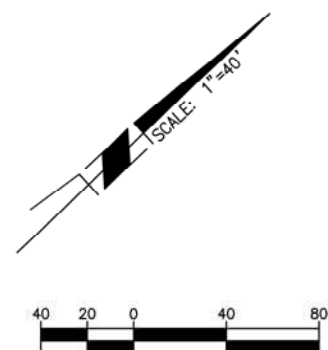
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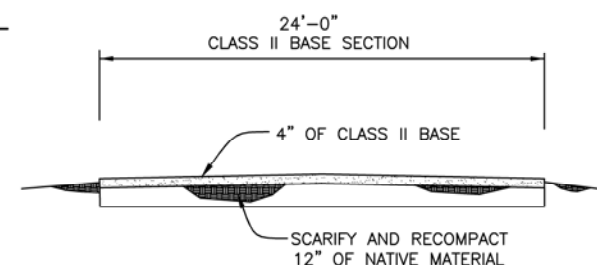
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APPROACH TYPICAL SECTION
1" = 5'-0"



PLAN
1" = 30'-0"

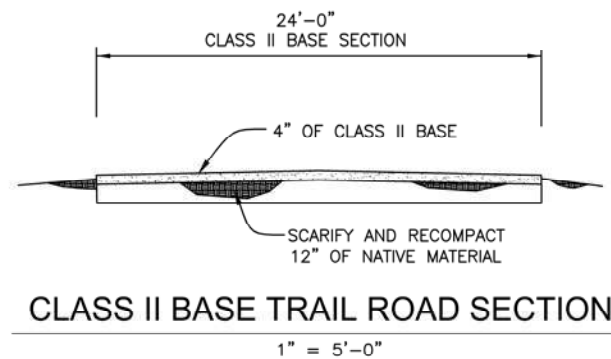
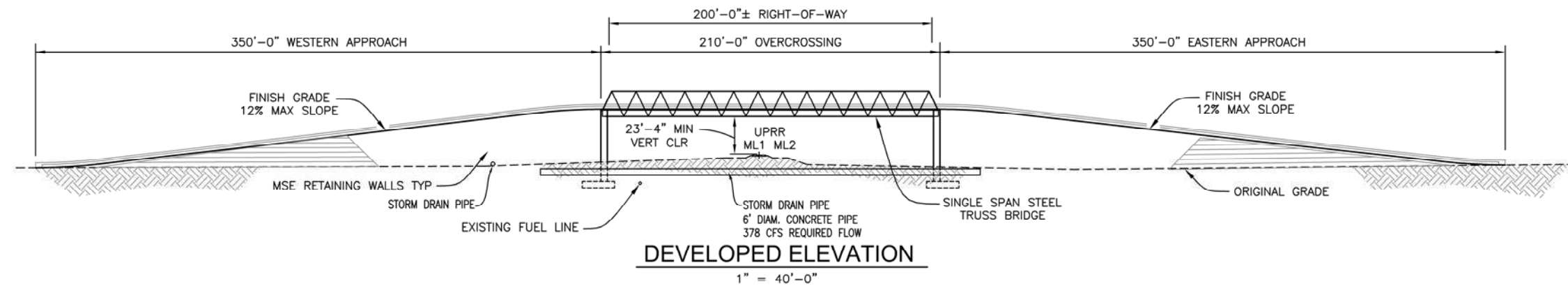


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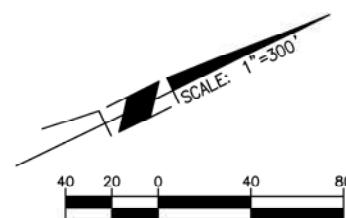
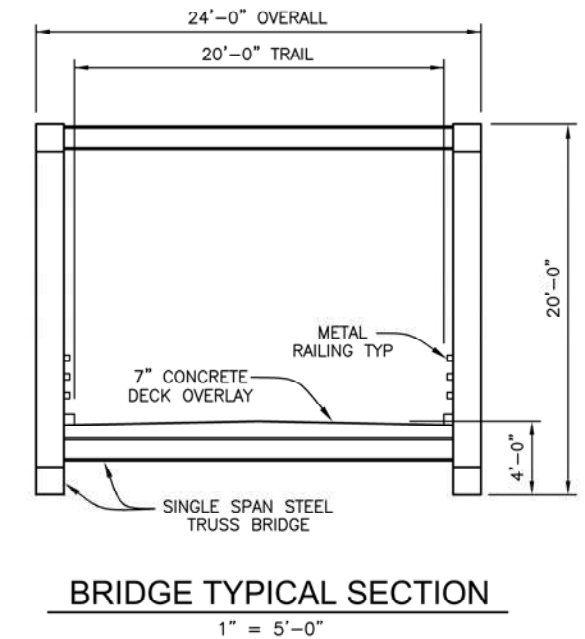
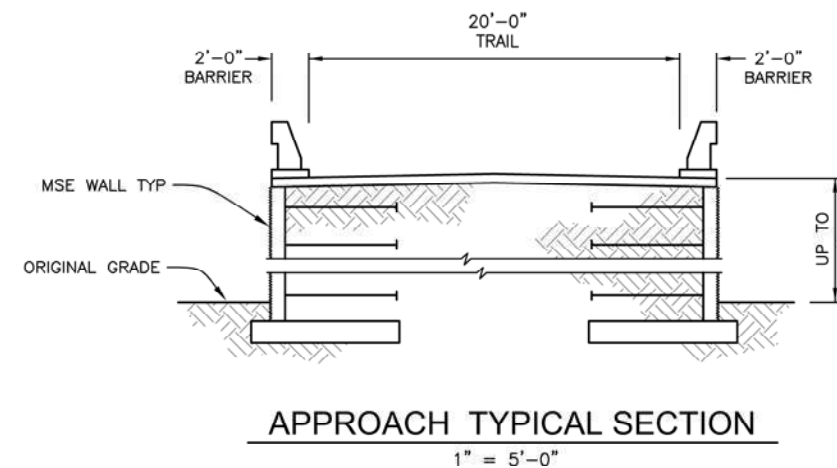
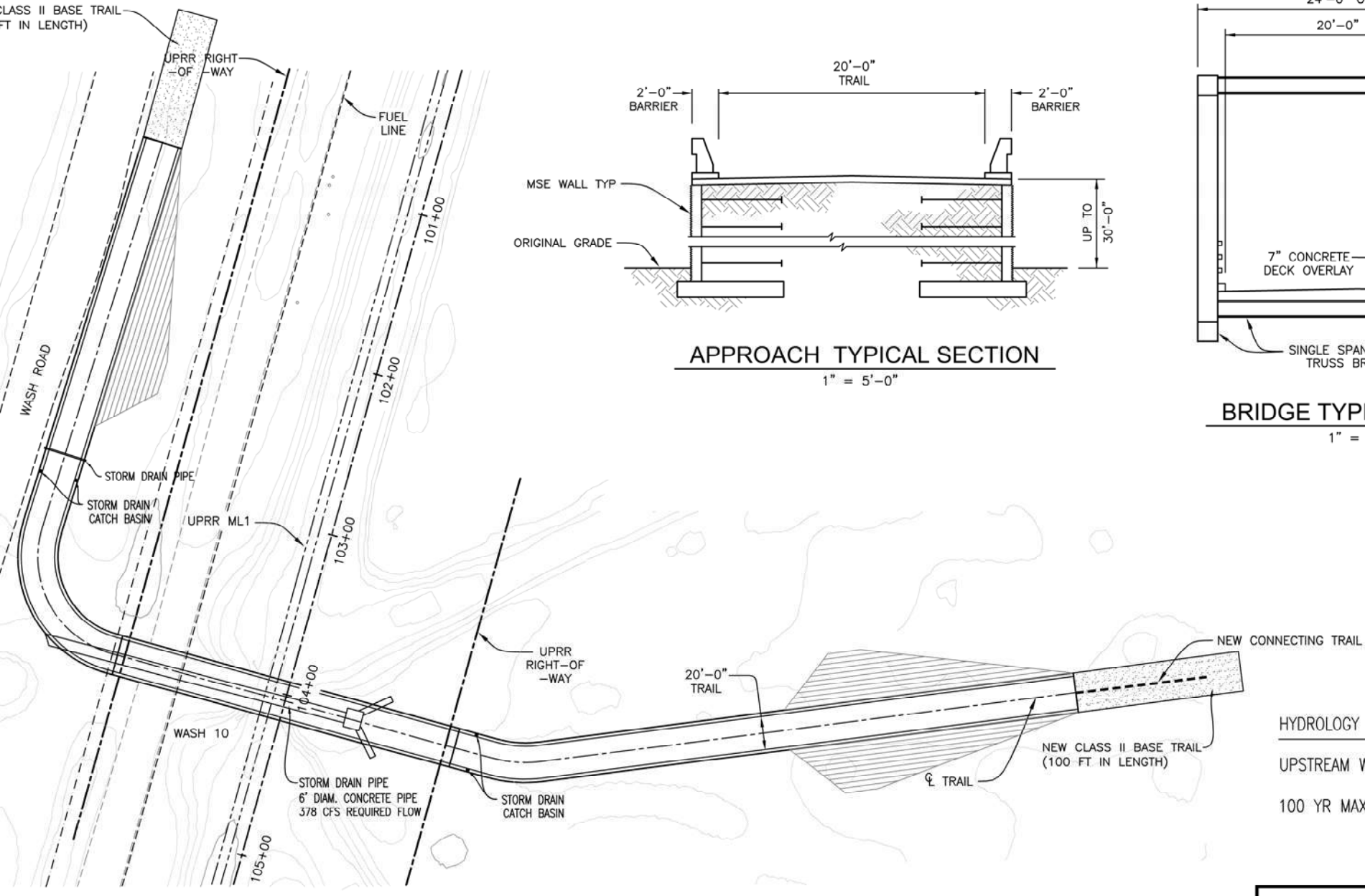
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REQUIRED STORM DRAINAGE STORAGE: 1,725 CF
(PER ICPWD REQUIREMENT)

UNDERGROUND STORAGE CAPACITY: 2,309 CF



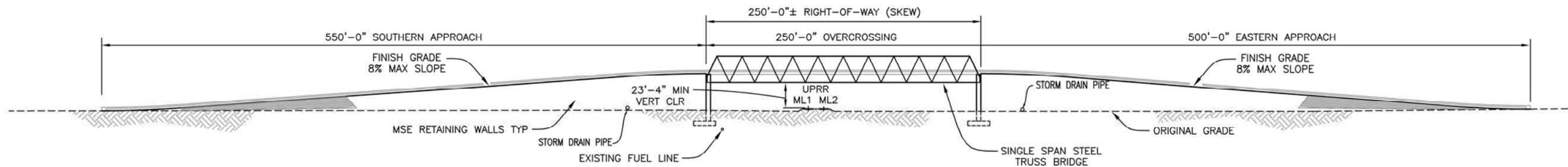
NEW CLASS II BASE TRAIL
(100 FT IN LENGTH)



HYDROLOGY ANALYSIS:

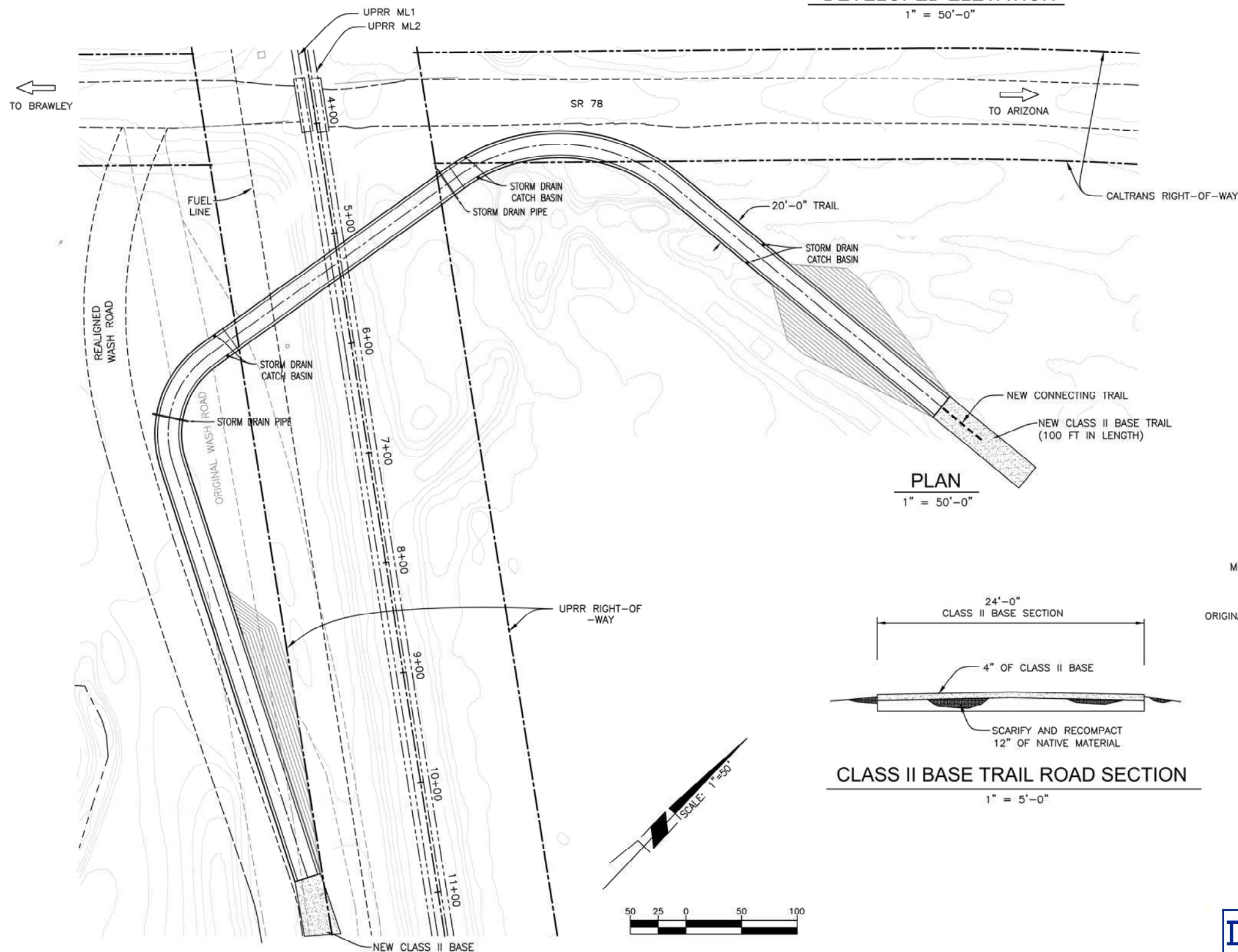
UPSTREAM WATERSHED TRIBUTARY AREA: 426 ACRES

100 YR MAXIMUM STORM DRAIN FLOW Q: 378 CFS



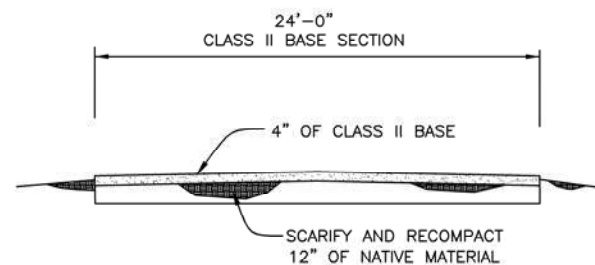
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1" = 50'-0"



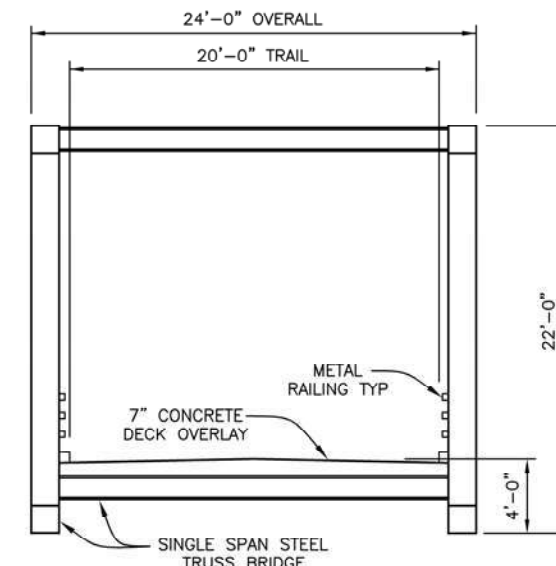
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1" = 50'-0"



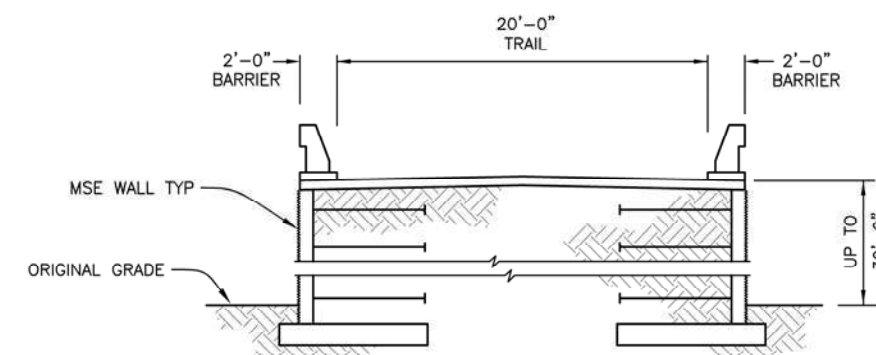
CLASS II BASE TRAIL ROAD SECTION

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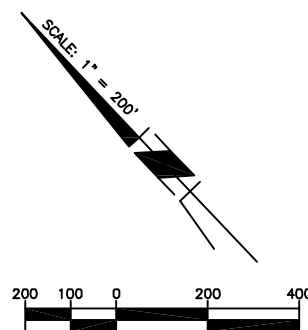
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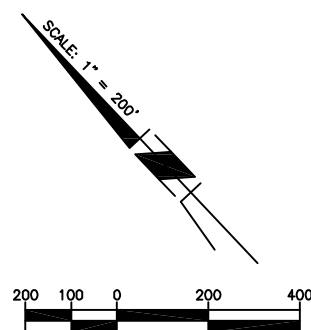
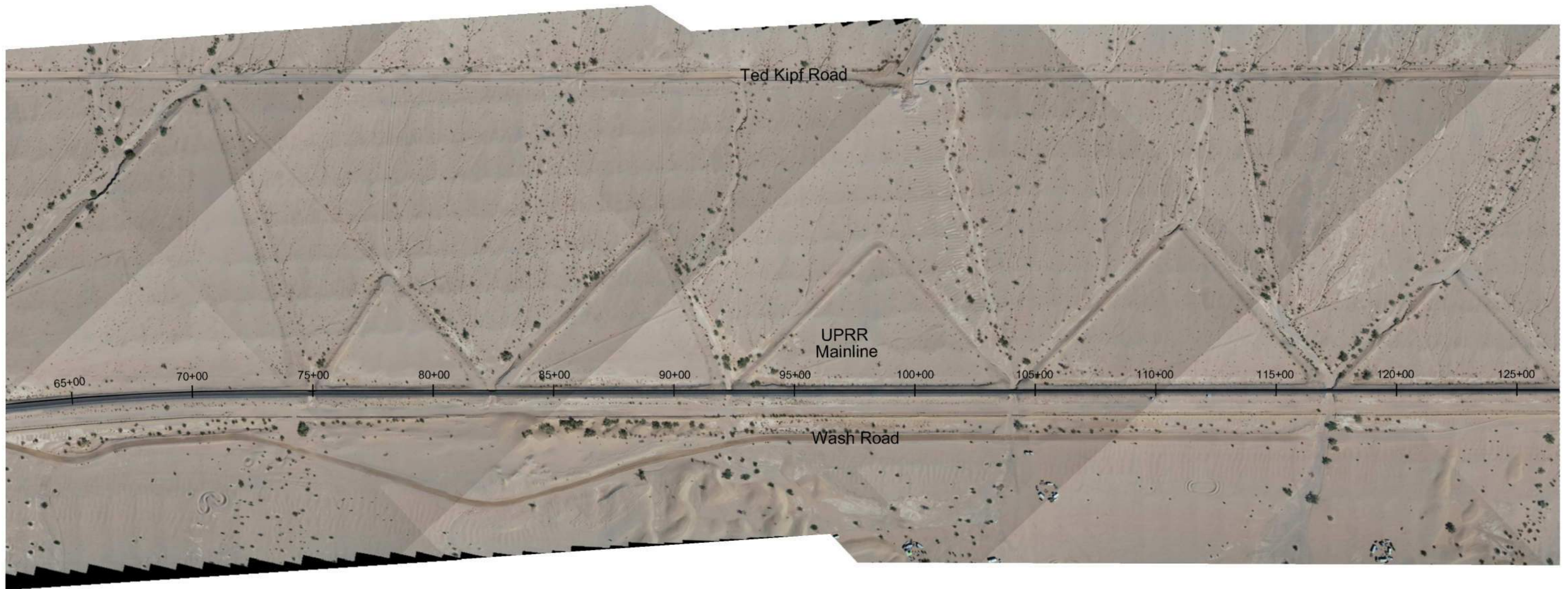


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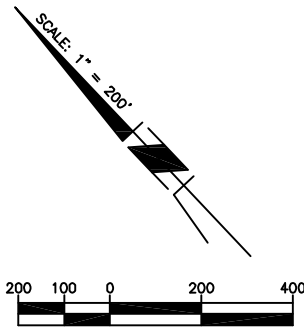
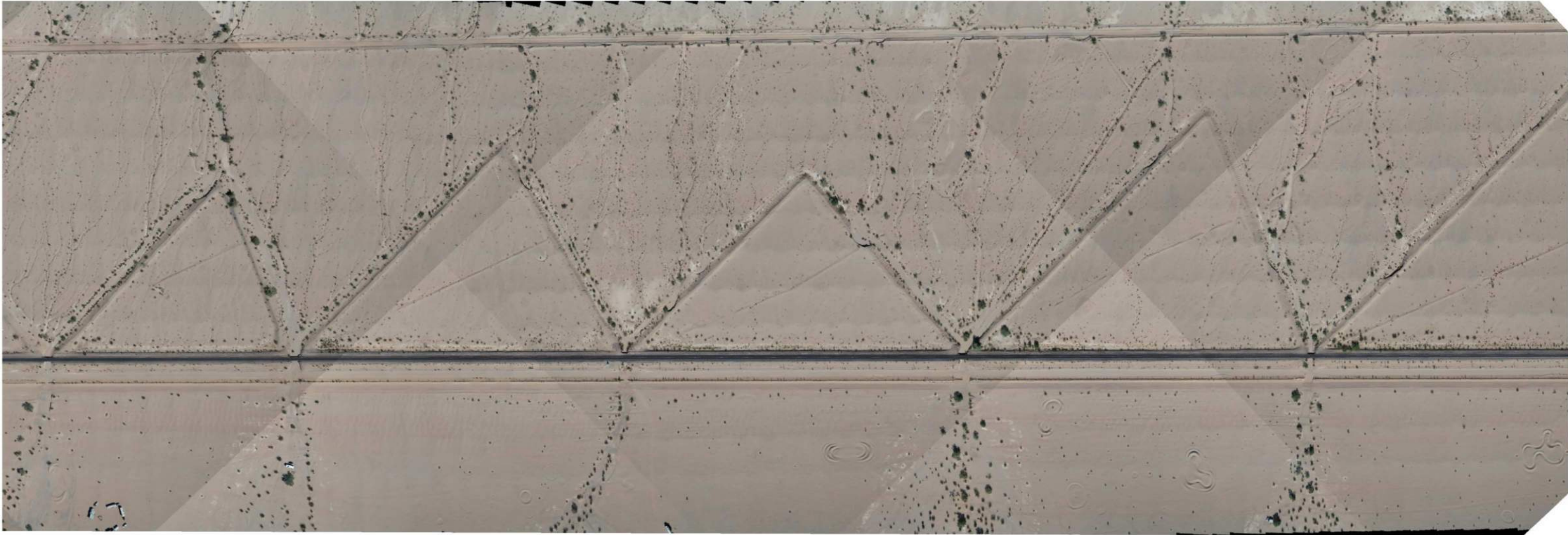
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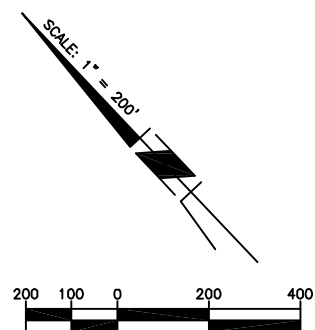
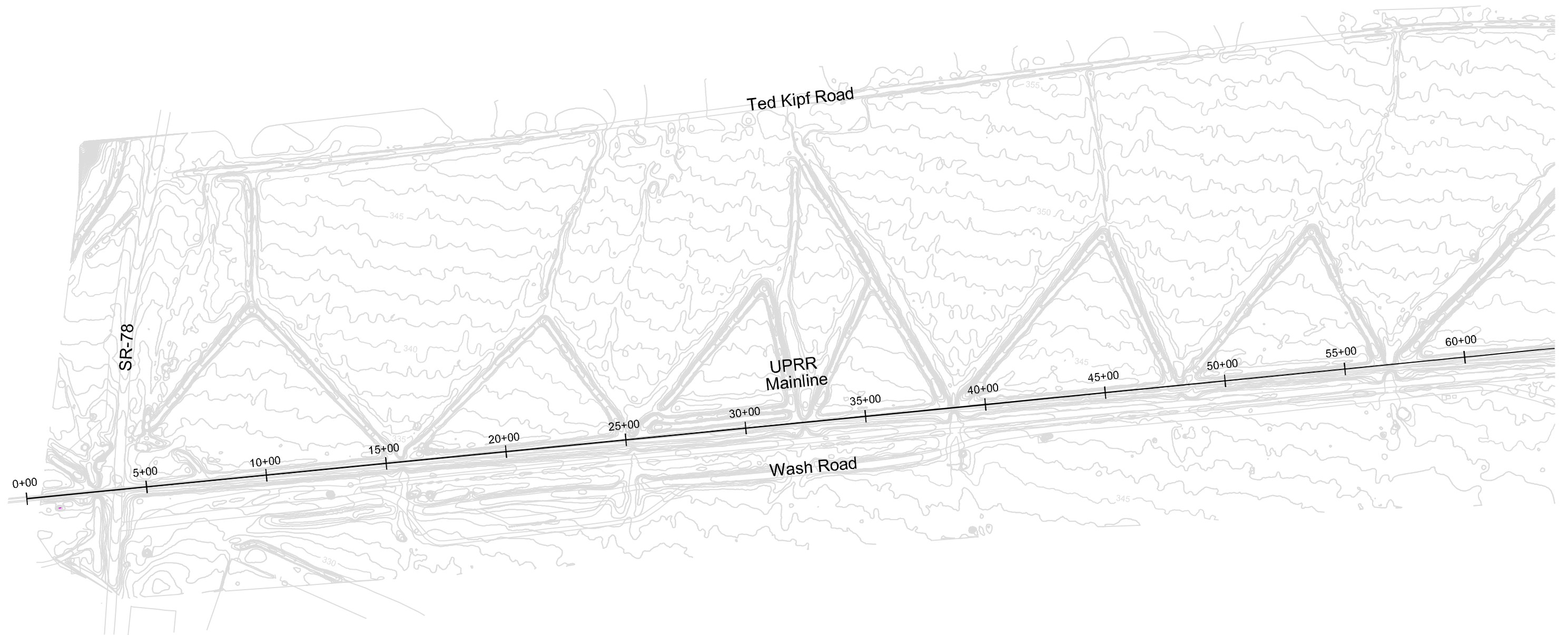
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CHECKED DB			
CML ENGINEERING- LAND SURVEYING- CONSTRUCTION MANAGEMENT 2415 IMPERIAL BUSINESS PARK DRIVE, SUITE B., IMPERIAL CA. 92251			TEL. (760) 545-0162 FAX (760) 545-0163



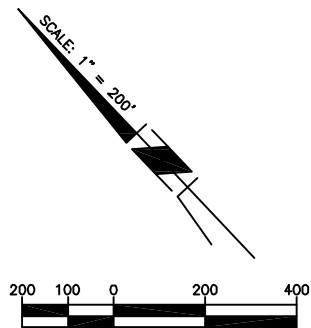
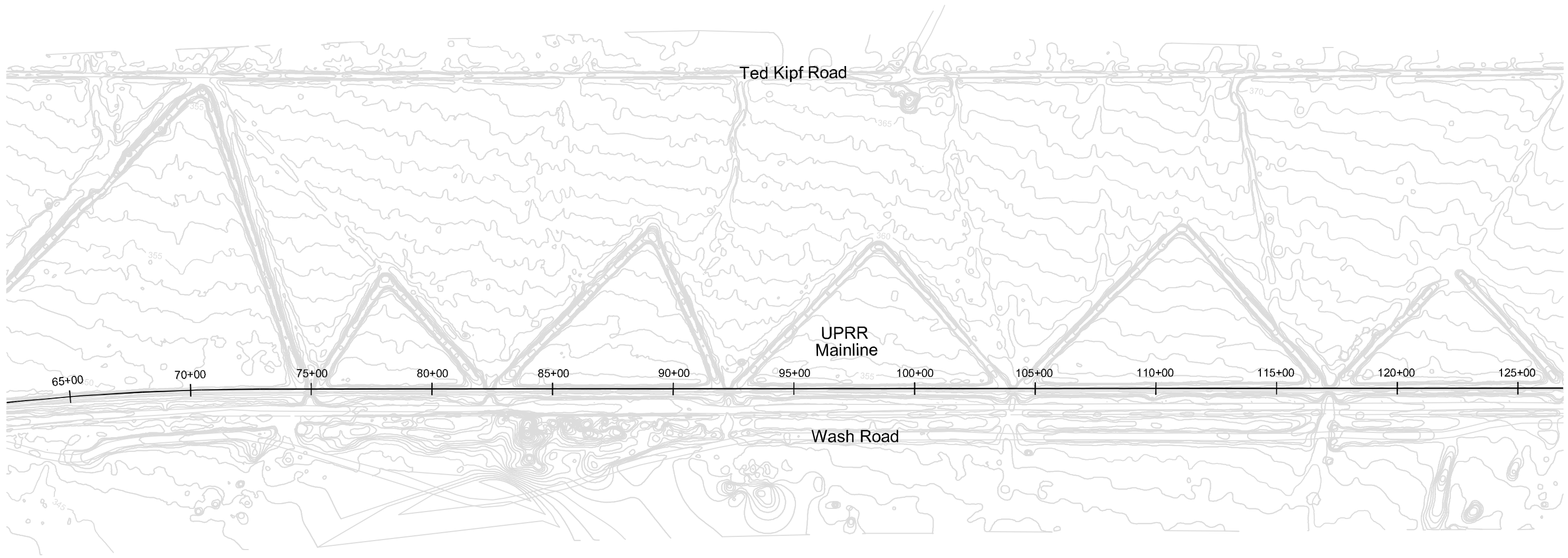
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			CIVIL ENGINEERING - LAND SURVEYING - CONSTRUCTION MANAGEMENT 2415 IMPERIAL BUSINESS PARK DRIVE, SUITE B., IMPERIAL CA. 92251 TEL. (760) 545-0162 FAX (760) 545-0163



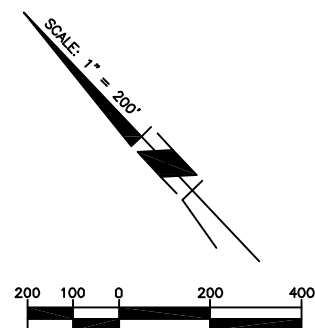
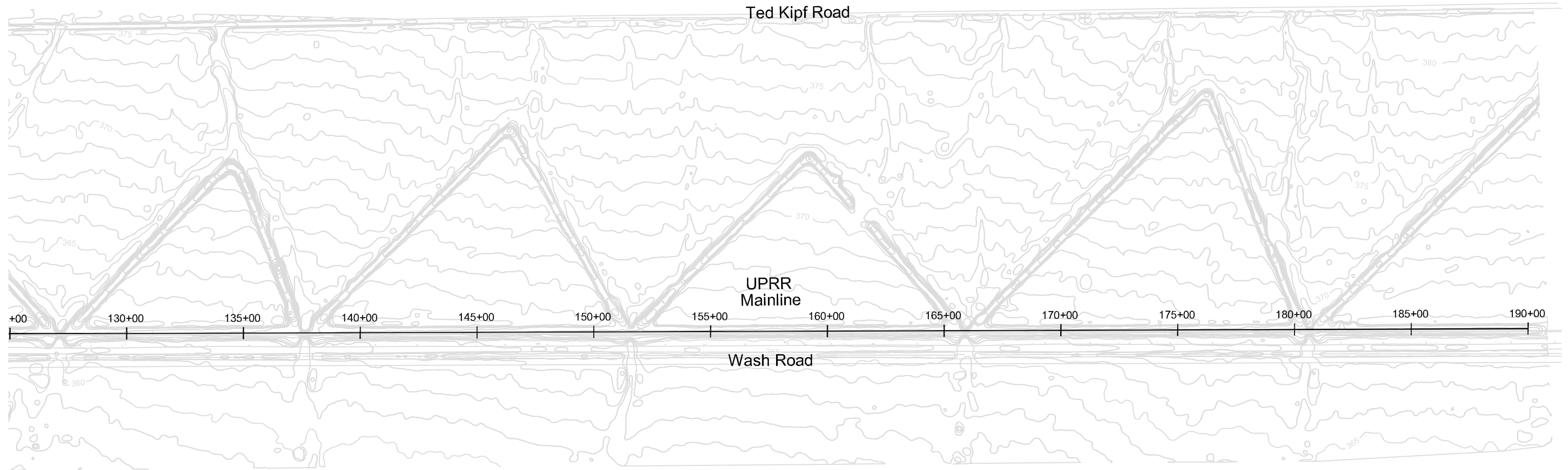
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DATE 12/2/19	GLAMIS STUDY AREA TOPOGRAPHIC SURVEY		Dynamic CONSULTING ENGINEERS
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DATE 12/2/19	GLAMIS STUDY AREA TOPOGRAPHIC SURVEY		Dynamic	CONSULTING ENGINEERS
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TEL. (760) 545-0162				



DATE 12/2/19	GLAMIS STUDY AREA TOPOGRAPHIC SURVEY		Dynamic CONSULTING ENGINEERS
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APPENDIX B

EXISTING STUDIES MEMORANDUM

SR 78 / Glamis Multiuse Grade Separated Crossing Feasibility Study

Existing Studies Memorandum



**Prepared for:
Imperial County Transportation Commission**

December 3, 2019

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1 Introduction	1
1.1 Project Background	1
1.3 Previous Efforts and Proceedings	4
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3 References	12

Revision	Date	Description
Rev 0	12/3/2019	Initial Submittal
Rev 1	11/13/2020	Resubmitted as Study Report Appendix B

Prepared by: Kleinfelder Inc

in cooperation with Kearns & West, RECON Environmental, Inc., Dynamic Consulting Engineers, Inc.

1 Introduction

The purpose of the State Route 78 (SR 78)/Glamis Multiuse Grade Separated Crossing Feasibility Study (FS) is to lay the groundwork and map out a direction for providing a safe crossing for off-highway vehicle (OHV) users across the Union Pacific Railroad (UPRR) rail line at the Imperial Sand Dunes Recreation Area (ISDRA). The FS objectives and outcomes include developing a problem statement, identifying feasible engineering alternatives for grade separated crossings, and the constraints, costs, and risks of each alternative, and establishing a path forward for a preferred alternative including identification of agency responsibility, funding mechanisms, anticipated costs, and risks throughout the project life. This technical memorandum summarizes background information, previous studies and ongoing planning efforts for projects within the vicinity of the Study Area (Figure 1).

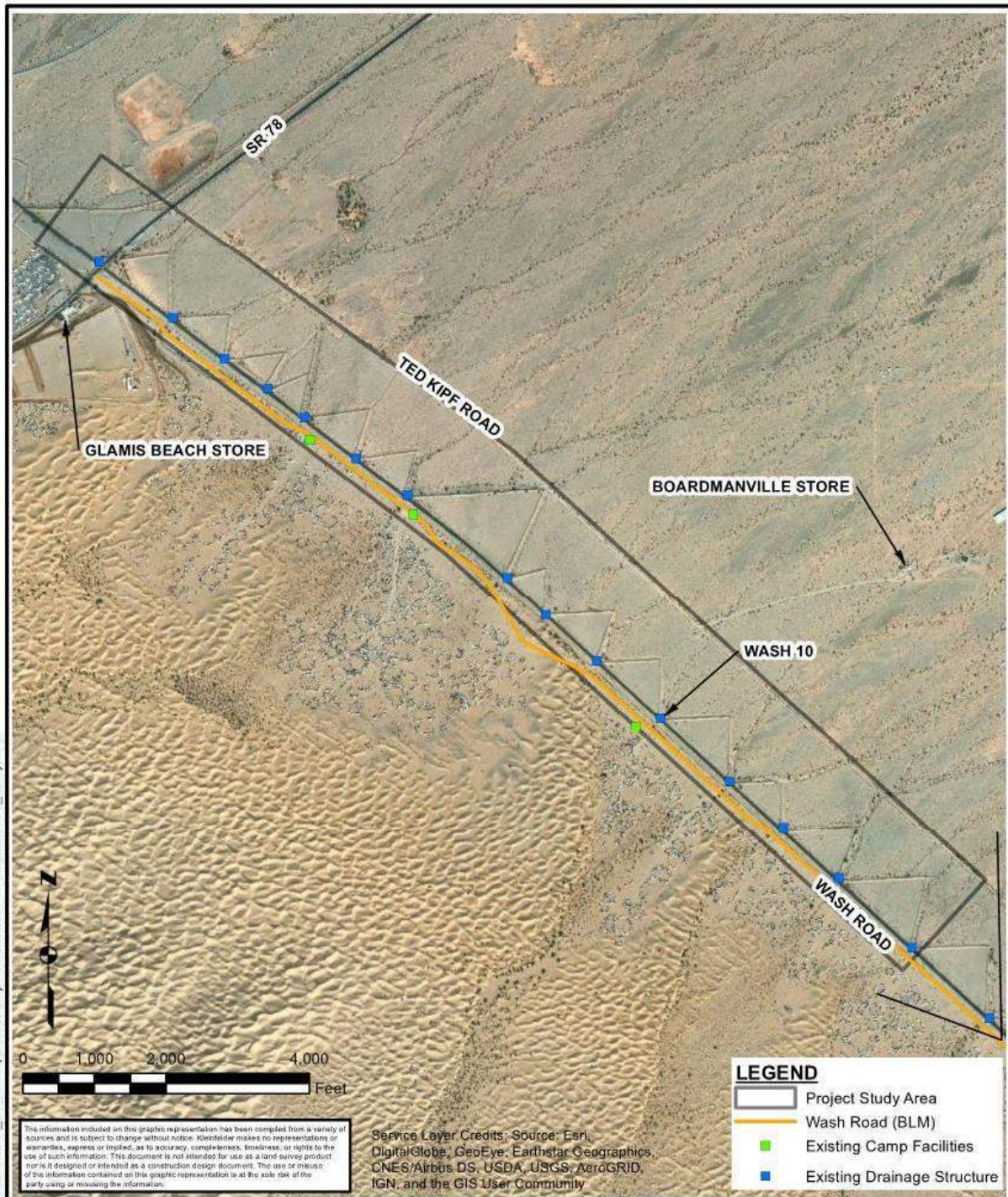
1.1 Project Background

The ISDRA in eastern Imperial County, California is considered a world-class OHV recreation area and well-known recreation resource for local residents and visitors from the southwestern United States and beyond.

The Bureau of Land Management (BLM) has established a Planning Area of approximately 227,000 acres (214,930 BLM-administered acres) that encompasses the ISDRA, including the North Algodones Dunes Wilderness and an additional approximately one-mile-wide zone surrounding the ISDRA (Figure 2). This Planning Area, also known as the “Glamis Area”, is the most intensively used OHV recreation area that the BLM manages nationwide, with over one million visitors per year. As many as 150,000 recreational users come to the ISDRA on winter weekends.

Within the ISDRA Planning Area, there is a 17-mile section, running north to south, located between SR 78 and Ogilby Road. UPRR operates a rail line that travels through this section and bisects certain recreation and camping areas. To the west of the rail line, BLM has designated an open riding area for OHVs, as well as a camping area. The designated camping area also exists to the east of the rail line. Both camping areas are operated under the same system and have the same fees. ISDRA visitors must cross the UPRR rail line to travel between the two areas. BLM only offers restrooms and waste facilities on the west side of the railroad tracks.

Historically, a below-grade wash structure wide enough for OHVs just south of SR 78, known as Wash 10, was maintained for travel between the western and eastern portions of the ISDRA on either side of the rail line tracks. The access was designated by a sign on the eastern side of the UPRR rail line that informed OHV riders to continue riding on designated routes of travel only. Wash 10 was maintained clear for OHV use by the previous owner of small store and bar called the Boardmanville Trading Post (Boardmanville) via an informal agreement. There were also three at-grade maintenance access points known as Ruthven, Clyde, and Cactus that were used by OHV users as crossings. The maintenance accesses were designated by two tall, wooden posts located just far enough apart for an OHV to proceed through. Designated routes of travel for OHVs, established by BLM, on the eastern side of the rail tracks lead directly to these crossing points.



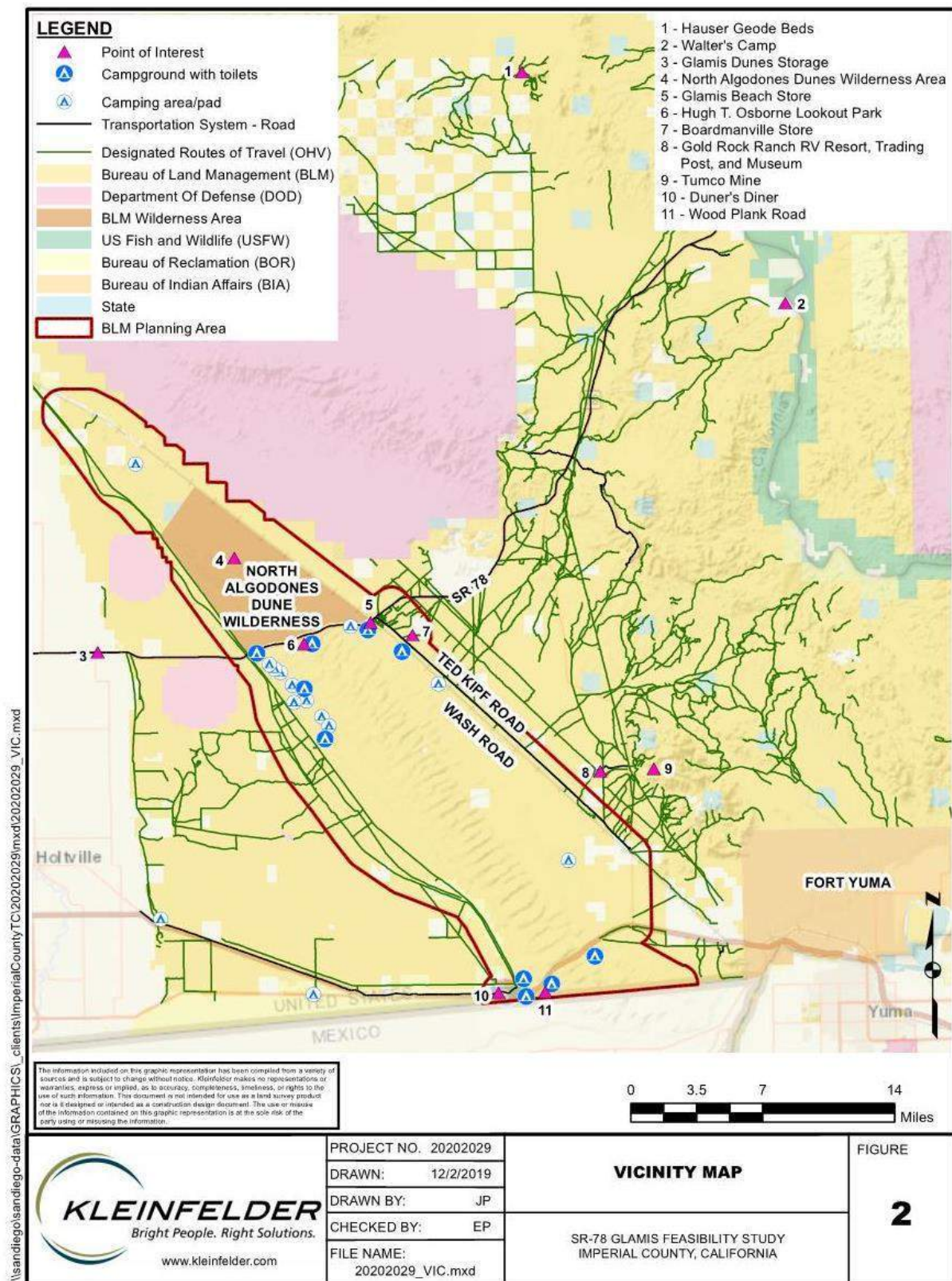
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DRAWN:	12/2/2019
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CHECKED BY:	EP
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STUDY AREA MAP

SR-78 GLAMIS FEASIBILITY STUDY
IMPERIAL COUNTY, CALIFORNIA

FIGURE

1



In 2009, UPRR physically closed the informal crossings and indicated they were not authorized for public use. The Wash 10 structure does not meet minimum clearance standards and the at-grade crossings were constructed solely as private railroad maintenance crossings for the railroad's use.

Since the closure of Wash 10 and the other crossings, no designated crossings for OHVs are within the 17 miles between SR 78 and Ogilby Road. This has resulted in OHV users crossing over the actual rail line tracks at unprotected, unregulated, and uncontrolled crossing points. The current illegal crossing situation is considered by all parties to be a major safety issue.

1.3 Previous Efforts and Proceedings

Multiple stakeholders have been examining issues related to access and safety in the ISDRA for several years. Since 2009, multiple discussions have been held about whether and how to improve access and safety for OHV riders in relation to the UPRR right-of-way (ROW). County Supervisor Wally Leimgruber hosted the first all-party meeting in April 2010. Representatives from UPRR, the American Sand Association, Imperial County, the Bureau of Land Management (BLM), the California Highway Patrol (CHP), the Boardmanville Store, and others attended.

In 2013, ownership of the Boardmanville Store changed. Since that time, the new property owner has participated in conversations with UPRR and others about the feasibility of improving OHV access across the UPRR ROW.

On October 4, 2016, the City of Brawley submitted a letter to UPRR requesting that a safe crossing solution across the UPRR ROW at the ISDRA be evaluated.

At an Imperial County Board of Supervisor's Meeting on October 18, 2016, the owner of the Boardmanville Store expressed concerns that OHV users are continuing to cross the railroad tracks illegally and that a solution for the unsafe situation has not been identified. It was requested that a letter requesting safe access be sent by the Board to UPRR and the Board agreed.

On November 17, 2016, Imperial County, UPRR, the California Department of Transportation (Caltrans), and the BLM held a meeting to discuss options for the rail crossing. Supervisor Ray Castillo gave opening comments at the meeting. Ultimately, the meeting concluded that no public fund sources were available to approve the crossing. On May 31, 2017, the California Public Utilities Commission (CPUC) responded to a letter from Senator Joel Anderson regarding OHV crossings in the ISDRA. The letter explained CPUC's authority to approve construction of new or modified rail crossings. On June 9, 2017, the CPUC responded to a letter from Senator Ben Hueso and Assembly member Eduardo Garcia concerning the hazardous rail crossing in the ISDRA. The CPUC explained that it has looked into and held discussions about the issue.

On March 28, 2017 the Imperial County Board of Supervisors discussed a request to participate in a new ISDRA/Glamis Wash 10 Access Project. The County was asked to provide staff resources and financial support for the design, permitting, construction, maintenance, and indemnification of the project under the UPRR. It was discussed that if the County took the lead on the project, then UPRR may allow for

Wash 10 to be reopened. Because costs associated with the project were estimated to be well over one million dollars, the County indicated that it was not in a position to provide the requested support.

On September 26, 2018, the American Sand Association and EcoLogic Partners, Inc. filed a Complaint with the CPUC requesting that they investigate a rail crossing, reopen the structure at Wash 10 and redesignate the at-grade maintenance access crossings. Proceedings on the complaint continued until November 16, 2018 when a notice was filed assigning the matter for Alternative Dispute Resolution. Mediation efforts are ongoing. Following the completion of mediation, evidentiary hearings will be held.

2 Existing Plans and Studies

This section summarizes pertinent plans in the areas and studies related to the proposed project.

2.1 Imperial County General Plan and Policies

The Land Use Element of the General Plan (adopted October 6, 2015) largely defines the Study Area as Open Space/Recreation. Open space is considered for any parcel or area of land or water that is essentially unimproved and devoted to conservation of natural resources, outdoor recreation, and protection of the public health and safety. The study area is bisected by the UPRR line, which serves the Los Angeles area, and northward in California, and the balance of the U.S. eastward as a major freight line. Several objectives are contained in the Circulation and Scenic Highways Element (approved January 29, 2008), including encouraging existing railroad corridor ROWs to be preserved for future transportation needs.

A portion of the Study Area is located within the Glamis Specific Plan area. The Glamis Specific Plan area encompasses approximately 160 acres bisected by SR 78 approximately 27 miles east of the City of Brawley. The UPRR crosses the specific planning area on the east. Glamis is centered around OHV activity at the Algodones Sand Dunes and Osborne Scenic Overlook. The Glamis Specific Plan area is intended to accommodate recreation supporting land uses including retail and service commercial, motel accommodations, recreational vehicle and mobile home parks, and community facilities.

This Glamis Specific Plan is currently being developed and specific land use within that area will be defined therein. The initial draft of the proposed modification and development includes significant upgrades to the area and changes in zoning for a majority of the privately-owned property to designation CR-3 which would allow the maximum range of recreational, commercial, resort, retail, or other infrastructure uses. The development of the property is proposed to occur over several phases spanning 20 to 50 years and includes installation of utility service as well as amenities, housing, additional infrastructure and retail. Development is noted in all four quadrants of the private property around the intersection of SR 78 and the UPRR line.

In 2017, the County of Imperial prepared a Policy Statement regarding safe OHV recreation, which clarifies the County's support of OHV use assuming compliance with local, state, and federal regulations. The County also established that when it participates in projects to develop new safe access points and methods of travel in the area, the cost and benefits need to be weighed by the Board of Supervisors and the project should have maximum benefit to the residents of Imperial County.

2.2 ISDRA Management Plan and Amendments to the California Desert Conservation Area Plan

The 2013 ISDRA Management Plan (RAMP) and Amendments to the California Desert Conservation Area (CDCA) Plan provide guidance for the management of lands within the Planning Area (as defined previously; see Figure 2).

Goals of the RAMP include providing a variety of sustainable OHV and other recreational activities, maintaining or improving conditions of the special status species and other unique natural and cultural resources, and creating an environment to promote the health and safety of visitors, employees, and nearby residents by working with local, state, and federal agencies and interest groups.

The RAMP establishes multiple use classes (MUCs); visual resource management classes; areas of critical environmental concern; recreation area management zones; exclusion or avoidance areas for camping and land use authorizations; adjusts land tenure; designates all BLM-administered lands within the Planning Area as open, closed, or limited to OHV and other motorized use; and maintains the existing Northern and Eastern Colorado Desert Management Plan and Western Colorado Desert Routes of Travel Designation Plan decisions in the Planning Area.

MUCs include Class C (Controlled Use), Class L (Limited Use), Class M (Moderate Use) and Class I (Intensive Use). Class C lands are the most restricted MUC and access is generally limited to non-motorized, non-mechanized means; the North Algodones Dunes Wilderness is a Class C MUC. Areas within the ISDRA that are currently restricted to OHVs due to sensitive biological or cultural resources are categorized as Class L. The area between Old Coachella Canal and New Coachella Canal is classified as Class M, which allows for activities such as mining, livestock grazing, recreation, and energy and utility development. Class I lands comprise the remainder of the ISDRA and allow for the most concentrated use.

The RAMP also designates five types of OHV Management Areas (see Figure 3). Open areas are areas where any type of vehicle use is permitted without restriction, provided vehicles are adhering to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342. Limited OHV Management Areas restrict the use of certain types of vehicles, the locations in which OHV use is permitted, and/or the time that OHVs may be used. Restrictions can include numbers of vehicles, types and sizes of vehicles, time or season of vehicle use, permitted or licensed use only, use on existing roads and trails, use on designated roads and trails, limited to administrative use only, and other restrictions. Within open and limited areas, portions of the OHV Management Areas are open to camping and portions where camping is not permitted. OHV use is prohibited in closed areas, with the rare exception of OHV use for emergency or administrative purposes.

Recreation programs within the ISDRA include developed and dispersed camping, as well as interpretive, informational, and educational services. Though recreation in the ISDRA is largely driven by users seeking opportunities for motorized camping and OHV recreation, other recreational activities such as hunting, hiking, horseback riding, wildflower and wildlife viewing, bird watching, photography, and commercial uses also occur to a lesser degree. Facilities available to visitors include campgrounds, vendor areas,

toilets, trash facilities, and kiosks. BLM ranger stations provide interpretive services, information, and emergency medical services to visitors.

Visitation primarily occurs from October through May, with high levels of visitation occurring on Halloween, Thanksgiving, New Year's Eve/Day, Martin Luther King Jr. Day, Presidents' Day, and Easter holiday weekends. Average annual visitation for fiscal years 2004 through 2009 was estimated at 1.4 million visitors and visitation estimates for the major holiday weekends often exceed 150,000. Visitors historically congregate in camping areas along major access roads, such as Glamis Flats and Wash Road; however, historical gathering areas also exist farther into the dunes, such as Competition Hill, Oldsmobile Hill, Patton Valley, Test Hill, and Buttercup Valley. In 2013, BLM visitor use statistics documented that although annual visitation had historically steadily increased, it had begun to level off since about 2011. (BLM, 2013)

In addition to OHV registration stickers, an ISDRA permit is also required for all primary street legal vehicles used for transportation to access to the Planning Area. Weekly permits currently cost \$35 and seasonal permits cost \$150. The California Desert District Advisory Committee (DAC) provides recommendations to the Secretary of the Interior on resource and land management issues within the BLM's California Desert District. The DAC is also responsible for acting as the advisory entity for the recreation fee program at the ISDRA under the Federal Lands Recreation Enhancement Act. Within the DAC, the ISDRA Subgroup has been developed to provide recommendations specific to the ISDRA on how fees are spent.

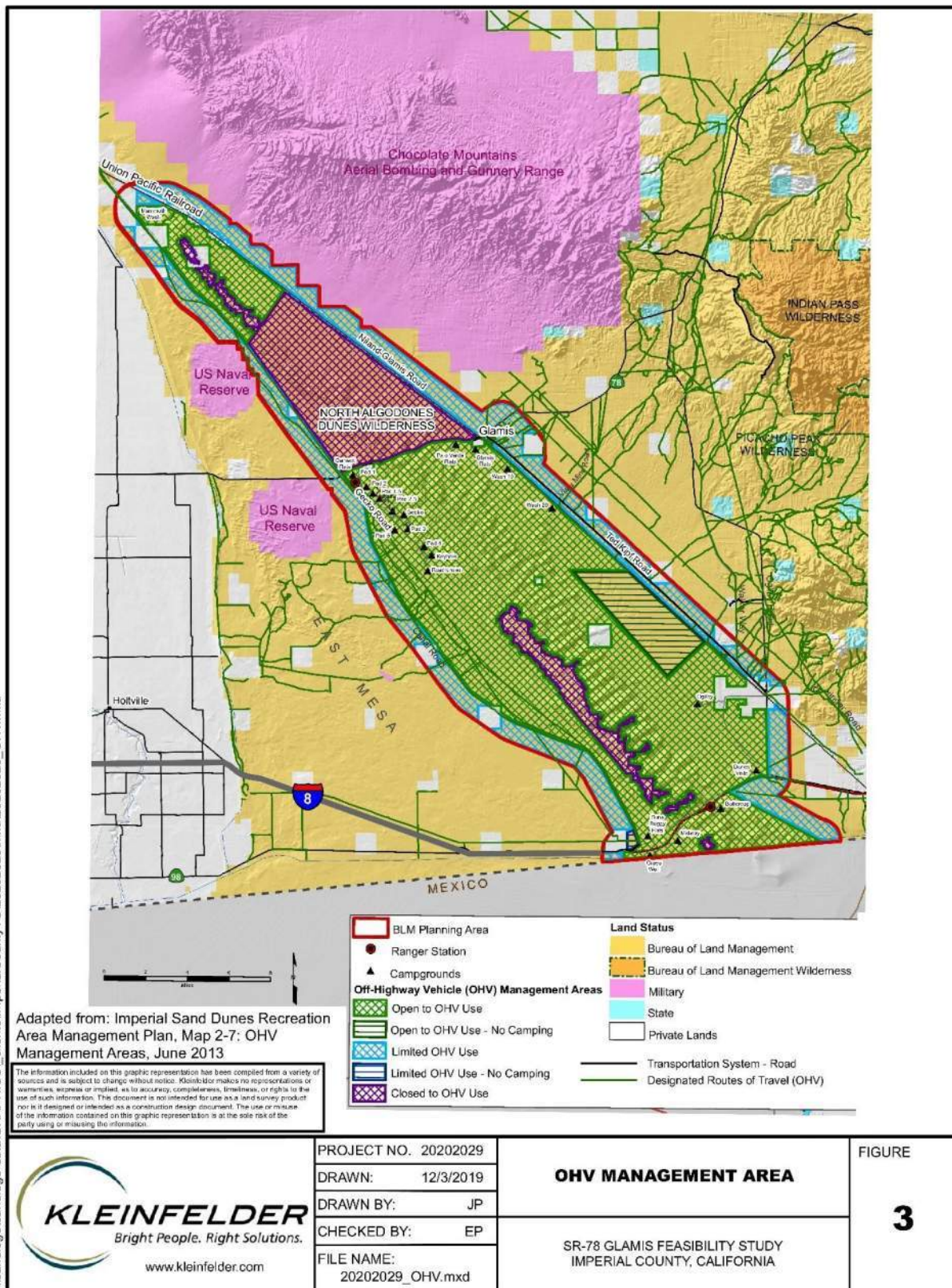
2.3 Off-Highway Rules and Regulations

Off-Highway rules and regulations are codified in the California vehicle code and established within the ISDRA RAMP. The rules are enforced by CHP, the Imperial County Sheriff's Department, and BLM peace officers.

Section 38025 of the California Vehicle Code addresses OHV travel in relation to highways. It states that a motor vehicle issued a plate or device pursuant to Section 38160 may be operated or driven upon a highway but only as follows:

(a) On a two-lane highway, only to cross the highway at an angle of approximately 90 degrees to the direction of the roadway and at a place where a quick and safe crossing may be made, or only when the roadway is not maintained by snow removal equipment and is closed to motor vehicles that are subject to registration pursuant to Division 3 (commencing with Section 4000), or only to cross a highway in the manner specified in subdivision (b).

(b) With respect to the crossing of a highway having more than two lanes, or a highway having limited access, a motor vehicle may cross a highway but only at a place designated by the Department of Transportation or local authorities with respect to a highway under their respective jurisdictions as a place where a motor vehicle, or specified types of motor vehicle, may cross a highway, and a vehicle shall cross the highway only at that designated place and only in a quick and safe manner.



(c) The Department of Transportation and local authorities with respect to a highway under their respective jurisdictions may designate, by the erection of an appropriate sign of a type approved by the Department of Transportation, a place where a motor vehicle, or specified type of motor vehicle, may cross a highway having more than two lanes or having limited access.

(d) A motor vehicle identified pursuant to Section 38010 may be towed upon a highway, but not driven, if the vehicle displays a plate or device issued pursuant to Section 38160.

(e) A motorcycle identified pursuant to Section 38010 may be pushed upon a highway, but not ridden, if the motorcycle has displayed upon it a plate or device issued pursuant to Section 38160.

(f) A peace officer, as defined in Chapter 4.5 (commencing with Section 830) of Title 3 of Part 2 of the Penal Code, may operate or drive an off-highway vehicle identified pursuant to Section 38010 upon a highway in an emergency response situation. (Amended by Stats. 2003, Ch. 135, Sec. 1. Effective January 1, 2004.)

Section 38027 of the California Vehicle Code indicated that motor-driven cycles issued a plate or device pursuant to Section 38160 may be moved, by nonmechanical means only, adjacent to a roadway, in such a manner so as to not interfere with traffic upon the highway, only for the purpose of gaining access to, or returning from, areas designed for the operation of off-highway vehicles, when no other route is available. The Department of Transportation or local authority may designate access routes leading to off-highway parks as suitable for the operation of off-highway vehicles, if such access routes are available to the general public only for pedestrian and off-highway motor vehicle travel.

The BLM has also established ISDRA specific rules and regulations for OHVs. A 15-mph speed rule exists on the sand highways and on public lands within 500 feet of SR 78.

2.4 SR 78 Transportation Concept Report

In 2015, Caltrans prepared a Transportation Concept Report (TCR) for the Imperial County portion of SR 78, which is a long-term plan that assists Caltrans with managing future projects along the corridor. SR 78 is a two-lane highway that runs east and west, serving as an interregional, local, goods movement, and recreational route. SR 78 within the Study Area is classified as a two-lane undivided conventional roadway and designated as a minor arterial roadway. It provides access to the ISDRA as well as provides goods movement for agricultural activities in the Imperial Valley. The terrain in the area is flat and is characterized by arid desert landscapes. The speed limit along SR 78 within the Study Area is 55 miles per hour. It is also designated as a shared Class III bicycle route. As with many rural highway routes, pedestrian facilities in the SR 78 corridor exist only as the highway shoulder. The outside paved shoulder width is greater than 8 feet. Roadway crossings along SR 78 in the vicinity of the Study Area are at-grade and unsignalized.

SR 78 is a major goods movement corridor that is part of the interregional Calexico-Coachella Cargo Corridor and the North American Free Trade Agreement Network (NAFTA-NET), which were both created to facilitate the movement of goods, services, and information between California and Mexico.

These systems are also intended to improve intercity and international travel and to provide an improved facility for the movement of goods throughout the region. Freight rail is also used to accommodate goods movement through Imperial County. The UPRR moves bulk commodity, bulk, and mixed cargo along the former Southern Pacific *Sunset Route*, which is still a primary California freight rail corridor. The UPRR is defined by the Surface Transportation Board (STB) as a Class I railroad.

No public transit is available within the Study Area. The segment of SR 78 within the study area is not designated as a scenic highway.

2.5 Accident Data

The Statewide Integrated Traffic Records System (SWITRS) traffic collision data for the area nearby the Project Location were compiled for an 11-year period from January 1, 2008 to October 20, 2019.

Considered in the analysis of accident data were collisions occurring on SR 78, the ISDRA, Ted Kipf Road, Ogilby Road, and various intersections with these thoroughfares.

Imperial Sand Dunes Recreation Area

A total of 50 collisions were reported within the ISDRA between 2008 and 2019, including 38 fatalities and 48 injuries. During the 11-year period, the types of accidents that occurred within the ISDRA were reported as follows:

- 29 overturned
- 1 sideswipe
- 5 hit objects
- 6 head-on
- 5 broadsides
- 1 auto-pedestrian
- 3 unknown or other factors

The majority of collisions reported within the ISDRA were attributed to unsafe speeds (62 percent), with 18 percent of collisions caused by improper turns. Other collision factors were reported as drivers under the influence of alcohol or drugs (6 percent), other improper driving (4 percent), exterior factors (4 percent), and unknown or not stated (6 percent).

State Route 78

A total of 12 collisions were reported along SR 78 between Ted Kipf Road and Vista Mine Road, including 10 injuries and no fatalities. During the 11-year period, the types of accidents that occurred along SR 78 were reported as follows:

- 2 overturned
- 1 sideswipe
- 2 hit objects
- 5 rear ends
- 2 broadsides

Half of the collisions that occurred along SR 78 were attributed to unsafe speeds. Approximately 33 percent of the reported collisions were caused by improper turns, while 8 percent were caused by driving on the wrong side of the highway, and 8 percent were caused by external factors.

Ogilby Road

A total of 42 collisions were reported along Ogilby Road between Ted Kipf Road and SR 78, including 2 fatalities and 34 injuries. During the 11-year period, the types of accidents that occurred along Ogilby Road were reported as follows:

- 14 overturned
- 1 sideswipe
- 13 hit objects
- 1 rear end
- 1 head-on
- 2 broadsides
- 3 unknown or other factors

The majority of collisions reported along Ogilby Road were attributed to improper turns (66 percent), while 14 percent were caused by unsafe speeds and 11 percent by external factors. Other collision factors included improper stopping and/or signaling (3 percent), drivers under the influence of alcohol or drugs (3 percent), and failure to yield to the ROW (3 percent).

Ted Kipf Road

A total of two collisions resulting in two injuries and no fatalities were reported along Ted Kipf Road between Vista Mine Road and SR 78. One of the collisions occurred in which the driver hit an object while the other involved a collision between the driver and another motor vehicle. Both collisions reported along Ted Kipf Road were attributed to unsafe speeds.

2.6 Stakeholder Provided Documentation

The owner of the Boardmanville store provided maps and photographs representing the study area, and video recordings of illegal crossing of the UPRR ROW and SR 78. In several maps, Wash 10 is identified as an unimproved dirt road, and is indicated on both east and west sides of the UPRR line as well as passing beneath the rail line. BLM maps of the ISDRA presented in the Recreation Area Management Plan show the area to the east of the UPRR line as open to OHV use. Also provided was information from various webpages that provide information to users such as camping areas and points of interest. These sources reference Wash 10 as a shortcut to Boardmanville. Information related to citations given to OHV users on both roadways and within OHV closure areas were also provided.

It is anticipated that additional information on previous studies or surveys performed by BLM may be provided as the FS progresses. Any relevant additional information will be included in the Final Project Report.

2.7 Inyo County Local Transportation Commission Combined Use Pilot Project – Case Study

The Inyo County Local Transportation Commission Combined Use Pilot Project was initiated in 2011 and serves as a case study if combined use designations are considered as part of the FS. AB 628, creating Vehicle Code section 38026.1, was passed by the State Legislature and signed into law in 2011 and then extended by SB 1345 in 2016. The law will sunset on January 1, 2020 unless enacted or extended by the Legislature. AB 628 allowed Inyo County to establish a pilot project to designate combined-use highway segments up to 10 miles long on unincorporated County roads to link existing OHV trails and trailheads on federal BLM or United States Forest Service lands, and to link OHV recreational-use areas with necessary service and lodging facilities, in order to provide a unified system of OHV trails in the Owens Valley. Other goals for the project are to preserve traffic safety, improve natural resource protection, reduce OHV trespass on private land, and minimize impacts on County residents. The County of Inyo adopted Implementing Procedures for AB 628 (Implementing Procedures) consistent with the requirements of Vehicle Code sections 38026.1(b)(1) & (2) in 2012. The Implementing Procedures include rules and regulations for OHV travel, environmental review of new routes, and monitoring and reporting requirements. Since 2011, a total of seven combined-use routes have been approved by the Board of Supervisors.

3 References

- Bureau of Land Management (BLM). 2002. *Proposed California Desert Conservation Area Plan Amendment for the Coachella Valley and Final Environmental Impact Statement*. October.
- Bureau of Land Management (BLM). 2013. *Imperial Sand Dunes Recreation Area Management Plan*. El Centro Field Office. Publication Number BLM/CA/ES-2013/013+1793
- California Department of Transportation (Caltrans). *Transportation Concept Report State Route 78 Imperial County*. District 11. September.
- County of Imperial. 2015. *County of Imperial General Plan; Land Use Element*. Planning & Development Services Department. October 6.

APPENDIX C

PUBLIC INVOLVEMENT WORKSHOP INFORMATION

Public Workshop #1 - On-Site

Engagement

Public Workshop Summary

January 18, 2020

Introduction

This summary provides information about on-site engagement activities for SR 78/Glamis Multi-Use Grade Separated Crossing Feasibility Study. On January 18, 2020, The Imperial County Transportation Commission (ICTC) and the project team conducted an on-site public outreach event. The public outreach event was both informative and interactive and was designed to maximize participation by Glamis visitors and users. The following summary provides an overview of the outreach event and each activity conducted, as well as a discussion of major themes and input received from attendees. Attachments to this summary contain visualizations of the raw data from the mapping activities.

Project Overview

The Imperial County Transportation Commission (ICTC) is performing a feasibility study (Study) to identify and analyze design alternatives and locations for a safe Multi-use Grade Separated Crossing for off-highway vehicle (OHV) users across the Union Pacific Railroad (UPRR) rail line at State Route 78 (SR 78) and the Imperial Sand Dunes Recreation Area (ISDRA). The Study is funded by a Sustainable Communities Grant administered by Caltrans. The Study area is near Glamis, California, in the eastern portion of Imperial County. The Study area is within the eastern portion of the ISDRA and is approximately 3 miles long and 2,000 feet wide. It is bisected by the UPRR from SR 78 in the north to approximately Wash 15 in the south, encompassing Ted Kipf road to the east.

Public Outreach Overview

As part of this project, ICTC is conducting outreach to users and other stakeholders in the Glamis area to hear their perspectives and preferences for crossing the tracks, and to understand points of interest in the project site and surrounding area.

On-Site Engagement Event



Public Workshop Set-up

Objectives

The community outreach event objectives were to provide visitors and users of the Glamis area the opportunity to:

- Learn about the project,
- Learn about the online survey and how they can participate,
- Provide input on preferred areas for crossings, destinations east of the crossing, size of crossings, and other important considerations from a user perspective,
- Sign up for project updates and announcements about future involvement opportunities.



LANDS Imperial County Annual Imperial Sand Dunes Clean-Up participants

Date, Time, and Location

The outreach event was held on Saturday, January 18, 2020, 8:00 a.m. to 3:00 p.m. in the Main Stage Area at the Glamis Flats campground, near the Glamis Beach Store. In order to maximize potential participation, the event was hosted in conjunction with the LANDS Imperial County Annual Imperial Sand Dunes Clean-Up event.



Public Workshop participants

Getting the Word Out

ICTC and the project team worked closely with project Technical Working Group members, the American Sand Association (ASA), LANDS Imperial County, and other stakeholder organizations with ties to the full range of Glamis users to publicize the project and involvement opportunities. A flyer was prepared and distributed, **an example of which can be found in Attachment A**. The flyer and information about the event were posted on the ICTC, ISDRA, ASA, LANDS Imperial County, Glamis Dunes, and Boardmanville Trading Post websites and/or social media accounts. Physical copies were also provided for posting at the Glamis Beach Store and at Boardmanville Trading Post.

Outreach Event Activities and Input

Participants were invited to visit the project booth and learn about the project, participate in hands-on input activities, share what they value about Glamis, and talk with the project team about their preferences. Participants could also provide their contact information for future project updates and, importantly, receive information about how to participate in the project online survey.

Project Informational Resources

Informational boards were posted at the project booth and were meant to provide participants with a quick overview of the project's purpose, the project process, public involvement opportunities, and illustrations of different crossing types that might be used. A Project Fact Sheet was available for participants to take and share, **an example of which can be found in Attachment B**. Participants were also encouraged to participate in the project online survey and were provided with small cards that displayed the project website.



Participants reviewing informational boards

Crossing the Tracks: Mapping Activity

Using a base map of the project area, participants were asked to respond to three questions by placing pins related to their experiences and preferences when using Glamis. This activity provided a visual representation showing where participants are currently crossing and the areas where crossings may be advantageous. Each question was assigned a different color pin.

Graphic representation of the data collected, for this activity can be found in Attachment C.

The three questions asked were:

Red Pin: If you currently cross the railroad tracks on your OHV, where do you cross?

Blue Pin: What would be an ideal place to cross?

White Pin: What are points of interest/destinations you frequent?

Activity Themes

- Participants primarily identified Wash 10 as a preferred crossing location. Participants placed 13 red pins on the map indicating that they currently cross at Wash 10, and 38 blue pins indicating that this would be an ideal place to cross.
- Some participants noted that a crossing at Wash 10 would be beneficial given its proximity to Boardmanville, as well as its central location within the heavily used areas of Glamis.
- The primary destination that participants indicated as a reason for crossing the tracks was Boardmanville; 19 white pins were placed.
- Participants also cited that the need for crossing is related to access for OHV use and access to camping sites and other recreational opportunities.



Participants mapping their preferred crossing locations

Regional Point of Interest Mapping Activity

Using a base map of the broader Glamis region and surrounding areas, participants were asked to indicate areas that they travel to or that they believe are points of interest for users.

Participants indicated their locating using a yellow pin. **Graphic representation of the data collected for this activity can be found in Attachment D.**

Points of Interest

East side of UPRR train tracks

- Boardmanville
- Vista Mine Wash/RD
- Tunnels
- Imperial Gardens (Date Shakes)
- Picacho Cemetery
- Walter's Camp
- Palo Verde (First Place for gas)
- Camping
- Sightseeing

West side of UPRR train tracks

- Swing Set
- Tiki Hut
- Natural Hot Springs "Six Palms"
- Drag Strip
- Flag Pole
- Old Campground (Glamis Flats)
- Oldsmobile Hill
- Plane/Great Wall
- Sidewinder Road

Activity Themes

- The points of interest indicated by the majority of participants were located on the west side of the UPRR train tracks. Many citing the reason as there being no current access for OHV users that allows for travel between the two areas.
- Some participants did note points of interested and destinations on the east side of the tracks. 24 pins were placed identifying areas beyond Boardmanville including nine pins near the Colorado River and ten in the Tumco Mine / Gold Rock Ranch area.
- The three most-pinned locations by participants were the "Flag Pole," "Swing Set," and Glamis Flats located within the ISDRA.



Participants mapping and reviewing locations mapped by other participants

Values

Participants were asked to identify what was important to them as they used Glamis and write their response on a community values board. Below are the summarized results of the activity.

Graphic representation of data collected for this activity can be found in Appendix E.

Activity Themes

- Participants frequently identified "access" as an important value; many participants shared that they hope to be able to use all different areas in Glamis with minimal closures.
- Participants shared that there was a desire to maintain "clean dunes" for all users.
- "Safety" was a value consistently shared, and there was a desire to keep the dunes safe for users of all ages. Participants highlighted the importance of Glamis for many who have made visiting the dunes a part of their family traditions.

Major Themes

The following major themes represent recurring input gathered from the various activities at the on-site engagement event. Understanding the full range and depth of the input requires reviewing the documentation in the appendices, which contain a summary of raw input provided by participants.

There is a desire to cross the tracks for various reasons.

While some participants did not have a preference or did not express a desire to cross the tracks, many commented that they would take advantage of the opportunity. It was also noted that vehicle uses on either side of the tracks are different, with the Glamis side more appropriate

for vehicles equipped to handle sand, and the Boardmanville side more appropriate for trucks and other street-legal vehicles better equipped for hard-packed surfaces.

A Small Crossing is Sufficient.

When discussing crossing types and photos of other crossings, most respondents noted that a small crossing similar to a culvert is sufficient. Concerns about safety if the crossing is single lane were noted, however they were balanced by a recognition that a wide open thoroughfare would encourage higher speed and less caution. It was also noted that damage to flags will occur if the crossing height is too short.

Participants thought Wash 10 would be a good place to cross.

A majority of participants who participated in the mapping activity indicated that Wash 10 would be a good place for a crossing. Reasons included its location central to heavily used areas at the northeast parts of Glamis, location relative to the road connecting the area to Boardmanville, and the width and available space for a crossing at Wash 10. Some participants also noted that this wash has been historically used to cross. It was also suggested that a crossing did not necessarily need to be placed at a wash but could be effective if placed between two washes.

Safety is important.

The value of safety was connected many times to access. Many participants shared that by creating access to more areas, there would be lower concentrations of people, contributing to safer dune activities for everyone.

Most Feasible Alternative

Public Input Summary

Public Review Period: October 8 – November 6, 2020

Prepared by Kearns & West, in partnership with Kleinfelder
November 13, 2020

Introduction

During the public review period for Most Feasible Alternative for the SR 78/Glamis Multi-Use Grade Separated Crossing Feasibility Study, Imperial County Transportation Commission (ICTC) conducted a set of virtual meeting sessions and provided the public with an opportunity to comment through an online input portal. Virtual public meeting sessions occurred on October 21 and 24, 2020, and the input portal was available during the public comment period from October 8 to November 6, 2020. The virtual public meeting presentation was pre-recorded and available for viewing at the beginning of the public comment period. The following summary provides an overview of feedback provided by the public through both the virtual meeting and the online input portal.

Project Overview

ICTC is performing a feasibility study (Study) to identify and analyze design alternatives and locations for a safe multi-use grade separated crossing for off-highway vehicle (OHV) users across the Union Pacific Railroad (UPRR) rail line at SR 78 and the Imperial Sand Dunes Recreation Area (ISDRA), commonly known as Glamis. The Study is funded by a State Planning and Research Grant administered by Caltrans. The Study area is within the eastern portion of the ISDRA and is approximately 3 miles long and 2,000 feet wide. It is bisected by the UPRR from SR 78 in the north to approximately Wash 15 in the south, encompassing Ted Kipf road to the east.

Public Outreach Overview

ICTC recognizes the importance of users and other stakeholder perspectives and preferences for crossing the tracks and points of interest in the project site and surrounding areas. Project outreach was initiated in January 2020, during the winter riding season, with an event held on Saturday, January 18, 2020, in conjunction with the LANDS Imperial County Annual Imperial Sand Dunes Clean-Up event. ICTC and the project team set up a booth at the event to help attendees learn about preferred areas for crossings, destinations east of the railroad tracks, size of crossings, use frequency, and willingness to pay, and an online survey was set up to allow the public to provide feedback.

Informed by the input received through this first engagement, the team prepared a draft feasibility study, which included development and weighting of criteria for evaluation, selecting a range of feasible alternatives, scoring the alternatives, estimating cost, and using scoring and cost to select the four most feasible alternatives. ICTC then released the draft Study report, including identification of the Most Feasible Alternative (Alternative 78T-O), for review, allowing an opportunity for the public to learn about the results, ask questions, and provide comment. More information on these items can be found on the project webpage at <http://www.imperialctc.org/sr-78-glamis-crossing/>.

Alternatives Considered



Map of the four alternatives analyzed in the draft Study.

Getting the Word Out

ICTC and the project team worked closely with project Technical Working Group members, the American Sand Association (ASA), LANDS Imperial County, and other stakeholder organizations with ties to the full range of Glamis users to publicize the project and involvement opportunities. A flyer was prepared and distributed, an example of which can be found in Attachment F. The flyer and information about the event were posted on the ICTC, Imperial Sand Dunes Recreation Area, ASA, LANDS Imperial County, Glamis Dunes, and Boardmanville Trading Post websites and/or social media accounts. A notification was also emailed to those who participated in the user survey during the first round of engagement.

The project team utilized the Eventbrite platform to provide up-to-date project information and to collect RSVPs for the virtual public meetings. ICTC hosted information about the event, including the flyer and link to the Eventbrite page, on the Glamis Crossing website.

Virtual Public Meeting

Objectives

The objectives of virtual public meetings were to involve Glamis visitors and users and to:

- Provide an overview of the study process, the alternatives evaluated, and the most feasible alternatives
- Provide an opportunity for questions and comments from the public through multiple methods
- Guide participants to the online input portal

Format and Attendance

The two virtual meeting sessions were designed to provide multiple opportunities for the public to learn about the project, ask questions, and provide comment, and each presented the same content. The first virtual public meeting session was held first on Wednesday, October 21, 2020, from 7:00 p.m. to 8:00 p.m., and the second session was held on Saturday, October 24, 2020, 9:00 a.m. to 10:00 a.m. Both events took place on the Zoom virtual meeting platform. Attendance at the October 21 session was 59 people, and attendance at the October 24 session was 25 people.

Meeting Presentation

ICTC and the project technical team provided a presentation overviewing the project's purpose, summarizing Public Workshop #1 and the online survey, and highlighting alternatives considered, structure types, and the feasibility criteria and scoring for project alternatives. The project team highlighted Alternative 78T-O as the most feasible alternative and noted the next steps of pursuing funding and beginning discussions on ownership of the crossing. Participants were encouraged to participate in the project online and were shown how to access the public input form. Presentation slides can be found in Attachment G.



Map of the Most Feasible Alternative (78T-O), showing an overcrossing along SR 78.

Major Themes from Public Questions and Comments

At the conclusion of the project presentation during both virtual public meeting sessions, attendees were given the opportunity to ask questions and provide comments in through the chat box function. ICTC and the project technical team provided responses to the questions verbally. The following major themes were discussed during the meeting. Themes are listed in alphabetical order and the order does not denote any order of importance or priority.

Crossing safety

Safety was a major theme of questions and input, with some comments addressing the safety of specific crossing alternatives and others emphasizing the need for a establishing a safe crossing independent of the location chosen as soon as possible.

Other Crossing Options

Some attendees asked questions about why a new crossing is needed, commenting that Glamis users have historically utilized many different crossings. Although not presented as an alternative, a small group of people embraced the idea of a crossing at Mammoth Wash. Participants expressed an interest in an at-grade crossing at multiple locations.

Participation, Responsibility, and Funding

Process and implementation questions from attendees were common. Some participants had specific questions about the role of Union Pacific Railroad (UPRR) and the Bureau of Land Management in the Study and asked why representatives did not participate in the virtual public meetings. Others posed questions about the agency/organization that would be responsible for the crossing. And two people asked about funding and the cost to riders.

SR 78 Crossing: Multiple attendees commented on the preferred crossing at SR 78, including suggestions of widening the highway for OHV traffic and a preference for the overpass. A suggestion was made to legalize OHV crossing along SR 78 at the railroad tracks. A comment was made that it is currently legal to push OHVs across the tracks along SR 78, but an attendee noted that this is not a safe practice for many types of OHVs.

Union Pacific Right-of-Way and Removal of Crossing

Attendees posed questions and made suggestions regarding BLM requiring Union Pacific to reopen Wash 10 as a legal crossing, with some suggesting that the wash had previously been used for many years and is listed by BLM as a crossing. Many attendees questioned the legality of Union Pacific's closure of certain crossings, noting that Union Pacific operates on an easement through Glamis.

Wash 10 Alternative

Many of the questions and comments pertained to reopening the previous crossing at Wash 10. Many noted that Wash 10 had been used for many years to safely cross the tracks and suggested simply clearing the wash to allow access.

Wash 9.5-Underpass Alternative

The Wash 9.5-Underpass Alternative located between Wash 9 and Wash 10 received support from many participants. A few people felt that the 9.5-Underpass alternative feasibility score should have been higher.

Online Input Portal

During the public comment period, ICTC provided an online input portal on the Glamis Crossing web page, allowing the public to provide feedback. A version of the project presentation was pre-recorded and made available for the public at the start of the public input period. This was done to help the public learn about the project and provide informed feedback through the online input portal.

Topics addressed in responses included: consideration of a more centrally located crossing to allow for better access by more centrally located users, emergency vehicles, and US customs; safety for users crossing the tracks; and utilization of the existing Wash 10 undercrossing.

SR-78 Glamis OHV Crossing Feasibility Study Public Input Form

1. Contact Information

Name

Email Address

2. Please use the space below to provide comments about the most feasible alternative for creating the OHV crossing. We also welcome your comments on the study.

Done

SR 78 / Glamis Multi-Use Grade Separated Crossing Feasibility Study

Public Engagement

Attachment A

On-Site Event Flyer

SR 78 Glamis Off-Highway Vehicle Crossing Feasibility Study

Get Involved: The Imperial County Transportation Commission is holding a public workshop and conducting an online survey to collect feedback for a potential Grade Separated OHV Crossing in the Glamis area.

We want to hear from you!

- Locations for crossings
- Design preferences
- Types of vehicles
- Access needs
- Key points of interest
- Safety concerns
- General input

For more information, visit the project website:

<http://www.imperialctc.org/sr-78-glamis-crossing/>



Public Workshop at the Dunes Cleanup Event:

North Dunes Main Stage Area – Glamis Flats

Saturday, January 18, 2020
9:00 am to 3:00 pm

Online OHV User Survey:

To take the survey, visit:

<http://sgiz.mobi/s3/SR-78-Glamis-Crossing>

The online survey will be available from January 1, 2020 through January 31, 2020



Project Contact:
Virginia Mendoza
Senior Transportation Planner
Imperial County
Transportation Commission
1.760.592.4494

SR 78 / Glamis Multi-Use Grade Separated Crossing Feasibility Study

Public Engagement

Attachment B

Project Fact Sheet

State Route 78/Glamis Multiuse Grade Separated Crossing Feasibility Study

Project Description

The Imperial County Transportation Commission (ICTC) is performing a Feasibility Study to analyze and develop design alternatives and locations for providing a safe Multi-use Grade Separated Crossing for off-highway vehicle (OHV) users across the Union Pacific Railroad (UPRR) rail line at State Route 78 (SR 78) and the Imperial Sand Dunes Recreation Area (ISDRA). The study is being funded by a Sustainable Communities Grant administered by Caltrans.

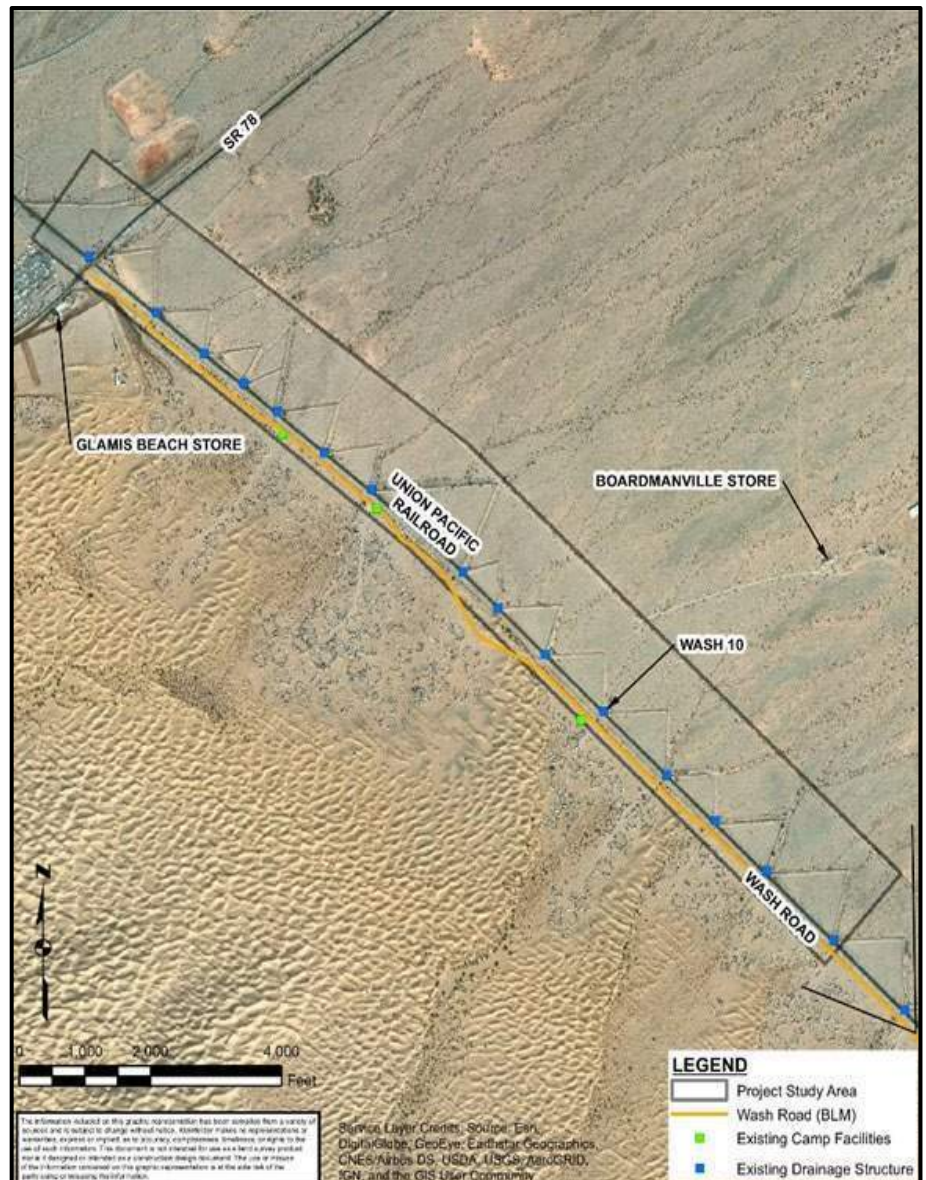
The Study Area is located in Glamis California in the eastern portion of Imperial County. It is within the eastern portion of the ISDRA and is approximately 3 miles long and 2,000 feet wide. It is bisected by the UPRR from SR 78 in the north to approximately Wash 15 in the south, encompassing Ted Kipf road to the east.

Project Background

Historically, a below-grade wash structure, wide enough for OHVs, south of SR 78, was informally used and privately maintained for travel between the western and eastern portions of the ISDRA on either side of the rail line tracks.

In 2009, UPRR physically closed the informal crossings and indicated they were not authorized for public use. The structure does not meet minimum clearance standards and the at-grade crossings were constructed solely as private railroad maintenance crossings for the railroad's sole use.

Since the closure of these informal crossings, there are no designated legal crossings for OHVs within the 17 miles between SR 78 and Ogilby Road. This has resulted in OHV users crossing over the actual rail line tracks at unprotected, unregulated, and uncontrolled crossing points. The current situation is considered to be a significant safety issue.



Project Outcomes

The outcomes of the Feasibility Study include developing a problem statement, identifying feasible engineering alternatives for grade separated crossings and the constraints, costs, and risks of each alternative, and establishing a path forward for a preferred alternative. The path forward will include identification of agency responsibility, funding mechanisms, anticipated costs and risks throughout the project life.

Project Timeline



Opportunities for Public Input

As shown in the project timeline, ICTC will provide several opportunities to provide public input, as part of the Feasibility Study. Public Workshop #1 will be held at the ISDRA during the Sand Dunes Cleanup in January 2020 to collect public input on access needs, locations for crossings, design preferences, types of

vehicles, key points of interest, safety concerns, and any additional general input.

During the month of January, ICTC will also conduct an online OHV User Survey to better understand OHV recreation and user preferences in the vicinity of the Study Area .

To take the survey, please visit

<http://sqiz.mobi/s3/SR-78-Glamis-Crossing>

Public Workshop #2 will be held online and in person in El Centro, Ca to present the proposed alternatives for the crossing, including the preliminary engineering design for each alternative, evaluation criteria and the preferred alternatives.

Technical Working Group Partners

A Technical Working Group (TWG), comprised of ICTC, Caltrans, Imperial County, UPRR, the California Public Utilities Commission, American Sands Association, Polaris, and the owner of the Boardmanville Trading Post has been formed to serve in an advisory capacity as part of the Feasibility Study. The TWG's role is to provide input and feedback to the Consultant Team during the



Feasibility Study in order to achieve the anticipated project outcomes.

Additional Information

For more information about the project, please visit the project website:

<http://www.imperialctc.org/sr-78-glamis-crossing/>

Public Engagement

Attachment C

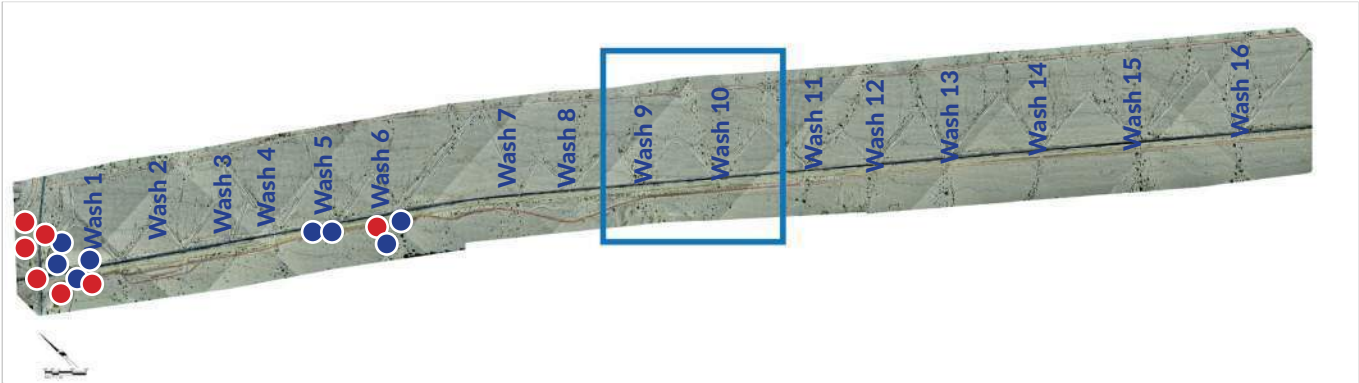
On-Site Workshop

Crossing the Tracks: Mapping Activity Data

Appendix C Crossing the Tracks Mapping Activity Data

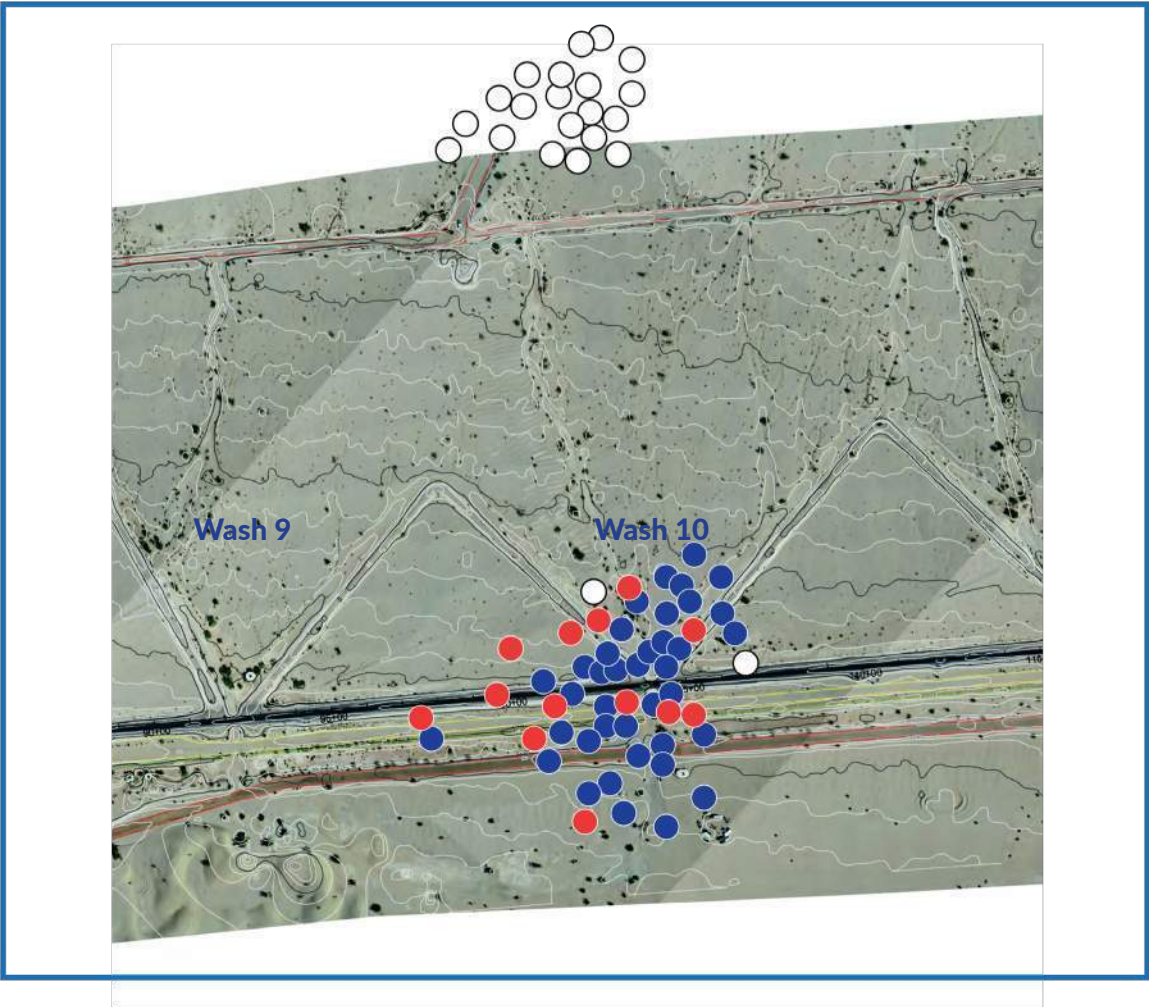
Legend ● Red Pin = Place where you currently cross ● Blue Pin = Ideal place to cross ○ White Pin = Point of interest

Activity Results

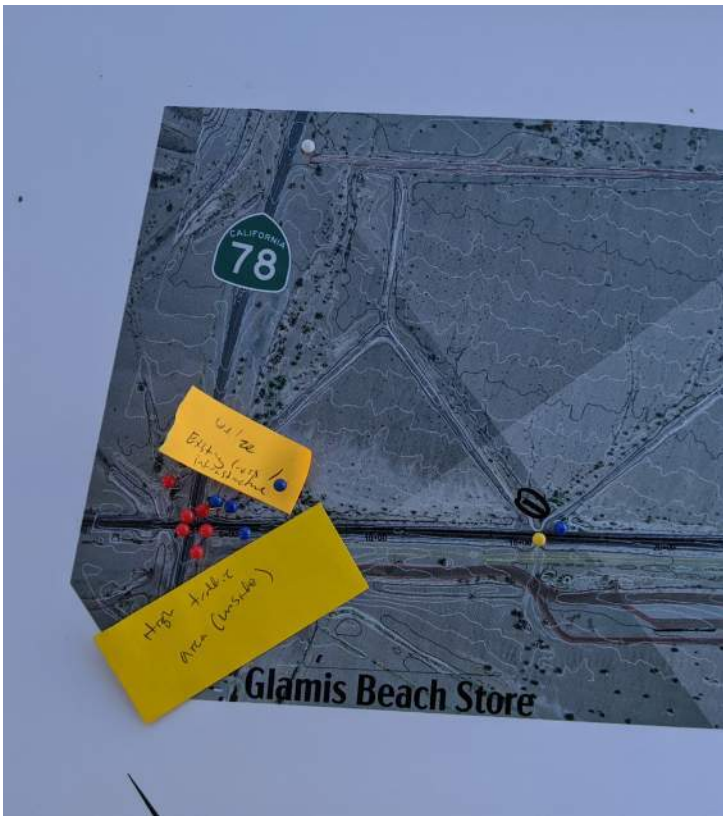
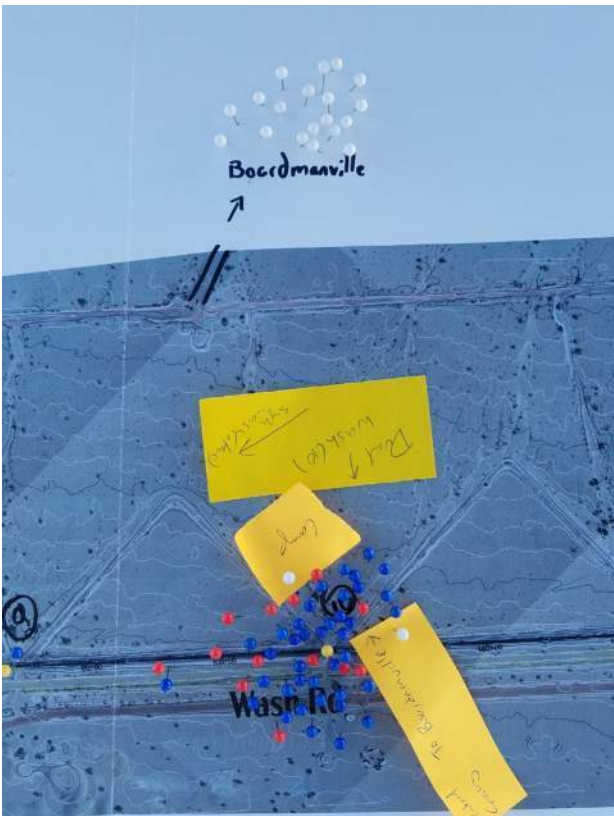
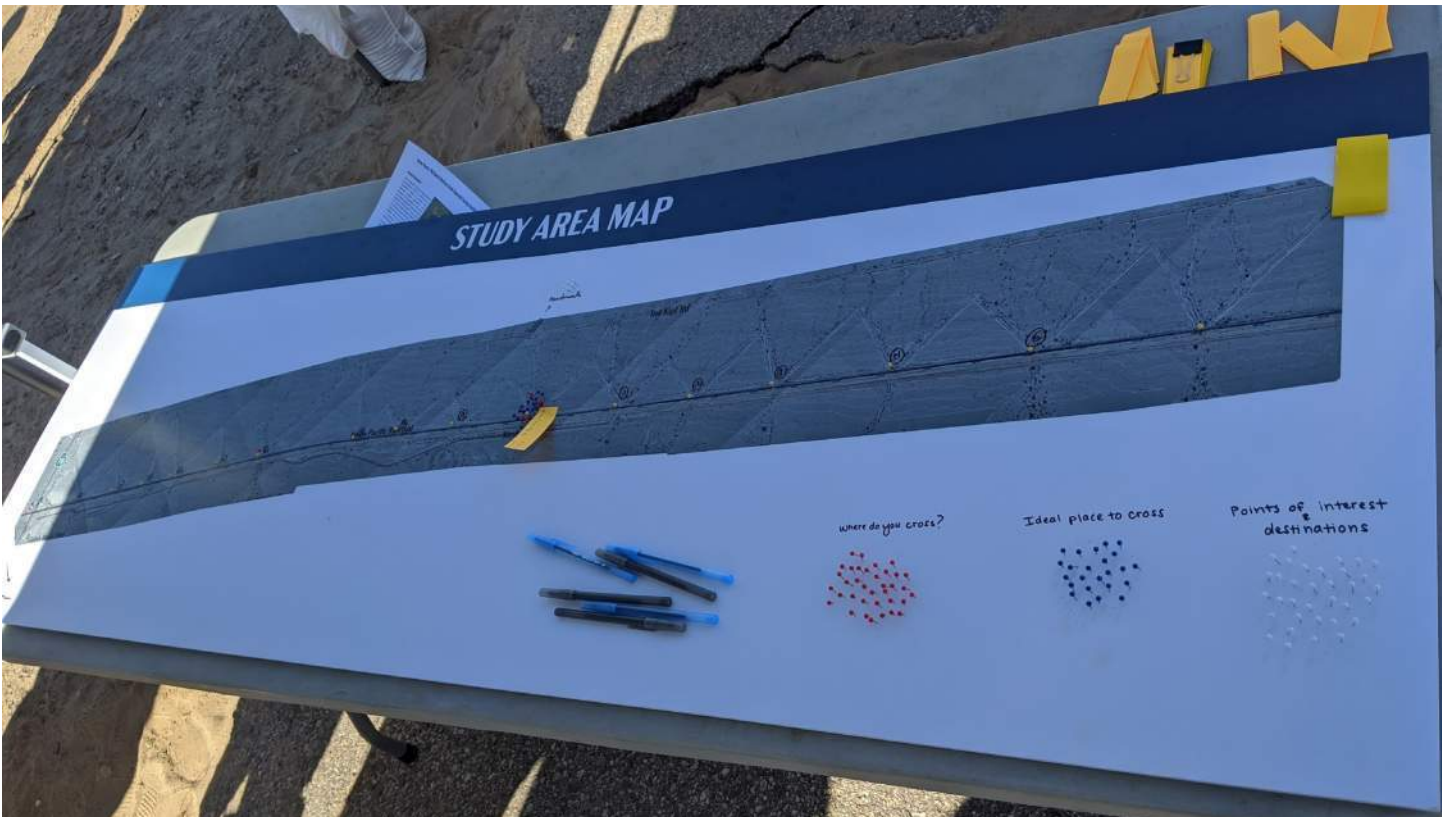


Input received in Wash 10 Area

Due to the high number of pins placed on wash 10, a detailed view of input related to the area can be found below.



Appendix C Crossing the Tracks Mapping Activity Data



Public Engagement

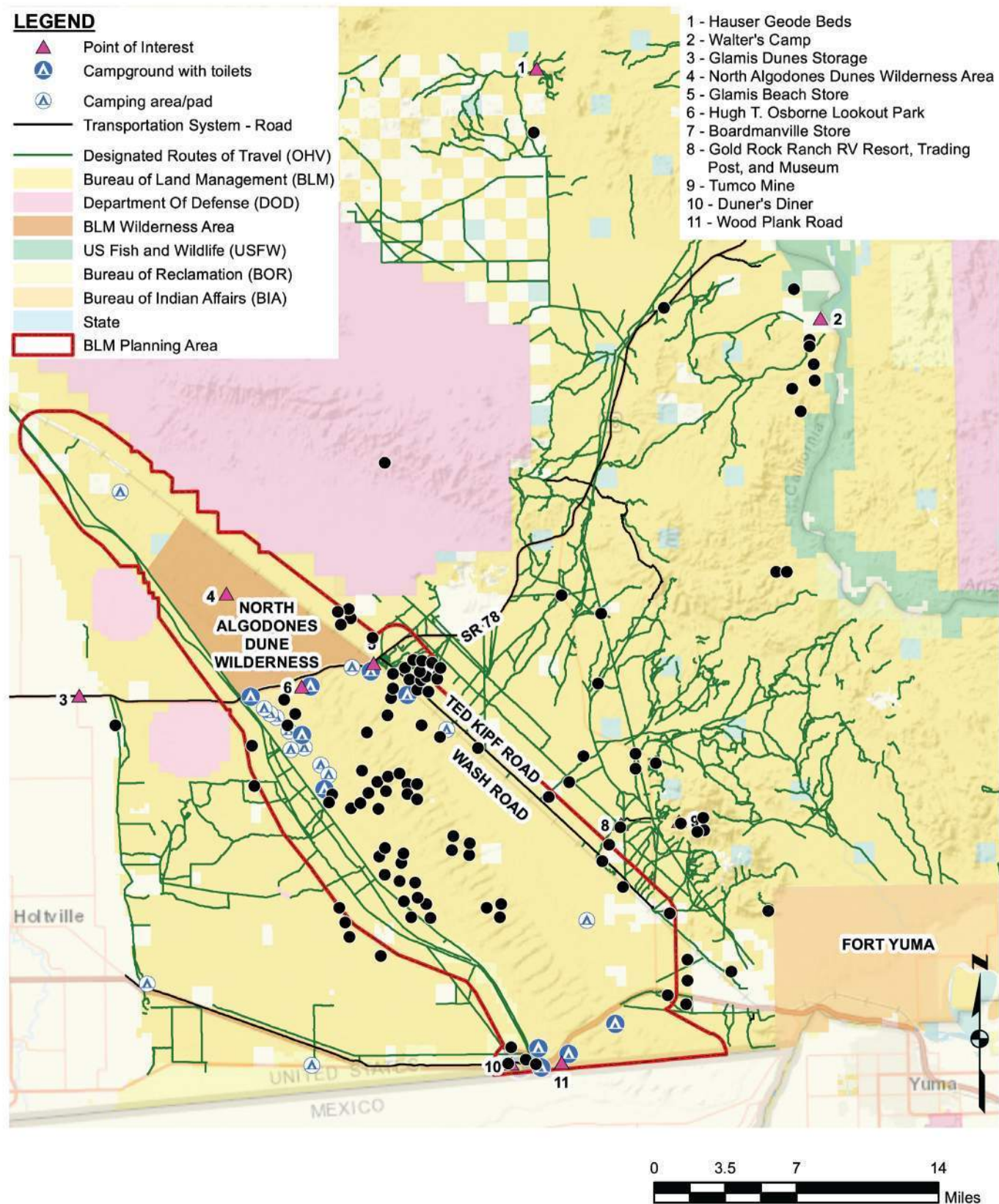
Attachment D

On-Site Workshop

Regional Points of Interest Mapping

Activity Data

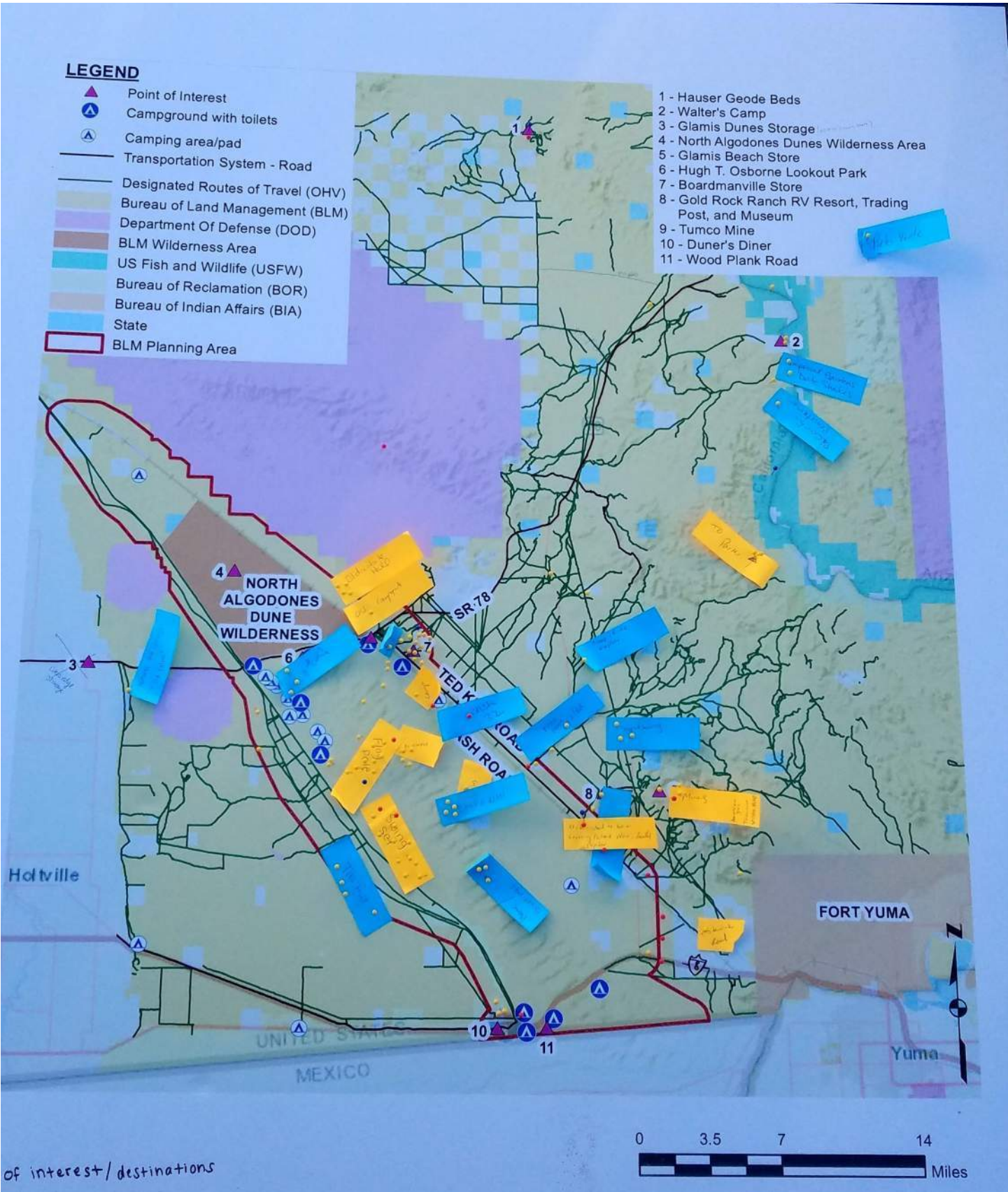
Appendix D Regional Point of Interest Mapping Activity Data



Legend ● Black Pin = Point of interest

Map shows black pins instead of yellow pins to aid visibility

Appendix D Regional Point of Interest Mapping Activity Data



SR 78 / Glamis Multi-Use Grade Separated Crossing Feasibility Study

Public Engagement

Attachment E

On-Site Workshop

Participant Values Data

Appendix E Participant Values Data

What is important to you as you use Glamis?

- Clean Dunes, spending time with family friends
- Safety
- Fire
- Pick up your trash, No glass. Stop ranger harassment
- Access to plenty of dunning real estate, safe dunning practices and priceless memories
- Only take pics, only leave footprints!
- Safe family environment, clean camping, trash can access
- Fun safe & clean
- Clean safe & fun environment for my family and friends!
- Hanging out with family and friends
- Clean & Safe
- Great times with friends! Pack it in, pack it out.
- Have a great time and be safe!!
- Riding
- Ice Cream Allys
- Clean Campus, safe for everyone and family fun!
- Clean, Safe, Fun for my family
- Having safe, clean fun and respect of people camping with you and around you! Keeping it open.
- Family & Friends
- Family time in a clean, safe place.
- Clean Dunes, Access to North & East Area
- Stays Clean
- I want clean Dunes and to ride quads and play with my dogs and to be safe!
- More Dunes = Safe Dunes
- Safe R.R. X-ings
- Having fun and making sure others have a good time and don't have to deal with others trash deposits.
- Glamis family, keep it clean!!
- Having fun with the family & enjoying life!
- Family time together. Being able to enjoy the outdoors.
- Go on a long ride.
- Clean Dunes
- Access to North & East Dunes or area
- Have fun Be Safe!
- Friends & family fun
- Dunes family 5yrs and going
- Fun
- To be safe & keep our Dunes clean!
- I want all of us to be safe and ride quads
- Good times at Glamis
- No Dunes closures
- No all night parties. Save riding
- Milkweed Plant
- Clean & Safety
- Safe family fun
- Family fun
- No more closures
- Community events
- Crossing into Boardmanville

Appendix E Participant Values Data



Public Engagement

Attachment F

Virtual Meeting Flyer

SR 78 Glamis OHV Crossing Feasibility Study

Join the Imperial County Transportation Commission (ICTC) for an opportunity to provide input on a potential Off Highway Vehicle (OHV) crossing in the Glamis area!

You shared your vision with us during the first round of outreach, now tell us what you think about the most feasible alternative. We invite you to participate in one of the public meetings scheduled in October. Also, an online input portal will be available between October 8 and November 6, 2020.



Project Contact:
Virginia Mendoza
Senior Transportation Planner
Imperial County
Transportation Commission
1.760.592.4494



Virtual Public Meeting Opportunities:

Meeting Opportunity 1:

Wednesday, October 21, 2020
7:00 PM to 8:00 PM

Meeting Opportunity 2:

Saturday, October 24, 2020
9:00 AM to 10:00 AM

To register visit:

glamiscrossing.eventbrite.com or
<http://www.imperialctc.org/sr-78-glamis-crossing>

Registration will be open from
August 21 to October 23, 2020

We want to hear from you about:

- Design
- Access and usability
- Safety
- General Input
- General questions

Online Resources and Input Portal:

We invite you to visit the project website to learn more and to provide direct input through the online input portal:
<http://www.imperialctc.org/sr-78-glamis-crossing>

SR 78 / Glamis Multi-Use Grade Separated Crossing Feasibility Study

Public Engagement

Attachment G

Virtual Meeting Presentation Slides

SR 78 / Glamis Multiuse Grade Separation Crossing Feasibility Study

Welcome!

Thank you for joining this virtual public meeting hosted by the Imperial County Transportation Commission. We'll start shortly.

The purpose of this study is to assess alternatives to safely cross the railroad in the Glamis area and to select the most feasible alternative. You can access the draft document and provide comment at Imperialctc.org/sr-78-glamis-crossing/.

During today's meeting, we'll share information about the study and the preferred alternative, answer your questions, and collect input.

SR 78 / Glamis Multiuse Grade Separation Crossing Feasibility Study

Thank you for participating in today's Virtual Public Meeting

- Share an overview of the study process, the alternatives evaluated, the most feasible alternative
- Provide an opportunity for feedback and answer questions
- Guide participants to the online input portal

How to Participate

- Use Chat Box to type in questions and comments during the meeting
- Go to Imperialctc.org/sr-78-glamis-crossing/ to read the full study and provide additional comments
- Send the link to your friends and family and tell them about the study

Today's Agenda

- Presentation – who, what, why, how
- Q & A
- Fun Polling Questions

Meeting Team

- Virginia Mendoza – ICTC Project Manager – Presenter
- Kelly Burnell – Consultant Project Manager – Presenter
- Joan Isaacson – Facilitator
- Christian Mendez – Meeting Tech
- Siri Champion – Meeting Records



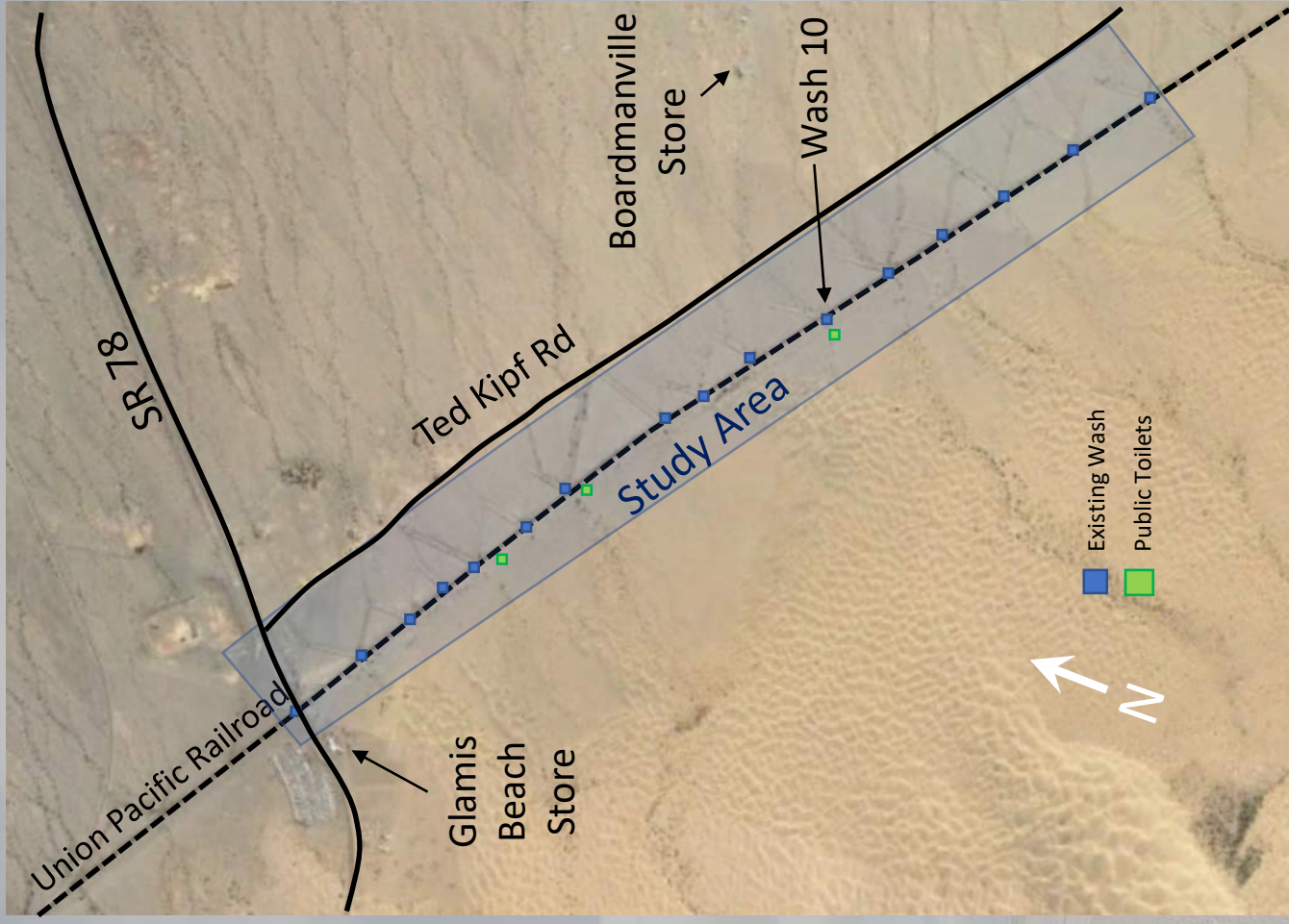
SR 78 / Glamis Multiuse Grade Separation Crossing Feasibility Study

What are we trying to solve?

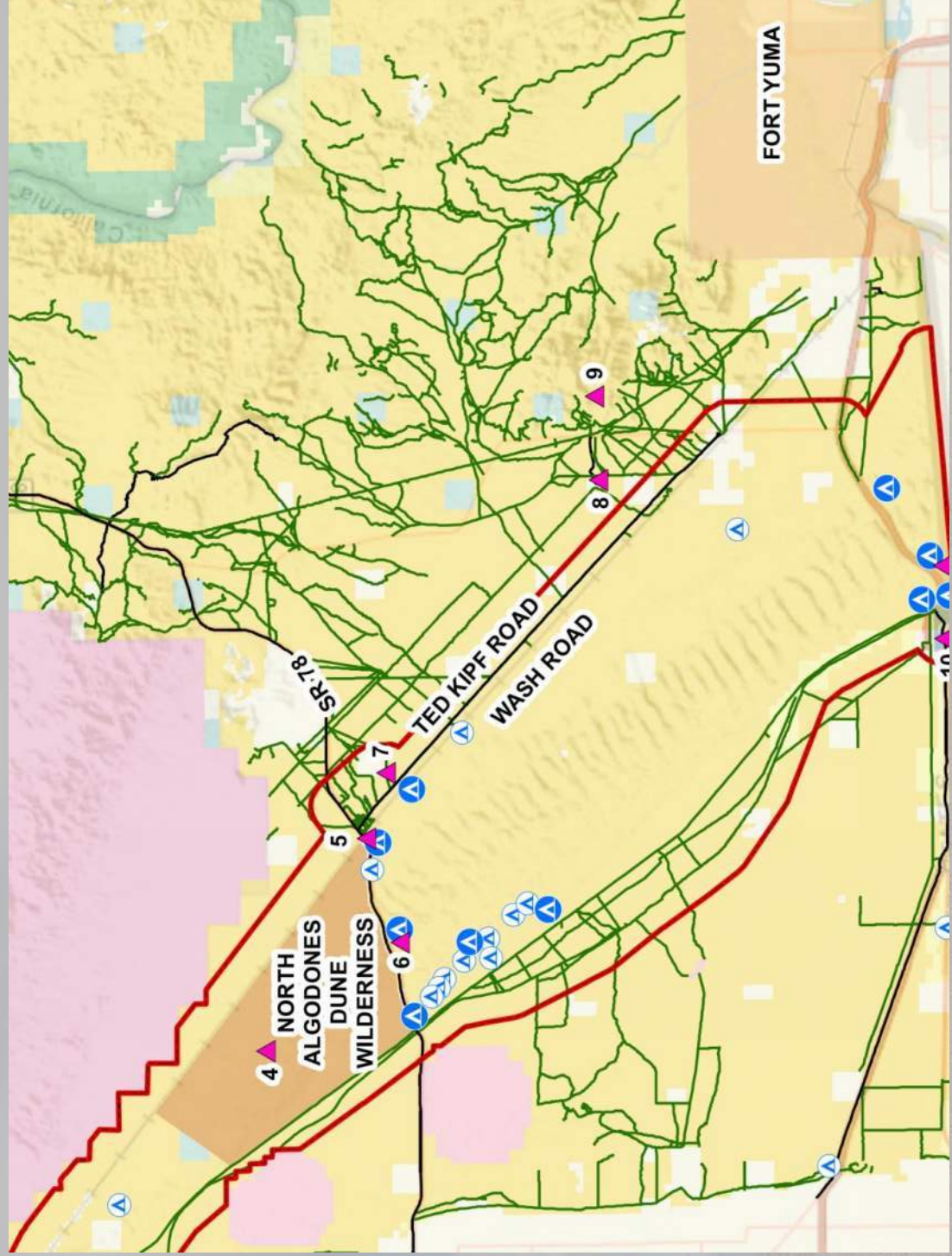


- Study is funded by State Planning and Research Funds
- Led by Imperial County Transportation Commission
- Key involvement from Technical Working Group

Study Area:



East Side Connections



Public Workshop #1 - On-Site Engagement Summary

January 18, 2020



Major Themes from Public Workshop

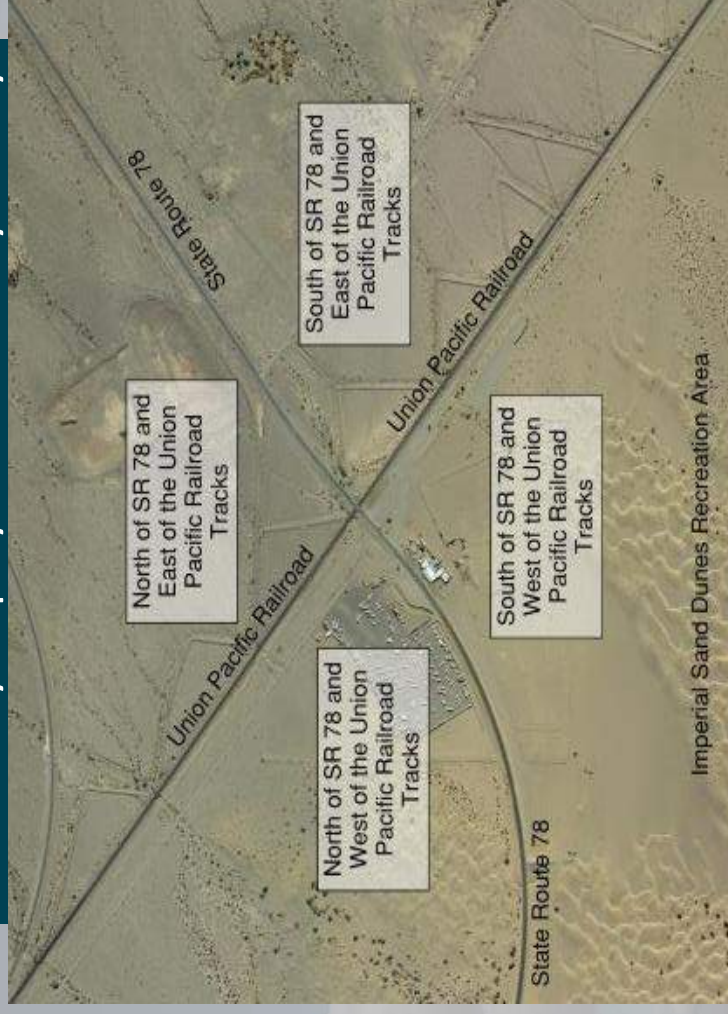
- There is a desire to cross the tracks for various reasons.
- A small crossing is sufficient.
- Participants thought Wash 10 would be a good place to cross.
- Safety is important.



Online Survey – January 2020

- 4,900 Respondents
- Topics included:
 - Use Frequency
 - Areas of Interest
 - Willingness to Pay

Where do you play? Where do you stay?

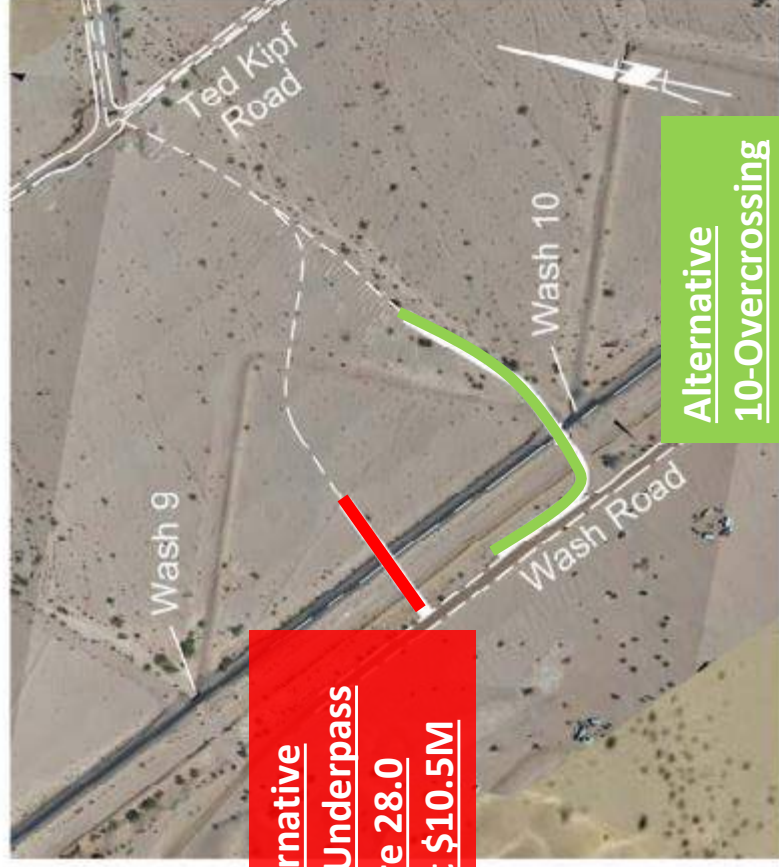


Alternatives Considered



Alternative
78-Overcrossing
Score 32.3
Cost \$34.5M

Alternative
78 Trail-Overcrossing
Score 34.6
Cost \$12M



Alternative
9.5-Underpass
Score 28.0
Cost \$10.5M

Alternative
10-Overcrossing
Score 32.9
Cost \$11.5M

GRADE SEPARATED CROSSING STRUCTURE TYPES

Over the Railroad

Roadway Concepts



Trail Concepts



Under the Railroad



Feasibility Study – Evaluation Process

1. Develop and Weight Criteria
2. Select Range of Feasible Alternatives
3. Score Alternatives using Criteria
4. Estimate Cost of Alternatives
5. Use Scoring and Cost to Select Most Feasible Alternative

Feasibility Study – Criteria

1. Connectivity
2. Traffic on Existing Roads (SR78, Ted Kipf, Wash Rd)
3. Rail Operations during Construction
4. Conflicts within Rail ROW
5. Conflicts with Private ROW
6. Maintenance and Operation efforts
7. Sensitive Resources
8. Aesthetics

Alternative 78Trail-Overcrossing



Alternative 78-O Overcrossing



Alternative 9.5-Underpass



Alternative 10-Overcrossing



Updated Scoring Summary

	Alternatives			
	78-O	78T-O	9.5-U	10-O
1. Connectivity	2	3	5	4
2. Traffic on Existing Roads	3	4	5	4
3. Rail Operations During Construction	4	5	3	5
4. Conflicts within Rail ROW	5	5	3	5
5. Conflicts with Private ROW	2	3	5	5
6. Maintenance and Operations Efforts	5	4	3	3
7. Sensitive Resources	4	4	3	2
8. Aesthetics	1	2	5	2
Weighted Performance Score	32.3	34.6	28.0	32.9

Alternatives Cost Summary

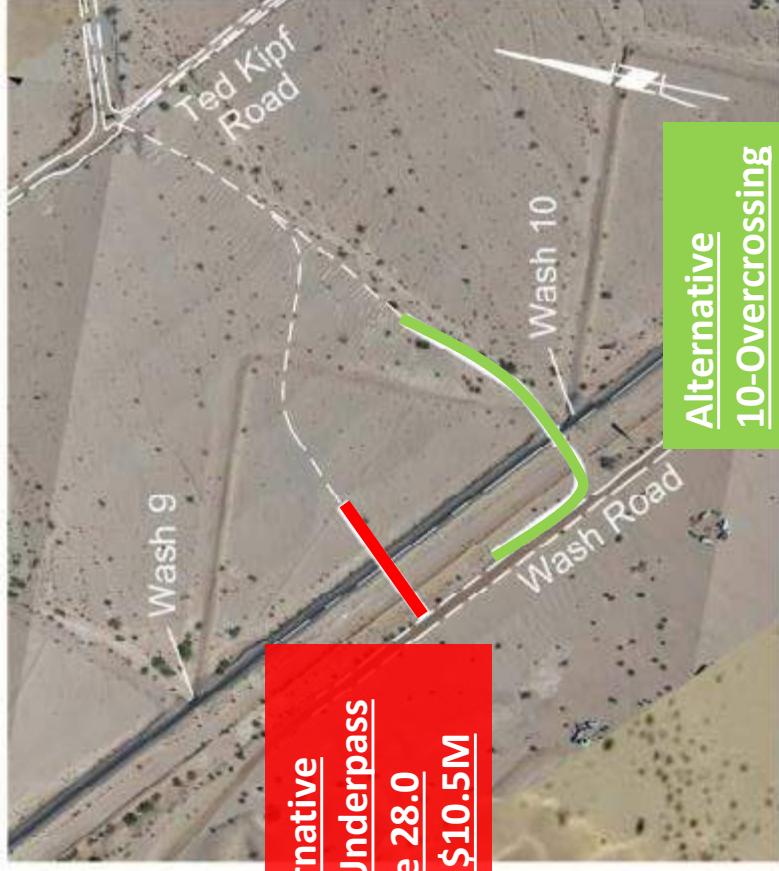
	Alternatives (O = Overcrossing, U = Underpass)			
	78-O	78T-O	9.5-U	10-O
Capital Cost	\$28M	\$9.7M	\$8.1M	\$9.3M
Support Cost	\$6.5M	\$2.3M	\$2.4M	\$2.2M
Project Cost	\$34.5M	\$12M	\$10.5M	\$11.5M

Alternatives Considered



Alternative
78-Overcrossing
Score 32.3
Cost \$34.5M

Alternative
78 Trail-Overcrossing
Score 34.6
Cost \$12M



Alternative
9.5-Underpass
Score 28.0
Cost \$10.5M

Alternative
10-Overcrossing
Score 32.9
Cost \$11.5M

Study Recommendations

- Alternative 78T-O is the most feasible
- Begin process to pursue funding opportunities
- Begin discussions on public agency ownership and construction of the proposed crossing

Ask Questions Now in Chatbox

Provide Comments Later at
the ICTC website:
[Imperialctc.org/sr-78-glamis-crossing/](https://imperialctc.org/sr-78-glamis-crossing/)

Comment period ends Nov. 9th

*Next Virtual Public Meeting:
October 24, 2020*

APPENDIX D

ONLINE SURVEY RESULTS

Online Survey Results

for the
For the SR-78 / Glamis Multiuse Grade Separated
Crossing Feasibility Study

Previous ISDRA Surveys

Previous surveys performed at the ISDRA include the following:

- 2017 Imperial Sand Dunes Recreation Area Visitor Survey. Prepared by Washington State University Social & Economic Sciences Research Center for the Bureau of Land Management, US Department of the Interior. Report No. IMSA17.
- 2011 Imperial Sand Dunes Recreation Area Visitor Survey. Prepared by the University of Idaho Park Studies Unit for the Bureau of Land Management, US Department of the Interior. Report No. IMSA311
- 2005 TRT Dune Users Survey
- 1998 Visitor Satisfaction Survey. Conducted by the California Department of Parks and Recreation.
- 1993 Imperial Sand Dunes Visitor Research Case Study. Report No. BLM/CA/ST-93-01 4-9560

The results of the past surveys were provided by the BLM and reviewed during the development of the User Survey for the Feasibility Study. In general, these studies focused on assessing visitor satisfaction and the quality of the recreational experience at the ISDRA.

SR-78 / Glamis Multiuse Grade Separated Crossing User Survey

An online OHV User Survey was administered as part of the Feasibility Study to better understand off-highway vehicle (OHV) recreation and user preferences in the vicinity of the Study Area. The objectives of the survey were to obtain information from users to guide the location and design of potential crossing structures and inform the overall purpose and need for the project. The survey examined visitation, the types of recreational vehicles used, key points of interest, patterns of recreation use, and willingness to pay for a new crossing structure.

Survey Methods

The survey was administered utilizing the online survey platform, Survey Gizmo, from January 1 through January 31, 2020. A unique URL address was created for online access. The online survey was secured using reCAPTCHA and restricted such that only one survey could be taken per IP address.

Public participation and outreach for the survey was coordinated with the Technical Working Group (TWG), American Sand Association, LANDS Imperial County, and other stakeholder organizations. Survey notifications were posted online using websites, online forums, and social media. An advertisement was also included in the S&S Off Road Magazine's January 2020 issue and printed flyers were posted at local businesses. In addition, cards with details on how to take the survey were distributed at Public Workshop No. 1.

Public outreach was performed with the assistance of stakeholders who have ties to the full range of Glamis users to publicize the project and involvement opportunities; however, it is acknowledged that an online survey format has some limitations. The intent of survey was to include as many Glamis users as possible to provide public input for the Feasibility Study rather than identifying and selecting a discrete representative sample of users to take the survey as required for a scientific research study.

Survey Results

While examining the results of the surveys, it is important to be aware that the survey included several types of questions:

- Closed-ended questions: Questions that had a discrete answer set from which to choose.
- Scaled questions: Closed-ended questions presented in a scale or range, such as 0-5 rating of not important; a little or somewhat important; very important; extremely important.
- Single or multiple response questions: Some questions allowed only a single response, while other questions allow respondents to give more than one response or choose all that apply.
- Open-ended questions: Questions in which no answer is presented to respondents; rather, a fill-in response with anything that comes to mind from the question. Open ended responses were included for several of the multiple response questions.

A summary of key survey results are discussed further below. A comprehensive survey report is included in Appendix A.

Survey Participation

9,938 viewers participated in the survey. Of those that viewed the survey, 4,021 respondents completed all survey questions and a total 918 respondents partially completed the survey by answering at least one question. The majority of the surveys were completed mobile devices.

Based on the origin of the IP addresses, more than half of the survey respondents were located in California at the time the survey was taken. Because the majority of the surveys were taken on mobile devices, the location where the survey was taken does not necessarily correlate to the place of residence. The following table presents the number of complete survey responses from a particular location.

Location	Number of Completed Survey Responses
CA	2,734
AZ	760
NV	69
TN	43
WA	28
CO	26
UT	26
TX	24
IL	20
NC	18
OR	18
OH	16
NM	13
NY	11
MO	10
MN	9
FL	8
GA	8
MI	8
OK	7
ID	6
NJ	6
KS	5
Other (USA) ¹ : IN; ON; SC; WI; AB; AK; HI; PA; VA; IA; MD; ND; NE; WY; AR; BC; D8; LA; MA; MB; MS; SD	40
Canada ¹ : ON; AB; BC; MB	9
Mexico	2
Australia	1
Unknown	96
Total	4,021

¹ Less than 5 responses from any one of these locations.

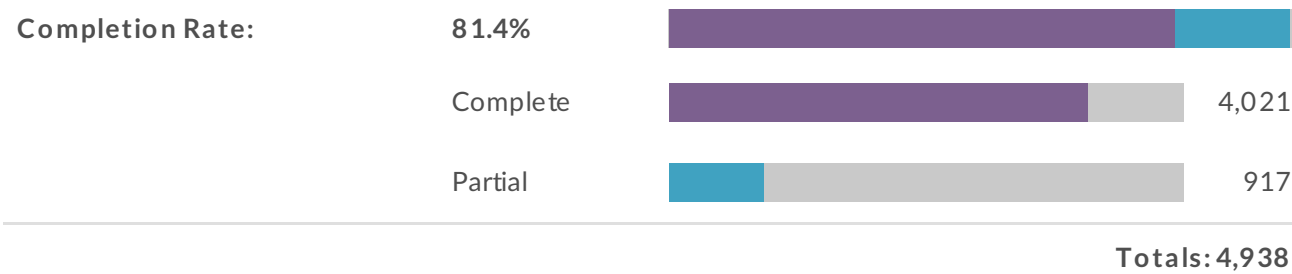
Further evaluation of the partial survey responses indicate that the majority of the respondents stopped the survey at Page 6 [When visiting in the Glamis region, how often do you stay overnight in the following areas?] or Page 7 [Please identify all of the areas of interest you visit with an OHV when recreating in the Glamis region and surrounding areas.] (See Appendix A). Partial survey responses were also provided from respondents located in the US, Canada, Australia, Mexico, Panama, and Costa Rica.

The subsequent pages contain the online survey results data.

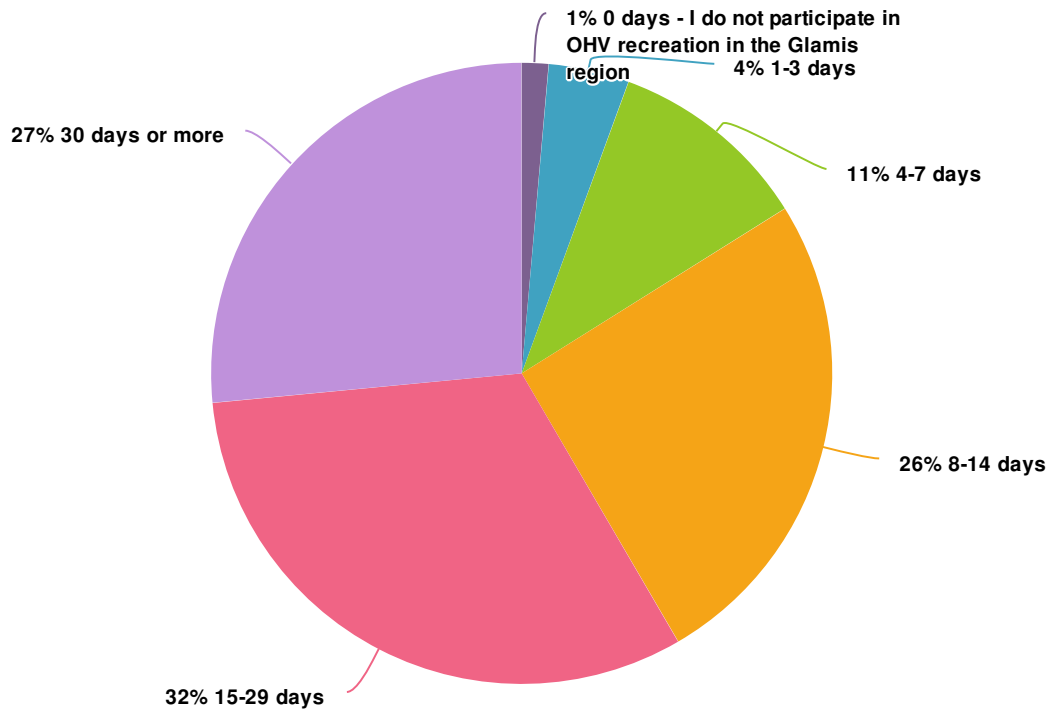
Survey Summary Data Report







Report for SR 78 / Glamis Multiuse Grade Separated Crossing User Survey

Response Counts



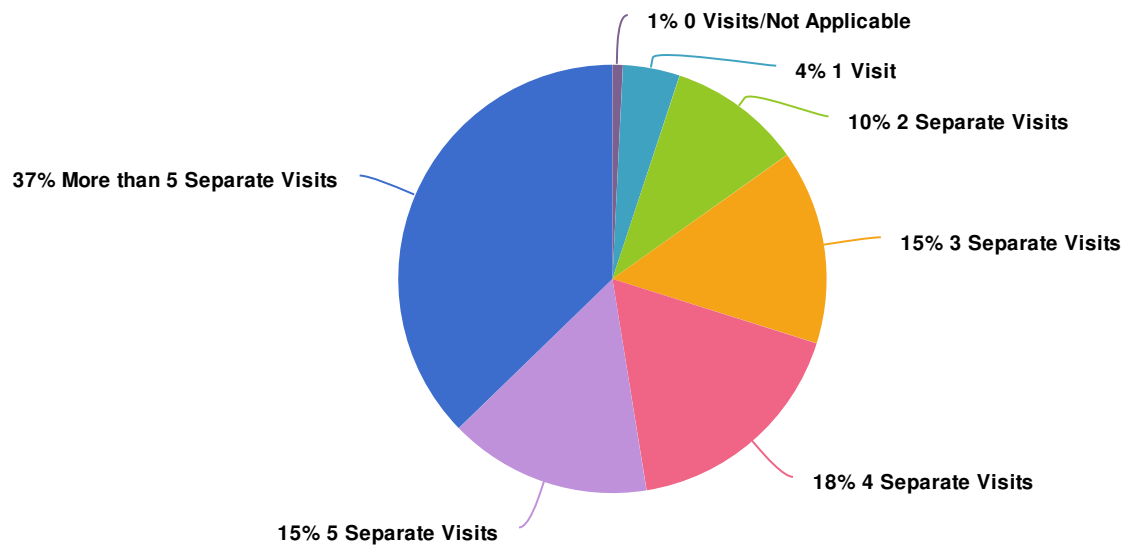
1. On average, how many days each year do you participate in OHV recreation, specifically in the Glamis region?



Value		Percent	Responses
0 days - I do not participate in OHV recreation in the Glamis region		1.4%	66
1-3 days		4.2%	203
4-7 days		10.5%	506
8-14 days		25.5%	1,231
15-29 days		31.9%	1,540
30 days or more		26.5%	1,281

Totals: 4,827

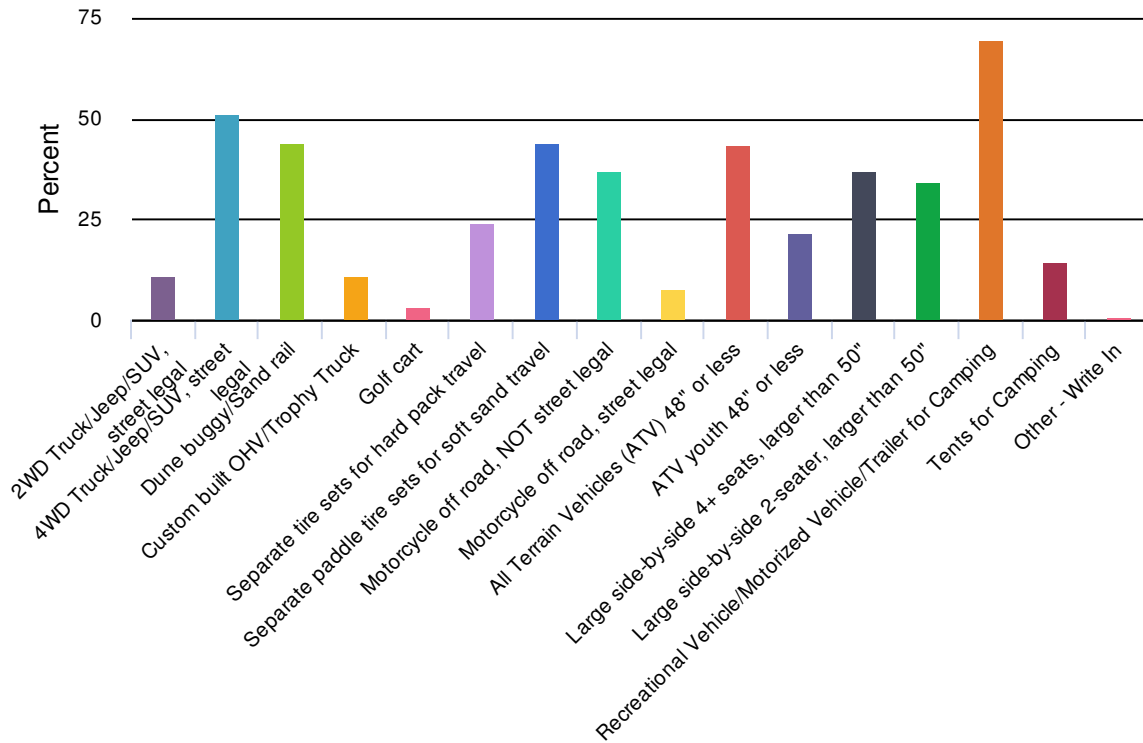
2. When visiting at the Imperial Sand Dunes Recreation Area, how many separate visits do you typically make in any given year?



Value		Percent	Responses
0 Visits/Not Applicable	<div><div></div></div>	0.8%	37
1 Visit	<div><div></div></div>	4.3%	207
2 Separate Visits	<div><div></div></div>	10.1%	484
3 Separate Visits	<div><div></div></div>	14.7%	703
4 Separate Visits	<div><div></div></div>	17.6%	842
5 Separate Visits	<div><div></div></div>	15.3%	732
More than 5 Separate Visits	<div><div></div></div>	37.3%	1,790

Totals: 4,795

3. Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply)



Value		Percent	Responses
2WD Truck/Jeep/SUV, street legal		11.3%	538
4WD Truck/Jeep/SUV, street legal		51.5%	2,442
Dune buggy/Sand rail		44.0%	2,088
Custom built OHV/Trophy Truck		10.9%	518
Golf cart		3.6%	171
Separate tire sets for hard pack travel		24.1%	1,141
Separate paddle tire sets for soft sand travel		43.8%	2,079
Motorcycle off road, NOT street legal		37.3%	1,767
Motorcycle off road, street legal		7.6%	360
All Terrain Vehicles (ATV) 48" or less		43.5%	2,062
ATV youth 48" or less		21.9%	1,038
Large side-by-side 4+ seats, larger than 50"		37.1%	1,758
Large side-by-side 2-seater, larger than 50"		34.5%	1,634
Recreational Vehicle/Motorized Vehicle/Trailer for Camping		69.8%	3,310
Tents for Camping		14.6%	691
Other - Write In		1.2%	56

Other - Write In	Count
Motorhome	5
Toy hauler	2
1 seat utv	1
2 quads	1
2 seater trail sxs 54"	1
Totals	50

Other - Write In	Count
3 wheeler	1
400cc quads and bigger	1
50 "utv	1
ATC	1
ATV 48" +	1
Drag atv	1
Electric bike	1
Fifth wheel for camping	1
Go with friends	1
Little confusing question not sure how big my OHV is	1
Magnetic broom	1
Mod kart	1
Motor home	1
Off road wheelchair	1
Quads	1
RV	1
Sand Jeep	1
Sand car	1
Sandcars	1
Semi	1
Sidexside, dirt bike, and quad and tent	1
TRX 450 crf 150r both non street legal	1
Toy hauler	1
Totals	50

Other - Write In	Count
Toyhauler	1
Trailer	1
Trailer for vehicles	1
UTV	1
UTV	1
Varies each time.	1
We live in Brawley so we go out for the day	1
What ever i can rent for the day	1
Wife	1
Yamaha 2 seats less than 50 "	1
atv greater than 48"	1
enclosed utility trailer	1
sand jeep, not street legal	1
toyhauler	1
trailer for off road vehicles	1
truck cab over camper	1
x2	1
Totals	50

4. Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

Percent

No data to display



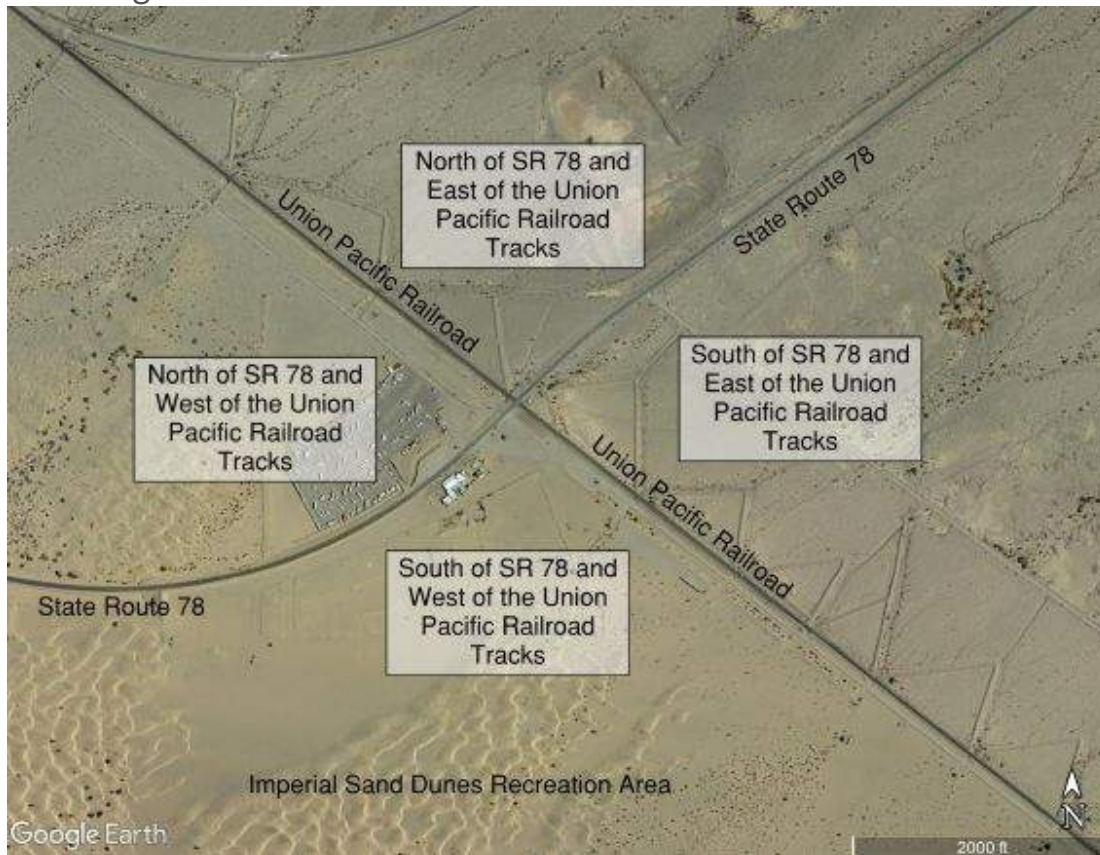
5. Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

Percent

No data to display



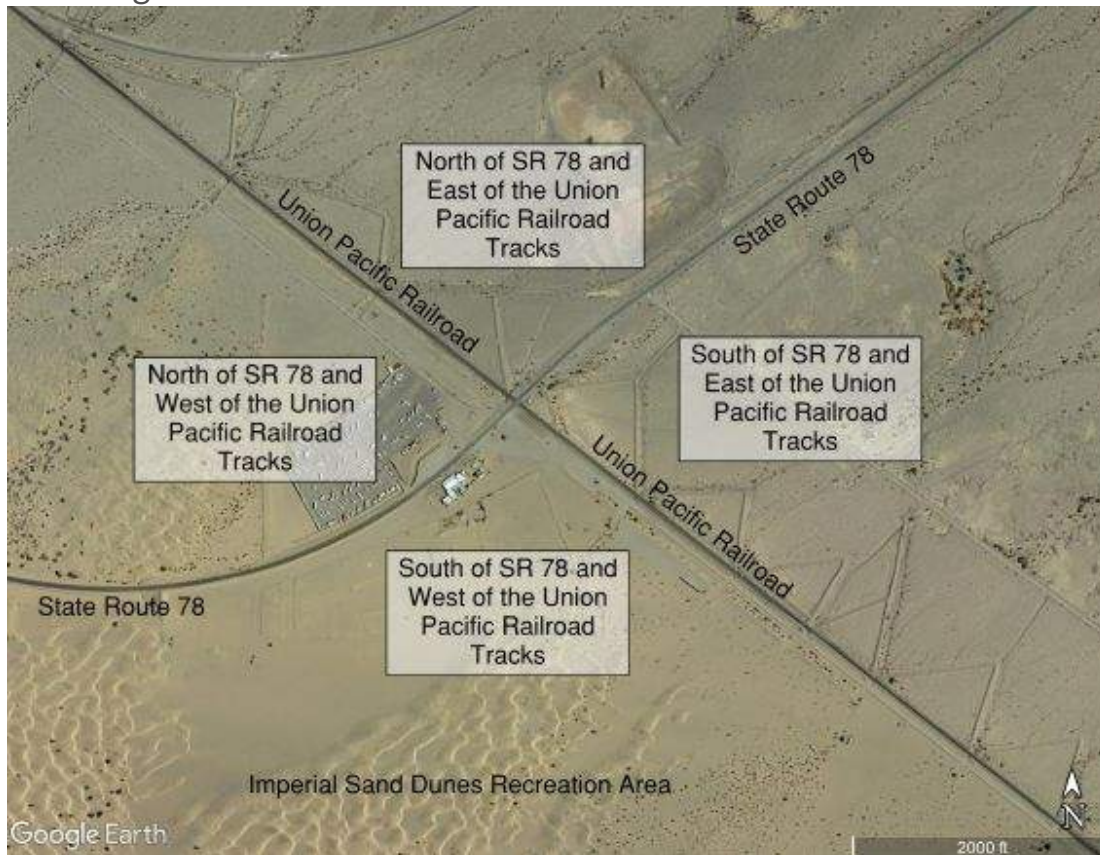
6. When riding in the Glamis region, how often do you operate an OHV in the following areas?



	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know	Responses
Imperial Sand Dunes Recreation Area - Fee Area Count Row %	3,138 70.3%	874 19.6%	289 6.5%	47 1.1%	29 0.7%	84 1.9%	4,461
Designated routes of travel South of SR 78 and East of the Union Pacific Railroad tracks Count Row %	1,139 25.8%	1,267 28.7%	1,017 23.0%	466 10.6%	360 8.2%	167 3.8%	4,416

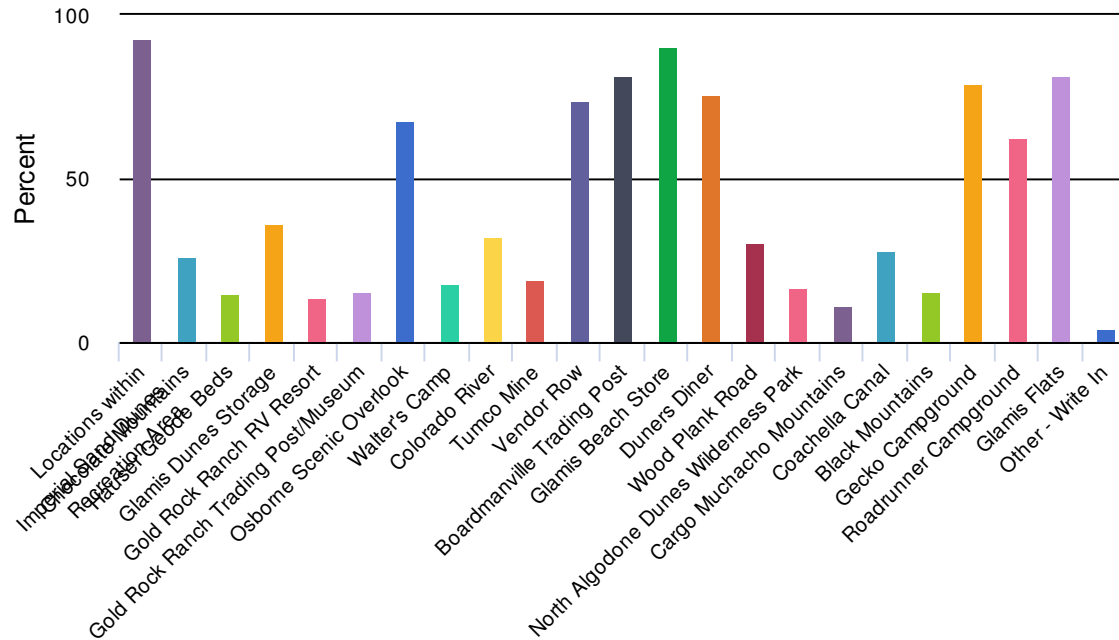
	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know	Responses
Designated routes of travel North of SR 78 and East of the Union Pacific Railroad tracks Count Row %	731 16.8%	957 22.0%	857 19.7%	680 15.6%	913 20.9%	220 5.0%	4,358
Designated routes of travel South of SR 78 and West of the Union Pacific Railroad tracks Count Row %	1,924 44.2%	1,200 27.6%	616 14.2%	225 5.2%	199 4.6%	188 4.3%	4,352
Designated routes of travel North of SR 78 and West of the Union Pacific Railroad tracks Count Row %	782 18.3%	910 21.3%	723 16.9%	662 15.5%	961 22.5%	234 5.5%	4,272
Washes along Ted Kipf Road Count Row %	1,408 32.6%	1,365 31.6%	832 19.2%	301 7.0%	163 3.8%	254 5.9%	4,323
Totals Total Responses							4461

7. When visiting in the Glamis region, how often do you stay overnight in the following areas?



	Always or Nearly Always	Often	Occasionally	Rarely	Never	Responses
Imperial Sand Dunes Recreation Area - Fee Area Count Row %	3,192 75.9%	651 15.5%	215 5.1%	87 2.1%	59 1.4%	4,204
Dispersed camping sites South of SR 78 and East of the Union Pacific Railroad tracks Count Row %	658 16.2%	679 16.7%	686 16.9%	811 20.0%	1,226 30.2%	4,060
Dispersed camping sites North of SR 78 and East of the Union Pacific Railroad tracks Count Row %	450 11.1%	575 14.2%	627 15.4%	741 18.3%	1,666 41.0%	4,059
Dispersed camping sites South of SR 78 and West of the Union Pacific Railroad tracks Count Row %	1,633 40.0%	860 21.1%	654 16.0%	408 10.0%	527 12.9%	4,082
Dispersed camping sites North of SR 78 and West of the Union Pacific Railroad tracks Count Row %	487 12.1%	598 14.9%	611 15.2%	705 17.5%	1,622 40.3%	4,023
Commercial lodging or hotel Count Row %	201 5.0%	176 4.3%	186 4.6%	424 10.5%	3,060 75.6%	4,047
Day Use only Count Row %	367 9.0%	325 8.0%	626 15.4%	1,004 24.7%	1,740 42.8%	4,062
Totals Total Responses						4204

8. Please identify all of the areas of interest you visit with an OHV when recreating in the Glamis region and surrounding areas. (Check all that apply)



Value		Percent	Responses
Locations within Imperial Sand Dunes Recreation Area		92.9%	3,866
Chocolate Mountains		25.9%	1,079
Hauser Geode Beds		15.0%	623
Glamis Dunes Storage		36.2%	1,505
Gold Rock Ranch RV Resort		13.5%	561
Gold Rock Ranch Trading Post/Museum		15.7%	653
Osborne Scenic Overlook		68.0%	2,831
Walter's Camp		18.0%	750
Colorado River		32.3%	1,346
Tumco Mine		19.1%	796
Vendor Row		73.7%	3,067
Boardmanville Trading Post		81.4%	3,387
Glamis Beach Store		90.5%	3,766
Duners Diner		75.4%	3,139
Wood Plank Road		30.2%	1,256
North Algodone Dunes Wilderness Park		16.4%	682
Cargo Muchacho Mountains		11.6%	483
Coachella Canal		28.2%	1,176
Black Mountains		15.3%	638
Gecko Campground		79.0%	3,287
Roadrunner Campground		62.7%	2,610
Glamis Flats		81.6%	3,397
Other - Write In		4.1%	170

Other - Write In	Count
Washes	6
Boardmanville	5
Mammoth Wash	3
Boardmanville	2
Glamis washes	2
Gordon's Well	2
washes	2
ran broadmanville for year uChuckntil he died. It was DEAD wrong what the BLM and railroad did to broadmanville. Pleaae make it right agian.	1
Any cool landmark in the dunes.	1
Anywhere else I end up	1
Bar	1
Boardmanvile	1
Boardmanville restaurant!!	1
Boardmanville via wash 10	1
Buttercup	1
Buttercup, Ogilby Rd, Midway, Gordon's Well	1
Camp rzzr	1
Canal road	1
Cargo Muchacho Mtns	1
Cement flats	1
China wall	1
China wall	1
Totals	139

Other - Write In	Count
China wall, comp hill , flag post, swing set	1
East of Whitlock Rd	1
Flag Pole on Veterans Day	1
Flag memorials	1
Flag pole, swing set, oldsmobile hill	1
Flag poles, swing set etc	1
Glamis Hill 5	1
Glamis North	1
Glamis as a whole	1
Glamis sand dunes	1
Glamis washes 2-22	1
Gordens Wells, Ogiby	1
Gordon's well	1
Gordon's well	1
Gordon's well, Buttercup	1
Gordon's well, buttercup	1
Gordons well	1
Hot Springs	1
Hot springs,	1
I don't visit glamis only wish I could and ride there with family and friends	1
I drive OTR, that's how i get to this beautiful place... i want to bring friends and family too enjoy this hole area!	1
I rarely use because I was told by rangers the area was closed to OHV. Got a ticket to prove it! I want access and my money back for the ticket. Hate the Rangers there jerks.	1
Totals	139

Other - Write In	Count
I think question 4 is confusing to the areas but I use to camp on the hardpack side of the tracks before UPRR closed access for us to ride to the dunes. So I use to camp and would camp more often on the other side of the tracks and use the trails if there was access. It's frustrating	1
I want access	1
I want access everywhere	1
I want access without breaking and laws or rules.	1
I want safe access everywhere	1
I want to see everything	1
I was not aware the north of 78, west of the RR tracks was open for recreational use.	1
I would go to Boardmansville more often. Now I can only drive my motorhome over there. I used to go under wash 10 until it was closed for no apparent reason except change of ownership of the railroad. This has cost Glamis and California millions to build a new road and drove a small business bankrupt for why?	1
I would like access to visit the areas on the other side of the train tracks.	1
I would like to explore other areas	1
I would like to have ohv access to ride east of the railroad and south of 78	1
I would ride and camp on east side of tracks but I was told by BLM it was illegal	1
I would visit these other places more often if access was easier	1
If access to the east side was easier would would visit those area every single trip	1
Indian Pass, Midway Wells, Malpitas Wash	1
Indian Pass.	1
It would be nice to be able to get out to the Colorado River for the longer trips we take!	1
Julian Wash / Indian Pass	1
Mammoth wash	1
Mammoth wash	1
Totals	139

Other - Write In	Count
Mammoth wash north	1
Ogilby	1
Ogilby/Sidewinder road camp.	1
Ogilby Road	1
Oglby	1
Olds	1
Olds hill china wall swing set flag pole	1
Oldsmobile	1
Oldsmobile hill	1
Olgeby	1
Olgiby	1
Pad 4	1
Patten Valley	1
Superstition	1
Swing set and the flag pole	1
Swing set, teter totter	1
Swing set, flag pole, Oldsmobile hill, China wall,	1
The Oasis west of Glamis Campground	1
Vinagree Wash	1
Want safe access to all public lands from camping areas.	1
Wash 10	1
Wash 10,11,12,13,14	1
Wash 13	1
Totals	139

Other - Write In	Count
Wash 15 to wash 32	1
Wash 21	1
Wash 6	1
Wash 6 through 12	1
Wash 8-10	1
Wash 9 and 10	1
Wash Road	1
Wash road	1
Wash road and washes thru 22	1
Washes	1
Washes - typically camp 4, 10, or 12	1
Washes 10 to 21 camping	1
Washes 6 - 17	1
Washes/wash rd	1
We camp in wash 6	1
We camp at wash 7	1
We don't often go outside of the dune area as there is no safe legal access to the other side of the rail road tracks any longer.	1
We want access back	1
We would go to boardmanville once per trip to if we could cross the tracks	1
West of gecko rd	1
West of the old canal. Hot springs beyond the bombing range.	1
Would like to visit boardmanville but unable to legally do so	1
Totals	139

Other - Write In	Count
Would love to explore more than what I already have	1
Would really like to stay and visit these areas. The problem is the Railroad cut off access and I can't camp east of the tracks and can't use public services. Please get us access so we can enjoy our lands!	1
Would travel a lot more if there was safe legal routes without being worried I was going to get a ticket or harassed by BLM	1
Would use everything if there is access.	1
Would visit everything if there was access!!!	1
being able to have access to Ted Keff rd Ted Kiff RD	1
bradshaw trail, general pattons museum. palo verde.	1
cement flats on Gecko Rd.	1
dune buggy flats	1
midway	1
ogilby	1
only those we can reach by OHV bc BLM won't let us cross the tracks	1
wash road camping	1
wash's 22-23	1
washs	1
Totals	139

9. Please identify all of the areas of interest you visit with an OHV when recreating in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

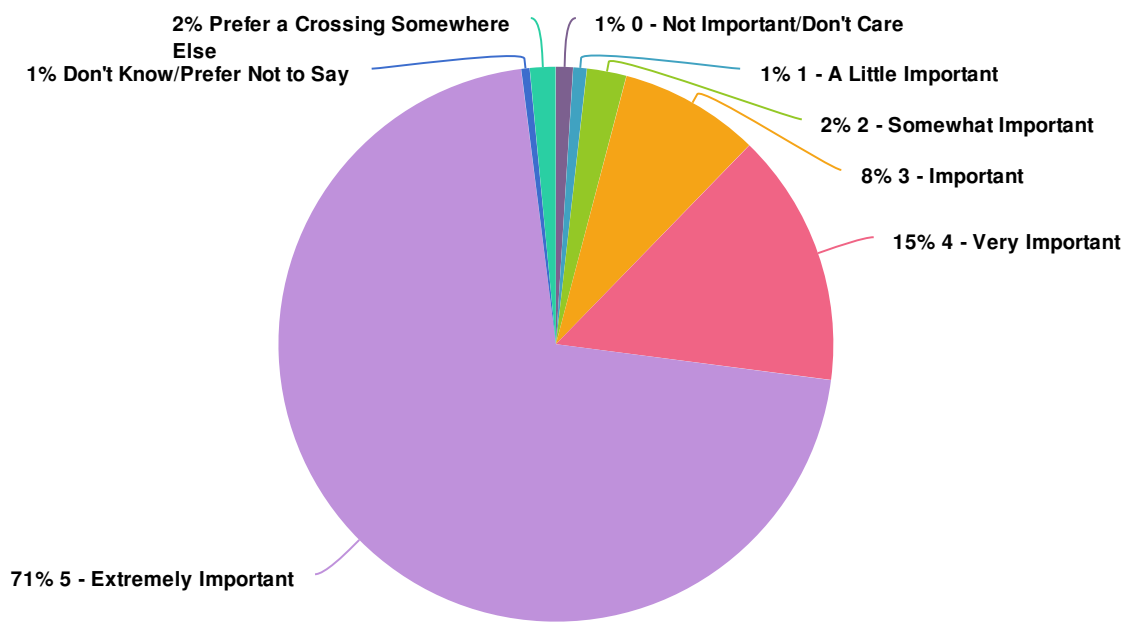
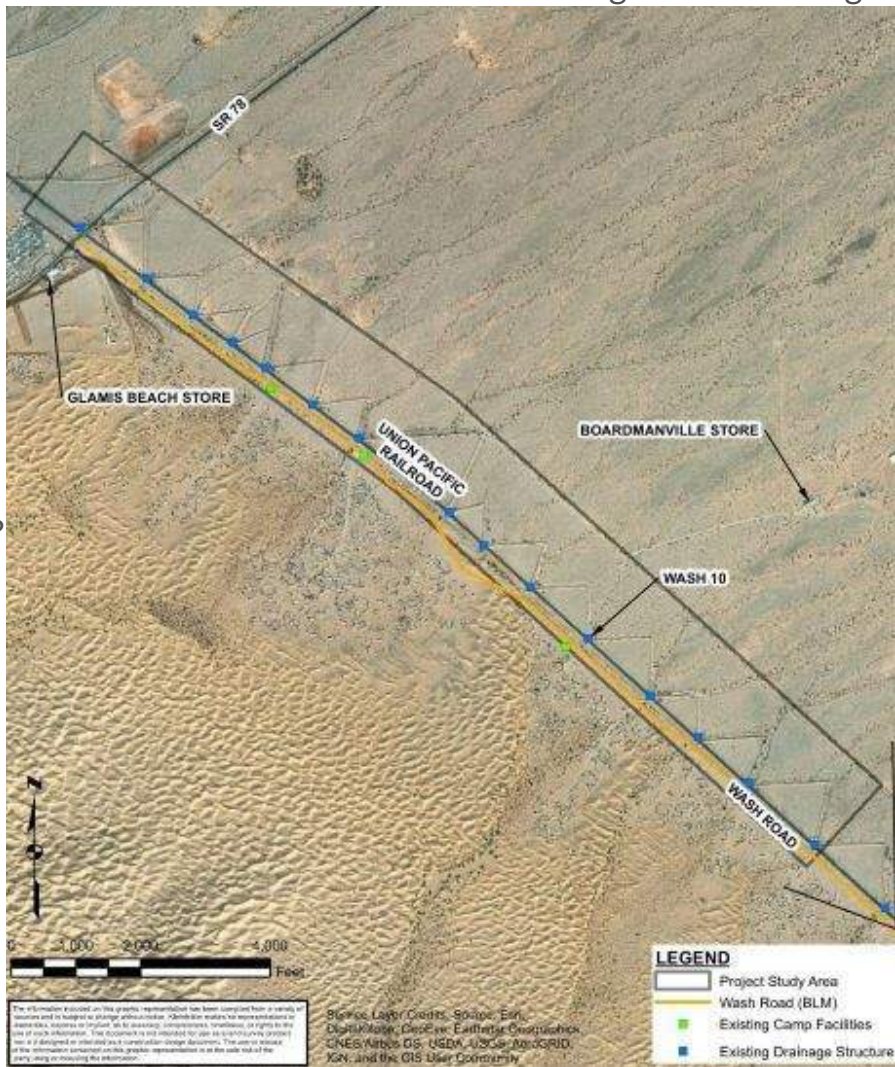
Percent









No data to display



10. On a scale of 0 to 5, how important is it to you that an OHV crossing of the tracks be constructed in the area of the existing SR 78 crossing as shown in the

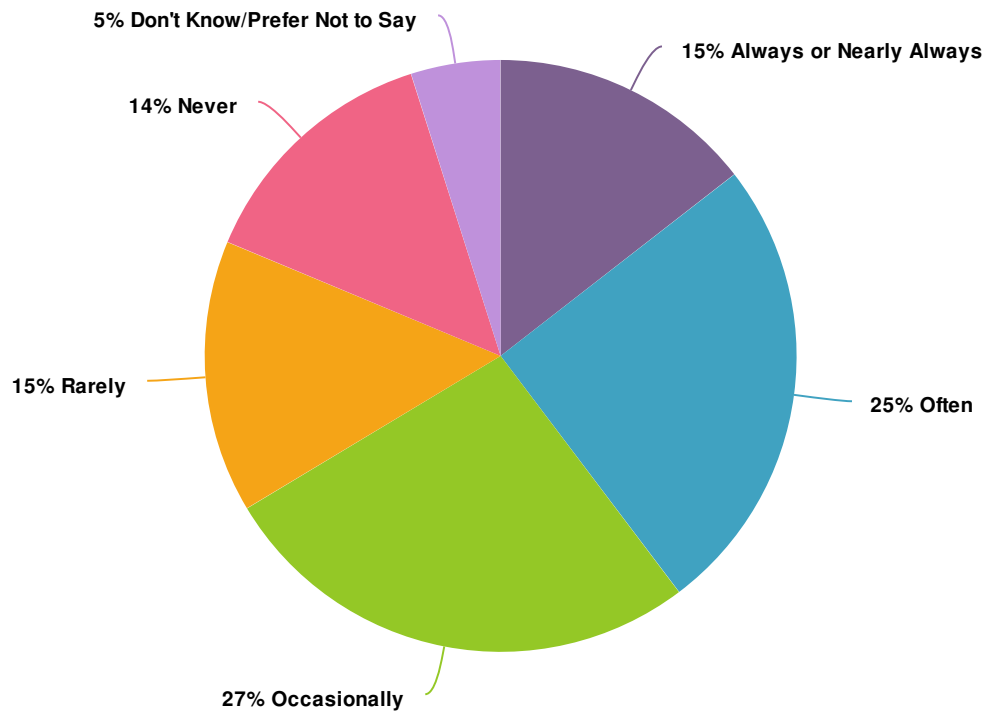
Figure?



Value		Percent	Responses
0 - Not Important/Don't Care		1.0%	42
1 - A Little Important		0.8%	35
2 - Somewhat Important		2.3%	93
3 - Important		8.2%	337
4 - Very Important		14.8%	608
5 - Extremely Important		71.0%	2,927
Don't Know/Prefer Not to Say		0.5%	19
Prefer a Crossing Somewhere Else		1.5%	60

Totals: 4,121

11. Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?

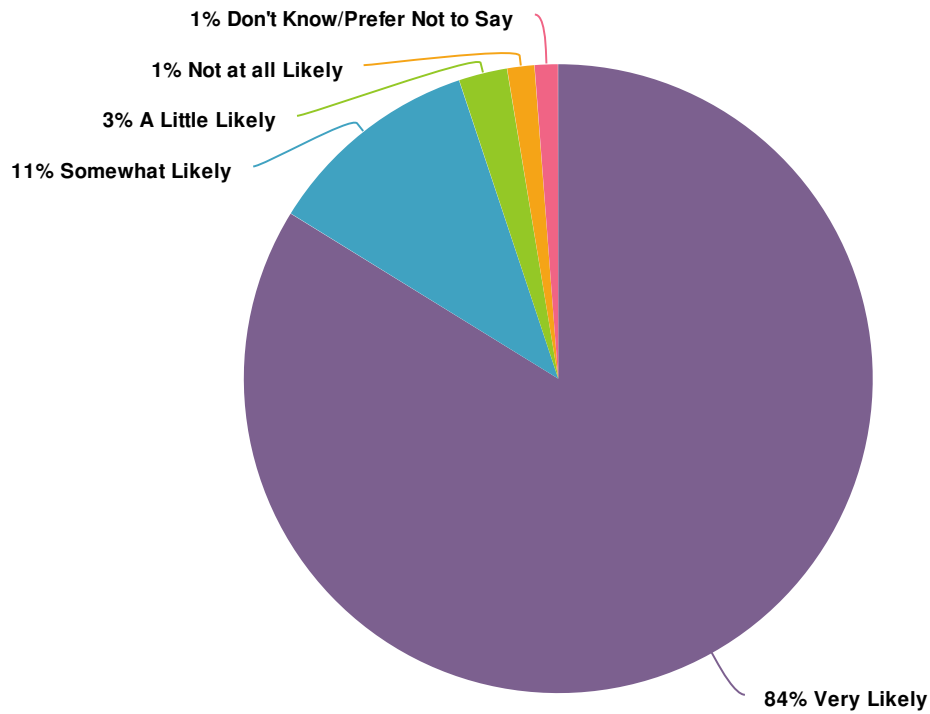


Value		Percent	Responses
Always or Nearly Always	<div><div></div></div>	14.5%	594
Often	<div><div></div></div>	25.2%	1,033
Occasionally	<div><div></div></div>	26.7%	1,095
Rarely	<div><div></div></div>	14.9%	609
Never	<div><div></div></div>	13.8%	563
Don't Know/Prefer Not to Say	<div><div></div></div>	4.9%	200

Totals: 4,094

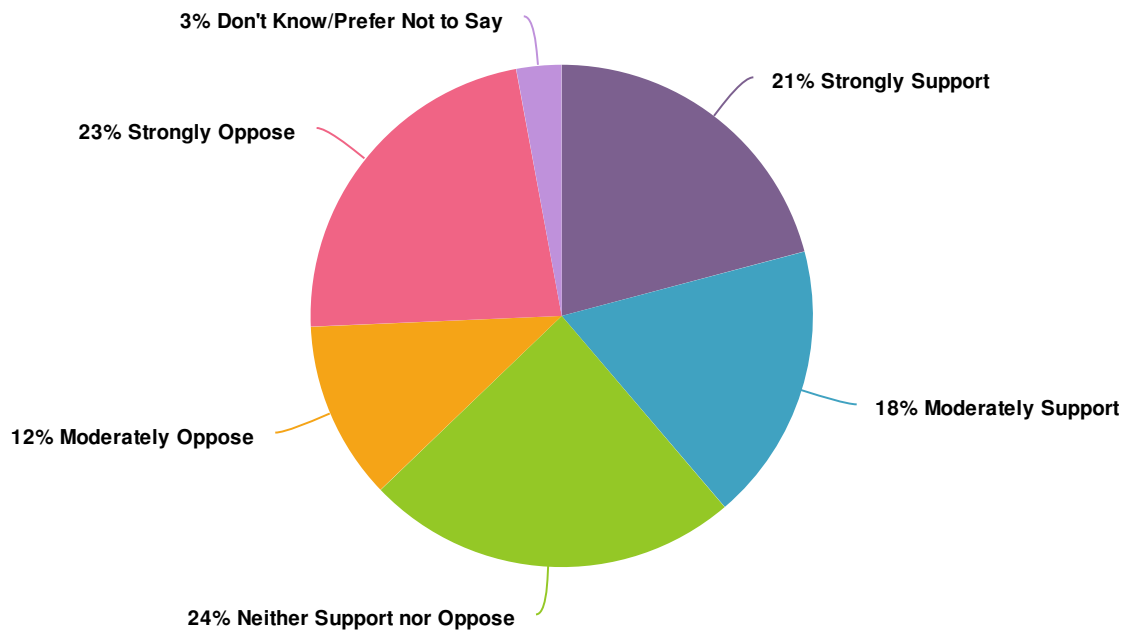
12. How likely would you operate OHVs on the designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Imperial Sand Dunes Recreation Area if a new safe OHV crossing was constructed?











Value		Percent	Responses
Very Likely	<div><div></div></div>	83.8%	3,407
Somewhat Likely	<div><div></div></div>	11.1%	452
A Little Likely	<div><div></div></div>	2.5%	101
Not at all Likely	<div><div></div></div>	1.4%	56
Don't Know/Prefer Not to Say	<div><div></div></div>	1.2%	49
Totals: 4,065			

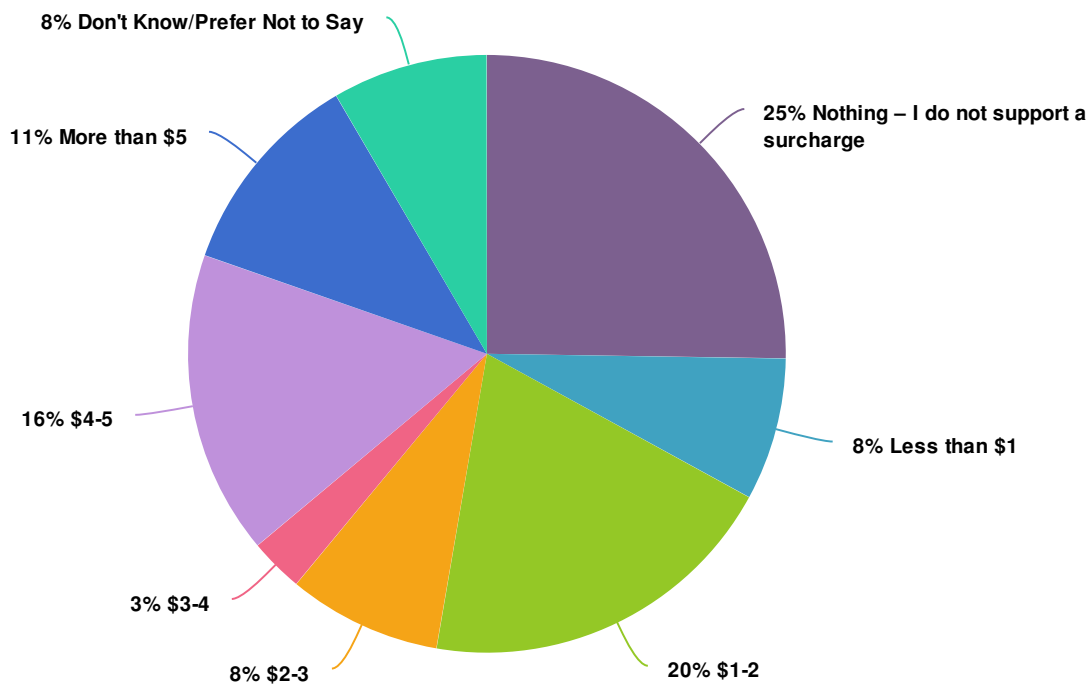
13. How supportive would you be to paying a surcharge (such as a crossing toll fee) in order to construct, operate and maintain a new safe OHV crossing?











Value		Percent	Responses
Strongly Support		20.9%	848
Moderately Support		17.9%	725
Neither Support nor Oppose		24.1%	975
Moderately Oppose		11.5%	464
Strongly Oppose		22.8%	924
Don't Know/Prefer Not to Say		2.9%	116

Totals: 4,052

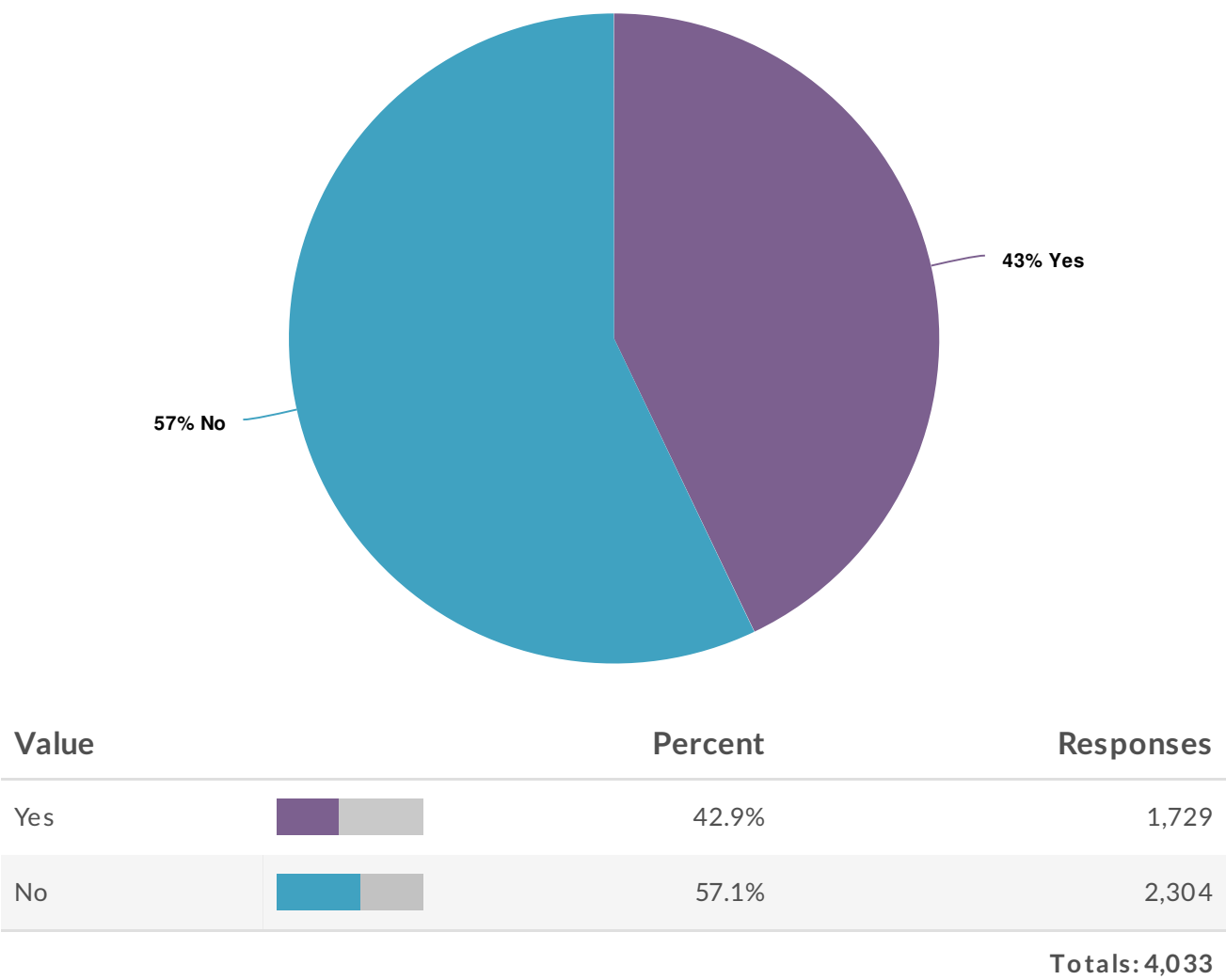
14. How much more would you be willing to pay per visit on an annual basis to have a new safe OHV crossing?



Value		Percent	Responses
Nothing – I do not support a surcharge		25.2%	1,020
Less than \$1		7.7%	313
\$1-2		19.7%	797
\$2-3		8.3%	336
\$3-4		2.9%	117
\$4-5		16.4%	664
More than \$5		11.2%	453
Don't Know/Prefer Not to Say		8.4%	341

Totals: 4,041

15. Would you like to receive project updates and announcements about future public involvement opportunities?



Comparison Report

Raw Export Data

New Comparison Report - 11 March 2020

On average, how many days each year do you participate in OHV recreation, specifically in the Glamis region?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	0 days - I do not participate in OHV recreation in the Glamis region	1-3 days	4-7 days	8-14 days	15-29 days	30 days or more
Always or Nearly Always	2	15	40	121	162	245
Often	7	36	98	282	303	280
Occasionally	4	46	126	274	384	242
Rarely	4	15	53	153	224	156
Never	3	4	54	150	225	123
Don't Know/Prefer Not to Say	5	8	18	41	71	46
Totals	25	124	389	1021	1369	1092

When visiting at the Imperial Sand Dunes Recreation Area, how many separate visits do you typically make in any given year?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	0 Visits/Not Applicable	1 Visit	2 Separate Visits	3 Separate Visits	4 Separate Visits	5 Separate Visits	More than 5 Separate Visits
Always or Nearly Always	2	18	43	70	92	69	291
Often	2	29	98	146	188	146	397
Occasionally	3	49	122	173	182	185	362
Rarely	1	18	61	85	110	116	214
Never	3	21	45	75	118	93	204
Don't Know/Prefer Not to Say	4	12	20	24	33	28	69
Totals	15	147	389	573	723	637	1537

Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply)

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	2WD Truck/Jeep/SUV, street legal	4WD Truck/Jeep/SUV, street legal	Sport utility vehicles, street legal	Dune buggy/Sand rail, NOT street legal	Dune buggy/Sand rail	Custom built OHV/Trophy Truck	Golf cart	Separate tire sets for hard pack travel	Separate tire sets for sand travel
Always or Nearly Always	80	316	0	0	319	107	41	183	26
Often	131	595	0	0	459	130	46	278	45
Occasionally	103	560	0	0	456	97	30	282	48
Rarely	63	296	0	0	254	44	9	148	29
Never	39	234	0	0	240	29	8	108	25
Don't Know/Prefer Not to Say	17	80	0	0	79	15	8	28	72
Totals	433	2081	0	0	1807	422	142	1027	188

Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?
Always or Nearly Always
Often
Occasionally
Rarely
Never
Don't Know/Prefer Not to Say
Totals

Please identify all of the types of OHVs and equipment you bring, specifically for riding in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?
Always or Nearly Always
Often
Occasionally
Rarely
Never
Don't Know/Prefer Not to Say
Totals

When riding in the Glamis region, how often do you operate an OHV in the following areas?:Imperial Sand Dunes Recreation Area - Fee Area

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	483	74	13	3	2	3
Often	639	307	46	5	1	4
Occasionally	702	225	114	12	3	16
Rarely	482	78	25	7	1	9
Never	468	49	20	3	7	9
Don't Know/Prefer Not to Say	131	25	5	6	6	16
Totals	2905	758	223	36	20	57

When riding in the Glamis region, how often do you operate an OHV in the following areas?:Designated routes of travel South of SR 78 and East of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	363	140	46	13	8	7
Often	271	520	162	22	8	13
Occasionally	169	305	464	82	21	21
Rarely	91	98	165	185	41	16
Never	82	47	58	93	237	22
Don't Know/Prefer Not to Say	33	23	32	28	18	50
Totals	1009	1133	927	423	333	129

When riding in the Glamis region, how often do you operate an OHV in the following areas?: Designated routes of travel North of SR 78 and East of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	281	117	55	60	41	18
Often	179	404	197	122	55	23
Occasionally	91	210	360	191	159	36
Rarely	35	64	97	172	198	21
Never	31	25	40	63	353	22
Don't Know/Prefer Not to Say	14	30	21	21	39	59
Totals	631	850	770	629	845	179

When riding in the Glamis region, how often do you operate an OHV in the following areas?: Designated routes of travel South of SR 78 and West of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	378	124	32	12	14	7
Often	360	448	103	37	18	14
Occasionally	370	296	269	62	24	27
Rarely	289	118	73	53	31	25
Never	317	69	37	29	74	21
Don't Know/Prefer Not to Say	58	24	22	14	11	55
Totals	1772	1079	536	207	172	149

When riding in the Glamis region, how often do you operate an OHV in the following areas?:Designated routes of travel North of SR 78 and West of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	262	96	52	59	62	18
Often	190	375	163	124	89	23
Occasionally	106	211	291	187	194	46
Rarely	50	67	82	155	208	23
Never	55	33	38	64	321	23
Don't Know/Prefer Not to Say	21	21	21	23	34	56
Totals	684	803	647	612	908	189

When riding in the Glamis region, how often do you operate an OHV in the following areas?:Washes along Ted Kipf Road

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never	Don't Know
Always or Nearly Always	375	129	35	9	5	13
Often	313	473	129	30	4	22
Occasionally	251	321	335	79	15	45
Rarely	151	174	121	89	22	36
Never	160	111	91	45	94	45
Don't Know/Prefer Not to Say	40	34	30	20	7	49
Totals	1290	1242	741	272	147	210

When visiting in the Glamis region, how often do you stay overnight in the following areas?:Imperial Sand Dunes Recreation Area - Fee Area

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	481	61	17	11	6
Often	649	264	52	17	11
Occasionally	776	175	87	23	6
Rarely	512	50	17	11	10
Never	510	23	6	4	12
Don't Know/Prefer Not to Say	139	26	10	7	7
Totals	3067	599	189	73	52

When visiting in the Glamis region, how often do you stay overnight in the following areas?:Dispersed camping sites South of SR 78 and East of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	258	108	80	56	61
Often	150	311	205	185	112
Occasionally	114	140	260	278	244
Rarely	29	33	60	170	292
Never	44	18	19	54	393
Don't Know/Prefer Not to Say	23	14	22	33	83
Totals	618	624	646	776	1185

When visiting in the Glamis region, how often do you stay overnight in the following areas?: Dispersed camping sites North of SR 78 and East of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	201	89	69	75	121
Often	103	284	193	169	214
Occasionally	53	100	246	250	388
Rarely	15	23	48	141	358
Never	24	11	11	43	439
Don't Know/Prefer Not to Say	21	16	25	25	90
Totals	417	523	592	703	1610

When visiting in the Glamis region, how often do you stay overnight in the following areas?: Dispersed camping sites South of SR 78 and West of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	310	110	67	38	38
Often	269	363	177	95	65
Occasionally	339	202	251	131	112
Rarely	270	72	71	73	108
Never	319	38	23	30	127
Don't Know/Prefer Not to Say	56	22	30	21	48
Totals	1563	807	619	388	498

When visiting in the Glamis region, how often do you stay overnight in the following areas?:Dispersed camping sites North of SR 78 and West of the Union Pacific Railroad tracks

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	198	96	68	73	121
Often	98	292	174	176	217
Occasionally	67	102	247	226	378
Rarely	31	32	51	123	348
Never	37	17	11	45	417
Don't Know/Prefer Not to Say	19	13	24	28	89
Totals	450	552	575	671	1570

When visiting in the Glamis region, how often do you stay overnight in the following areas?:Commercial lodging or hotel

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	99	26	19	59	351
Often	45	80	48	130	657
Occasionally	18	32	68	130	784
Rarely	6	13	17	48	502
Never	5	5	6	18	495
Don't Know/Prefer Not to Say	6	4	5	20	144
Totals	179	160	163	405	2933

When visiting in the Glamis region, how often do you stay overnight in the following areas?:Day Use only

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Always or Nearly Always	Often	Occasionally	Rarely	Never
Always or Nearly Always	133	58	64	112	193
Often	69	124	162	239	361
Occasionally	59	68	207	301	402
Rarely	34	25	87	172	271
Never	34	10	39	104	346
Don't Know/Prefer Not to Say	11	7	30	33	98
Totals	340	292	589	961	1671

Please identify all of the areas of interest you visit with an OHV when recreating in the Glamis region and surrounding areas. (Check all that apply)

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Locations within Imperial Sand Dunes Recreation Area	Chocolate Mountains	Hauser Geode Beds	Glamis Dunes Storage	Gold Rock Ranch RV Resort	Gold Rock Ranch Trading Post/Museum	Osborne Scenic Overlook	Walter's Camp	Colorado River	Tumco Mine
Always or Nearly Always	553	242	161	281	161	165	404	185	273	195
Often	934	336	206	415	190	218	677	234	421	275
Occasionally	986	270	136	377	117	154	727	187	366	183
Rarely	569	96	42	197	33	46	431	62	119	49
Never	529	64	38	137	30	36	407	37	81	45
Don't Know/Prefer Not to Say	171	27	16	55	14	12	122	21	35	21
Totals	3742	1035	599	1462	545	631	2768	726	1295	768

Please identify all of the areas of interest you visit with an OHV when recreating in the Glamis region and surrounding areas. (Check all that apply) - Text Analysis

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?
Always or Nearly Always
Often
Occasionally
Rarely
Never
Don't Know/Prefer Not to Say
Totals

On a scale of 0 to 5, how important is it to you that an OHV crossing of the tracks be constructed in the area of the existing SR 78 crossing as shown in the Figure?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	0 - Not Important/Don't Care	1 - A Little Important	2 - Somewhat Important	3 - Important	4 - Very Important	5 - Extremely Important	Don't Know/Prefer Not to Say	Prefer a Crossing Somewhere Else
Always or Nearly Always	4	2	2	20	21	524	3	9
Often	9	6	6	41	142	783	3	16
Occasionally	6	5	33	132	204	680	5	11
Rarely	2	11	21	67	111	385	1	7
Never	16	8	18	41	86	378	0	12
Don't Know/Prefer Not to Say	4	0	7	16	24	131	5	3
Totals	41	32	87	317	588	2881	17	58

How likely would you operate OHVs on the designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Imperial Sand Dunes Recreation Area if a new safe OHV crossing was constructed?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Very Likely	Somewhat Likely	A Little Likely	Not at all Likely	Don't Know/Prefer Not to Say
Always or Nearly Always	544	20	4	10	7
Often	878	96	11	10	11
Occasionally	828	191	41	6	10
Rarely	501	79	18	5	2
Never	485	36	16	21	1
Don't Know/Prefer Not to Say	146	19	7	2	16
Totals	3382	441	97	54	47

How supportive would you be to paying a surcharge (such as a crossing toll fee) in order to construct, operate and maintain a new safe OHV crossing?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Strongly Support	Moderately Support	Neither Support nor Oppose	Moderately Oppose	Strongly Oppose	Don't Know/Prefer Not to Say
Always or Nearly Always	187	75	111	43	153	16
Often	225	199	226	120	215	21
Occasionally	172	203	276	144	251	30
Rarely	108	117	161	79	125	15
Never	112	96	131	68	134	18
Don't Know/Prefer Not to Say	37	29	61	9	41	13
Totals	841	719	966	463	919	113

How much more would you be willing to pay per visit on an annual basis to have a new safe OHV crossing?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Nothing – I do not support a surcharge	Less than \$1	\$1-2	\$2-3	\$3-4	\$4-5	More than \$5	Don't Know/Prefer Not to Say
Always or Nearly Always	163	36	99	37	13	91	107	39
Often	233	95	197	99	30	156	111	85
Occasionally	278	85	243	84	34	172	100	79
Rarely	141	40	133	50	20	111	55	55
Never	152	44	89	44	12	101	63	54
Don't Know/Prefer Not to Say	49	12	32	18	7	31	16	25
Totals	1016	312	793	332	116	662	452	337

Would you like to receive project updates and announcements about future public involvement opportunities?

Currently, how often do you operate OHVs on designated routes of travel East of the Union Pacific Railroad tracks during a visit to the Glamis area?	Yes	No
Always or Nearly Always	279	306
Often	432	574
Occasionally	421	655
Rarely	268	337
Never	251	308
Don't Know/Prefer Not to Say	66	124
Totals	1717	2304

APPENDIX E

PAIRED-COMPARISON CRITERIA WEIGHTING INFORMATION

Paired Comparison

The paired comparison process is an established method of determining a weighted value for different criteria to be used on a project. This process involves comparing each pair of criteria and selecting the more important between the two. Each criterion is assigned a number (1 through 8 for the Crossing Alternatives) and given a row in the stepped table. Then, moving across each row, the criterion in the row are compared to the criterion in each column of the table one at a time. The criterion deemed more important between the two is selected and the number of that criteria placed in the cell.

For example in the first row, criterion 1 – *Connectivity* is compared first against criterion 2 - *Traffic on Existing Roads*. In the selected weighting, 1- *Connectivity* is deemed more important to the project performance, so in the table where the row and column of the criteria compared intersect a 1 is placed. Once all the criteria are compared, the tally of occurrences of each criterion' designation number (1-8) are added into the tally column. The weighted percentages for the criteria are then calculated based on each criterion's tally divided by the sum of all the tallies. This process makes is possible for a low ranking criterion that is not more important than any of the other criterion to have a weight percentage of 0. This occurs for the 8-*Aesthetics* criterion in the comparison.

A Paired Comparison worksheet was provided to members of the Technical Working Group of the project and one was also completed by the Consultant Team. The paired comparison worksheets are provided in this Appendix as is a summary of the weighting selected and the different weighting percentages based on each provided paired comparison worksheet.

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: All



		Selected	Alternate	Consultant Team	UPRR	Caltrans	L. Ricotta	ICTC	ASA
Weighted Criteria									
1	1) Connectivity	11%	14%	7%	7%	21%	18%	11%	25%
2	2) Traffic on Existing Roads	11%	7%	18%	11%	11%	7%	4%	11%
3	3) Rail Operations During Construction	21%	14%	21%	21%	14%	18%	14%	7%
4	4) Conflicts Within Rail ROW	25%	21%	25%	25%	25%	21%	18%	21%
5	5) Conflicts with Private Property	4%	11%	0%	4%	7%	11%	7%	4%
6	6) Maintenance and Operations	18%	18%	14%	18%	18%	14%	21%	18%
7	7) Sensitive Resources	11%	14%	11%	14%	0%	11%	25%	14%
8	8) Aesthetics	0%	0%	4%	0%	4%	0%	0%	0%



Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: Selected Ranking

 = Unanimous
 = 5 to 1 vote

 = 4 to 2 vote
 = 3 to 3 vote




		Weighted Criteria									
		1) Connectivity	2) Traffic on Existing Roads	3) Rail Operations During Construction	4) Conflicts Within Rail ROW	5) Conflicts with Private Property	6) Maintenance and Operations	7) Sensitive Resources	8) Aesthetics	Tally	Weight
1	1) Connectivity		1	3	4	1	6	7	1	3	11%
	2) Traffic on Existing Roads			3	4	2	6	2	2	3	11%
	3) Rail Operations During Construction				4	3	3	3	3	6	21%
	4) Conflicts Within Rail ROW					4	4	4	4	7	25%
	5) Conflicts with Private Property						6	7	5	1	4%
	6) Maintenance and Operations							6	6	5	18%
	7) Sensitive Resources								7	3	11%
	8) Aesthetics									0	0%
										28	100%



Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: Alternate from Select w/ 3-3 votes swapped

 = Unanimous
 = 5 to 1 vote
 = 3 to 3 vote

 = 4 to 2 vote
 = 3 to 3 vote

		Weighted Criteria									
		1) Connectivity	2) Traffic on Existing Roads	3) Rail Operations During Construction	4) Conflicts Within Rail ROW	5) Conflicts with Private Property	6) Maintenance and Operations	7) Sensitive Resources	8) Aesthetics	Tally	Weight
1	1) Connectivity		2	3	4	1	1	1	1	4	14%
2	2) Traffic on Existing Roads			3	4	5	6	7	2	2	7%
3	3) Rail Operations During Construction				4	3	6	7	3	4	14%
4	4) Conflicts Within Rail ROW					4	4	7	4	6	21%
5	5) Conflicts with Private Property						6	5	5	3	11%
6	6) Maintenance and Operations							6	6	5	18%
7	7) Sensitive Resources								7	4	14%
8	8) Aesthetics									0	0%
										28	100%

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/10/19

Contributors: Consultant Team

		Weighted Criteria									
		1) Connectivity	2) Traffic on Existing Ro	3) Rail Operations During Construction	4) Conflicts Within Rail ROW	5) Conflicts with Private Property	6) Maintenance and Operations	7) Sensitive Resources	8) Aesthetics	Tally	Weight
Weighted Criteria											
1	1) Connectivity		2	3	4	1	6	7	1	2	7%
2	2) Traffic on Existing Roads			3	4	2	2	2	2	5	18%
3	3) Rail Operations During Construction				4	3	3	3	3	6	21%
4	4) Conflicts Within Rail ROW					4	4	4	4	7	25%
5	5) Conflicts with Private Property						6	7	8	0	0%
6	6) Maintenance and Operations							6	6	4	14%
7	7) Sensitive Resources								7	3	11%
8	8) Aesthetics									1	4%
										28	100%

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: UPRR

		Weighted Criteria									
		1) Connectivity	2) Traffic on Existing Ro	3) Rail Operations During Construction	4) Conflicts Within Rail ROW	5) Conflicts with Private Property	6) Maintenance and Operations	7) Sensitive Resources	8) Aesthetics	Tally	Weight
Weighted Criteria											
1	1) Connectivity		2	3	4	1	6	7	1	2	7%
2	2) Traffic on Existing Roads			3	4	2	6	7	2	3	11%
3	3) Rail Operations During Construction				4	3	3	3	3	6	21%
4	4) Conflicts Within Rail ROW					4	4	4	4	7	25%
5	5) Conflicts with Private Property						6	7	5	1	4%
6	6) Maintenance and Operations							6	6	5	18%
7	7) Sensitive Resources								7	4	14%
8	8) Aesthetics									0	0%
										28	100%

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: Caltrans

		Weighted Criteria									
		1) Connectivity	2) Traffic on Existing Ro	3) Rail Operations During Construction	4) Conflicts Within Rail ROW	5) Conflicts with Private Property	6) Maintenance and Operations	7) Sensitive Resources	8) Aesthetics	Tally	Weight
Weighted Criteria											
1	1) Connectivity		1	1	4	1	1	1	1	6	21%
2	2) Traffic on Existing Roads			3	4	2	6	2	2	3	11%
3	3) Rail Operations During Construction				4	3	6	3	3	4	14%
4	4) Conflicts Within Rail ROW					4	4	4	4	7	25%
5	5) Conflicts with Private Property						6	5	5	2	7%
6	6) Maintenance and Operations							6	6	5	18%
7	7) Sensitive Resources								8	0	0%
8	8) Aesthetics									1	4%
										28	100%

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/10/19

Contributors: Lance Ricotta

		Weighted Criteria									

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: ICTC

		Weighted Criteria									

Paired Comparison Tool

Project: SR 78 - Glamis Grade Separated Crossing

Date: 12/19/19

Contributors: ASA

		Weighted Criteria									

APPENDIX F

ENVIRONMENTAL CONSTRAINTS MEMO



An Employee-Owned Company

April 15, 2020

Mr. Kelly Burnell
Kleinfelder
550 West C Street, Suite #1200
San Diego, CA 92101

Reference: State Route 78/Glamis Multiuse Grade Separation Project Environmental Constraints Memo
(RECON Number 9512)

Dear Mr. Burnell:

This environmental constraints memo is intended to provide a preliminary assessment of the environmental topics that will need to be addressed to move forward with the construction and operation of a multi-use grade separation project (project) in Glamis, California. Specifically, the intent is to identify the environmental documents that would be required under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), including any technical reports needed to support the CEQA and NEPA documents. CEQA applies to all non-federal lands and agencies and NEPA applies only to federal lands and agencies. The lead agency for the current feasibility is the Imperial County Transportation Commission (ICTC) with funding provided by the California Department of Transportation (Caltrans). The lead agency under CEQA and/or NEPA for the construction and operation of the project has not yet been determined, as ICTC is a planning agency that does not own or operate facilities.

Information contained in this environmental constraints memo is based on a review of the Imperial Sand Dunes Recreation Area (ISDRA) Recreation Area Management Plan (RAMP)/California Desert Conservation Area (CDCA) Plan Amendment/Final Environmental Impact Statement (EIS) (BLM 2012), Imperial Sand Dunes Record of Decision/Approved ISDRA RAMP (BLM 2013), CDCA Plan relevant amendments, record searches, and site visits.

These are preliminary assessments of potential impacts to various resources for the purposes of environmental planning and budgeting of the project. All topic areas discussed below will need to be considered for study again once the environmental studies phase of the proposed project is initiated. Additional studies could also be identified during project scoping conducted pursuant to CEQA and NEPA requirements or to support policies that would need to be established in order to facilitate funding or authorizations for the project.

STUDY AREA

The study area is located in Glamis, California in the eastern portion of Imperial County. The study area is primarily on federal lands managed by the Bureau of Land Management (BLM) and is designated as the ISDRA. Privately owned land, including the Glamis Beach Store and associated Specific Plan Area and the Union Pacific Railroad (UPRR), is also included in the study area.

The study area is within the eastern portion of the ISDRA and is approximately 3 miles long and 2,000 feet wide. It is bisected by the UPRR right-of-way from State Route 78 (SR-78) in the north to approximately Wash 15 in the south, encompassing Ted Kipf Road to the east, which is an Imperial County (County) maintained roadway on BLM-administered land. It also includes the Caltrans right-of-way for SR-78.

PROJECT DESCRIPTION

The ICTC has contracted with Kleinfelder to perform a feasibility study (FS) to analyze and develop feasible design alternatives and locations for providing a safe Multiuse Grade Separated Crossing for off-highway vehicle (OHV) users across the UPRR rail line at the ISDRA (Figure 1). Due to potential conflicts and safety concerns between autos, commercial trucks, recreational vehicles, the UPRR, OHVs, bicyclists, and hikers that travel on SR-78, there is a need for a multiuse grade separated crossing feasibility study at this location. The intended outcome of this feasibility study is to remove conflicts between all modes of transportation and ultimately improve safety on SR-78.

Following are brief descriptions of four project alternatives, identified as 78-O, 78T-O, 9.5-U, and 10-O, including three overpasses and one underpass. The first two are located at SR-78 and are both overpasses. Alternative 9.5-U is located at mile 9.5 south of SR-78 and is an undercrossing. Alternative 10-O is located at mile 10.0 south of SR-78 and is an overpass. All overpasses would be built to provide a minimum clearance of 23 feet 4 inches above the track. Two of the alternatives, 9.5-U and 10-O, would each require an access route connecting the new grade separation infrastructure with Ted Kipf Road.

Alternative 78-O

Alternative 78-O would replace a section of SR-78 where it currently crosses the UPRR rail tracks at grade with a 200-foot-long and 74-foot-wide highway bridge. The entire structure, including wall support approach ramps on either side of the bridge, would be 1,500 feet long.

Alternative 78T-O

Under alternative 78T-O, SR-78 would remain at-grade with the UPRR rail tracks and a 200-foot-long by 20-foot-wide bridge would be built for OHV and pedestrian traffic only. This alternative would have a smaller footprint relative to alternative 78-O, with a steeper grade and only 350- to 400-foot approaches on either side of the bridge. The southwesterly ramp would originate along Wash Road, curving east in order to connect with the bridge.

Alternative 9.5-U

Alternative 9.5-U proposes the construction of a new 65-foot-long by 20-foot-wide undercrossing between existing washes 9 and 10. Positioning the undercrossing away from the washes is intended to reduce risks and infrastructure issues associated with periods of high flow and sediment deposition. This alternative would position the impact area within one of the chevrons that was graded during the construction of the berms built to convey storm flow into each wash. An access route would connect the undercrossing with Ted Kipf Road, approximately 1,000 feet northeast.

One significant difference for an undercrossing option would be the need to create a temporary railroad detour, referred to as a shoofly. The shoofly would be a siding track approximately half a mile long that would be placed 30 feet to the side of the current UPRR rail tracks. The shoofly would be in place approximately 4 to 6 months. The shoofly would require regrading to create the space to construct the proposed undercrossing.

Alternative 10-O

Under Alternative 10-O, a 200-foot-long by 20-foot-wide OHV and pedestrian overcrossing would be built at Wash 10 with a ramp parallel to Wash Road and an access route between the overcrossing and Ted Kipf Road, approximately 900 feet north of the overcrossing.

ENVIRONMENTAL SETTING

The Algodones Sand Dunes in the ISDRA are the largest sand dunes open to OHV use in the United States. The dunes begin ten miles southeast of Niland and stretch all the way into Mexico, over 40 miles away. The

dunes vary in width from about a quarter mile at the northern end to about five miles in width below SR-78. The Algodones Sand Dune system covers 1,000 square miles, making it one of the largest dune complexes in North America. There are over 150,000 acres designated as open to motorized use or having limited motorized use. Approximately 32,000 acres are designated wilderness and closed to motorized recreation, including OHV use. While visited year-round, summer temperatures often exceed 110 degrees Fahrenheit, resulting in the most popular months to visit from October to May. On holiday weekends, there can be several hundred thousand visitors to this area. Besides OHV users, hiking, biking, camping, star-gazing, and historical sites are popular attractions. This area is directly served by SR-78 (an east-west route), which provides direct access to numerous campsites. On the westerly side of SR-78, the terrain is made up of the sand dunes; while the easterly side tends to be more washes and gullies. The ISDRA is managed by the BLM, who is responsible for collecting use fees, maintaining restroom and waste facilities, providing safety oversight and responsibly managing the federal resources.

SR-78 is also part of the California State Highway System bike route, which is designated as a shared Class III bicycle route and classified as the Southern Tier Long Distance Bicycle Route. It connects California with Florida, and is well travelled by long-distance cyclists. Bisecting the ISDRA is the UPRR. UPRR rail line serves freight movement as well as Amtrak service connecting Los Angeles with New Orleans (Sunset Route). The UPRR was constructed in the 1800s; in 2010, the rail was widened to two tracks (double-track).

LAND USE

The proposed project study area is primarily located on BLM-administered lands within the ISDRA, but also includes Caltrans right-of-way for SR-78 and UPRR right-of-way for a double-tracked/single-tracked rail line, as well the portion of the privately-owned 160-acre Glamis Specific Plan Area that is located south of SR-78. The ISDRA also includes the North Algodones Dunes Wilderness Area located immediately to the north of SR-78 and west of the UPRR. Recreation within the wilderness area is limited to non-motorized uses.

The Glamis General Store and associated OHV serving businesses and facilities are located within the Glamis Specific Plan Area, which has been proposed for further development as a base for OHV recreation. The project study area within the Glamis Specific Plan Area is zoned as S-2 (Open Space/Preservation), with a small area around the Glamis Beach Store that is zoned C-2 (General Commercial). However, a Draft Specific Plan Amendment has been proposed, including a zone change to three new zones: CR-1 (the equivalent of neighborhood commercial), CR-2 (the equivalent of light commercial), and CR-3 (the equivalent of heavy commercial).

The ISDRA is a BLM-administered recreation area used extensively for OHV recreation. Open motorized use is permitted west of the UPRR right-of-way, while motorized use to the east of the right-of-way is limited to designated routes of travel only. There are no designated wild and scenic rivers in the project vicinity.

Recommendations

While generally compatible with the adjacent recreational uses, the compatibility with the land uses regulated by the BLM, Caltrans, UPRR, and County must be considered.

BLM

Within BLM-administered land, any overcrossing or undercrossing of the UPRR right-of-way would need to connect to an existing designated route of travel or a new route would need to be designated to make the connection to Ted Kipf Road, a County roadway. The proposed project may also require a BLM right-of-way permit or other BLM Lands and Realty related permit.

CALTRANS

Department of Transportation/Federal Highway Administration (FHWA). U.S. Department of Transportation Act Section 4(f) properties include significant publicly owned public parks, recreation areas,

and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places. The majority of the project study area would need to be considered as a Section 4(f) resource if the project required FHWA involvement.

COUNTY OF IMPERIAL

The study area includes a portion of the Glamis Specific Plan Area. The Glamis Specific Plan Area encompasses approximately 160 acres bisected by SR-78 approximately 27 miles east of the City of Brawley. The Southern Pacific Railroad crosses the site on the east. The Glamis Specific Plan Area is intended to accommodate recreation-supporting land uses including retail and service commercial, motel accommodations, recreational vehicle and mobile home parks, and community facilities. The Specific Plan shall be coordinated with the BLM and affected local agencies. A draft Glamis Specific Plan has been prepared and submitted to the County. The County is in the early stages of selecting a consultant to prepare the necessary CEQA document for this project. Therefore, any consideration of Alternatives 78-O and 78T-O should be closely coordinated with the County as they evaluate the Glamis Specific Plan.

FARMLANDS/TIMBERLANDS

There are no farmlands, including Williamson Act lands and/or timberlands, in the study area. There are no potential impacts to agricultural land or timberlands associated with the proposed project alternatives. No further study of this topic is warranted.

Recommendations

There are no potential environmental constraints related to farmlands or timberlands at the federal, state, or local levels.

POPULATION GROWTH

The proposed project alternatives would not result in population growth-related changes in the study area. The purpose and need for the project is to improve safety for all forms of transportation crossing from one side of the UPRR to the other. No further study of this topic is warranted.

Recommendations

There are no potential environmental constraints related to growth at the federal, state, or local levels.

COMMUNITY IMPACTS

The study area is used extensively from October to May for camping and OHV recreation. No structures would be affected by right-of-way acquisition. The proposed project would not require any relocation of structures or individuals. Community impacts would likely be beneficial as safety would be improved for all forms of transportation crossing from one side of the UPRR to the other. The proposed project would facilitate cohesion by improving the safety of all forms of transportation crossing from one side of the UPRR right-of-way to the other, including emergency service vehicles.

The Glamis Beach Store and associated OHV serving facilities would benefit from the improved safety of a grade separation project.

Recommendations

For Alternatives 78-O and 78T-O, there is a potential for the ingress/egress to the Glamis Beach Store to be adversely affected during project construction. The circulation of OHV traffic in the vicinity of the Glamis Beach Store and other potential future developments proposed under the Draft Glamis Specific Plan could adversely affect business access or operations. Therefore, a Community Impact Assessment (CIA) is recommended for these alternatives to further evaluate this issue per Caltrans guidelines. Conformance with the Glamis Specific Plan, once adopted, would also be required under County. A CIA and conformance

with the Glamis Specific Plan, once adopted, are not warranted for Alternatives 9.5-U or Alternative 10-O because there would not be adverse effects to ingress/egress or circulation of existing or proposed commercial business.

UTILITIES/EMERGENCY SERVICES

The only community or public facilities in the study area are the Glamis Beach Store and the Boardmanville Trading Post, both of which serve as gathering spots that provide shelter, food, and drink. Law enforcement and emergency services are provided by the California Highway Patrol (CHP), BLM Park Rangers, and the Imperial County Sheriff's Office. The closest permanent law enforcement facility, the BLM Cahuilla Ranger Station, is located approximately 6.5 miles west of the project study area within the ISDRA. Mobile command centers are located in key activity centers of the ISDRA during busy weekends and holidays during the fall and winter months.

The study area is within a Contingency Corridor for utilities that includes and encompasses land on both sides of the UPRR. There are existing underground utilities within this corridor.

Recommendations

The existing utilities would be potentially significantly impacted by an undercrossing option and possibly require relocation. These include a large natural gas line and railroad related telecommunication lines. This issue is relevant to lands under the jurisdiction of the BLM, Caltrans, and County.

The proposed project would also need to consider the need for utilities, such as electricity for lighting, and the accommodation of emergency vehicles.

VISUAL AND AESTHETICS

SR-78 has not been designated by Caltrans as part of the state scenic highway system. The ISDRA provides dramatic desert scenery with sand dunes, desert washes, and views of distant mountains. The BLM has adopted Visual Resource Management (VRM) classes for the study area that are managed according to the objectives below.

VRM Classes and Objectives

The VRM classes set VRM objectives for lands in each class, as well as the level of visual change in the landscape character that is allowed as a result of proposed management activities. The objectives and allowed levels of change for each of the four VRM classes are as follows:

- **VRM Class I Objective:** To preserve the existing character of the landscape. Allowed Level of Change: This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- **VRM Class II Objective:** To retain the existing character of the landscape. Allowed Level of Change: 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.
- **VRM Class III Objective:** To partially retain the existing character of the landscape. Allowed Level of Change: 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.

- **VRM Class IV Objective:** To provide for management activities which require major modification of the existing character of the landscape. Allowed Level of Change: The level of change to the characteristic landscape can be high. Management activities may dominate the view and may be the major focus of viewer attention. However, the impact of these activities should be minimized through careful siting, minimal disturbance, and repeating the basic elements of form, line, color, and texture within the existing setting.

The nearby North Algodones Dunes Wilderness Area, north of SR-78 and west of the UPRR right-of-way is designated as VRM Class I. The project study area is VRM Class III on the east side of the UPRR right-of-way and Class IV on the west side of the UPRR right-of-way.

Recommendations

A Visual Impact Assessment (VIA) would not be warranted for a proposed undercrossing of the UPRR, as an undercrossing would not be highly visible and would be similar in appearance to the 14 existing undercrossing locations that are designed exclusively for flood control purposes. However, for Alternatives 10-O and 78T-O that propose an overcrossing, the overcrossing would need to have a 23-foot four-inch clearance over the UPRR tracks, which would create a highly visible structure that could block or alter distant views. Therefore, a VIA would need to be prepared for these alternatives to determine the extent of the potential impact on the visual environment, including potential impacts to the existing views of the sand dunes and distant mountains. The VIA would need to address both BLM and Caltrans requirements for alternatives 78-O and 78T-O. Only BLM VIA guidelines would apply to alternative 10-O as it would not be highly visible from SR-78 or any other Caltrans properties.

CULTURAL RESOURCES

RECON Environmental, Inc. (RECON) conducted a record search and literature review to determine the potential sensitivity of the study area regarding cultural resources. The management of cultural resources on BLM-administered land must be in compliance with several federal laws, including the Antiquities Act of 1906; the National Historic Preservation Act of 1966, as amended; the NEPA of 1969; Executive Order 11593–Protection and Enhancement of the Cultural Environment; Federal Land Policy and Management Act of 1976; the American Indian Religious Freedom Act of 1978; the Religious Freedom Restoration Act of 1993; the Archaeological Resource Protection Act of 1979; the Native American Graves Protection and Repatriation Act of 1990; Executive Order 13007–Indian Sacred Sites; and Executive Order 13287–Preserve America. The BLM also manages cultural resources in accordance with the National Programmatic Agreement (Among the Bureau of Land Management Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers Regarding the Manner in Which the BLM will Meet Its Responsibilities under the National Historic Preservation Act) of 2012. In addition, the BLM manages its cultural resources according to BLM Manuals 8100 through 8170, and in accordance with the BLM–California State Historic Preservation Officer Protocol Agreement of 2007, as amended.

Locations of cultural resource sites are to be kept confidential with the exception of public use sites. Therefore, the location and sensitivity of cultural resources within the study area is not presented in this report; only the potential need for additional surveys and/or monitoring.

ISDRA RAMP Cultural Resource Goals and Objectives

- **CRM-01** Identify, preserve, and protect significant cultural resources, districts, and landscapes and ensure that they are available for appropriate uses by present and future generations.
- **CRM-02** Identify priority geographic areas for new field inventory, based upon a probability for unrecorded significant resources.
- **CRM-03** Enhance public understanding of and appreciation for cultural resources through educational outreach and heritage tourism opportunities.

- **CRM-04** Evaluate identified cultural resources under the criteria for the National Register of Historic Places. Eligible resources will be formally nominated for listing to the National Register of Historic Places, as appropriate.
- **CRM-05** Promote new survey efforts on an ongoing basis, utilizing partners where appropriate.
- **CRM-06** Maintain viewsheds of important cultural resources whose settings contribute significantly to their scientific, public, traditional, or conservation values.
- **CRM-07** Provide and encourage cultural resources research opportunities that would contribute to the understanding of the ways humans have used and influenced natural systems and processes.
- **CRM-08** Seek to reduce imminent threats, and direct and indirect impacts to cultural resources, or potential conflict with other resource uses.
- **CRM-09** Increase BLM nation-to-nation consultation and coordination with Native American Tribes.

Records Search Results

RECON performed a records search at the California Historical Resources Information System, South Coastal Information Center at San Diego State University on January 13, 2020. A letter was sent to the Native American Heritage Commission (NAHC) on February 17, 2020 requesting them to search their files to identify spiritually significant and/or sacred sites or traditional use areas in the project vicinity.

The record search indicated that there have been 27 cultural resources investigations and 11 cultural resources identified within the one-mile search radius (Table 1). The study area has not been surveyed in the past. The historic sites include historic trash scatters, a cemetery, and features associated with the railroad. The prehistoric sites are comprised of a lithic scatter and a ceramic scatter. Five sites are located within or immediately adjacent to the study area. Of these, only one, the Historic Southern Pacific Railroad (CA-IMP-3424), has been evaluated and recommended eligible for listing on the NRHP and the CRHR. This resource would be impacted by all four alternatives. The other four resources within the study area have not been evaluated.

Historic aerial photographs from 1961 and 1996 were examined for structures over 50 years of age. None were identified. Based on an internet search, the Glamis Beach Store was opened in 1937 north of SR-78 and then dismantled (Glamis Dunes 2009). The 1961 aerial photograph shows a small structure approximately 800 feet northwest of the SR-78. The current Glamis Beach Store opened in 1979 south of SR-78 according to the owner's daughter, Jeannie LeBlanc (Polaris 2018). In 2018, the store was bought by Polaris. The 1996 aerial photograph shows the store in its current location. This structure is not over 50 years old.

Table 1 Cultural Resources within 1-Mile of the Study Area						
Primary	Trinomial	Age	Type	Within Study Area/Alternative Footprints	NRHP Eligibility Status	Recording Date
P-13-003424	CA-IMP-003424	Historic	Railroad bed	4 Alternatives	Historic Southern Pacific Railroad, ca. 1870s; Current Union Pacific Railroad; Recommended eligible CRHR, NRHP	1999 (Soil Systems, Inc.); 1999, (Jones & Stokes Associates); 2000 (KEA Environmental, Inc.); 2005 (ASM Affiliates); 2006, (K. Collins); 2008 (EDAW); 2016 (EPG, LLC)
P-13-004153	CA-IMP-004153	Historic	Trash scatter	Within Study Area	Less than 40 fragments of bottle glass (includes 4 pieces of SCA glass); Not evaluated	1979 (Jan Townsend)
P-13-004154	CA-IMP-004154	Prehistoric	Lithic scatter	Outside Study Area (within buffer area)	-	1979 (Jan Townsend)
P-13-004155	CA-IMP-004155	Historic	Isolate - glass fragment	Outside Study Area (within buffer area)	-	1979 (Jan Townsend)
P-13-004619	CA-IMP-004619	Prehistoric	Ceramic scatter	Outside Study Area (within buffer area)	-	1979 (RECON)
P-13-004621	CA-IMP-004621	Historic	Cemetery	3 Alternatives	Glamis Cemetery; Not evaluated	1979 (RECON); 2001 (Tierra Environmental Services); 2005 (ASM Affiliates)
P-13-008730	CA-IMP-008212	Historic	Trash scatter	Outside Study Area (within buffer area)	-	2001 (Tierra Environmental Services)
P-13-008731	CA-IMP-008213	Historic	Trash scatter	Outside Study Area (within buffer area)	-	2001 (Tierra Environmental Services)
P-13-008732	CA-IMP-008214	Historic	Trash scatter	Within Study Area	3 loci of bottle and plate glass (100+ fragments) with tin cans; Not evaluated	2001 (Tierra Environmental Services)
P-13-009568	CA-IMP-008633	Historic	Trash scatter	Outside Study Area (within buffer area)	-	2006 (Chambers Group, Inc.)
P-13-009569	CA-IMP-008634	Historic	Railroad depot; Foundations; Trash scatter	Within Study Area	Former Glamis Station; only concrete foundations remain; sparse numbers of historic period trash; Not evaluated	2007 (Chambers Group, Inc.)

Recommendations

If either Alternative 78-O or 78T-O is chosen, CA-IMP-4621 and IMP-8634 would likely require formal evaluation to determine if impacts would be considered adverse. CA-IMP-8732 and IMP-4153 are within the study area but not in the footprint of any of the alternatives.

Based upon a reconnaissance of aerial photographs and noting the existing disturbances such as the construction of the dikes, the construction of the railroad, a significant amount of off-road vehicle activity, and washes due to rain events, the disturbed condition of the study area presents a very low potential for intact cultural resources. However, because none of the study area has been surveyed, RECON recommends that a Class III inventory, in accordance with BLM guidelines by a BLM permitted cultural resources specialist, be conducted to determine if cultural resources would be impacted. Additionally, the viewshed impacts to the Historic Southern Pacific Railroad should be analyzed to determine if the resource would be

adversely affected by proposed overcrossing or undercrossing alternatives. The results of these analyses would be documented in the following reports: Archaeological Survey Report, Historical Resources Evaluation Report, and Historic Property Survey Report per Caltrans guidelines.

TRIBAL CULTURAL RESOURCES

RECON sent a letter to the NAHC on February 17, 2020 requesting them to search their files to identify spiritually significant and/or sacred sites or traditional use areas in the project vicinity and provide a list of tribes culturally affiliated to the study area. The sacred lands results from the NAHC were negative (Attachment 1). Once a project footprint is chosen, the lead federal agency will formally consult with Indian tribes and other tribal entities in accordance with Executive Orders regarding government-to-government relations with Native Americans and as part of the Section 106 of the NHPA. The Executive Orders include:

- Executive Order 11593 Protection and Enhancement of Cultural Environment (1971)
- Executive Order 13007 Indian Sacred Sites (1996)
- Executive Order 13175 Consultation and Coordination with Indian Tribal Governments (2000)
- Executive Order 13287 Preserve America (2003)

HYDROLOGY AND FLOODPLAIN

The majority of the study area consists of an alluvial fan containing multiple washes that have been directed by earthen berms to flow beneath the UPRR at 14 locations identified as Washes 1–14. The terrain becomes nearly level on the west side of the UPRR and the washes continue to the west until ending within the Algodones Dune Complex. The depth to water within the study area is approximately 90 to 100 feet below ground surface. The study area is not within a sole-source aquifer. Groundwater is not anticipated to be encountered during project construction.

While the study area is dry much of the year, brief and intense rainfall can cause powerful floodwaters to turn what are typically dry washes into flash flood zones.

Recommendations

Because washes are typically the easiest routes of travel in the desert, and because any undercrossing of the UPRR would create a low point, hydrology and drainage issues will be one of the most important issues to address with the design of any project alternative moving forward. While an overcrossing would largely avoid hydrology and floodplain issues, an undercrossing would be subjected to periodic inundation and sedimentation. Due to the potential to alter existing drainage patterns, the preparation of a technical report addressing drainage, water quality, and stormwater is recommended and this issue must be further addressed during alternative selection and design.

WATER QUALITY AND STORMWATER RUNOFF

The ISDRA RAMP states that to ensure BLM activities or authorized activities do not degrade surface or groundwater in the planning area by identifying and protecting surface waters where possible, and preserving and enhancing natural conditions and hydrology of washes.

ISDRA RAMP Water Quality Management Actions

- **WRM-05** Preserve and enhance the natural condition and hydrology of washes.
- **WRM-10** Maintain authorized vehicle routes in a manner that will promote natural hydrology and protect water quality through application of best management practices.

Recommendations

BLM ISDRA RAMP requirements related to water quality and stormwater runoff would be accomplished by (1) preventing or reducing water quality degradation through implementation of applicable BMPs or other specific mitigation measures, and (2) implementing travel management actions that maintain authorized vehicle routes in a manner that will promote natural hydrology and protect water quality through application of BMPs and actions described below for the *Transportation and Public Access Management* Resource Category.

GEOLOGY, SOILS, SEISMIC, AND TOPOGRAPHY

The ISDRA comprises a variety of dune types (e.g., draas, linear, parabolic, barchan, zibars). These dunes are separated occasionally by inter-dune areas, where relatively little sand accumulates into dune formations. The dune system lies on alluvial fan material emanating from the Cargo Muchacho and Chocolate Mountains. Some dunes reach 300 feet in height.

The study area is located along the eastern edge of the dune complex, with minor dune activity along the western side of the UPRR right-of-way. The portion of the study area east of the UPRR right-of-way consists of desert washes on a broad alluvial plain that slopes gently to the west with the periodic flow of water from the east to the west, beneath the UPRR tracks in 14 separate undercrossings.

Imperial County is a seismically active region. According to the Imperial County General Plan, some portion of Imperial County will be affected by a minor earthquake (less than Richter magnitude of 3.5 and causing little or no damage) every few months. Every five years, the county may experience a moderately damaging event (magnitude of 5.5 or greater). At least once every fifty years there will probably be a major earthquake (6.8 or greater). Micro seismicity occurs almost continuously in Imperial County (events less than 2.0), often dozens and sometimes hundreds of events per day.

ISDRA RAMP Geology, Soils, Seismic, and Topography Goals and Objectives

- **SRM-01** Manage soils to maintain productivity and to minimize erosion.
- **SRM-02** Preserve the natural process of dune movement and formation.
- **SRM-03** Meet Land Health Standard #1, as related to soils and as described in the RAMP, Section 2.8.

ISDRA RAMP Geology, Soils, Seismic, and Topography Management Actions

- **SRM-04** Minimize surface disturbance from authorized activities. Post-activity disturbed surfaces will be restored to a pre-disturbance or natural condition as applicable.
- **SRM-05** Incorporate erosion control measures into projects on a case-by-case basis.

Recommendations

A geotechnical report should be prepared and any project alternative must be designed to withstand the anticipated seismic activity, as well as all other geologic conditions. The seismic standards would be the same for a structure on lands under the jurisdiction of the BLM, Caltrans, or the County.

PALEONTOLOGY

Paleontological resources found on public lands are recognized by BLM as constituting a fragile and nonrenewable scientific record of the history of life on Earth. They therefore represent an important component of America's natural heritage. All lands within the ISDRA RAMP have been classified as containing vertebrate fossils.

The BLM manages paleontological resources principally under the following authorities:

- Title VI, Subtitle D of the Omnibus Public Land Management Act, known by its popular name, the Paleontological Resources Preservation Act (123 Stat. 1172; 16 USC 470aaa et seq.); BLM Manual 8270—Paleontological Resources Management; BLM Handbook.
- 8270-1—General Procedural Guidance for Paleontological Resources Management; Federal Land Policy and Management Act of 1976; NEPA of 1969; the Federal Cave Resources Protection Act of 1988; and various sections of BLMs regulations found in Code of Federal Regulations Title 43. BLM policy laid forth in these guidelines promotes the scientific, educational, and recreational uses of fossils on public lands, mitigates resource conflicts, and develops strategies to regularly monitor public lands where important paleontological localities have been identified.

Potential Fossil Yield Classification (PFYC)s are grouped into three categories based on the level of management concern and the type of assessment and mitigation actions that could be required (BLM 2016).

- PFYC Classes 1 and 2: Low/Very Low (LVL). Class 1 geologic units that are not likely to contain recognizable paleontological resources and management concerns are usually negligible or not applicable. Class 2 geologic units are not likely to contain paleontological resources and management concerns are generally low and further assessment is usually unnecessary, except where resources are known or found to exist.
- PFYC Class 3: Moderate (M) or Unknown. Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. Management concerns are moderate because the existence of significant paleontological resources is known to be low.

Class 3a—Moderate Potential. Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.

Class 3b—Unknown Potential. Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this class may eventually be placed in another class when sufficient survey and research is performed. The unknown potential of the units in this class should be carefully considered when developing any mitigation or management actions.

- PFYC Classes 4 and 5: High/Very High (HVH). Class 4 geologic units are known to contain a high occurrence of paleontological resources and management concerns are moderate to high, depending on the proposed action. Class 5 consists of highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources. Management concerns in Class 5 areas are high to very high.

Based on geologic resources mapped for the BLM El Centro Field Office, the study area has Unknown Potential for paleontological resources (Class 3a) (Figure 2).

ISDRA RAMP Paleontology Goals and Objectives

- **PRM-01** Protect and conserve significant paleontological resources as they are discovered on public lands.
- **PRM-02** Manage paleontological resources in ways that prioritize research needs, facilitate educational and recreational needs, and protect important sites.
- **PRM-03** Develop specific objectives and management actions for fossil localities, when paleontological resources are discovered in the Planning Area.

ISDRA RAMP Paleontology Management Actions

- **PRM-04** Evaluate paleontological resources as they are discovered, considering their scientific, educational, and recreational values. Identify appropriate objectives, management actions, and allowable uses for fossil localities as they are found.
- **PRM-05** Restrict the collection of all vertebrate fossils and invertebrate and plant fossils of paleontological interest to legitimate scientific or educational uses in accordance with permitting procedures.
- **PRM-06** Allow recreational collecting of common invertebrate and plant paleontological resources, in accordance with the Paleontological Resources Preservation Act.
- **PRM-07** Require immediate notification should paleontological resources be encountered during project surface-disturbing activities, and cease work in the area of the discovery. Work may not resume until the BLM issues a written authorization to proceed.
- **PRM-08** Although all lands within the Planning Area have been classified as Potential Fossil Yield Classification (PFYC) Class 2 (low likelihood for sensitive fossils), a field survey by a qualified paleontologist may be required if future information determines or indicates the presence of important paleontological resources prior to surface-disturbing activities. Management prescriptions for resource preservation and conservation through controlled access or special management designation could be considered. Surface disturbing activities may require an assessment in PFYC Class 2 areas to determine further courses of action. Assessment or mitigation in PFYC Class 1 areas will not be required except in very rare circumstances.

Recommendations

If a Class 3b (Unknown Potential) unit underlies the area, it may be appropriate to require an onsite preliminary assessment by a qualified paleontologist. Consultation with the BLM would be required to determine if ISDRA RAMP PRM-8 is relevant to the study area. For lands under Caltrans or County jurisdictions, their respective guidelines for paleontological resources would apply. If the project sites are determined to be of low or no sensitivity, no mitigation would be required. For lands with moderate to high sensitivity, a paleontologist would be required to monitor excavation and grading activities.

HAZARDOUS WASTE/MATERIALS

Hazardous materials consist of chemicals and materials that have the potential to adversely impact human health and the environment. In the ISDRA RAMP Planning Area, hazardous materials could include but are not limited to petroleum products, industrial chemicals, acids, heavy metals, lead-based paint, and asbestos-containing materials. Potential sources of hazardous materials include illegal dumping (including sewage), leaking fuel tanks and other fluids from OHV and associated tow/haul and camping vehicles, illegal drug manufacturing sites, abandoned buildings, and other sites. Illegal dumping has a potential to cause environmental impacts to BLM-administered land within the project study area.

Laws governing the management of these materials include Comprehensive Environmental Recovery, Compensation, and Liability Act (CERCLA), Resource Conservation Recovery Act (RCA), other federal laws and regulations, and state and local regulations. Mining and milling wastes are managed under the CERCLA as potentially hazardous materials or hazardous waste.

According to a regulatory records search performed by Kleinfelder for the study area using the State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2020) and the California Department of Toxic Substances Control (DTSC) EnviroStor database (DTSC 2020), a diesel fuel tank was found to be leaking at the Glamis Beach Store property in 1991; however, the site is listed as completed-case closed as of August 24, 1992. Because the listed sites have been previously evaluated with the oversight of a regulatory agency and have subsequently been listed as closed, and groundwater is not anticipated to be encountered during construction, it is unlikely that the historical release poses any remaining significant hazard to the public or the environment. Both SR-78 and the UPRR rail line have sustained heavy historical mechanized use and exposure to exhaust fumes containing lead. Aerially deposited lead (ADL) contamination from vehicle emissions could also be found in unpaved areas adjacent to roads and highways.

ISDRA RAMP Hazardous Waste/Materials Management Actions

- **PHS-23** Minimize the presence and potential impact to human health and the environment from hazardous materials.
- **PHS-24** Perform public notification of potential health risks by means of notices, signage, and other forms of communication.
- **PHS-25** Remediate areas contaminated with hazardous materials in accordance with applicable laws and regulations.

Recommendations

An Initial Site Assessment, updated records search, site visit, and an ADL evaluation is recommended to determine whether potential impacts may be considered to represent an environmental concern for any alternative. This would apply to lands under the jurisdiction of the BLM, Caltrans, and County.

AIR QUALITY

Dust Control During Off Highway Vehicle Use

The BLM applies dust control measures within the ISDRA. Specifically, the following access roads are treated for dust control to reduce the impact of OHV activities on air quality:

1. Wash Road adjacent to the UPRR and Dune Buggy Flats Road.
2. Certain unpaved areas located in the Imperial Sand Dunes, including Wash Road and the Dune Buggy Flats access road receive more than 50 vehicle trips per day during holiday weekends (Halloween, Thanksgiving, New Years' Day, and Presidents' Day) that fall between the months of October and February. BLM will continue to water these areas to reduce dust emissions.

In January 2003, the BLM approved and signed the Record of Decision (ROD) for the Western Colorado Deserts Routes of Travel Designations (WECO) and in December of 2002 the ROD for the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) was signed. Both of these Decisions are amendments of the 1980 BLM CDCA Plan. In these plans, BLM set forth control measures to help curb particulate matter with an aerodynamic diameter of 10 microns or less emissions.

As stated in the WECO Desert Routes of Travel Designation (these are also true for the Northern and Eastern Colorado Routes of Travel Designation):

There would be fewer roads designated as open than the current situation. There would be less miles of routes than existing conditions. The vehicle use limitation to street legal vehicles in the Yuha (and other areas) should result in a decrease in the use of this area. In addition to the designation of roads and the enforcement of the designation, land use should result in less off route travel. The off route travel creates new roads which increases the particulate matter emissions due to vehicular use and wind. This alternative also includes the mitigation requirement to restore closed roads to a natural desert landscape. This will result in fewer emissions due to the inability to easily use closed roads and the reduction in emissions due to wind.

BLM is currently implementing this plan. Since 2003 the BLM El Centro Field Office has restored 751 closed routes and unauthorized impacts within Imperial County totaling 65.89 miles of routes and 1,189 acres of public land. This restoration has returned the closed trails/routes to natural habitat and reduced the wind erosion for these areas.

Dust Control During Miscellaneous Construction Projects

The BLM states that miscellaneous construction activities and general access activities tend to produce minimal fugitive dust emissions. Therefore, the BLM defers to the Imperial County Air Pollution Control District to determine if a proposed project would require the project coordinator to submit a dust plan to Imperial County Air Pollution Control District. It is recommended that a dust plan be prepared and submitted to the Imperial County Air Pollution Control District by the lead agency for this project.

Recommendations

An air quality technical study would be required for any of the selected project alternatives. Impacts would likely be significant and mitigation measures would be required. There is no clear advantage to any one project alternative over the others. The air quality study would be required for lands under the jurisdiction of the BLM, Caltrans, and County.

NOISE AND VIBRATION

The ISDRA provides for many types of recreational experiences, with OHV recreation as the dominant activity. The OHV enthusiasts who visit on holiday weekends experience large crowds, noise, and intensive, 24-hour, OHV activity in areas such as Glamis.

The vehicle types that can be found operating in the ISDRA are nearly limitless, and include: sand rails, dune buggies, all-terrain vehicles, motorcycles, 4 wheel-drive (WD) pickups, 2WD pickups, sport utility vehicles, and custom built OHVs. Private, law enforcement, military, commercial, and rescue aircraft frequently fly over the dunes at low altitudes.

Over one million individuals visit the ISDRA each year, with peak visitation occurring between October and May. Visitation is unevenly distributed throughout the year, with the highest visitation occurring during the major holiday weekends. The visitation estimates for the major holiday weekends can approach 200,000 visitors. For example, the average visitation during Thanksgiving weekend for fiscal years 2004 through 2009 was 179,677. Approximately 35 percent of the annual visitation occurs during 25 percent of the recreation season (i.e., two out of 8 months in the season).

Despite the noise levels that can be experienced on busy holiday weekends, the project study area has a very low ambient noise level much of the time, especially east of the UPRR tracks where OHV use is limited. Sensitive receptors to noise within the study area include the Glamis Beach Store and recreational users of the ISDRA. Due to proximity to the Glamis Beach Store, Alternatives 78-O and 78T-O have a greater

potential to affect sensitive receptors during project construction and operation than Alternatives 9.5U and 10-O, where the potential for adverse noise impacts is limited.

Recommendations

A noise and vibration technical study would be required for any of the selected project alternatives. Impacts would likely be significant and mitigation measures would be required. Impacts and mitigation requirement for alternatives 78-O and 78T-O would likely be greater than the other two alternatives due to the proximity to the Glamis Beach Store. The noise and vibration study would be required for lands under the jurisdiction of the BLM, Caltrans, and County.

CLIMATE CHANGE

The Southern California Association of Governments' (SCAG's) *Sustainability Grant Program–Imperial County Regional Climate Action Plan*: ICTC was awarded a SCAG Sustainable Planning Grant to develop a Regional Climate Action Plan (CAP). ICTC staff will work in collaboration with SCAG staff and a consultant to develop the Regional CAP. ICTC serves as the day-to-day project manager and SCAG staff serves as the administrative project manager. The goal of the project is to develop a regional framework for addressing greenhouse gas (GHG) emissions for a Regional CAP that allows each local agency to customize and fit into the context of the community each jurisdiction serves, that can be used at the local level in the development of jurisdiction-specific CAPs.

Recommendations

A climate change technical study would be required for any of the selected project alternatives. Impacts would likely be significant and mitigation measures would be required. There is no clear advantage to any one project alternative over the others. The climate change study would be required for lands under the jurisdiction of the BLM, Caltrans, and County.

GHG EMISSIONS ESTIMATES AND REDUCTION MEASURES

Transportation is the largest source of California's GHG emissions—mostly from light-duty passenger vehicles. Emissions declined from 2006 to 2016, but have increased slightly in recent years. The state has many policies in place to reduce GHG emissions in the transportation sector. The major categories of programs include (1) reducing emissions from light-duty vehicles, (2) reducing emissions from heavy-duty vehicles, (3) increasing the use of lower carbon fuels, and (4) reducing the number of vehicle miles traveled. These programs are intended to work in a variety of ways. For example, some programs provide financial assistance incentives to reduce the cost of adopting lower emission technologies, while other programs are designed to increase the costs of using higher emission technologies. Some programs are targeted towards consumers of fuel, while other programs are targeted towards vehicle manufacturers and fuel producers.

While GHG emissions are of global concern, the proposed project would likely result in a short-term increase in GHG emissions during construction and a long term reduction in GHG emissions by providing a more direct route of travel between the west and east sides of the UPRR right-of-way, reducing the distance traveled by vehicles using the existing crossings at SR-78 to the north and Ogilby Road to the south, a distance of approximately 18.5 miles.

Recommendations

A GHG technical study would be required for any of the selected project alternatives. This is the same study as listed above under climate change. Impacts would likely be significant and mitigation measures would be required. There is no clear advantage to any one project alternative over the others. The GHG study would be required for lands under the jurisdiction of the BLM, Caltrans, and County.

ENERGY

The study area is within a Contingency Corridor for utilities that includes and encompasses land on both sides of the UPRR. Energy would be required for the construction and operation of the proposed project. But energy may also be saved through the creation of a more efficient connection between the two sides of the UPRR tracks. It is approximately 18.5 miles between the SR-78 crossing and the Ogilby Road crossing, which are the only legally usable routes by street-legal vehicles.

Recommendations

Energy usage would be addressed in the climate change/GHG technical study. There is no clear advantage to any one project alternative over the others. The energy study would be required for lands under the jurisdiction of the BLM, Caltrans, and County.

BIOLOGICAL ENVIRONMENT

The biological resources in the project study area include several desert habitats that support a variety of desert plants, reptile and insect communities, including special-status and endemic species found only in the Algodones Dunes. The primary habitat types associated with the dune system are: creosote bush scrub, psammophytic scrub, active dune, microphyll woodland, Sonoran desert scrub, and canal-influenced vegetation. The primary habitat type found in the study area is creosote brush scrub.

Creosote bush scrub generally occurs on the edges of the dune system and occasionally in the central portion. Creosote bush scrub is the most common vegetation community in the Colorado Desert and typically occurs in well-drained secondary soils of slopes, fans, and valleys. Characteristic species for this community include creosote bush, brittlebush, and burrobrush. The creosote bush habitat in the ISDRA generally consists of widely spaced shrubs, usually interspersed with bare ground. The western flank consists of almost pure stands of creosote bush.

The area on the eastern side of the dune system is a large alluvial fan draining the Chocolate and Cargo Muchacho Mountains. The alluvial fan is dissected into numerous washes and plains. The microphyll woodland habitat is found along these dry-wash channels and around the cul-de-sac sinks at the end of the washes. Trees associated with this habitat are palo verde, ironwood, smoke tree, and, to a lesser degree, honey mesquite and desert willow. Microphyll woodland habitat supports the highest diversity of wildlife in the ISDRA.

Sonoran Desert Scrub occurs on the extreme eastern edge in the study area as a transition zone between creosote bush scrub and microphyll woodland. This habitat includes desert dry wash woodland, as well as alluvial fans that support ocotillo, brittlebush, and cacti.

1. Biological Record Search Findings

A biological records search of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation System (IPACS; USFWS 2020) and California Natural Diversity Database (CNDDB) was conducted. The IPACS database reports species listed under the Endangered Species Act (ESA) as threatened and endangered that may occur within five miles of the study area. The report indicated that one federally listed species, the Pierson's milk-vetch (*Astragalus magdalenae* var. *peirsonii*), has the potential to occur and could be affected by the proposed project.

The CNDDB yielded 21 species observations within a five-mile radius of the study area. The full list of species observations is presented in Attachment 2. A CNDDB report generated using the Rarefind application provides details on each documented species occurrence and is included in Attachment 3. Of these species, the following five species listed as threatened or endangered at the federal or state level, or are state candidate endangered: Pierson's milk-vetch, Mojave Desert tortoise (*Gopherus agassizii*), Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*), Gila woodpecker (*Melanerpes uropygialis*), and the western bumble bee (*Bombus occidentalis*). The Mojave Desert tortoise and the Pierson's milk-vetch are both

federally listed. Four additional species are considered BLM species of special concern: burrowing owl (*Athene cunicularia*), flat-tailed horned lizard (*Phrynosoma mcalli*), Le Conte's thrasher (*Toxostoma lecontei*), and the pallid bat (*Antrozous pallidus*).

The Algodones Dunes sunflower, the flat-tailed horned lizard, and the western bumble bee all have documented occurrences within the study area. No occurrence of desert tortoise or Pierson's milk-vetch has been recorded within the study area. However, two desert tortoise occurrences are documented within the search radius, both approximately 4.5 miles east of the study area, and the Pierson's milk-vetch has been documented throughout the dune complex within approximately 1.5 miles of the study area.

2. Literature Review

RECON conducted a literature review of agency protocols for listed and special status species with potential to occur within the study area. Documents reviewed included the ISDRA RAMP, the USFWS Biological Opinion on the ISDRA RAMP, Mojave Desert Tortoise Revised Recovery Plan (USFWS 2011), the Draft Pierson's Milk-Vetch Recovery Plan (USFWS 2019a), and the California Desert Biological Conservation Framework (CEC et al 2016). The results of the literature review for these species are presented below.

a. Peirson's Milk-Vetch

Peirson's milk-vetch was listed by USFWS as threatened in 1998. It is also recognized as endangered by the State of California and as a special status species by the BLM. Peirson's milk-vetch habitat consists of sandy depressions at the base of high dunes and lower established dunes. Critical habitat for the Pierson's milk-vetch occurs in two main sections within the Algodones Dunes, which are located approximately 4.5 miles north-west of the study area, between SR-78 and the northern limit of the dune complex, and approximately 6 miles south of the study area, in the western portion of the dune complex.

ISDRA RAMP Peirson's Milk-Vetch Goals and Objectives

- **PMV-01** Promote population increase and protect habitat necessary to promote recovery.
- **PMV-02** Provide for habitat connectivity between Peirson's milk-vetch populations throughout the dunes.
- **PMV-03** Ensure no adverse modification of critical habitat, as mandated by the Endangered Species Act.
- **PMV-04** Achieve stable or increasing populations of Peirson's milk-vetch over time with adequate pollination, nurse plants, recruitment, and survivorship. Maintain desired habitat conditions or restore degraded habitats to promote pollinator success and survival.
- **PMV-05** Minimize effects resulting from human-caused disturbances.
- **PMV-06** Promote research activities to further management goals of Peirson's milkvetch.
- **PMV-07** Implement a monitoring plan for Peirson's milk-vetch. Analyze the monitoring data to compare the trend in species abundance due to the different types of impacts in each area.
- **PMV-08** Provide for recovery of Peirson's milk-vetch through critical habitat protection.
- **PMV-09** Prohibit motorized recreation within Peirson's milk-vetch critical habitat.
- **PMV-10** Exclude Peirson's milk-vetch critical habitat from solar energy development. Exclusion areas are defined as areas which are not available for location of rights-of-way under any conditions.
- **PMV-11** Exclude Peirson's milk-vetch critical habitat from wind energy development.
- **PMV-12** Exclude Peirson's milk-vetch critical habitat from all other types of land use authorization.

Draft Recovery Plan for Pierson's Milk-Vetch

A Draft Recovery Plan for the Pierson's milk-vetch was published on July 26, 2019, providing guidance on how to control impacts from current or potential future threats to the taxon, such that it no longer requires the protections afforded by the ESA and, therefore, warrants consideration for delisting. The Draft Recovery Plan is based on the Species Biological Report for the Pierson's milk-vetch (USFWS 2019b), which describes the life history and biology of the species, as well as its current status and threats. A third document, the Recovery Implementation Strategy, builds on the draft recovery plan by discussing recovery actions in more detail (USFWS 2019c). The Recovery Plan identifies several different threat types for the milk-vetch and prioritizes which threats to address first. The highest priority for the recovery of the Pierson's milk-vetch is to sufficiently reduce Factor A threats (the destruction or adverse modification of habitat) and Factor E threats (other natural or manmade factors, such as loss of genetic diversity due to population thinning, and OHV impacts to the taxon). The implementation schedule outlined in the Recovery Implementation Strategy and the delisting criteria provided in the Draft Recovery Plan both require the development of a taxon-specific adaptive management plan that ensures the long-term viability of the milk-vetch, preserves its habitat, and is responsive to survey and monitoring results, new research, and the population viability analysis.

b. Desert Tortoise

The Mojave population of desert tortoise was federally listed as threatened in 1990. It is also recognized as a special status species by BLM and as a threatened species by the State of California. In California, the desert tortoise is most commonly found in association with creosote bush scrub with intershrub space for growth of herbaceous plants. Critical habitat for the Mojave population of the desert tortoise extends south from the Chocolate Mountains towards the Algodones Dunes, stopping approximately 3.5 miles north of the study area. The BLM has identified the majority of the eastern portion of the dunes as tortoise habitat. The overall recovery objective for the Mojave population of the desert tortoise is to provide habitat capable of maintaining stable or increasing trends in abundance and survivorship of desert tortoise in all recovery units in the Mojave region. Recovery goals, objectives, strategies, and delisting criteria are described in the Mojave Desert Tortoise Revised Recovery Plan (USFWS 2011).

ISDRA RAMP Desert Tortoise Goals and Objectives

- **MDT-01** Maintain and improve habitat for the Mojave population of the desert tortoise.
- **MDT-02** Promote population increase and protect habitat necessary to promote recovery.
- **MDT-03** Provide for habitat connectivity between desert tortoise populations.
- **MDT-04** Establish the goals and criteria for three categories of desert tortoise habitat areas designated in the desert tortoise recovery plan (USFWS 1994). These categories are:
 - Category I. Maintain stable, viable populations, retain natural shelter sites, protect existing tortoise habitat values, and increase populations where possible.
 - Category II. Maintain stable, viable populations and halt further declines in tortoise values.
 - Category III. Limit tortoise habitat and population declines to the extent possible through mitigating impacts.

- **MDT-05** The following management actions apply to all desert tortoise habitat within the Planning Area and are derived from the 2011 Revised Recovery Plan for the Mojave Population of the Desert Tortoise (USFWS).
 - Review land use requests on a case-by-case basis. Requests may be approved, denied, or require mitigation to achieve Goals and Objectives.
 - Compensate for loss of desert tortoise habitat in accordance with the Desert Tortoise Compensation Team report (1991).
 - Limit activities that would fragment or further isolate existing Mojave populations of desert tortoise (e.g., canals, highways).
 - Reduce the attraction of predators through proper management of garbage.
 - Reduce take of desert tortoises, by injury or death, through proper mitigation measures.
- **MDT-06** Allow camping within designated areas of desert tortoise habitat.

Biological Opinion

A Biological Opinion (BO) was issued to the BLM by the USFWS addressing the ISDRA RAMP and its effects on the Mojave desert tortoise. The BO assesses the potential for Wash Road maintenance activities or utility development projects along Ted Kipf Road to impact desert tortoises or their habitat. Based on the absence of the species in the study area and the measures proposed to minimize impacts to the species if encountered, the USFWS and the BLM determined that maintenance of Wash Road was not likely to adversely affect desert tortoises. Similarly, given the sparse densities of desert tortoises in the planning area, the USFWS anticipates that impacts to the species from activities along Ted Kipf Road relating to future utility development and other types of land use authorizations would be relatively minor.

c. BLM Special Status Species

The BLM defines special status species as species listed or proposed for listing under the ESA, and BLM sensitive species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. The RAMP identifies 14 BLM sensitive species within the ISDRA: Munz's cholla (*Cylindropuntia munzii*), giant Spanish needle (*Palafoxia arida* var. *gigantea*), sand food (*Pholisma sonora*), Orocopia sage (*Salvia greatae*), spotted bat (*Euderma maculatum*), California leaf-nosed bat (*Macrotus californicus*), cave myotis (*myotis velifer*), Townsend's big-eared bat (*Corynorhinus townsendii*), burrowing owl, LeConte's thrasher, lowland leopard frog (*Lithobates yavapaiensis*), Couch's spadefoot toad (*Scaphiopus couchii*), flat-tailed horned lizard, and Colorado Desert fringe-toed lizard (*Uma notata*). As stated in the RAMP, special status species must be fully analyzed in any BLM decision that could affect those species or their habitat. Analysis may include inventory, monitoring, evaluation, and identification of mitigation of effects. Potential mitigation actions may include project relocation or redesign (avoidance), monitoring, and site-specific mitigation.

3. RECON Site Visit Findings

RECON Principal Environmental Planner Michael Page and RECON Biologist Katy Chappaz conducted a site visit on February 19, 2020, to ground truth the vegetation communities identified in the ISDRA RAMP and determine whether any variation in the location of resources within the study area could impact the final constraints applied to the proposed project. The study area was accessed from SR-78 and initially surveyed by driving along Wash Road to the southern end of the study area at Wash 14. Wash 14 was surveyed on foot, on both sides of the railway, and Wash 10 was surveyed on foot on either side of the railway and from the railway to Ted Kipf Road, affording an overview of the impact area should the construction of a new designated route be required between the grade separation and Ted Kipf Road.

Creosote scrub is the only vegetation community occurring within the study area, as mapped for the RAMP, though the vegetation is more disturbed within the graded flood control chevrons on the east side of the UPRR and along Wash Road, particularly near SR-78. The vegetation tends to be denser within the washes, and is sparsest within the chevrons. Despite these slight variations, the vegetation throughout the study area is homogenous enough that the same biological constraints and focused surveys would likely apply to all of the proposed alternatives, regardless of their location within the study area.

Recommendations

The sensitivity of biological resources on the western side of the UPRR right-of-way are low as much of the area between the railroad and Wash Road has been disturbed by development and intensive use. However, much of the project study area east of the UPRR right-of-way exhibits limited recent disturbance and is considered to be sensitive. Biological surveys for special status/rare plants and wildlife species, particularly Pierson's milk vetch and reptiles such as the desert tortoise, flat-tailed horned lizard, and fringed-toed lizard, are recommended. Rare plant surveys would likely be required by BLM to be conducted during the spring blooming period, between February and May.

A Biological Assessment (BA) addressing the federally listed species should be prepared once the limits of the project alternatives have been defined. This would include protocol surveys for the desert tortoise. Informal consultation should be initiated with the USFWS to determine the scope of the BA. Informal consultation with the California Department of Fish and Wildlife should be initiated for potential impacts on Caltrans properties or private lands. A Natural Environment Study would also be required for potential impacts to Caltrans properties. The biological resources studies would need to conform to the requirements of the BLM, Caltrans, and County, depending on the alternative selected and the underlying ownership and management responsibilities.

MINERAL RESOURCES

The general goals for mineral resources in the ISDRA RAMP are to:

- Assure the availability of known mineral resource lands for exploration and development within the multiple-use management framework.
- Encourage the development of mineral resources in a manner which satisfies national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation processes.
- Develop a mineral resource inventory; geology, energy, and minerals resources database; and professional, technical, and managerial staff knowledgeable in mineral exploration and development.

Recommendations

There is no clear difference in the potential for impacts to mineral resources between the four project alternatives. Adverse impacts to mineral resources are not anticipated, but should be addressed under the guidelines of the BLM, Caltrans, and County, depending on the alternative selected and the underlying ownership and management responsibilities.

WILDFIRE

Wildfire is of limited concern in the project study area due to the general lack of fuel. However, the ISDRA RAMP does include general goals for the prevention of wildfire impacts.

ISDRA RAMP Wildfire Goals and Objectives

- **INP-03** Treat non-native invasive species that constitute significant fuel load and fire threat directly by using integrated pest management or management through fire breaks and other tactics.
- **WFM-03** Implement fuels reduction programs where needed, with wildland fuels decreased and maintained at a manageable level, creating conditions conducive to safe, efficient, and effective firefighting. Fire and fuels management treatments may include fire suppression, prescribed fire, and non-fire treatments (manual, chemical, mechanical, or biological treatments). Treat non-native invasive species that constitute significant fuel load and fire threat directly by using Integrated Pest Management or management through fire breaks and other tactics.
- **WFM-04** Identify, prioritize, and plan fuels reduction projects using a uniform system for determining wildland fire risk in wildland–urban interface (e.g., Risk Assessment and Mitigation Strategy).
- **WFM-05** Identify and implement post-fire stabilization and rehabilitation actions in burned areas to restore a functional landscape to meet the natural resource management objectives.
- **WFM-06** Apply the minimum impact management tactics, identified in the Interagency Standards for Fire and Aviation Operations, in the wilderness, when wildland fire suppression is required.
- **WFM-07** Consider the desired conditions and management prescriptions in implementing fire management activities for ACECs (see Section 2.22.3 for ACEC management actions).

Recommendations

There is no clear difference in the potential for impacts regarding wildfire between the four project alternatives. Due to the limited fuel and potential for wildfire in the study area, combined with the lack of proposed habitation of the structure, the potential for wildfire impacts would be low.

If you have any questions, please call me at 619-308-9333 extension 145 or e-mail me at mpage@reconenvironmental.com.

Sincerely,



Michael Page
Principal, Environmental Division

cc: Kelly Burnell, Kleinfelder

REFERENCES CITED

California Department of Toxic Substances

- 2020 EnviroStor Database search for Study area. Website accessed March 2020 at:
<https://www.envirostor.dtsc.ca.gov/public/>

California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service

- 2016 California Desert Biological Conservation Framework. December 2016.

California Water Resources Board

- 2020 Geotracker Database search of Study Area. Website accessed March 2020 at:
<https://geotracker.waterboards.ca.gov/>

Glamis Dunes

- 2009 Glamis History. Website accessed February 20, 2020 at:
<https://www.glamisdunes.com/history/beachstore.html>.

Polaris

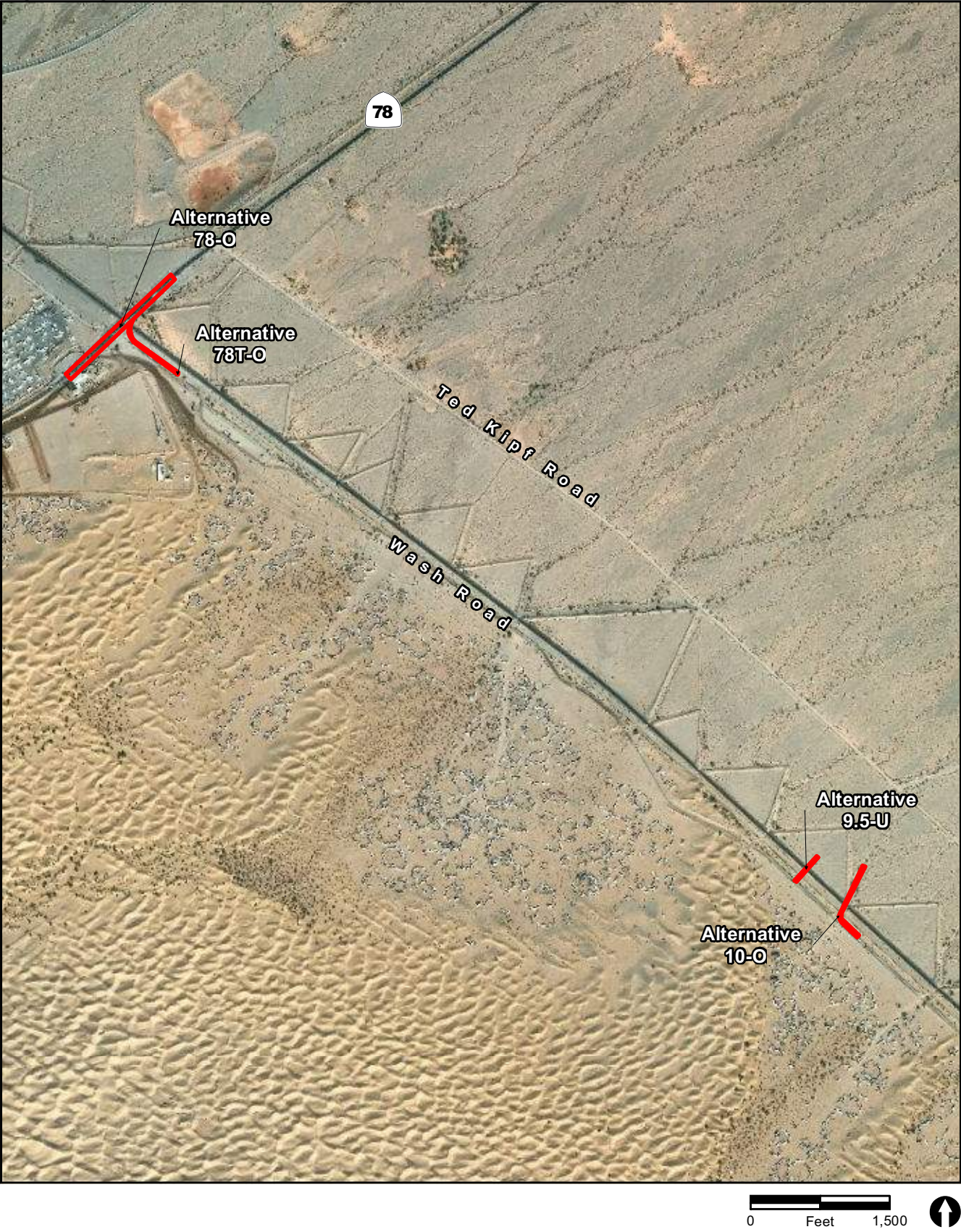
- 2018 Polaris Acquires Historic Glamis Beach Store and Surrounding Property. Website accessed February 20, 2020 at: <https://www.polaris.com/en-us/news/company/polaris-acquires-glamis-beach-store/>.

U.S. Department of the Interior, Bureau of Land Management

- 2012 Imperial Sand Dunes Recreation Area Proposed Recreation Area Management Plan and Final Environmental Impact Statement. September 2012.
- 2013 Imperial Sand Dunes Recreation Area Record of Decision and Approved Recreation Area Management Plan. June 2013.
- 2016 Potential Fossil Yield Classification System. 5 pp.

U.S. Fish and Wildlife Service (USFWS)

- 1994 Desert Tortoise (Mojave Population) Recovery Plan. June.
- 2011 Mojave Desert Tortoise Revised Recovery Plan. May.
- 2019a Recovery Plan for *Astragalus magdalenae* var. *peirsonii* (Peirson's milk-vetch). July.
- 2019b Species Biological Report for *Astragalus magdalenae* var. *peirsonii* (Peirson's milk-vetch). July.
- 2019c Recovery Implementation Strategy for *Astragalus magdalenae* var. *peirsonii* (Peirson's milk-vetch). July.
- 2020 IPAC Resources List for Study Area.




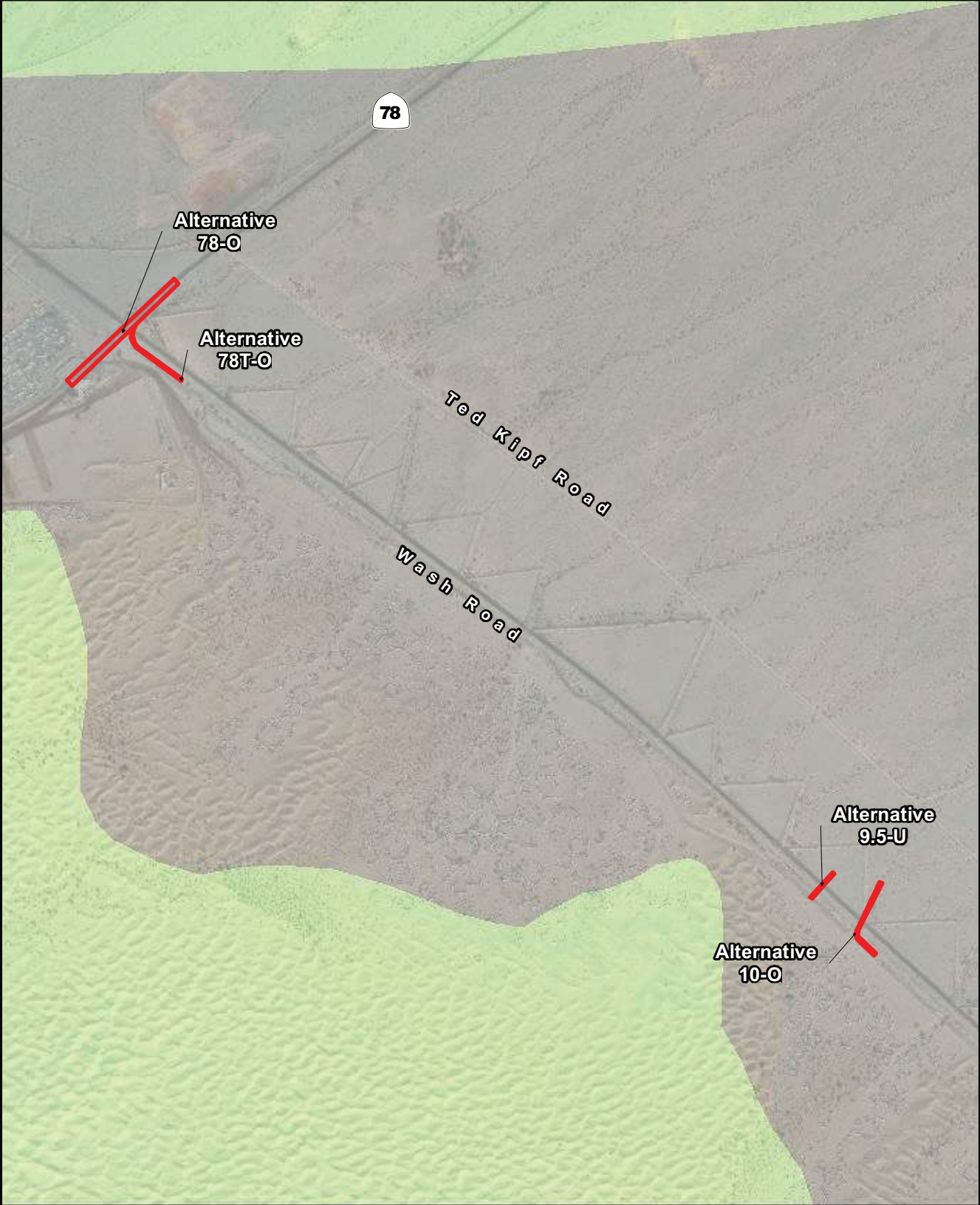
 Project Alternatives

FIGURE 1
Project Alternatives on Aerial Photograph



Project Alternatives

Potential Fossil Yield Classification

Low

Unknown

0 Feet 1,500



FIGURE 2

Potential Fossil Yield
Classification in the Study Area

ATTACHMENTS

ATTACHMENT 1

Native American Heritage Commission

NATIVE AMERICAN HERITAGE COMMISSION

March 4, 2020

Carmen Zepeda-Herman
RECON Environmental

Via Email to: czepeda@reconenvironmental.com

Re: SR 78/Glamis Multiuse Feasibility Study Project, Imperial County

Dear Ms. Zepeda-Herman:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,



Steven Quinn
Cultural Resources Analyst

Attachment



CHAIRPERSON
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Luiseño

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SECRETARY
Merri Lopez-Keifer
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Wintun

COMMISSIONER
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Apache

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**Native American Heritage Commission
Native American Contact List
Imperial County
3/4/2020**

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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed SR 78/Glamis Multiuse Feasibility Study Project, Imperial County.

**Native American Heritage Commission
Native American Contact List
Imperial County
3/4/2020**

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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed SR 78/Glamis Multiuse Feasibility Study Project, Imperial County.

ATTACHMENT 2

CNDDDB Species Observations



Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Imported file selection



Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Algodones Dunes sunflower <i>Helianthus niveus ssp. tephrodes</i>	PDAST4N0Z2	None	Endangered	G4T2T3	S1	1B.2
Andrew's dune scarab beetle <i>Pseudocotalpa andrewsi</i>	IICOL37020	None	None	G1	S1	
burrowing owl <i>Athene cunicularia</i>	ABNSB10010	None	None	G4	S3	SSC
California mellitid bee <i>Melitta californica</i>	IIHYM74010	None	None	G4?	S2?	
Carlson's dune beetle <i>Anomala carlsoni</i>	IICOL30050	None	None	G1	S1	
desert tortoise <i>Gopherus agassizii</i>	ARAAF01012	Threatened	Threatened	G3	S2S3	
flat-tailed horned lizard <i>Phrynosoma mcallii</i>	ARACF12040	None	None	G3	S2	SSC
giant spanish-needle <i>Palafoxia arida var. gigantea</i>	PDAST6T012	None	None	G5T3?	S2	1B.3
Gila woodpecker <i>Melanerpes uropygialis</i>	ABNYF04150	None	Endangered	G5	S1	
Hardy's dune beetle <i>Anomala hardyorum</i>	IICOL30060	None	None	G1	S1	
Le Conte's thrasher <i>Toxostoma lecontei</i>	ABPBK06100	None	None	G4	S3	SSC
Munz's cholla <i>Cylindropuntia munzii</i>	PDCAC0D0V0	None	None	G3	S1	1B.3
pallid bat <i>Antrozous pallidus</i>	AMACC10010	None	None	G5	S3	SSC
Peirson's milk-vetch <i>Astragalus magdalenae var. peirsonii</i>	PDFAB0F532	Threatened	Endangered	G3G4T1	S1	1B.2
pink fairy-duster <i>Calliandra eriophylla</i>	PDFAB0N040	None	None	G5	S3	2B.3
roughstalk witch grass <i>Panicum hirticaule ssp. hirticaule</i>	PMPOA4K170	None	None	G5T5	S2	2B.1
sand evening-primrose <i>Chylismia arenaria</i>	PDONA03020	None	None	G4?	S2S3	2B.2
sand food <i>Pholisma sonorae</i>	PDLNN02020	None	None	G2	S2	1B.2
slender cottonheads <i>Nemacaulis denudata var. gracilis</i>	PDPGN0G012	None	None	G3G4T3?	S2	2B.2
western bumble bee <i>Bombus occidentalis</i>	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Wiggins' croton <i>Croton wigginsii</i>	PDEUP0H140	None	Rare	G2G3	S2	2B.2

Record Count: 21

ATTACHMENT 3
CNDDDB Species Observations Report



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Query Criteria: Imported file selection

<i>Athene cunicularia</i>		Element Code: ABNSB10010	
burrowing owl			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S3
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern		
Habitat:	General:	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.	
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.	

Occurrence No.	1220	Map Index:	72240	EO Index:	73182	Element Last Seen:	2007-01-20
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:			2007-01-20
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2008-09-11

Quad Summary:	Acolita (3311512)
County Summary:	Imperial

Lat/Long:	33.04224 / -115.13905	Accuracy:	1/10 mile
UTM:	Zone-11 N3657509 E673771	Elevation (ft):	280
PLSS:	T13S, R17.5E, Sec. 12 (S)	Acres:	0.0

Location:	5.0 MI NW OF GLAMIS ALONG RAILROAD.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF DESERT SCRUB AND DISTURBED DESERT SCRUB. SURROUNDING AREAS ARE ALGODONES DUNES, OPEN SPACE, SOME AGRICULTURE AND SMALL TOWN DEVELOPMENT TO THE NORTH. AREA DISTURBED BY ORV USE AND LIMITED DEVELOPMENT.
General:	1ADULT AT BURROW OBSERVED ON 20 JAN 2007 DURING A UNION PACIFIC SENSITIVE SPECIES PROJECT. 12 ADULTS OBSERVED ALONG TOTAL SURVEY AREA APPEARED TO BE WINTERING INDIVIDUALS.
Owner/Manager:	UNION PACIFIC



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Melanerpes uropygialis

Element Code: ABNYF04150

Gila woodpecker

Listing Status: **Federal:** None **CNDDB Element Ranks:** **Global:** G5
State: Endangered **State:** S1
Other: BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern
Habitat: **General:** IN CALIFORNIA, INHABITS COTTONWOODS AND OTHER DESERT RIPARIAN TREES, SHADE TREES, AND DATE PALMS.
Micro: CAVITY NESTER IN RIPARIAN TREES OR SAGUARO CACTUS.

Occurrence No. 35 **Map Index:** 63289 **EO Index:** 63381 **Element Last Seen:** 2003-12-06
Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** 2003-12-06
Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 2005-12-01

Quad Summary: Clyde (3211488)

County Summary: Imperial

Lat/Long: 32.92479 / -114.99093 **Accuracy:** 1/10 mile
UTM: Zone-11 N3644740 E687852 **Elevation (ft):** 366
PLSS: T14S, R19E, Sec. 20 (S) **Acres:** 0.0

Location: EASTERN EDGE OF IMPERIAL SAND DUNES RECREATION AREA. ABOUT 1.2 MILES WNW OF CLYDE.

Detailed Location:

Ecological: MICROPHYLL WOODLAND DOMINATED BY PALO VERDE, CREOSOTE AND IRONWOOD. AREA USED FOR ORV RECREATION AND CAMPING.

General: 1 FEMALE OBSERVED CALLING AND MOVING FROM TREE TO TREE ON 6 DEC 2003.

Owner/Manager: BLM



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Toxostoma lecontei

Element Code: ABPBK06100

Le Conte's thrasher

Listing Status:	Federal:	None	CNDDB Element Ranks:	Global:	G4
	State:	None		State:	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern			
Habitat:	General:	DESERT RESIDENT; PRIMARILY OF OPEN DESERT WASH, DESERT SCRUB, ALKALI DESERT SCRUB, AND DESERT SUCCULENT SCRUB HABITATS.			
	Micro:	COMMONLY NESTS IN A DENSE, SPINY SHRUB OR DENSELY BRANCHED CACTUS IN DESERT WASH HABITAT, USUALLY 2-8 FEET ABOVE GROUND.			

Occurrence No.	81	Map Index:	06470	EO Index:	24501	Element Last Seen:	1975-04-05
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1975-04-05
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-10

Quad Summary: Glamis (3211581)

County Summary: Imperial

Lat/Long:	32.95226 / -115.07386	Accuracy:	1 mile
UTM:	Zone-11 N3647641 E680042	Elevation (ft):	335
PLSS:	T14S, R18E, Sec. 45 (S)	Acres:	0.0

Location: THREE MI S OF GLAMIS.

Detailed Location: ONE YOUNG AND ADULT SEEN ON PALO VERDE BRANCH.

Ecological: DESERT HABITAT - PALO VERDE AND CERCIPIUM.

General: EO FROM NORTH AMERICAN NEST RECORD CARD PROGRAM.

Owner/Manager: UNKNOWN



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Antrozous pallidus

Element Code: AMACC10010

pallid bat

Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G5
	State: None		State: S3
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority		
Habitat:	General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS AND FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.		
	Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.		

Occurrence No.	153	Map Index: 58285	EO Index: 66612	Element Last Seen: 1977-05-01
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1977-05-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2006-10-02

Quad Summary: Glamis (3211581), East of Acolita (3311511)

County Summary: Imperial

Lat/Long:	32.99335 / -115.07985	Accuracy:	1 mile
UTM:	Zone-11 N3652187 E679398	Elevation (ft):	300
PLSS:	T13S, R18E, Sec. 33 (S)	Acres:	0.0

Location: 1 MI W OF GLAMIS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED IN THE GENERAL VICINITY OF 1 MI W OF GLAMIS.

Ecological:

General: 1 FEMALE SPECIMEN COLLECTED 1 MAY 1977, MSB #103268.

Owner/Manager: BLM



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Gopherus agassizii

Element Code: ARAAF01012

desert tortoise

Listing Status: **Federal:** Threatened

CNDDDB Element Ranks: **Global:** G3

State: Threatened

State: S2S3

Other: IUCN_VU-Vulnerable

Habitat: **General:** MOST COMMON IN DESERT SCRUB, DESERT WASH, AND JOSHUA TREE HABITATS; OCCURS IN ALMOST EVERY DESERT HABITAT.

Micro: REQUIRE FRIABLE SOIL FOR BURROW AND NEST CONSTRUCTION. CREOSOTE BUSH HABITAT WITH LARGE ANNUAL WILDFLOWER BLOOMS PREFERRED.

Occurrence No.	473	Map Index:	82794	EO Index:	83790	Element Last Seen:	2007-04-29
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2007-04-29	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2011-06-06	

Quad Summary: Clyde (3211488)

County Summary: Imperial

Lat/Long:	32.97579 / -114.95297	Accuracy:	80 meters
UTM:	Zone-11 N3650463 E691293	Elevation (ft):	560
PLSS:	T14S, R19E, Sec. 03, SE (S)	Acres:	0.0

Location: 7 MI E OF GLAMIS, 10 MI NW OF HEDGES, 10 MI SW OF QUARTZ PEAK.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological:

General: MALE TORTOISE (287 MM MCL) OBSERVED 29 APR 2007.

Owner/Manager: BLM

Occurrence No.	474	Map Index:	82795	EO Index:	83791	Element Last Seen:	2010-03-30
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2010-03-30	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2011-06-06	

Quad Summary: Clyde (3211488)

County Summary: Imperial

Lat/Long:	32.99112 / -114.95277	Accuracy:	80 meters
UTM:	Zone-11 N3652164 E691279	Elevation (ft):	600
PLSS:	T13S, R19E, Sec. 34, SE (S)	Acres:	0.0

Location: 7 MI E OF GLAMIS, 10.5 MI NW OF HEDGES, 11 MI SW OF QUARTZ PEAK.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological:

General: MALE CARCASS (272 MM MCL) OBSERVED 30 MAR 2010.

Owner/Manager: BLM



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Phrynosoma mcallii

Element Code: ARACF12040

flat-tailed horned lizard

Listing Status: **Federal:** None **CNDDB Element Ranks:** **Global:** G3
State: None **State:** S2
Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened
Habitat: **General:** RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.
Micro: CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.

Occurrence No. 49 **Map Index:** 06432 **EO Index:** 27930 **Element Last Seen:** 2007-05-24
Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** 2007-05-24
Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 2015-09-10

Quad Summary: Glamis NW (3211582), Holtville NE (3211583)

County Summary: Imperial

Lat/Long: 32.96883 / -115.22148 **Accuracy:** nonspecific area
UTM: Zone-11 N3649236 E666210 **Elevation (ft):** 100
PLSS: T14S, R17E, Sec. 04 (S) **Acres:** 14844.0

Location: ALONG HIGHWAY 78, FROM ABOUT 5 MILES TO 14 ROAD MILES WEST OF GLAMIS.

Detailed Location: 1955-1964: MAPPED TO SPECIMEN LOCALITIES ALONG HWY 78, 5-14 MI W OF GLAMIS. LATER SPECIMENS MAINLY FROM BETWEEN COACHELLA & HIGHLINE CANALS ON HWY 78. 2001, 2007 DETECTIONS ALONG HWY WITHIN 1 MI OF COACHELLA CANAL.

Ecological: AERIAL IMAGERY SHOWS AREA WEST OF HIGHLINE CANAL IS PRIMARILY AGRICULTURAL LANDS, NOT SUITABLE HABITAT. AREA EAST OF HIGHLINE CANAL APPEARS UNDISTURBED.

General: MANY COLLECTIONS MADE IN THIS VICINITY IN 1955, 1956, 1957, 1958, 1959, 1960, 1963, 1964, 1965, 1966, 1968, 1969, 1971, 1973, 2000, AND 2001. 2 AOR & 1 DOR OBSERVED, 2000. 1 OBSERVED 24 MAY 2007.

Owner/Manager: BLM, PVT

Occurrence No. 57 **Map Index:** 06471 **EO Index:** 27918 **Element Last Seen:** 1969-05-06
Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** 1969-05-06
Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 2016-07-21

Quad Summary: Glamis (3211581), East of Acolita (3311511)

County Summary: Imperial

Lat/Long: 33.00507 / -115.07001 **Accuracy:** 1 mile
UTM: Zone-11 N3653503 E680295 **Elevation (ft):** 360
PLSS: T13S, R18E, Sec. 27 (S) **Acres:** 0.0

Location: GLAMIS, ALGODONES DUNES.

Detailed Location: LOCATIONS STATED AS "1 MI N GLAMIS, ALGODONES DUNES" (LACM) AND "GLAMIS, ALGODONES DUNES AREA" (MVZ).

Ecological:

General: MUSEUM SPECIMENS (LACM) #74206, 74261. MVZ #'S 85232, 85233, 85234, 85235 - 3 MALES AND 1 FEMALE COLLECTED BY ROBERT STEBBINS ON 6 MAY 1969.

Owner/Manager: UNKNOWN

Anomala carlsoni

Element Code: IICOL30050

Carlson's dune beetle

Listing Status: **Federal:** None **CNDDB Element Ranks:** **Global:** G1
State: None **State:** S1
Other:



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Habitat:	General:	KNOWN PRIMARILY FROM CREOSOTE SCRUB IN VICINITY OF ALGODONES DUNES, IMPERIAL COUNTY. ALSO TAKEN FROM BORREGO, SAN DIEGO COUNTY.					
	Micro:	HOST PREFERENCES UNKNOWN.					
Occurrence No.	1	Map Index:	06483	EO Index:	22783	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-13
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.95121 / -115.03370			Accuracy:	1/5 mile		
UTM:	Zone-11 N3647594 E683799			Elevation (ft):	340		
PLSS:	T14S, R18E, Sec. 13, S (S)			Acres:	0.0		
Location:	ALGODONES DUNES SYSTEM, 3.5 MI SE OF GLAMIS.						
Detailed Location:							
Ecological:	VIRTUALLY NOTHING IS KNOWN ABOUT THE BIOLOGY OF THIS SPECIES.						
General:	FOR YEARS THIS SPECIES WENT UNRECOGNIZED IN MIXED SERIES OF LEPTOHOPLIA TESTACEIPENNIS; DESCRIBED BY HARDY IN 1976. FEMALE SPECIMENS ARE RARE; ONLY 3 KNOWN OF 1000 COLLECTED.						
Owner/Manager:	BLM						
Occurrence No.	2	Map Index:	06502	EO Index:	22782	Element Last Seen:	1979-04-XX
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-XX
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Clyde (3211488)						
County Summary:	Imperial						
Lat/Long:	32.92059 / -114.98913			Accuracy:	1/5 mile		
UTM:	Zone-11 N3644277 E688031			Elevation (ft):	380		
PLSS:	T14S, R19E, Sec. 29 (S)			Acres:	0.0		
Location:	ALGODONES DUNE SYSTEM, 7 MI SE OF GLAMIS.						
Detailed Location:							
Ecological:	VIRTUALLY NOTHING IS KNOWN ABOUT THE BIOLOGY OF THIS SPECIES.						
General:	FOR YEARS THIS SPECIES WENT UNRECOGNIZED IN MIXED SERIES OF LEPTOHOPLIA TESTACEIPENNIS. DESCRIBED BY HARDY IN 1976. FEMALE SPECIMENS ARE RARE - ONLY 3 KNOWN OF 1000 COLLECTED.						
Owner/Manager:	BLM						



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Occurrence No.	6	Map Index:	06491	EO Index:	22778	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.92253 / -115.01191				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644452 E685896				Elevation (ft):	360	
PLSS:	T14S, R19E, Sec. 30 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 6.25 MI SSE OF GLAMIS.						
Detailed Location:							
Ecological:	VIRTUALLY NOTHING IS KNOWN ABOUT THE BIOLOGY OF THIS SPECIES.						
General:	FOR YEARS THIS SPECIES WENT UNRECOGNIZED IN MIXED SERIES OF LEPTOHOPLIA TESTACEIPENNIS. DESCRIBED BY HARDY IN 1976. FEMALE SPECIMENS ARE RARE - ONLY 3 KNOWN OF 1000 COLLECTED.						
Owner/Manager:	BLM						

Occurrence No.	7	Map Index:	06489	EO Index:	22777	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.93240 / -115.01349				Accuracy:	1/5 mile	
UTM:	Zone-11 N3645543 E685728				Elevation (ft):	390	
PLSS:	T14S, R19E, Sec. 19 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 5 MI SSE OF GLAMIS.						
Detailed Location:							
Ecological:	VIRTUALLY NOTHING IS KNOWN ABOUT THE BIOLOGY OF THIS SPECIES.						
General:	FOR YEARS THIS SPECIES WENT UNRECOGNIZED IN MIXED SERIES OF LEPTOHOPLIA TESTACEIPENNIS. DESCRIBED BY HARDY IN 1976. FEMALE SPECIMENS ARE RARE - ONLY 3 KNOWN OF 1000 COLLECTED.						
Owner/Manager:	BLM						

Occurrence No.	18	Map Index:	58279	EO Index:	58319	Element Last Seen:	1972-09-16
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1972-09-16
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2004-12-02
Quad Summary:	East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	33.02148 / -115.11725				Accuracy:	1/5 mile	
UTM:	Zone-11 N3655243 E675848				Elevation (ft):	100	
PLSS:	T13S, R18E, Sec. 19 (S)				Acres:	0.0	
Location:	3 MILES NW OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	ALLOTYPE FEMALE AND 200+ MALE PARATYPES (EXACT NUMBER NOT GIVEN FOR LATER COLLECTION DATE).						
Owner/Manager:	BLM						



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Occurrence No.	19	Map Index:	58284	EO Index:	58320	Element Last Seen:	1972-02-27
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1972-02-27	Record Last Updated:	2004-12-02
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	33.01297 / -115.10394				Accuracy:	1/5 mile	
UTM:	Zone-11 N3654322 E677109				Elevation (ft):	300	
PLSS:	T13S, R18E, Sec. 29 (S)				Acres:	0.0	
Location:	2 MILES NW OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	HOLOTYPE MALE AND 3 MALE PARATYPES. FEMALES ARE RARE; ONLY 3 ARE KNOWN FROM APPROXIMATELY 1000 SPECIMENS COLLECTED. ADULTS ARE ATTRACTED TO LIGHTS AT NIGHT, & ADULT MALES ARE TAKEN ON SAND OR FLYING IN A LOW, Laterally oscillating manner.						
Owner/Manager:	BLM						

Occurrence No.	20	Map Index:	58285	EO Index:	58321	Element Last Seen:	1972-04-09
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1972-04-09
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2005-03-17
Quad Summary:	Glamis (3211581), East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	32.99335 / -115.07985				Accuracy:	1 mile	
UTM:	Zone-11 N3652187 E679398				Elevation (ft):	300	
PLSS:	T13S, R18E, Sec. 33 (S)				Acres:	0.0	
Location:	GLAMIS TO 1 MILE WEST OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	4 MALE PARATYPES, 1 MILE WEST OF GLAMIS, DEPOSITED AT OSU. 5 MALE PARATYPES, GLAMIS, DEPOSITED IN COLLECTIONS OF ALAN HARDY AND H. F. HOWDEN. SPECIMENS FROM "GLAMIS" ARE PROBABLY FROM DUNES JUST WEST OF TOWN, AND MAPPED ACCORDINGLY.						
Owner/Manager:	BLM						



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Occurrence No.	21	Map Index:	58286	EO Index:	58322	Element Last Seen:	1973-05-04
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1973-05-04	Record Last Updated:	2005-04-29
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.99548 / -115.10834				Accuracy:	1/5 mile	
UTM:	Zone-11 N3652376 E676732				Elevation (ft):	250	
PLSS:	T13S, R18E, Sec. 31 (S)				Acres:	0.0	
Location:	2 MILES WEST OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	259 MALE PARATYPES, DEPOSITED AT OSU. 2 PARATYPES AND 2 SPECIMENS DEPOSITED IN THE CALIFORNIA STATE COLLECTION OF ARTHROPODS (CDFA), COLLECTED BY R.B. ROBERTS.						
Owner/Manager:	UNKNOWN						

Occurrence No.	22	Map Index:	58287	EO Index:	58323	Element Last Seen:	1972-03-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1972-03-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2005-04-29
Quad Summary:	East of Acolita (3311511), Acolita (3311512)						
County Summary:	Imperial						
Lat/Long:	33.02662 / -115.12512				Accuracy:	1/5 mile	
UTM:	Zone-11 N3655799 E675102				Elevation (ft):	200	
PLSS:	T13S, R17.5E, Sec. 13 (S)				Acres:	0.0	
Location:	3.5 MILES NW OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	6 MALE PARATYPES, DEPOSITED AT CALIFORNIA DEPT AGRICULTURE.						
Owner/Manager:	BLM						

Anomala hardyorum				Element Code: IICOL30060			
Hardy's dune beetle							
Listing Status:	Federal:	None			CNDDDB Element Ranks:	Global:	G1
	State:	None				State:	S1
	Other:						
Habitat:	General:	KNOWN ONLY FROM CREOSOTE BUSH SCRUB HABITAT IN THE VICINITY OF THE ALGODONES DUNES, IMPERIAL COUNTY.					
	Micro:	ADULTS ACTIVE AT DUSK, GENERALLY ON NORTH OR EAST SLIP FACES OF DUNES.					



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Occurrence No.	1	Map Index:	06483	EO Index:	22766	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-13
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.95121 / -115.03370				Accuracy:	1/5 mile	
UTM:	Zone-11 N3647594 E683799				Elevation (ft):	340	
PLSS:	T14S, R18E, Sec. 13 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 4 MI SE OF GLAMIS.						
Detailed Location:							
Ecological:	NO KNOWN HOST PLANT. ADULTS HAVE BEEN SIFTED FROM SAND BENEATH A WIDE VARIETY OF PLANTS. NOTHING IS KNOWN OF THE IMMATURE STAGES. ADULTS ARE ACTIVE AT DUSK, GENERALLY ON NORTH- OR EAST-FACING SLIP FACES.						
General:							
Owner/Manager:	BLM						

Occurrence No.	2	Map Index:	06502	EO Index:	22765	Element Last Seen:	1979-04-XX
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-XX
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2005-04-29
Quad Summary:	Clyde (3211488)						
County Summary:	Imperial						
Lat/Long:	32.92059 / -114.98913				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644277 E688031				Elevation (ft):	380	
PLSS:	T14S, R19E, Sec. 29 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 7 MI SE OF GLAMIS.						
Detailed Location:							
Ecological:	NO KNOWN HOST PLANT. ADULTS HAVE BEEN SIFTED FROM SAND BENEATH A WIDE VARIETY OF PLANTS. NOTHING IS KNOWN OF THE IMMATURE STAGES. ADULTS ARE ACTIVE AT DUSK, GENERALLY ON NORTH- OR EAST-FACING SLIP FACES.						
General:	56 SPECIMENS DEPOSITED IN THE CALIFORNIA STATE COLLECTION OF ARTHROPODS (CDFA), COLLECTED AT BLACKLIGHT 19-24 MAR 1979.						
Owner/Manager:	BLM						



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Occurrence No.	7	Map Index:	06491	EO Index:	22760	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.92253 / -115.01191				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644452 E685896				Elevation (ft):	360	
PLSS:	T14S, R19E, Sec. 30 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 6 MI SSE OF GLAMIS.						
Detailed Location:							
Ecological:	NO KNOWN HOST PLANT. ADULTS HAVE BEEN SIFTED FROM SAND BENEATH A WIDE VARIETY OF PLANTS. NOTHING IS KNOWN OF THE IMMATURE STAGES. ADULTS ARE ACTIVE AT DUSK, GENERALLY ON NORTH- OR EAST-FACING SLIP FACES.						
General:							
Owner/Manager:	BLM						

Occurrence No.	8	Map Index:	06489	EO Index:	22759	Element Last Seen:	1979-06-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-06-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2005-04-29
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.93240 / -115.01349				Accuracy:	1/5 mile	
UTM:	Zone-11 N3645543 E685728				Elevation (ft):	400	
PLSS:	T14S, R19E, Sec. 19 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 5.5 MI SSE OF GLAMIS.						
Detailed Location:							
Ecological:	NO KNOWN HOST PLANT. ADULTS HAVE BEEN SIFTED FROM SAND BENEATH A WIDE VARIETY OF PLANTS. NOTHING IS KNOWN OF THE IMMATURE STAGES. ADULTS ARE ACTIVE AT DUSK, GENERALLY ON NORTH- OR EAST-FACING SLIP FACES.						
General:	6 SPECIMENS DEPOSITED IN THE CALIFORNIA STATE COLLECTION OF ARTHROPODS (CDFA), TAKEN AT BLACKLIGHT.						
Owner/Manager:	BLM						



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Occurrence No.	17	Map Index:	58279	EO Index:	58315	Element Last Seen:	1970-04-23
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1970-04-23
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2004-12-02
Quad Summary:	East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	33.02148 / -115.11725				Accuracy:	1/5 mile	
UTM:	Zone-11 N3655243 E675848				Elevation (ft):	100	
PLSS:	T13S, R18E, Sec. 19 (S)				Acres:	0.0	
Location:	3 MILES NW OF GLAMIS.						
Detailed Location:							
Ecological:							
General:	ORIGINAL DESCRIPTION/TYPE LOCALITY; HOLOTYPE MALE COLL. 12 APRIL 1969, ALLOTYPE FEMALE COLL. 23 APR 1970; 93 M, 8 F, SAME DATA, 3 APR-5 MAY; 91 M, 10 F, SAME EXCEPT VARIOUS STATIONS "NEARER GLAMIS," BETWEEN 26 MAR-4 MAY.						
Owner/Manager:	BLM						

<i>Pseudocotalpa andrewsi</i>				Element Code: IICOL37020	
Andrew's dune scarab beetle					
Listing Status:	Federal:	None	CNDDDB Element Ranks:	Global:	G1
	State:	None		State:	S1
	Other:				
Habitat:	General:	ENDEMIC TO THE CREOSOTE BUSH SCRUB HABITAT OF ALGODONES DUNES, NW OF GLAMIS, IMPERIAL COUNTY; 100-400 FT ELEVATION.			
	Micro:	INHABITS BOTH SURFACE AND SUB-SURFACE OF SAND, UTILIZING THE WET SAND INTERFACE AS PROTECTION FROM THE HEAT OF THE DAY.			

Occurrence No.	1	Map Index:	06481	EO Index:	22711	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-13
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.96364 / -115.03830				Accuracy:	1/5 mile	
UTM:	Zone-11 N3648964 E683343				Elevation (ft):	340	
PLSS:	T14S, R18E, Sec. 11 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 3 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	2	Map Index:	06491	EO Index:	22710	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1979-04-10		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	1989-08-11		
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.92253 / -115.01191			Accuracy:	1/5 mile		
UTM:	Zone-11 N3644452 E685896			Elevation (ft):	360		
PLSS:	T14S, R19E, Sec. 30 (S)			Acres:	0.0		
Location:	ALGODONES DUNE SYSTEM, ABOUT 7 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	3	Map Index:	06483	EO Index:	22709	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1979-04-13		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	1989-08-11		
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.95121 / -115.03370			Accuracy:	1/5 mile		
UTM:	Zone-11 N3647594 E683799			Elevation (ft):	340		
PLSS:	T14S, R18E, Sec. 13 (S)			Acres:	0.0		
Location:	ALGODONES DUNE SYSTEM, 3.5 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	4	Map Index:	06489	EO Index:	22708	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1979-04-10		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	1989-08-11		
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.93240 / -115.01349				Accuracy:	1/5 mile	
UTM:	Zone-11 N3645543 E685728				Elevation (ft):	350	
PLSS:	T14S, R19E, Sec. 19 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 5.5 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	5	Map Index:	06478	EO Index:	22707	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1979-04-13		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	1989-08-11		
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.95182 / -115.04966				Accuracy:	1/5 mile	
UTM:	Zone-11 N3647634 E682306				Elevation (ft):	320	
PLSS:	T14S, R18E, Sec. 14 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 3.5 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	17	Map Index:	06479	EO Index:	22695	Element Last Seen:	1979-04-14
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-14
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.92833 / -115.04344				Accuracy:	1/5 mile	
UTM:	Zone-11 N3645040 E682935				Elevation (ft):	360	
PLSS:	T14S, R18E, Sec. 23 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 5 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	18	Map Index:	06484	EO Index:	22694	Element Last Seen:	1979-04-14
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-14
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.91031 / -115.03025				Accuracy:	1/5 mile	
UTM:	Zone-11 N3643064 E684206				Elevation (ft):	400	
PLSS:	T14S, R18E, Sec. 36 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 6.4 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	23	Map Index:	06476	EO Index:	22689	Element Last Seen:	1979-04-13
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-13
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.94198 / -115.05831				Accuracy:	1/5 mile	
UTM:	Zone-11 N3646527 E681517				Elevation (ft):	300	
PLSS:	T14S, R18E, Sec. 15 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 4 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	24	Map Index:	06488	EO Index:	22688	Element Last Seen:	1979-04-14
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-14
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.89865 / -115.01996				Accuracy:	1/5 mile	
UTM:	Zone-11 N3641790 E685193				Elevation (ft):	400	
PLSS:	T14S, R18E, Sec. 36, NW (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 7.5 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	25	Map Index:	06490	EO Index:	22687	Element Last Seen:	1979-04-14
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-14
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.90420 / -115.01358				Accuracy:	1/5 mile	
UTM:	Zone-11 N3642416 E685778				Elevation (ft):	400	
PLSS:	T14S, R19E, Sec. 31 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 7.4 MI SSE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	26	Map Index:	06496	EO Index:	22686	Element Last Seen:	1979-04-10
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-10
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Clyde (3211488)						
County Summary:	Imperial						
Lat/Long:	32.92559 / -114.99720				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644817 E687265				Elevation (ft):	390	
PLSS:	T14S, R19E, Sec. 20 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 6.5 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						



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Occurrence No.	27	Map Index:	06502	EO Index:	22685	Element Last Seen:	1979-04-XX
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1979-04-XX
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	1989-08-11
Quad Summary:	Clyde (3211488)						
County Summary:	Imperial						
Lat/Long:	32.92059 / -114.98913				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644277 E688031				Elevation (ft):	390	
PLSS:	T14S, R19E, Sec. 29 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, 7 MI SE OF GLAMIS.						
Detailed Location:	ENDEMIC TO THE ALGODONES DUNES.						
Ecological:	FLIGHT ACTIVITY 10-30 MINUTES AFTER SUNSET, DIGGING IN 1-2 MINUTES AFTER LANDING, DESCENDING TO THE WET SAND INTERFACE (USUALLY 5-8 CM, UP TO 30 CM). HOST PLANT UNKNOWN, ALTHOUGH MOST ADULTS SWARM AROUND CREOSOTE.						
General:	ADULTS SWARM FROM APRIL TO MID-MAY.						
Owner/Manager:	BLM						

Occurrence No.	28	Map Index:	78428	EO Index:	79348	Element Last Seen:	1977-04-16
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	1977-04-16
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2010-03-29
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.92490 / -115.07110				Accuracy:	1/5 mile	
UTM:	Zone-11 N3644612 E680356				Elevation (ft):	435	
PLSS:	T14S, R18E, Sec. 51, NW (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, ABOUT 5 MILES SOUTH OF GLAMIS.						
Detailed Location:	MAPPED TO THE COORDINATES GIVEN BY SBMNH.						
Ecological:							
General:	TWO COLLECTED 16 APR 1977 AND DEPOSITED IN THE SANTA BARBARA MUSEUM OF NATURAL HISTORY #CBP0037409 & CBP0037410.						
Owner/Manager:	BLM						



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Occurrence No.	29	Map Index:	78429	EO Index:	79349	Element Last Seen:	2006-04-01
Occ. Rank:	Unknown			Presence:	Presumed Extant	Site Last Seen:	2006-04-01
Occ. Type:	Natural/Native occurrence			Trend:	Unknown	Record Last Updated:	2010-03-24
Quad Summary:	Glamis (3211581)						
County Summary:	Imperial						
Lat/Long:	32.98420 / -115.05120				Accuracy:	1/5 mile	
UTM:	Zone-11 N3651222 E682095				Elevation (ft):	357	
PLSS:	T14S, R18E, Sec. 02 (S)				Acres:	0.0	
Location:	ALGODONES DUNE SYSTEM, ABOUT 1.5 MILES SE OF GLAMIS.						
Detailed Location:	LOCATION GIVEN AS "5 MI. S. GLAMIS" BUT COORDINATES GIVEN ARE 1.5 MI SE OF GLAMIS. MAPPED TO THE COORDINATES GIVEN IN THE SBMNH SPECIMEN RECORD.						
Ecological:							
General:	THREE BEETLES SEIVED FROM SAND ON 1 APR 2006 BY M.E. IRWIN. DEPOSITED IN THE SANTA BARBARA MUSEUM OF NATURAL HISTORY (#CBP0067583 - CBP0067585).						
Owner/Manager:	BLM						

<i>Bombus occidentalis</i>				Element Code: IIHYM24250			
western bumble bee							
Listing Status:	Federal:	None			CNDDB Element Ranks:	Global:	G2G3
	State:	Candidate Endangered				State:	S1
	Other:	USFS_S-Sensitive, XERCES_IM-Imperiled					
Habitat:	General:	ONCE COMMON & WIDESPREAD, SPECIES HAS DECLINED PRECIPITOUSLY FROM CENTRAL CA TO SOUTHERN B.C., PERHAPS FROM DISEASE.					
	Micro:	<input type="checkbox"/>					

Occurrence No.	282	Map Index:	58285	EO Index:	100407	Element Last Seen:	1993-04-04
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1993-04-04	Record Last Updated:	2016-01-21
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Glamis (3211581), East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	32.99335 / -115.07985				Accuracy:	1 mile	
UTM:	Zone-11 N3652187 E679398				Elevation (ft):	300	
PLSS:	T13S, R18E, Sec. 33 (S)				Acres:	0.0	
Location:	GLAMIS SANDDUNES.						
Detailed Location:	EXACT LOCATION UNKNOWN. THE LOCALITY "GLAMIS SANDDUNES" MAY REFER TO THE AREA NEAR THE SETTLEMENT OF GLAMIS. ALTERNATIVELY, SOME PEOPLE REFER TO THE ENTIRETY OF THE ALGODONES DUNES AS THE GLAMIS DUNES. MAPPED BY CNDDB NEAR THE SETTLEMENT.						
Ecological:							
General:	COLLECTED 4 APR 1993.						
Owner/Manager:	BLM						



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Melitta californica

Element Code: IIHYM74010

California mellitid bee

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G4?

State: None

State: S2?

Other:

Habitat: **General:** DESERT REGIONS OF SW ARIZONA, SE CALIFORNIA, AND BAJA CALIFORNIA, MEXICO. ALSO COLLECTED FROM TORREY PINES, SAN DIEGO CO

Micro: EARLIER RECORDS OF M. WILMATTAE PERTAIN TO THIS SPECIES; SPECIES WAS SYNONYMIZED WITH M. CALIFORNICA IN 1981.

Occurrence No.	3	Map Index:	58279	EO Index:	61721	Element Last Seen:	1972-03-04
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1972-03-04	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2005-06-21	

Quad Summary: East of Acolita (3311511)

County Summary: Imperial

Lat/Long: 33.02148 / -115.11725 **Accuracy:** 1/5 mile

UTM: Zone-11 N3655243 E675848 **Elevation (ft):** 100

PLSS: T13S, R18E, Sec. 19 (S) **Acres:** 0.0

Location: 3 MILES NW OF GLAMIS.

Detailed Location:

Ecological:

General: ONE FEMALE, TWO MALES COLLECTED 4 MAR 1972 BY A. HARDY ON SPHAERALCEA, & DEPOSITED IN UTAH STATE UNIVERSITY AND LA COUNTY MUSEUM OF NATURAL HISTORY. AN UNKNOWN NUMBER COLLECTED BY E. KANE, 04 MAR 1972, IN THE COLLECTION OF ROBERT W. BROOKS.

Owner/Manager: BLM



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



Helianthus niveus ssp. tephrodes

Element Code: PDAST4N0Z2

Algodones Dunes sunflower

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G4T2T3

State: Endangered

State: S1

Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_USDA-US Dept of Agriculture

Habitat: **General:** DESERT DUNES.

Micro: ON PARTIALLY STABILIZED DESERT DUNES. 90-300 M.

Occurrence No. 1 **Map Index:** 76052 **EO Index:** 6541 **Element Last Seen:** 2018-04-18

Occ. Rank: Good **Presence:** Presumed Extant **Site Last Seen:** 2018-04-18

Occ. Type: Natural/Native occurrence **Trend:** Stable **Record Last Updated:** 2018-09-27

Quad Summary: Grays Well NE (3211467), Grays Well (3211468), Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), East of Acolita (3311511), Acolita (3311512), Amos (3311513), Tortuga (3311523)

County Summary: Imperial, Mexico

Lat/Long: 32.92889 / -115.07475

Accuracy: specific area

UTM: Zone-11 N3645048 E680006

Elevation (ft): 300

PLSS: T14S, R18E, Sec. 46 (S)

Acres: 97758.0

Location: ALGODONES DUNES.

Detailed Location: SCATTERED ALONG DUNES BETWEEN SOUTHERN PACIFIC RAILROAD TRACKS AND COACHELLA CANAL. INCLUDES FORMER OCCURRENCES #2-40.

Ecological: SAND DUNES WITHIN DESERT PSAMMOPHYTIC SCRUB (STABILIZED AND PARTIALLY STABILIZED DESERT DUNES). ASSOCIATES INCLUDE SEVERAL RARE PLANTS; AMMOBROMA SONORAE, ASTRAGALUS LENTIGINOSUS BORREGANUS, ERIOGONUM DESERTICOLA, PILOSTYLES THURBERI, ETC.

General: POP #S FOR PARTS OF OCC: 885 PLANTS IN 1984; 5,851 EST IN 1998; 7,545 IN 1999; 4,734 IN 2000; 7,376 IN 2001; 8,218 IN 2002; 88,704 IN 2003; 1,970,208 IN 2004 (86% SEEDLINGS); 325,122 ADULTS IN 2005, 25 IN 2013, 1 IN 2017, 427 IN 2018.

Owner/Manager: BLM



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



Palafoxia arida var. gigantea

Element Code: PDAST6T012

giant spanish-needle

Listing Status: **Federal:** None

CNDDB Element Ranks: **Global:** G5T3?

State: None

State: S2

Other: Rare Plant Rank - 1B.3, BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden

Habitat: **General:** DESERT DUNES.

Micro: ACTIVE AND STABLE DUNE AREAS; ASSOCIATED WITH AMMOBROMA SONORAE, ASTRAGALUS LENTIGINOSUS BORREGANUS, ETC. 20-95 M.

Occurrence No.	1	Map Index:	77872	EO Index:	6544	Element Last Seen:	2013-04-20
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:			2013-04-20
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2014-05-28

Quad Summary: Grays Well NE (3211467), Grays Well (3211468), Ogilby (3211477), Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), East of Acolita (3311511), Acolita (3311512), Amos (3311513), Tortuga (3311523)

County Summary: Imperial, Mexico

Lat/Long:	32.92004 / -115.06355	Accuracy:	specific area
UTM:	Zone-11 N3644086 E681072	Elevation (ft):	
PLSS:	T14S, R18E, Sec. 51 (S)	Acres:	118017.0

Location: ALGODONES DUNES.

Detailed Location: SCATTERED THROUGHOUT THE DUNES FROM SOUTHERN PACIFIC RR TRACKS WEST TO THE COACHELLA CANAL AND FROM MAMMOTH WASH SOUTH TO THE CA/MEXICO BORDER. MAPPED BY CNDDB USING MULTIPLE MAP SOURCES.

Ecological: SAND DUNES WITHIN DESERT PSAMMOPHYTIC SCRUB (STABILIZED AND PARTIALLY STABILIZED DESERT DUNES). ASSOCIATES INCLUDE SEVERAL RARE PLANTS: AMMOBROMA SONORAE, ASTRAGALUS LENTIGINOSUS BORREGANUS, ERIOGONUM DESERTICOLA, PILOSTYLES THURBERI, ETC.

General: >3,000 PLANTS SEEN ALONG ALL AMERICAN CANAL IN 1993. 34,649 IN 1998; 1,458 IN 1999; 13,933 IN 2000. 25 PLANTS ALONG HWY 78 JUST E OF GECKO RD IN 2009. 80+ PLANTS N OF HWY 78 ~1 MI NW OF OSBORNE LOOKOUT IN 2013. INCL FRMR EOS 2-49, 51, 52.

Owner/Manager: BLM



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



Cylindropuntia munzii

Element Code: PDCAC0D0V0

Munz's cholla

Listing Status: **Federal:** None **CNDDB Element Ranks:** **Global:** G3
State: None **State:** S1
Other: Rare Plant Rank - 1B.3, BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden
Habitat: **General:** SONORAN DESERT SCRUB.
Micro: SANDY AND ROCKY DESERT FLATS AND HILLS. 70-430 M.

Occurrence No.	5	Map Index:	06480	EO Index:	12782	Element Last Seen:	1981-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1981-XX-XX		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2010-11-16		
Quad Summary:	East of Acolita (3311511), Blue Mountain (3311521)						
County Summary:	Imperial						
Lat/Long:	33.10237 / -115.05688			Accuracy:	nonspecific area		
UTM:	Zone-11 N3664315 E681321			Elevation (ft):	650		
PLSS:	T12S, R18E, Sec. 26 (S)			Acres:	3674.0		
Location:	S END CHOCOLATE MOUNTAIN AERIAL GUNNERY RANGE.						
Detailed Location:	MAPPED ACCORDING TO A 1983 BERRY REPORT MAP.						
Ecological:							
General:	RECORDED AS RARE OR UNCOMMON DURING DESERT TORTOISE TRANSECT SURVEY. APPEARS TO BE SOMEWHAT ISOLATED FROM MAIN DISTRIBUTION OF PLANT WHICH IS ON THE NORTH SIDE OF THE CHOCOLATE MTNS AT THIS END OF THE CHOCOLATE MTNS AERIAL GUNNERY RANGE.						
Owner/Manager:	DOD-CHOCOLATE MOUNTAIN AGR						



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



Croton wigginsii

Element Code: PDEUP0H140

Wiggins' croton

Listing Status: **Federal:** None **CNDDB Element Ranks:** **Global:** G2G3
State: Rare **State:** S2
Other: Rare Plant Rank - 2B.2, BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden
Habitat: **General:** DESERT DUNES, SONORAN DESERT SCRUB.
Micro: ON SAND DUNES AND IN SANDY ARROYOS. 0-155 M.

Occurrence No.	2	Map Index:	76077	EO Index:	6543	Element Last Seen:	2019-02-22			
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:			2019-02-22			
Occ. Type:	Natural/Native occurrence	Trend:	Increasing	Record Last Updated:			2019-05-31			
Quad Summary:	Grays Well NE (3211467), Grays Well (3211468), Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), Acolita (3311512), Amos (3311513), Tortuga (3311523)									
County Summary:	Imperial									
Lat/Long:	32.91623 / -115.08879			Accuracy:	specific area					
UTM:	Zone-11 N3643620 E678720			Elevation (ft):	300					
PLSS:	T14S, R18E, Sec. 50 (S)			Acres:	72540.0					
Location:	ALGODONES DUNES.									
Detailed Location:	SCATTERED ALONG DUNES BETWEEN SOUTHERN PACIFIC RR TRACKS & COACHELLA CANAL. THE GREATEST DENSITY OF THIS PLANT IS ON THE W SIDE OF DUNES. ASTRAGALUS MAGDALENAE PEIRSONII, PALAFOXIA ARIDA GIGANTEA, AND HELIANTHUS NIVEUS TEPHRODES ALSO HERE.									
Ecological:	SAND DUNES WITHIN DESERT PSAMMOPHYTIC SCRUB (STABILIZED AND PARTIALLY STABILIZED DESERT DUNES). ASSOCIATES INCLUDE SEVERAL RARE PLANTS: AMMOBROMA SONORAE, ASTRAGALUS LENTIGINOSUS BORREGANUS, ERIOGONUM DESERTICOLA, AND PILOSTYLES THURBERI.									
General:	EO #2 & #11: 7,513 IN 1998; 9,697 IN 1999; 10,206 IN 2000. PARTS OF EO: ~314 PLANTS IN 1993, ~25 IN 2009, 15 IN 2013, 1447 IN 2018. ALSO SEEN IN 1977, 1979, 2005, 2008, 2010, 2014, & 2019. INCLUDES FRMR OCCS #1, 3-10, 13-36.									
Owner/Manager:	BLM									



Multiple Occurrences per Page
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Astragalus magdalenae var. peirsonii

Element Code: PDFAB0F532

Peirson's milk-vetch

Listing Status: **Federal:** Threatened

CNDDDB Element Ranks: **Global:** G3G4T1

State: Endangered

State: S1

Other: Rare Plant Rank - 1B.2, SB_RSABG-Rancho Santa Ana Botanic Garden

Habitat: **General:** DESERT DUNES.

Micro: SLOPES AND HOLLOWES IN MOBILE DUNES, USUALLY TO THE LEE OF THE PREVAILING WINDS. 60-225 M.

Occurrence No. 1 **Map Index:** 71505 **EO Index:** 6539 **Element Last Seen:** 2018-04-18

Occ. Rank: Good **Presence:** Presumed Extant **Site Last Seen:** 2018-04-18

Occ. Type: Natural/Native occurrence **Trend:** Fluctuating **Record Last Updated:** 2018-09-26

Quad Summary: Grays Well NE (3211467), Grays Well (3211468), Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), East of Acolita (3311511), Acolita (3311512), Amos (3311513), Tortuga (3311523)

County Summary: Imperial, Mexico

Lat/Long: 32.90611 / -115.06111

Accuracy: specific area

UTM: Zone-11 N3642545 E681328

Elevation (ft): 200

PLSS: T14S, R18E, Sec. 54 (S)

Acres: 77751.0

Location: ALGODONES DUNES.

Detailed Location: LARGE POLYGON MAPPED TO ENCOMPASS MULTIPLE SOURCES OF INFORMATION. INCLUDES FORMER OCCURRENCE #S 2-39, 43, 44.

Ecological: SAND DUNES WITHIN DESERT PSAMMOPHYTIC SCRUB (STABILIZED AND PARTIALLY STABILIZED DESERT DUNES). ASSOCIATES INCLUDE SEVERAL RARE PLANTS: PHOLISMA SONORAE, ASTRAGALUS LENTIGINOSUS BORREGANUS, ERIOGONUM DESERTICOLA, AND PILOSTYLES THURBERI.

General: PLANTS OBS IN PARTIAL SURVEYS: 1422 IN 1984, >1300 IN 1993, 5064 IN 1998, 942 IN 1999, 86 IN 2000, 5930 IN 2001, 2297 IN 2002. TOTAL POP SIZE EST: 286,374 IN 2004, 1,831,076 IN 2005. SEEN IN 2006, '07, '09-'11. ~50 IN 2013. 8392 IN 2018.

Owner/Manager: BLM



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California Natural Diversity Database



Calliandra eriophylla

Element Code: PDFAB0N040

pink fairy-duster

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G5

State: None

State: S3

Other: Rare Plant Rank - 2B.3, SB_RSABG-Rancho Santa Ana Botanic Garden

Habitat: **General:** SONORAN DESERT SCRUB.

Micro: SANDY OR ROCKY SITES IN THE DESERT. 105-1015 M.

Occurrence No.	10	Map Index:	36288	EO Index:	31285	Element Last Seen:	1962-03-18
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1962-03-18	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1997-07-30	

Quad Summary: Ninemile Wash (3311418), East of Acolita (3311511)

County Summary: Imperial

Lat/Long:	33.04581 / -115.00576	Accuracy:	1 mile
UTM:	Zone-11 N3658133 E686212	Elevation (ft):	600
PLSS:	T13S, R19E, Sec. 07 (S)	Acres:	0.0

Location: 5 MILES NORTHEAST OF GLAMIS.

Detailed Location: MAPPED 5 MILES NORTHEAST OF GLAMIS ALONG HIGHWAY 78.

Ecological: OPEN DESERT.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1962 COLLECTION BY HITCHCOCK AND MUHLICK.

Owner/Manager: BLM

Occurrence No.	50	Map Index:	86971	EO Index:	87924	Element Last Seen:	1881-04-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1881-04-XX	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-08-26	

Quad Summary: East of Acolita (3311511)

County Summary: Imperial

Lat/Long:	33.02188 / -115.10822	Accuracy:	1 mile
UTM:	Zone-11 N3655302 E676690	Elevation (ft):	
PLSS:	T13S, R18E, Sec. 19 (S)	Acres:	0.0

Location: MESQUITE, NW OF GLAMIS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED IN THE VICINITY OF MESQUITE, 2.7 MILES NW OF GLAMIS ON TED KIPF ROAD AT ELEVATION POINT ON TOPO MAP MARKED "295SB".

Ecological:

General: MAIN SOURCE OF INFORMATION IS A MARCH 25, 1881 PARISH & PARISH COLLECTION. AN APRIL 1881 PARISH & PARISH COLLECTION FROM "MESQUITE CANON [CANYON]", KERN COUNTY, IS ATTRIBUTED HERE; LIKELY IMPERIAL COUNTY BASED ON OTHER COLLECTIONS.

Owner/Manager: BLM



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California Department of Fish and Wildlife
California Natural Diversity Database



Pholisma sonorae

Element Code: PDLNN02020

sand food

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G2

State: None

State: S2

Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden

Habitat: **General:** DESERT DUNES, SONORAN DESERT SCRUB.

Micro: LOOSE, DEEP SAND DUNES, USUALLY ON THE MORE STABLE, WINDWARD FACE. 0-125 M.

Occurrence No.	2	Map Index:	46437	EO Index:	46437	Element Last Seen:	2018-04-22
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2018-04-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2019-01-03	

Quad Summary: Grays Well NE (3211467), Grays Well (3211468), Ogilby (3211477), Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), East of Acolita (3311511), Acolita (3311512), Amos (3311513), Tortuga (3311523)

County Summary: Imperial

Lat/Long:	32.88668 / -115.04526	Accuracy:	specific area
UTM:	Zone-11 N3640419 E682852	Elevation (ft):	300
PLSS:	T14S, R18E, Sec. 57, N (S)	Acres:	78858.0

Location: ALGODONES DUNES.

Detailed Location: MAPPED BY CNDDDB TO ENCOMPASS VARIOUS SOURCES OF MAP INFORMATION. INCLUDES FORMER EO #S 3-11, 13-25, 28-41, 43-45, 47-49, 51, 52. IN 2013, THE 4 PLANTS OBSERVED N OF HWY 78 WERE THE ONLY INDIVIDUALS SEEN OVER A LARGE AREA.

Ecological: MOST COMMONLY FOUND IN SHELTERED STABILIZED SAND DUNES BUT IT MAY OCCUR IN LOOSE DEEP SAND ON THE WINDWARD FACES OF SAND DUNES. ROOT PARASITE ON COLDENIA PLICATA, ERIOGONUM DESERTICOLA, AND COLDENIA PALMERI.

General: SEEN IN 1977 THROUGHOUT DUNES. POPULATION NUMBERS FOR PARTS OF OCC: 571 IN 1994, ~486 FLOWER HEADS IN '98, 385 IN '99, 1576 IN '00, 3740 IN '01, 3317 IN '02, 78,417 IN '04, 4 IN '13, 24 IN '17, 94 IN '18.

Owner/Manager: BLM

Occurrence No.	27	Map Index:	46513	EO Index:	46513	Element Last Seen:	1981-04-27
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1981-04-27	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2010-02-08	

Quad Summary: Glamis (3211581)

County Summary: Imperial

Lat/Long:	32.99414 / -115.10144	Accuracy:	nonspecific area
UTM:	Zone-11 N3652238 E677380	Elevation (ft):	300
PLSS:	T13S, R18E, Sec. 32, NW (S)	Acres:	38.0

Location: 1.7 MILES WEST OF GLAMIS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB ABOUT 1.7 MILES WEST OF GLAMIS STORE ALONG HWY 78 BASED ON A 1968 SUMMERS COLLECTION.

Ecological: DUNES. GROWING WITH A FEW GRASSES AND AN OCCASIONAL STRAY SHRUB.

General: SITE BASED ON A 1968 SUMMERS COLLECTION. A 1976 CULVER COLLECTION FROM "2 MI W OF GLAMIS STORE" AND A 1981 YATSKIEVYCH COLLECTION FROM "4.5 MI BY ROAD E OF COACHELLA CANAL" ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.

Owner/Manager: BLM



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California Department of Fish and Wildlife
California Natural Diversity Database



Chylismia arenaria

Element Code: PDONA03020

sand evening-primrose

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G4?

State: None

State: S2S3

Other: Rare Plant Rank - 2B.2

Habitat: **General:** SONORAN DESERT SCRUB.

Micro: SANDY OR ROCKY SITES. 155-425 M.

Occurrence No.	12	Map Index:	86971	EO Index:	92731	Element Last Seen:	1881-03-25
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1881-03-25	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-02-20	
Quad Summary:	East of Acolita (3311511)						
County Summary:	Imperial						
Lat/Long:	33.02188 / -115.10822				Accuracy:	1 mile	
UTM:	Zone-11 N3655302 E676690				Elevation (ft):		
PLSS:	T13S, R18E, Sec. 19 (S)				Acres:	0.0	
Location:	MESQUITE.						
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED IN THE VICINITY OF MESQUITE, LOCATED ABOUT 2.7 AIR MILES NW OF GLAMIS ON TED KIPF ROAD AT ELEVATION POINT ON TOPO MAP MARKED "295SB."						
Ecological:							
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS AN 1881 PARISH & PARISH COLLECTION. NEEDS FIELDWORK.						
Owner/Manager:	BLM						



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California Department of Fish and Wildlife
California Natural Diversity Database



Nemacaulis denudata var. gracilis

Element Code: PDPGN0G012

slender cottonheads

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G3G4T3?

State: None

State: S2

Other: Rare Plant Rank - 2B.2

Habitat: **General:** COASTAL DUNES, DESERT DUNES, SONORAN DESERT SCRUB.

Micro: IN DUNES OR SAND. -45-745 M.

Occurrence No. 12 **Map Index:** 06436 **EO Index:** 55248 **Element Last Seen:** XXXX-XX-XX

Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** XXXX-XX-XX

Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 2004-04-23

Quad Summary: Cactus (3211478), Clyde (3211488), Glamis SE (3211571), Glamis (3211581), Glamis NW (3211582), East of Acolita (3311511), Acolita (3311512), Amos (3311513), Tortuga (3311523)

County Summary: Imperial

Lat/Long: 32.97808 / -115.13049

Accuracy: nonspecific area

UTM: Zone-11 N3650408 E674697

Elevation (ft):

PLSS: T13S, R17.5E, Sec. 36 (S)

Acres: 85610.6

Location: ALGODONES DUNES.

Detailed Location: EXACT LOCATION UNKNOWN, SOURCE LISTS SITE AS "IN PROTECTED LOCALES OF THE SAND HILLS DUNE SYSTEM NEAR GLAMIS". MAPPED AS ALGODONES DUNES, A LARGE PROTECTED DUNE SYSTEM IN VICINITY OF GLAMIS.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 2001 "CRAIG REISER'S RARE PLANTS OF SAN DIEGO COUNTY". NEEDS FIELDWORK. CNDDDB DOUBTS THIS PLANT IS LOCATED THROUGHOUT THE DUNES.

Owner/Manager: BLM



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California Department of Fish and Wildlife
California Natural Diversity Database



Panicum hirticaule ssp. hirticaule

Element Code: PMPOA4K170

roughstalk witch grass

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G5T5

State: None

State: S2

Other: Rare Plant Rank - 2B.1, SB_RSABG-Rancho Santa Ana Botanic Garden

Habitat: **General:** DESERT DUNES, JOSHUA TREE WOODLAND, MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.

Micro: SANDY, SILTY DEPRESSIONS. 60-1465 M.

Occurrence No. 2 **Map Index:** 90910 **EO Index:** 91952 **Element Last Seen:** 1999-08-15

Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** 1999-08-15

Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 2013-11-19

Quad Summary: Clyde (3211488), Glamis (3211581)

County Summary: Imperial

Lat/Long: 32.94363 / -115.00040 **Accuracy:** 1 mile

UTM: Zone-11 N3646812 E686928 **Elevation (ft):** 380

PLSS: T14S, R19E, Sec. 17 (S) **Acres:** 0.0

Location: APPROXIMATELY 1 MILE SOUTH OF RUTHVEN, 7 MILES SOUTHEAST OF GLAMIS ON TED KIPF ROAD, ALGODONES DUNES.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB TO ENCOMPASS AREAS 1 AIR MILE SOUTH OF RUTHVEN AND 1 ROAD MILE SE OF RUTHVEN ON TED KIPF RD. ELEVATION ON COLLECTION LABEL (150 FT) IS LOWER THAN ELEVATION IN MAPPED AREA (ABOUT 380 FT).

Ecological: EAST MARGIN OF DUNES.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1999 COLLECTION BY GATES.

Owner/Manager: BLM

APPENDIX G

COST ESTIMATE DATA SUMMARY

COST ESTIMATE

Type of Estimate : Planning Level Cost Estimate

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **78 - O**

	Current Cost	Escalated Cost
CIVIL ITEMS	\$ 5,000,000.00	\$ 5,627,545.00
STRUCTURE ITEMS	\$ 11,500,000.00	\$ 12,943,352.00
SUBTOTAL CONSTRUCTION COST	\$ 16,500,000.00	\$ 18,570,897.00
RIGHT OF WAY	\$ 1,300,000.00	\$ 1,420,546.00
CONTINGENCY (40%)	\$ 7,120,000.00	\$ 7,996,577.20
TOTAL CAPITAL COST	\$ 24,920,000.00	\$ 27,989,000.00
PA/ED SUPPORT		\$ 2,492,000.00
PS&E SUPPORT		\$ 1,653,400.00
CONSTRUCTION SUPPORT		\$ 2,362,000.00
TOTAL SUPPORT COST		\$ 6,507,400.00
TOTAL PROJECT COST	\$ 24,950,000.00	\$ 34,500,000.00

	month	year
Date (Month/Year) of Estimate	10	2020
Estimated Date (Month/Year) of Construction	10	2024
Number of Months of Escalation	48	
Number of Years of Escalation	4.00	

Estimated Project Schedule

<i>PA/ED Approval</i>	April-23
<i>PS&E</i>	May-24
<i>RTL</i>	June-24
<i>Begin Construction</i>	October-24
<i>End Construction</i>	October-26

PRELIMINARY
PROJECT COST ESTIMATE

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **78 - O**

I. CIVIL ITEMS

		<i>Notes</i>		
1	Roadway Section	SR-78 Section - 120,000 sqft	\$	1,800,000
2	Trail Section	500' ft length	\$	50,000
3	Drainage	Roadway drainage	\$	500,000
4	Environmental	Mitigation, Monitoring, BMPs, Erosion	\$	750,000
5	Traffic	Signals	\$	500,000
6	Railroad Flagging	300 working days	\$	900,000
7	Detours	Staging of SR-78	\$	500,000
SUBTOTAL CIVIL ITEMS			\$	5,000,000

II. STRUCTURAL ITEMS

1	Bridge	15,500 sqft Concrete Box	\$	5,000,000
2	Retaining Wall	65,000 sqft wall surface	\$	6,500,000
SUBTOTAL STRUCTURAL ITEMS			\$	11,500,000

III. ROW ITEMS

1	Acquisition, including Fees, Goodwill, Mitigation, Railroad, Etc	\$	1,000,000
2	Utility Relocation	\$	300,000
SUBTOTAL ROW ITEMS		\$	1,300,000

Assumptions:

- 1 Escalation rates used in this estimate for Highway Construction Capital Costs are 3.0% compounded annually to Construction year.
- 2 Contingency = 40% based on feasibility study level of detail
- 3 Escalation rate for ROW Items assumed to be 3% escalated to 1 year prior to construction
- 4 PAED Costs estimated as 10 % of Capital Cost
- 5 PSE Costs estimated as 7 % of Construction Cost Subtotal
- 6 Construction Support Costs estimated as 10 % of Construction Cost Subtotal

Type of Estimate : Operations and Maintenance Cost estimate

Date: 7/10/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **78-O**

Total 20 Yr Maintenance Cost in Year 0 \$ 100,000

Total 30 Yr Maintenance Cost in Year 0 \$ 150,000

Year	Description	Cost \$ (in Year 0)	(in Year of activity)
0			
1	Sand	\$ 2,000	\$ 2,060
2	Sand, Inspection	\$ 3,000	\$ 3,180
3	Sand	\$ 2,000	\$ 2,190
4	Sand, Inspection	\$ 3,000	\$ 3,380
5	Sand, Drainage	\$ 5,000	\$ 5,800
6	Sand	\$ 2,000	\$ 2,390
7	Sand, Inspection	\$ 3,000	\$ 3,690
8	Sand	\$ 2,000	\$ 2,530
9	Sand, Inspection	\$ 3,000	\$ 3,910
10	Sand, Drainage, Repair	\$ 25,000	\$ 33,600
11	Sand	\$ 2,000	\$ 2,770
12	Sand, Inspection	\$ 3,000	\$ 4,280
13	Sand	\$ 2,000	\$ 2,940
14	Sand, Inspection	\$ 3,000	\$ 4,540
15	Sand, Drainage	\$ 5,000	\$ 7,790
16	Sand	\$ 2,000	\$ 3,210
17	Sand, Inspection	\$ 3,000	\$ 4,960
18	Sand	\$ 2,000	\$ 3,400
19	Sand, Inspection	\$ 3,000	\$ 5,260
20	Sand, Drainage, Repair	\$ 25,000	\$ 45,150
21	Sand	\$ 2,000	\$ 3,720
22	Sand, Inspection	\$ 3,000	\$ 5,750
23	Sand	\$ 2,000	\$ 3,950
24	Sand, Inspection	\$ 3,000	\$ 6,100
25	Sand, Drainage	\$ 5,000	\$ 10,470
26	Sand	\$ 2,000	\$ 4,310
27	Sand, Inspection	\$ 3,000	\$ 6,660
28	Sand	\$ 2,000	\$ 4,580
29	Sand, Inspection	\$ 3,000	\$ 7,070
30	Sand, Drainage, Repair	\$ 25,000	\$ 60,680
	Total	\$ 150,000	\$ 260,320

- Assumptions:
1. Assume operation inflation of 3%
 2. Inspection occurs every 2 years (\$1000 ea)
 3. No approach grading maintenance
 4. Sand drift maintenance occurs each year (\$2000 ea)
 5. Drainage maintenance every 5 years (\$3000 ea)
 6. Repairs to fencing or railing due to collisions occur every 10 years. (\$20,000 ea)

COST ESTIMATE

Type of Estimate : Planning Level Cost Estimate

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **78T-O**

	Current Cost	Escalated Cost
CIVIL ITEMS	\$ 730,000.00	\$ 821,622.00
STRUCTURE ITEMS	\$ 4,900,000.00	\$ 5,514,994.00
SUBTOTAL CONSTRUCTION COST	\$ 5,630,000.00	\$ 6,336,616.00
RIGHT OF WAY	\$ 550,000.00	\$ 601,000.00
CONTINGENCY (40%)	\$ 2,472,000.00	\$ 2,775,046.40
TOTAL CAPITAL COST	\$ 8,652,000.00	\$ 9,713,000.00
PA/ED SUPPORT		\$ 865,200.00
PS&E SUPPORT		\$ 648,160.00
CONSTRUCTION SUPPORT		\$ 810,200.00
TOTAL SUPPORT COST		\$ 2,323,560.00
TOTAL PROJECT COST	\$ 8,700,000.00	\$ 12,050,000.00

	month	year
Date (Month/Year) of Estimate	10	2020
Estimated Date (Month/Year) of Construction	10	2024
Number of Months of Escalation	48	
Number of Years of Escalation	4.00	

Estimated Project Schedule

<i>PA/ED Approval</i>	April-23
<i>PS&E</i>	May-24
<i>RTL</i>	June-24
<i>Begin Construction</i>	October-24
<i>End Construction</i>	October-25

PRELIMINARY
PROJECT COST ESTIMATE

Date: 5/11/2020

Description: SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study

Alternative : 78T-O

I. CIVIL ITEMS

		Notes		
1	Roadway Section	Wash Rd Realignment	\$	100,000
2	Trail Section	500' ft length	\$	50,000
3	Drainage	Minor drainage	\$	75,000
4	Environmental	Mitigation, Monitoring, BMPs, Erosion	\$	300,000
5	Traffic	none	\$	-
6	Railroad Flagging	60 working days	\$	180,000
7	Detours	Wash Rd	\$	25,000
SUBTOTAL CIVIL ITEMS			\$	730,000

II. STRUCTURAL ITEMS

1	Bridge	6000 sqft steel truss	\$	2,400,000
2	Retaining Wall	25,000 sqft wall surface	\$	2,500,000
SUBTOTAL STRUCTURAL ITEMS			\$	4,900,000

III. ROW ITEMS

1	Acquisition, including Fees, Goodwill, Mitigation, Railroad, Etc	\$	500,000
2	Utility Relocation	\$	50,000
SUBTOTAL ROW ITEMS		\$	550,000

Assumptions:

- 1 Escalation rates used in this estimate for Highway Construction Capital Costs are 3.0% compounded annually to Construction year.
- 2 Contingency = 40% based on feasibility study level of detail
- 3 Escalation rate for ROW Items assumed to be 3% escalated to 1 year prior to construction
- 4 PAED Costs estimated as 10 % of Capital Cost
- 5 PSE Costs estimated as 8 % of Construction Cost Subtotal
- 6 Construction Support Costs estimated as 10 % of Construction Cost Subtotal

Type of Estimate : Operations and Maintenance Cost estimate

Date: 7/10/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **78T-O**

Total 20 Yr Maintenance Cost in Year 0 \$ 170,000

Total 30 Yr Maintenance Cost in Year 0 \$ 255,000

Year	Description	Cost \$ (in Year 0)	(in Year of activity)
0			
1	Approach, Drainage	\$ 7,000	\$ 7,210
2	Approach, Inspection	\$ 6,000	\$ 6,370
3	Approach, Drainage	\$ 7,000	\$ 7,650
4	Approach, Inspection	\$ 6,000	\$ 6,750
5	Approach, Drainage	\$ 7,000	\$ 8,110
6	Approach, Inspection	\$ 6,000	\$ 7,160
7	Approach, Drainage	\$ 7,000	\$ 8,610
8	Approach, Inspection	\$ 6,000	\$ 7,600
9	Approach, Drainage	\$ 7,000	\$ 9,130
10	Approach, Inspection, Repairs	\$ 26,000	\$ 34,940
11	Approach, Drainage	\$ 7,000	\$ 9,690
12	Approach, Inspection	\$ 6,000	\$ 8,550
13	Approach, Drainage	\$ 7,000	\$ 10,280
14	Approach, Inspection	\$ 6,000	\$ 9,080
15	Approach, Drainage	\$ 7,000	\$ 10,910
16	Approach, Inspection	\$ 6,000	\$ 9,630
17	Approach, Drainage	\$ 7,000	\$ 11,570
18	Approach, Inspection	\$ 6,000	\$ 10,210
19	Approach, Drainage	\$ 7,000	\$ 12,270
20	Approach, Inspection, Repairs	\$ 26,000	\$ 46,960
21	Approach, Drainage	\$ 7,000	\$ 13,020
22	Approach, Inspection	\$ 6,000	\$ 11,500
23	Approach, Drainage	\$ 7,000	\$ 13,820
24	Approach, Inspection	\$ 6,000	\$ 12,200
25	Approach, Drainage	\$ 7,000	\$ 14,660
26	Approach, Inspection	\$ 6,000	\$ 12,940
27	Approach, Drainage	\$ 7,000	\$ 15,550
28	Approach, Inspection	\$ 6,000	\$ 13,730
29	Approach, Drainage	\$ 7,000	\$ 16,500
30	Approach, Inspection, Repairs	\$ 26,000	\$ 63,110
	Total	\$ 255,000	\$ 429,710

- Assumptions:
1. Assume operation inflation of 3%
 2. Inspection occurs every 2 years (\$1000 ea)
 3. Approach grading maintenance occurs each year (\$5,000 ea)
 4. Drainage maintenance occurs every other year (\$2,000 ea)
 5. Repairs to fencing or railing due to collisions occur every 10 years. (\$20,000 ea)

COST ESTIMATE

Type of Estimate : Planning Level Cost Estimate

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **9.5-U**

	Current Cost	Escalated Cost
CIVIL ITEMS	\$ 2,070,000.00	\$ 2,329,804.00
STRUCTURE ITEMS	\$ 1,350,000.00	\$ 1,519,437.00
SUBTOTAL CONSTRUCTION COST	\$ 3,420,000.00	\$ 3,849,241.00
RIGHT OF WAY	\$ 1,800,000.00	\$ 1,966,909.00
CONTINGENCY (40%)	\$ 2,088,000.00	\$ 2,326,460.00
TOTAL CAPITAL COST	\$ 7,308,000.00	\$ 8,143,000.00
PA/ED SUPPORT		\$ 1,096,200.00
PS&E SUPPORT		\$ 440,640.00
CONSTRUCTION SUPPORT		\$ 826,200.00
TOTAL SUPPORT COST		\$ 2,363,040.00
TOTAL PROJECT COST	\$ 7,350,000.00	\$ 10,550,000.00

	month	year
Date (Month/Year) of Estimate	10	2020
Estimated Date (Month/Year) of Construction	10	2024
Number of Months of Escalation	48	
Number of Years of Escalation	4.00	

Estimated Project Schedule

<i>PA/ED Approval</i>	April-23
<i>PS&E</i>	May-24
<i>RTL</i>	June-24
<i>Begin Construction</i>	October-24
<i>End Construction</i>	October-25

PRELIMINARY
PROJECT COST ESTIMATE

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **9.5-U**

I. CIVIL ITEMS

		<u>Notes</u>		
1	Roadway Section	none	\$	-
2	Trail Section	1200' ft length	\$	120,000
3	Drainage	Permanent Feature	\$	200,000
4	Environmental	Mitigation, Monitoring, BMPs, Erosion	\$	500,000
5	Traffic	none	\$	-
6	Railroad Flagging	250 working days	\$	750,000
7	Detours	RR Shoofly	\$	500,000
SUBTOTAL CIVIL ITEMS			\$	2,070,000

II. STRUCTURAL ITEMS

1	Bridge	1000 Precast Concrete Underpass	\$	600,000
2	Retaining Wall	5,000 sqft wall surface	\$	750,000
SUBTOTAL STRUCTURAL ITEMS			\$	1,350,000

III. ROW ITEMS

1	Acquisition, including Fees, Goodwill, Mitigation, Railroad, Etc	\$	1,000,000
2	Utility Relocation	\$	800,000
SUBTOTAL ROW ITEMS		\$	1,800,000

Assumptions:

- 1 Escalation rates used in this estimate for Highway Construction Capital Costs are 3.0% compounded annually to Construction year.
- 2 Contingency = 40% based on feasibility study level of detail
- 3 Escalation rate for ROW Items assumed to be 3% escalated to 1 year prior to construction
- 4 PAED Costs estimated as 15 % of Capital Cost
- 5 PSE Costs estimated as 8 % of Construction Cost Subtotal
- 6 Construction Support Costs estimated as 15 % of Construction Cost Subtotal

Type of Estimate : Operations and Maintenance Cost estimate

Date: 7/10/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **10-O**

Total 20 Yr Maintenance Cost in Year 0 \$ 230,000

Total 30 Yr Maintenance Cost in Year 0 \$ 345,000

Year	Description	Cost \$ (in Year 0)	(in Year of activity)
0			
1	Approach, Drainage	\$ 10,000	\$ 10,300
2	Approach, Drainage, Inspection	\$ 11,000	\$ 11,670
3	Approach, Drainage	\$ 10,000	\$ 10,930
4	Approach, Drainage, Inspection	\$ 11,000	\$ 12,380
5	Approach, Drainage	\$ 10,000	\$ 11,590
6	Approach, Drainage, Inspection	\$ 11,000	\$ 13,130
7	Approach, Drainage	\$ 10,000	\$ 12,300
8	Approach, Drainage, Inspection	\$ 11,000	\$ 13,930
9	Approach, Drainage	\$ 10,000	\$ 13,050
10	Approach, Drainage, Inspection, Repairs	\$ 21,000	\$ 28,220
11	Approach, Drainage	\$ 10,000	\$ 13,840
12	Approach, Drainage, Inspection	\$ 11,000	\$ 15,680
13	Approach, Drainage	\$ 10,000	\$ 14,690
14	Approach, Drainage, Inspection	\$ 11,000	\$ 16,640
15	Approach, Drainage	\$ 10,000	\$ 15,580
16	Approach, Drainage, Inspection	\$ 11,000	\$ 17,650
17	Approach, Drainage	\$ 10,000	\$ 16,530
18	Approach, Drainage, Inspection	\$ 11,000	\$ 18,730
19	Approach, Drainage	\$ 10,000	\$ 17,540
20	Approach, Drainage, Inspection, Repairs	\$ 21,000	\$ 37,930
21	Approach, Drainage	\$ 10,000	\$ 18,600
22	Approach, Drainage, Inspection	\$ 11,000	\$ 21,080
23	Approach, Drainage	\$ 10,000	\$ 19,740
24	Approach, Drainage, Inspection	\$ 11,000	\$ 22,360
25	Approach, Drainage	\$ 10,000	\$ 20,940
26	Approach, Drainage, Inspection	\$ 11,000	\$ 23,720
27	Approach, Drainage	\$ 10,000	\$ 22,210
28	Approach, Drainage, Inspection	\$ 11,000	\$ 25,170
29	Approach, Drainage	\$ 10,000	\$ 23,570
30	Approach, Drainage, Inspection, Repairs	\$ 21,000	\$ 50,970
	Total	\$ 345,000	\$ 570,670

- Assumptions:
1. Assume operation inflation of 3%
 2. Inspection occurs every 2 years (\$1000 ea)
 3. Approach grading maintenance occurs each year (\$3,000 ea)
 4. Drainage maintenance occurs each year (\$7,000 ea)
 5. Repairs to fencing or railing due to collisions occur every 10 years. (\$10,000 ea)

COST ESTIMATE

Type of Estimate : Planning Level Cost Estimate

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **10-O**

	Current Cost	Escalated Cost
CIVIL ITEMS	\$ 1,380,000.00	\$ 1,553,203.00
STRUCTURE ITEMS	\$ 4,000,000.00	\$ 4,502,036.00
SUBTOTAL CONSTRUCTION COST	\$ 5,380,000.00	\$ 6,055,239.00
RIGHT OF WAY	\$ 550,000.00	\$ 601,000.00
CONTINGENCY (40%)	\$ 2,372,000.00	\$ 2,662,495.60
TOTAL CAPITAL COST	\$ 8,302,000.00	\$ 9,319,000.00
PA/ED SUPPORT		\$ 830,200.00
PS&E SUPPORT		\$ 620,160.00
CONSTRUCTION SUPPORT		\$ 775,200.00
TOTAL SUPPORT COST		\$ 2,225,560.00
TOTAL PROJECT COST	\$ 8,350,000.00	\$ 11,550,000.00

	month	year
Date (Month/Year) of Estimate	10	2020
Estimated Date (Month/Year) of Construction	10	2024
Number of Months of Escalation	48	
Number of Years of Escalation	4.00	

Estimated Project Schedule

<i>PA/ED Approval</i>	April-23
<i>PS&E</i>	May-24
<i>RTL</i>	June-24
<i>Begin Construction</i>	October-24
<i>End Construction</i>	October-25

PRELIMINARY
PROJECT COST ESTIMATE

Date: 5/11/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **10-O**

I. CIVIL ITEMS

		<u>Notes</u>		
1	Roadway Section	none	\$	-
2	Trail Section	500' ft length	\$	50,000
3	Drainage	Permanent Feature	\$	400,000
4	Environmental	Mitigation, Monitoring, BMPs, Erosion	\$	750,000
5	Traffic	none	\$	-
6	Railroad Flagging	60 working days	\$	180,000
7	Detours	none	\$	-
SUBTOTAL CIVIL ITEMS			\$	1,380,000

II. STRUCTURAL ITEMS

1	Bridge	5000 sqft steel truss	\$	2,000,000
2	Retaining Wall	20,000 sqft wall surface	\$	2,000,000
SUBTOTAL STRUCTURAL ITEMS			\$	4,000,000

III. ROW ITEMS

1	Acquisition, including Fees, Goodwill, Mitigation, Railroad, Etc	\$	500,000
2	Utility Relocation	\$	50,000
SUBTOTAL ROW ITEMS		\$	550,000

Assumptions:

- 1 Escalation rates used in this estimate for Highway Construction Capital Costs are 3.0% compounded annually to Construction year.
- 2 Contingency = 40% based on feasibility study level of detail
- 3 Escalation rate for ROW Items assumed to be 3% escalated to 1 year prior to construction
- 4 PAED Costs estimated as 10 % of Capital Cost
- 5 PSE Costs estimated as 8 % of Construction Cost Subtotal
- 6 Construction Support Costs estimated as 10 % of Construction Cost Subtotal

Type of Estimate : Operations and Maintenance Cost estimate

Date: 7/10/2020

Description: **SR-78 / Glamis Multiuse Grade Separated Crossing Feasibility Study**

Alternative : **10-O**

Total 20 Yr Maintenance Cost in Year 0 \$ 250,000

Total 30 Yr Maintenance Cost in Year 0 \$ 375,000

Year	Description	Cost \$ (in Year 0)	(in Year of activity)
0			
1	Approach, Drainage	\$ 10,000	\$ 10,300
2	Approach, Drainage, Inspection	\$ 11,000	\$ 11,670
3	Approach, Drainage	\$ 10,000	\$ 10,930
4	Approach, Drainage, Inspection	\$ 11,000	\$ 12,380
5	Approach, Drainage	\$ 10,000	\$ 11,590
6	Approach, Drainage, Inspection	\$ 11,000	\$ 13,130
7	Approach, Drainage	\$ 10,000	\$ 12,300
8	Approach, Drainage, Inspection	\$ 11,000	\$ 13,930
9	Approach, Drainage	\$ 10,000	\$ 13,050
10	Approach, Drainage, Inspection, Repairs	\$ 31,000	\$ 41,660
11	Approach, Drainage	\$ 10,000	\$ 13,840
12	Approach, Drainage, Inspection	\$ 11,000	\$ 15,680
13	Approach, Drainage	\$ 10,000	\$ 14,690
14	Approach, Drainage, Inspection	\$ 11,000	\$ 16,640
15	Approach, Drainage	\$ 10,000	\$ 15,580
16	Approach, Drainage, Inspection	\$ 11,000	\$ 17,650
17	Approach, Drainage	\$ 10,000	\$ 16,530
18	Approach, Drainage, Inspection	\$ 11,000	\$ 18,730
19	Approach, Drainage	\$ 10,000	\$ 17,540
20	Approach, Drainage, Inspection, Repairs	\$ 31,000	\$ 55,990
21	Approach, Drainage	\$ 10,000	\$ 18,600
22	Approach, Drainage, Inspection	\$ 11,000	\$ 21,080
23	Approach, Drainage	\$ 10,000	\$ 19,740
24	Approach, Drainage, Inspection	\$ 11,000	\$ 22,360
25	Approach, Drainage	\$ 10,000	\$ 20,940
26	Approach, Drainage, Inspection	\$ 11,000	\$ 23,720
27	Approach, Drainage	\$ 10,000	\$ 22,210
28	Approach, Drainage, Inspection	\$ 11,000	\$ 25,170
29	Approach, Drainage	\$ 10,000	\$ 23,570
30	Approach, Drainage, Inspection, Repairs	\$ 31,000	\$ 75,250
	Total	\$ 375,000	\$ 626,450

- Assumptions:
1. Assume operation inflation of 3%
 2. Inspection occurs every 2 years (\$1000 ea)
 3. Approach grading maintenance occurs each year (\$5,000 ea)
 4. Drainage maintenance occurs each year (\$5,000 ea)
 5. Repairs to fencing or railing due to collisions occur every 10 years. (\$20,000 ea)