Draft Environmental Impact Statement for the UNEV Pipeline

Environmental Impact Statement
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U.S. Department of the Interior
Bureau of Land Management
Utah State Office

BLM

Draft Environmental Impact Statement

UNEV Pipeline

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Utah State Office
Cooperating Agencies:	Bureau of Indian Affairs Moapa Band of the Paiute Tribe U.S. Air Force, Nellis Air Force Base U.S. Army, Tooele Army Depot U.S. Forest Service, Dixie National Forest
Project Location:	Salt Lake, Tooele, Juab, Millard, Iron, and Washington counties in Utah; Clark County in Nevada
Date EIS Filed with EPA:	
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ABSTRACT

This Draft Environmental Impact Statement analyzes impacts related to the development of the proposed UNEV pipeline in Utah and northern Nevada. The Proposed Action includes construction of a 399-mile long main petroleum products pipeline originating at an inlet pumping station at the refineries near Woods Cross, Utah, ending at a terminal located in Apex Industrial Park, north of Las Vegas, in Clark County, Nevada. The Proposed Action would also include an approximately 2-mile long lateral line terminating at the Salt Lake City Airport, and an approximately 9-mile long lateral line and terminal near Cedar City, Utah. Alternatives to the Proposed Action are also analyzed.

Responsible Official for EIS:	Utah State Director Bureau of Land Management

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Acronyms and Abbreviations

AAA	American Automobile Club
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AC	Alternating Current
APE	Area of Potential Effect
AQI	Air Quality Index
AQMD	Air Quality Management District
ARPA	Archeological Resources Protection Act
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AUM	Animal Unit Month
BA	Biological Assessment
BACT	Best Available Control Technology
Bbl	Barrel
BCC	Birds of Conservation Concern
BMP	Best Management Practice
bgs	Below Ground Surface
BHP	Brake Horse Power
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
B.P.	Before Present
BPD	Barrels per Day
BPH	Barrels per Hour
BRC	Blue Ribbon Committee
CAA	Clean Air Act
CEA	Cumulative Effects Area
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental, Response and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CHU	Critical Habitat Unit
CO	Carbon Monoxide
CWA	Clean Water Act
dB	Decibel
dB(A)	Decibels on the A-Weighted Scale
DC	Direct Current
DoD	Department of Defense
DOI	Department of the Interior
DOT	Department of Transportation
DWSP	Drinking Water Source Protection
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System

ESA	Endangered Species Act
FCR	Field Contact Representative
FEMA	Federal Emergency Management Administration
FLPMA	Federal Land Policy and Management Act
Ft	Feet
GLO	General Land Office
HAP	Hazardous Air Pollutant
HDD	Horizontal Directional Drill
HPTP	Historic Property Treatment Plan
HMA	Herd Management Area
HUC	Hydrologic Unit Code
ID	Identification
ISB	Intermountain Seismic Belt
IPP	Intermountain Power Project
LAER	Lowest Achievable Emissions Rate
KOP	Key Observation Point
KUCC	Kennecott Utah Copper Corporation
kV	Kilovolt
KRGT	Kearn River Gas Transmission Company
L_{eq}	Equivalent Sound Pressure Level
L_{dn}	Day-Night Sound Level
L_n	Percentile Noise Level
LDS	Church of Jesus Christ of Latter Day Saints
LOS	Level of Service
LRMP	Land and Resource Management Plan
LUST	Leaking Underground Storage Tank
MOP	Maximum Operating Pressure
MOU	Memorandum of Understanding
MP	Milepost
MPH	Miles Per Hour
MUID	Map Unit Identifier
MUN	Map Unit Name
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	Noise Control Act
NDE	Non-Destructive Examination
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NFRAP	No Further Remedial Action Planned
NHPA	National Historic Preservation Act
NOx	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NVCRIS	Nevada Cultural Resource Information System
O_3	Ozone
O&M	Operation and Maintenance

OD	Outside Diameter
OHV	Off-Highway Vehicle
OHWM	Ordinary High Water Mark
OPS	Office of Pipeline Safety
OSHA	Occupational Safety and Health Act
OU	Operable Unit
PA	Programmatic Agreement
Pb	Lead
PCB	Polychlorinated Biphenyls
PFYC	Potential Fossil Yield Classification
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIF	Partners In Flight
PM_{10}	Particulate Matter Aerodynamic diameter < 10 microns
$PM_{2.5}$	Particulate Matter Aerodynamic diameter < 2.5 microns
POD	Plan of Development
PPA	Pollution Prevention Act
PPM	Parts Per Million
PRMMP	Paleontological Resource Monitoring and Mitigation Plan
PSD	Prevention of Significant Deterioration
PSI	Pounds per Square Inch
RCRA	Resource Conservation and Recovery Act
RDX	Cyclomethylenetriamine
RGL	Regulatory Guidance Letter
RMP	Resource Management Plan
RN	Roaded Natural
ROD	Record of Decision
ROW	Right-of-way
SCADA	Supervisory Control and Data Acquisition
SCWG	Southwest Condor Review Team
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Office
SIO	Scenic Integrity Objective
SMS	Scenery Management System
SNWA	Southern Nevada Water Authority
SO_2	Sulfur Dioxide
SO_x	Sulfur Dioxides
SP, LA, & SL RR	San Pedro, Los Angeles, & Salt Lake Railroad
SPM	Semi-Primitive motorized
SPNM	Semi-Primitive Non-Motorized
SSURGO	Soil Survey Geographic database
STATSGO	State Soil Geographic database
SVP	Society of Vertebrate Paleontology
SWANCC	Solid Waste Agency of Northern Cook County
SWIP	Southwest Intertie Project
SWL	Solid Waste Facility Inventory
SWPPP	Storm Water Pollution Prevention Plan
TEAD	Tooele Army Depot
TEC	Threatened, Endangered, and Candidate species
TNT	Trinitrotulene
Tpy	Tons per year
UDEQ	Utah Department of Environmental Quality

UDOT	Utah Department of Transportation
UDPH	Utah Department of Public Safety
UDWR	Utah Division of Wildlife Resources
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VMS	Visual Management System
VOC	Volatile Organic Compound
VRM	Visual Resource Management
WMA	Wildlife Management Area
WSA	Wilderness Study Area
WSC	Wildlife Species of Concern
WWEC	West Wide Energy Corridor
$\mu g/m^3$	Micrograms per cubic meter

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EXECUTIVE SUMMARY

Introduction

Southern Utah and Nevada continue to be among the fastest growing areas in the United States. According to the Utah Governor's Office of Planning and Budget, Washington and Iron counties are among the fastest growing in the state (Washington County receives nearly 1,000 new residents each month). Population growth in Clark County, Nevada is just as impressive growing from 1,394,440 in 2000 to 1,874,837 in 2006—a 26 percent increase over 6 years.

Demand for gasoline and diesel fuel is tied directly to population growth. Much of the gasoline serving these markets is transported into the areas by trucks or rail from Salt Lake City and other regional refineries. The energy needs of these regions would be met by continued refinery expansions, regardless of the bulk transportation methods used. The primary purpose of the Proposed Action is to respond to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, while balancing the needs of resources and other public interests in the area.

Proposed Action

UNEV Pipeline, LLC is proposing to construct and operate a 399-mile, 12-inch petroleum products pipeline that is proposed to originate in Woods Cross, Utah with terminals northwest of Cedar City, Utah and near Apex, Nevada (northeast of Las Vegas). The southern portion of the pipeline alignment would generally follow the existing Kern River pipeline corridor. The southern portion of the corridor contains two Kern River Pipeline Company natural gas pipelines, the newest of which was constructed in 2003. The Kern River Pipeline Environmental Impact Statement was completed in 2002.

The project would include an inlet pumping station at the origin; a pressure reduction station at a lateral terminal northwest of Cedar City, Utah; a pressure reduction site; and a receiving terminal near Las Vegas. A 10-inch diameter lateral service pipeline would extend approximately 2.4 miles to the Salt Lake International Airport from the mainline at milepost 4.5. Another 8-inch diameter lateral pipeline would extend approximately 10 miles from the mainline at milepost 256 to the proposed Cedar City Terminal.

Permanent facilities would include access roads to all above ground structures (including valves, launchers, and receiving equipment). Temporary facilities would include construction and equipment storage yards, extra workspace for pipe stringing, and additional construction access roads.

The pipeline inlet would be located near Holly Corporation's Woods Cross, Utah refinery. This refinery recently upgraded its crude oil processing capabilities enabling it to process black wax crude oil and heavy Canadian crude oils. This action is not considered a "connected action" and would not be analyzed as part of this Environmental Impact Statement. The UNEV pipeline would be available to accept shipments of refined products from multiple refineries in the Salt Lake City area, Wyoming, and Montana.

Alternatives

Five Action Alternatives are considered in the Environmental Impact Statement, including the Proposed Action. The primary differences between the Proposed Action and the four other Action Alternatives are routing differences ranging in length from approximately 3 to 63 miles. This Executive Summary is limited to a discussion of the Proposed Action. The No Action Alternative (project not constructed) is also considered in the Environmental Impact Statement, but not discussed further in this Executive Summary.

Construction and Operations Phases

The project would have two distinct phases: (1) facilities construction and (2) facilities operation. Impacts of these phases are discussed separately here and throughout the Environmental Impact Statement. Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance or other impacts. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations.

Affected Resources

Air Resources

Construction emissions would occur during mobilization and de-mobilization, and the construction of the pipeline, pumping stations, and terminals. During groundbreaking activities for pipe installation an increase in vehicular traffic and fugitive dust would be expected. Emission levels of volatile organic chemicals, nitrogen oxide, sulfur dioxide, carbon monoxide, and other emissions from internal combustion engines, and particulate matter with 10 micron diameter (PM_{10}) from vehicular travel on unpaved surfaces, would not be expected to exceed any predetermined standards for air quality. Construction activities associated with the Proposed Action would likely result in localized minor impacts of PM_{10} and nuisance dust. Emissions from blasting would result in additional PM_{10} and ammonia emissions. More regulatory controls for construction activities located within non-attainment zones, such as Salt Lake County and Clark County, should be anticipated.

Potential air quality impacts during project operation would be limited to the Cedar City terminal in Utah and the Las Vegas terminal in Clark County, Nevada. Each facility has different long-term impacts which are based on the on-site equipment, existing air quality, and the types and amounts of pollutants generated.

The proposed project includes installation of terminal tank farms near Las Vegas and Cedar City to store and deliver gasoline, diesel, and denatured ethanol. The air pollutant emitting equipment at the terminals would consist of the following:

- Tank truck loading racks.
- Petroleum product storage tanks.
- One denatured ethanol storage tank (Las Vegas only).
- A thermal oxidizer unit for transmix.

The total Hazardous Air Pollutants emissions from either facility would be less than 25 tons per year. Therefore, neither terminal would be a major source of hazardous air pollutants emissions or be subject to National Emissions Standards for Hazardous Air Pollutants. Total emissions per facility would be less than 100 tons per year and the facilities would, therefore, not require Part 70 operating permits.

Noise

The project would have minimal short-term impacts on noise as a result of construction. Onsite noise levels are anticipated to be in the 70 to 85 A-weighted decibel range. Noise generated from construction equipment, drilling, and blasting would all contribute, temporarily, to unwanted noise in the general vicinity of project activities. An increase in local traffic noise would result from construction workers and equipment traveling to and from the site. Blasting would likely be the most prominent source of unwanted noise.

The short-term additional noise produced during construction could disturb nesting birds and temporarily cause a potential adverse effect. Noise from construction activities for near-by residence would be considered “nuisance” noise and would not likely exceed local noise ordinances or Office of Safety and Health Administration standards.

Geology and Mineral Resources

Several types of bedrock would be encountered along the route that would require blasting to excavate for the pipeline. A blasting plan would safeguard against blasting risks and mitigate for potential damages. Although mineral resource areas occur within a half-mile of the proposed route, the disturbance as a result of pipeline installation would be temporary and would not hinder access or exploitation of the mineral resources.

Paleontological Resources

The majority of construction disturbance within the Right-of-way would be surficial. The pipeline excavation would typically be to a depth of 5 to 6 feet, although special conditions could require additional depth. A typical trench would be 24 to 36 inches wide.

Implementation of mitigation measures would reduce the potential impact from project-related ground disturbance on paleontological resources to an insignificant level by allowing for the recovery of fossil remains, and associated data that otherwise might be lost to earth-moving and to unauthorized fossil collecting.

With a well-designed and implemented Paleontological Resources Monitoring and Mitigation Program, project construction could potentially result in beneficial impacts to paleontological resources through the recovery of fossil remains that would otherwise not have been exposed and available for study.

Soil Resources

Construction activities could potentially result in a number of different soil or soil-related impacts including increased erosion, compaction, reduced fertility, poor revegetation, and the introduction of noxious weeds. Potential impacts would be minimized by implementing the mitigation measures and adhering to the site-specific Reclamation Plan and Noxious Weed Plan contained in the Plan of Development.

A small percentage of the land that would be disturbed by construction is designated as prime farmland or land of statewide importance. Little or no agricultural production would be affected long-term by the project, and mitigation measures can assure minimal erosion or productivity losses.

Operation and maintenance of the proposed project would involve little additional soils disturbance. Pipelines would be monitored and maintained over the life of the project utilizing existing roadways to access the pipeline. Soils disturbance would be required for any future pipeline repairs, although those are anticipated to be rare with minimal area disturbed. Any disturbance would be reclaimed and appropriately revegetated to prevent erosion. Upon abandonment, the pipeline would be capped and left in place, requiring no ground disturbance.

Water Resources

During construction groundwater could be affected in several ways. Surface disturbance could affect drainage patterns and recharge, although due to the relatively brief period the ground would be disturbed at any one location, impacts to recharge would likely be negligible. In areas of high groundwater, trench dewatering may be necessary; here again the brief period this would affect any one area would render this impact negligible. Where trench dewatering is required, Best Management Practices would be employed to minimize erosion and other possible effects of disposing of water. Water required for construction would be purchased from municipal or other permitted water rights.

Four water supply wells have been identified as being within 10 feet of the proposed path of the pipeline. If it appears that wells may be affected by pipeline construction, the pipeline corridor alignment may be altered or another remedy applied to ensure that no existing wells are affected long-term. Potential impacts to groundwater flow and turbidity from construction activities, such as blasting and ground disturbance, would be temporary and minor, returning to pre-construction conditions once the surface has been restored.

Impacts to surface water from construction activity, such as sedimentation and altered drainage patterns, would be mitigated through Best Management Practices and restoration of surface contours and vegetation. Where perennial water bodies are crossed by the pipeline horizontal directional drilling would be used to minimize disturbance to the natural morphology and erosion. Open-trenching may be used to cross intermittent streams; impacts would be temporary and minor due to the use of Best Management Practices to minimize impacts.

The pipeline may cross land belonging to Kennecott Utah Copper Corporation adjacent to Interstate 80 near the Salt Lake/Tooele County border, but not the retention ponds. Precautions would be taken in this area to ensure that selenium-contaminated soils and groundwater would not be disturbed in ways that would spread the contamination.

During the operations and maintenance phases for the pipeline the only potential impacts to groundwater would be limited to accidental spills or repairs to the buried pipe. Potential impacts to surface water would be limited to sediment from truck traffic (service vehicles), accidental spills or disturbance caused by repair or maintenance activities.

Vegetation

Under the Proposed Action, all vegetation within the 75-foot-wide temporary construction Right-of-way would be removed. This would be the primary impact of the project on vegetation communities. Where widening the construction corridor outside currently disturbed areas is required, loss of additional native vegetation would primarily affect long-lived plant species that take years to reach maturity. This impact would be long-term and minor.

Pipeline construction would potentially open up new areas to infestations of noxious weeds. This impact is anticipated to be long-term and minor to moderate. In addition to the pipeline Right-of-way, existing roads would be utilized to access the corridor. Impacts to vegetation resources adjacent to these roads may occur as a result of increased fugitive dust and/or grading requirements from road improvement. The impacts are anticipated to be short-term and negligible.

Impacts from ground-disturbing activities associated with pipeline operation and maintenance would be similar to those described for construction, but the extent and degree of impact would be considerably less than from pipeline construction. Impacts to vegetation associated with operations and maintenance are likely to be short-term and negligible.

Wildlife

Construction of the proposed pipeline has the potential to impact wildlife both directly and indirectly. In general, direct impacts would consist of direct mortality or injury (primarily for smaller, less mobile wildlife), habitat loss, habitat fragmentation, and displacement into adjacent habitat. Indirectly, wildlife may be affected by noise and human presence associated with construction activities.

Within the project area, direct impacts to wildlife would primarily occur as a result of the clearing and grading of the Right-of-way, staging areas, and access roads, as well as the excavation of trenches. These activities include the use of heavy equipment, creating the potential for the direct mortality or injury to wildlife, as well as the direct loss of wildlife habitat.

The degree of impact would depend on the type of habitat affected and the rate at which the vegetation would regenerate after construction. In previously disturbed portions of the proposed pipeline route, many of which contain noxious weeds and have not recovered from previous disturbances, the impacts to wildlife would likely be minor due to the low value and suitability of these areas for most wildlife. In undisturbed portions of the right-of-way, the impacts to wildlife from a loss of habitat could range from moderate to major because undisturbed areas are more likely to be suitable for wildlife and these areas would no longer be available. However, given that the types of habitat to be impacted are relatively abundant in the general area surrounding the proposed route, the loss of common habitat types would not result in significant effects to most wildlife populations as defined by the measurement indicators. Impacts may be long-term as virtually the entire length of the project would be constructed within arid habitats where regeneration of vegetation following construction may be slow.

In addition to the impacts described above, construction may impact big game ranges. Construction would be conducted outside of sensitive periods for big game winter range and fawning habitat and would temporarily disturb and may displace big game animals onto adjacent habitat. Winter range and fawning/calving areas would be lost when these areas are disturbed outside of the sensitive periods. Losses of big game habitat would generally be minor and insignificant because these areas are abundant outside the proposed disturbance areas.

General impacts to migratory birds during construction are not expected to be of a magnitude sufficient to result in long-term or significant population-level effects for the following reasons: 1) the presumed stability of local populations (other than sensitive species) and the abundance of available habitat outside of the proposed right-of-way, and 2) the linear nature of the project over a large geographic range.

Open-cut river crossings have the greatest potential to impact aquatic resources during construction (CH2MHill 2008c) through the direct disturbance of the streambed. Increases in sediment run-off from construction should be primarily short-term, generally restricted to the period of active construction and the time needed for reclamation.

As noted above, another wildlife disturbance factor associated with pipeline construction and operation is noise. The highest noise levels and greatest impacts would be expected during construction with lower noise levels during operations. However, noise levels near pump station facilities would continue for the life of the project. The area of disturbance would vary by species but would likely extend several hundred feet around pump station sites. For the majority of wildlife, noise would result in displacement into other habitat.

Special Status Species

General impacts to special status species would be similar to those described for wildlife and fisheries that are described above. Specifically, habitat losses would be temporary or short-term, unless forested areas or late-succession shrubs (i.e., sagebrush) were disturbed. Staging area disturbances would be of longer duration, relative to the pipeline, because they would last for the duration of construction. Road improvements may increase the potential for fragmentation of threatened, endangered, and candidate species populations. Noise impacts from blasting, construction equipment, and associated traffic would be temporary.

A Biological Assessment would be completed in association with this project that would disclose all potential impacts to Threatened or Endangered species in the project area and compliance with the

Endangered Species Act. A Biological Opinion would be submitted by the U.S. Fish and Wildlife Service in association with the decision document for this project that would contain the official determinations of impacts to these species. The Biological Opinion would also contain mitigation measures to be implemented for each species.

Exhibit 4.9-3 in Chapter 4 of this Environmental Impact Statement shows where possible impacts may occur to federally listed species, candidate species, species proposed for listing, or sensitive species. Briefly, the Airport, Rush Lake, and Tooele County Alternatives would all have the same effects as the Proposed Action. The Millard County Alternative showed an increase in potential impact to the habitat for several species over the Proposed Action, including: giant four-wing saltbush, raptors, sage grouse, and pygmy rabbit.

Land Use and Transportation

The proposed project would amend the Pony Express Resource Management Plan in the Salt Lake Field Office to establish a utility corridor including the Right-of-way for the proposed pipeline. The proposed project would be consistent with the identified applicable Bureau of Land Management policies related to the siting of rights-of-way, the processing of applications for use authorizations, and the management of public land.

Construction activities associated with the installation of the proposed pipeline would result in the temporary disruption of existing land uses on approximately 3,882 acres along the alignment during the project construction period. This acreage includes a 75-foot-wide construction Right-of-way along the main pipeline route, the Airport Lateral, and the Cedar City Lateral, plus temporary staging areas along the proposed alignment.

The Proposed Action may conflict with local land use plans in some of the counties that the pipeline would cross. Iron County has several policies that express its desire to continue the existing agricultural and grazing land uses. A Goal of Millard County is to allow growth, while maintaining its agricultural land use. Tooele County has a Growth Management Goal to preserve open space and agricultural land. Similarly, Lincoln County has a goal and policy that indicate its desire to maintain agricultural land uses. Construction of the project may temporarily interrupt agricultural and/or grazing land uses on parcels that the pipeline would cross which is inconsistent with these counties' Goals/Policies and effecting a short-term impact.

Where project construction would cross grazing allotments, vegetation would be removed within the right-of-way, impacting short-term availability of forage. During construction horses on the Chloride Wild Horse Herd Management Area would likely move away from construction disturbance. This may result in horses temporarily moving into areas having less productive water and forage sources.

The same access roads that were used during installation of the Kern River pipeline would be used to the extent they are still viable and are applicable to the proposed project. The improvement of access roads would have a long-term-term positive impact to access.

Project operation is not expected to result in many long-term effects on existing agricultural and/or grazing land uses on parcels that the pipeline would cross, resulting in minimal expected inconsistencies with Iron County's, Millard County's, Tooele County's, and Lincoln County's goals/policies related to the preservation of existing agricultural and/or grazing uses. Operation of the proposed pipeline would have a minimal impact (if any at all) on grazing allotments overlapping the project area. It is expected that nearly all grazing activities that currently occur along the proposed alignment would resume after project construction is complete. Exceptions could include locations where aboveground project facilities would be constructed that would change the use of that land.

Because pipelines are installed underground, they may not result in long-term interference with existing aboveground land uses (including residential, commercial, industrial, agricultural, grazing, and open space uses) depending on the alignment location.

No significant adverse transportation impacts would be expected during operation of the proposed project. There would be only minimal traffic associated with project operation and maintenance, and the traffic would coincide with the current levels of traffic associated with operation and maintenance of the existing Kern River pipeline.

Visual and Recreation Resources

The proposed pipeline alignment would cross Bureau of Land Management lands designated as Visual Resource Management Classes II, III, or IV. The proposed pipeline would be consistent with the management objectives for Classes II, III, and IV because those designations allow changes to the landscape that can be seen.

Construction of the proposed pipeline and associated facilities would cause construction-related visual impacts. The impacts would be caused by vegetation removal, earthwork and grading scars, stockpiles of topsoil and subsoil, staging areas, heavy equipment tracks, trenching, blasting, rock formation alteration or removal, temporary support machinery and tool storage, and construction personnel and vehicles. The visual effects of the presence of construction equipment and activities would be temporary, lasting approximately 12 months.

The removal of vegetation along the northern portion of the proposed pipeline alignment (that would not parallel the existing Kern River pipeline) would create a visible scar on the land, creating a line across the landscape when viewed from the air. However, much of the alignment is not accessible or visible by the public at ground level. When construction is complete, it is expected that revegetation of project-disturbed areas would commence.

The Proposed Action route would not cross any Special Recreation Management Areas, although it passes near several recreation sites, such as the Pony Express Trail, Mountain Meadow Massacre Historic Monument, and the Lytle Ranch Preserve. The route goes through both Bureau of Land Management and Forest Service administered lands that are used for a variety of dispersed recreation. Improvement of existing primitive roads and construction of additional access roads in conjunction with the proposed project could result in indirect effects to recreation from route proliferation, as the public uses these new roads to access previously inaccessible public lands.

After the pipeline is installed and revegetation occurs, minimal visual and recreation effects would occur. The aboveground structures associated with the project, such as the pump station, terminals and valves would be visible from various locations, but would not dominate landscape views. Their presence would alter the landscape; however, these facilities would be located in developed areas with little scenic value.

Cultural Resources

In accordance with the provisions outlined in the Programmatic Agreement, if a cultural resource site listed on or eligible for listing on the National Register of Historic Places would be subject to direct or indirect impacts, mitigation would be proposed. Mitigation may include, but is not limited to one or more of the following measures: (1) avoidance through the use of realignment of the pipeline route; relocation of temporary extra workspaces, or changes in the construction and/or operational design; (2) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and (3) the use of screening with landscaping or other techniques that would reduce or eliminate effects on the historic setting of standing structures.

For those historic properties that would be adversely affected by the undertaking, the project proponent is required by the Programmatic Agreement to prepare a Historic Property Treatment Plan indicating how impact would be reduced or mitigated. Additional consultation with Native American groups is also required to identify and address any concerns these groups may have.

A total of 323 cultural resource sites have been recorded within the surveyed areas of the proposed pipeline project area in Utah and Nevada. The final Class III Survey Report is currently in preparation, and, as a result, final determinations of eligibility by the Bureau of Land Management and State Historic Preservation Offices have not yet been made on these sites. The professional recommendation of the project's cultural resources consultant on site eligibility, which could differ from that of the Bureau of Land Management's and the State Historic Preservation Office's recommendation, is as follows: 161 sites are recommended to be eligible for National Register of Historic Places listing, 162 sites are recommended ineligible.

If any subsurface cultural materials are encountered during construction, all work would stop in the vicinity until a qualified archaeologist can assess the significance of the remains. An Emergency Discovery Plan conventional with the Advisory Council on Historic Preservation and accepted by applicable agencies such as the Bureau of Land Management, State Historic Preservation Offices, and tribal agencies would be followed.

Operation and maintenance of the proposed pipeline and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline.

Native American Concerns

There would be no direct or indirect impacts to known places of cultural and/or geographic interest to the Tribes. Consultation with the Tribes is on-going. No concerns have been raised to date by any of the Tribes.

There would be no direct or indirect impacts to known places of cultural and/or geographic interest to the Tribes under operations, maintenance, or abandonment of the proposed pipeline. No concerns have been raised to date by any of the Tribes.

Socioeconomics and Environmental Justice

The linear nature of the project and its short-term construction period (approximately 8 months) means that the effects of non-local workers residing temporarily in the project area would be spread out over a larger number of local jurisdictions. Peak numbers of workers would be in the area over a 60-90 day period. Based on the proponent's estimate of the total number of workers on the project, the percentage of those workers who would be hired from outside the local workforce, and the timing of crews along the length of the pipeline, construction is expected to have negligible to minor impacts on housing, public services and employment in the project area. There would be some beneficial impacts from company and worker spending in the local economies and sales tax collections.

The 16 permanent new hires to operate and maintain the pipeline following construction would be stationed in population centers (i.e., Salt Lake City, Cedar City and Las Vegas) that can easily accommodate them with existing housing and public services. Estimated property and ad valorem taxes that would be paid on the pipeline would exceed $3 million annually, which would be a benefit to the local communities.

No minority racial, ethnic or socioeconomic groups were identified in the project area and the proposed project would have no disproportionately high and adverse human health or environmental effects on minority, and/or low-income populations, during either construction or operations.

Hazardous Materials and Solid Waste

There were 24 potential sources of hazardous and solid waste identified near the proposed pipeline route using aerial photographs and federal and state databases. Most of these sites would likely have little or no impact on pipeline construction and operation.

Debris generated during pipeline construction would be disposed of at approved landfills or other approved sites traditionally used for disposal of construction debris.

Conclusion

Assuming that all recommended mitigation is implemented, no moderate or major impacts are anticipated to result from construction or operation of the Proposed Action or any of the Action Alternatives with some local exceptions. It is possible but not likely that an unknown historic or cultural site could be accidentally impacted by construction crews, or an unknown hazardous waste site might be encountered, or mortality of an individual of a listed species might occur. Short-term effects would be minor to moderate during the construction phase due to surface disturbance within the right-of-way. Long-term effects would likely be negligible to minor adverse effects during operations phase of the project.

Preferred Alternative

The Bureau of Land Management has identified the Proposed Action alignment as the preferred alternative, with the Airport, Tooele County, Rush Lake, and Millard County Alternative segments as replacements for the corresponding portions of the Proposed Action alignment in those areas. The Preferred Alternative would include all of the Best Management Practices and mitigation measures listed in **Appendix D**.

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CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

1.1. Introduction

This Environmental Impact Statement (EIS) was prepared in response to an Application for Transportation and Utility Systems and Facilities on federal lands, submitted by UNEV Pipeline, LLC (UNEV) and received at the Bureau of Land Management (BLM) on August 1, 2006 (UTU79766). The purpose of this EIS is: 1) for the BLM to evaluate and disclose potential impacts of the proposed project and alternatives; 2) to determine whether to issue a right-of-way (ROW) grant, and; 3) to amend the Pony Express Resource Management Plan (RMP) to establish a utility corridor.

1.1.1. Proposed Action

UNEV is proposing to construct and operate a 399-mile, 12-inch petroleum products pipeline that is proposed to originate in Woods Cross, Utah with terminals northwest of Cedar City, Utah and near Apex, Nevada (northeast of Las Vegas, **Exhibit 1.1-1**). The southern portion of the pipeline alignment would generally follow the existing Kern River pipeline corridor. The southern portion of the corridor contains two Kern River Pipeline Company natural gas pipelines, the newest of which was constructed in 2003. The Kern River Pipeline Environmental Impact Statement was completed in 2002.

Permanent facilities would include access roads to all above ground structures (including valves, launchers, and receiving equipment). Temporary facilities would include construction and equipment storage yards, extra workspace for pipe stringing, and additional construction access roads.

The pipeline inlet would be located near Holly Corporation's Woods Cross, Utah refinery. This refinery recently upgraded its crude oil processing capabilities enabling it to process black wax crude oil and heavy Canadian crude oils. This action is not considered a "connected action" and will not be analyzed as part of this EIS. The refinery expansion and proposed UNEV pipeline projects would have independent utility [40 CFR 1508.25(a)(1)] by virtue of the existing service provided by the expansion, even without the pipeline (Transcon 2008). In addition, because the permitting and construction of the refinery expansion is complete and agencies have fully reviewed and approved the project, additional scrutiny on the expansion serves no purpose other than the evaluation of possible cumulative effects (Transcon 2008).

1.1.2. Project Area

The location of the Project Area is shown in **Exhibit 1.1-1**. The map delineates the route of the proposed 50-foot permanent ROW in eastern and southern Utah, and southern Nevada. The southern portion of the proposed alignment would follow the existing Kern River 2003 Expansion Project utility corridor. Project elements would be located in Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties in Utah; and Lincoln and Clark Counties in Nevada. The pipeline would also cross the Moapa Band of the Paiute's Reservation in southern Nevada.

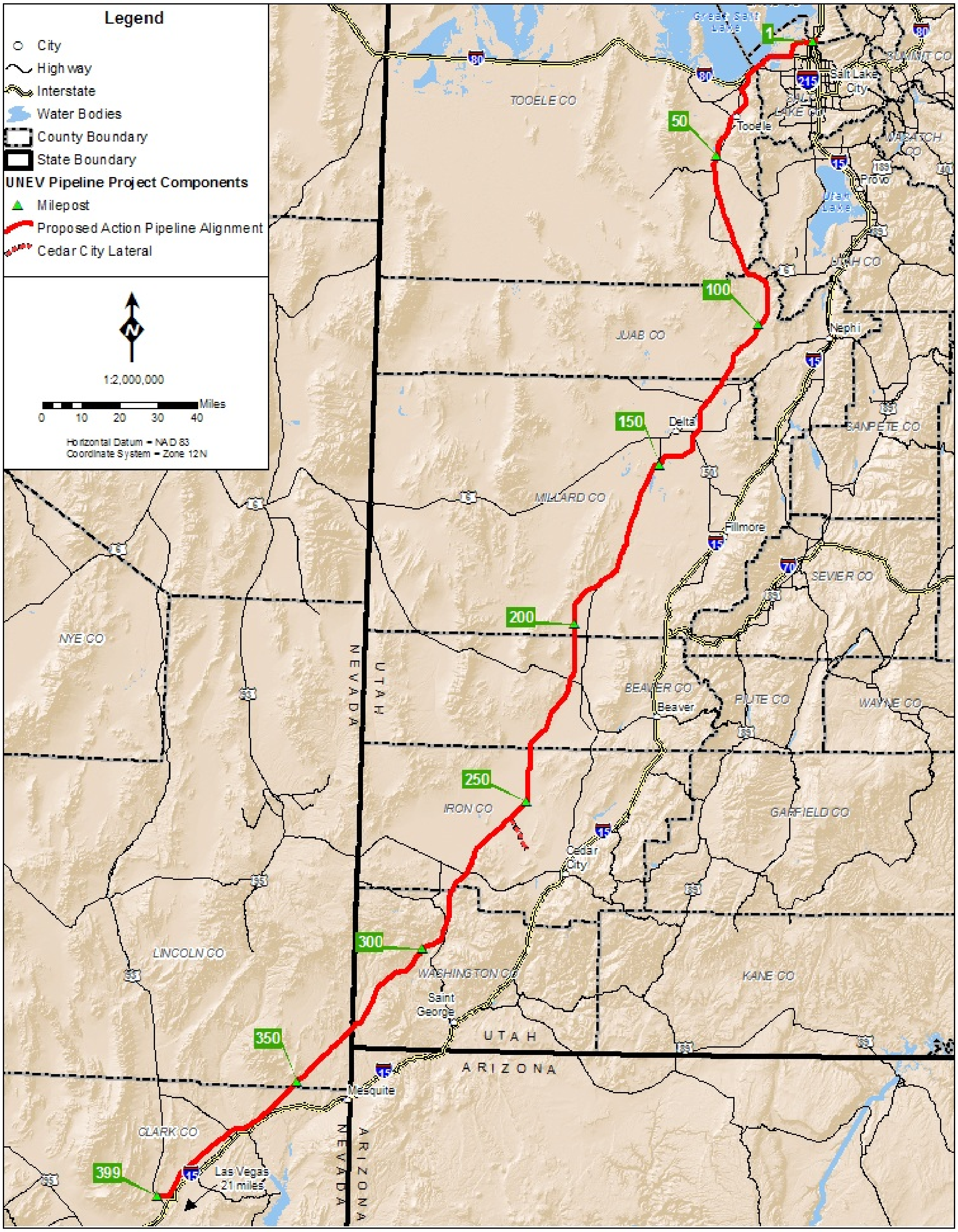

Exhibit 1.1-1 General Project Location

1.2. Need for Proposed Action

1.2.1. Agency Mandate

The BLM is required to evaluate and make decisions regarding the granting of rights-of-way in response to proponent applications. Under Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185), the BLM is authorized to issue ROW grants. It is the policy of the BLM to authorize all ROW applications that are in conformance with approved land use plans at the discretion of the authorized officer.

1.2.2. Proponent Need

1.2.2.1. Population Growth in Southern Utah and Nevada

Southern Utah and Nevada continue to be among the fastest growing areas in the United States. According to the Utah Governor's Office of Planning and Budget, Washington and Iron counties are among the fastest growing in the state. Currently, Washington County receives nearly 1,000 new residents each month. The county's 2006 growth rate was projected at 6.1 percent and it is estimated that Washington County's population of 130,000 people will increase to 648,000 people over the next 30 to 45 years. Iron County's population is expected to double over the next 30 to 45 years. This type of sustained population growth is strongly correlated to automobile use and subsequent fuel consumption. (Council of Economic Advisors 2008)

The statewide 2004 and 2005 population estimates from the U.S. Census Bureau showed Nevada as the fastest growing state in the United States and for the 19th consecutive year, Nevada has led the nation in population growth. Nevada's population grew by 24.9 percent from April 1, 2000 to July 1, 2006. This compares to the nation's population rise of 6.4 percent over the same period (U.S. Census Bureau 2006).

The population growth in Clark County, Nevada is just as impressive as the growth in neighboring Washington County, Utah. Clark County's population was 1,394,440 in 2000. By 2006 it had increased to 1,874,837—a 26 percent increase over 6 years. Over 71 percent of Nevada's population resides in Clark County. (CBER 2007)

1.2.2.2. Increase in Petroleum Products Demand

Population growth is tied directly to demand for gasoline and diesel fuel. Much of the gasoline serving these markets is transported into the areas by trucks from Salt Lake City and other regional refineries. The energy needs of these regions will be met by continued refinery expansions, regardless of the bulk transportation methods used. Today, all refineries in the Salt Lake City area must ship products by tanker truck or rail. Shipments to Idaho and Washington are transported via the Chevron pipeline.

Public demand for petroleum products continues to increase in Utah and Nevada. For example, according to information from the Utah Department of Public Safety (UDPS), vehicle miles traveled in Utah between 2000 and 2005 increased by an average of 2.4 percent annually. Washington County's vehicle miles traveled grew 13 percent from 2003 to 2005, compared to 1.8 percent in Salt Lake County (UDPS 2003; 2005). Statewide, Utah's vehicle miles traveled for 2005 was 2.1 percent higher than the year before, compared to a national figure of 1.5 percent (UDOT 2006).

Based on Official Energy Statistics distributed by the Energy Information Administration (EIA 2008), petroleum demand increased in Utah an average of 2.8 percent per year between 1986 and 2005. In response, Utah refineries expanded by over 12,000 barrels per day during this same period; refinery utilization increased by approximately 10 percent during this time and now averages greater than 90 percent utilization.

In Nevada, the Clark County Blue Ribbon Commission to Improve the Reliability of Southern Nevada's Fuel Supply reported that "there is a projected need for more fuel supply and storage capacity to meet rising consumer demand and bolster the system's reliability in the event of natural disasters." (BRC 2006)

The Blue Ribbon Commission also reported that the majority of Clark County's fuel supply is currently delivered through two parallel pipelines from Colton, California to North Las Vegas, which are running at or near capacity. One pipeline has a capacity of approximately 27,000 barrels of jet fuel per day (one barrel equals 42 gallons) and the second pipeline has a capacity of approximately 105,000 barrels of petroleum per day. All other fuel delivered to southern Nevada is by tanker truck. The Blue Ribbon Commission recommended that a new pipeline should be built to help meet consumer demand and that it should come from a source other than California to provide enhanced reliability should one system experience failure or delay in service. (BRC 2006)

In 2006, Clark County, Nevada's 1.2 million vehicles used approximately 3 million gallons of gasoline per day, and McCarran International Airport in Las Vegas used about 1.27 million gallons of jet fuel per day. Because of Nevada's growing tourism industry and the expected population growth to support it, it is estimated that the demand for fuels will increase by 25 percent over the next five years. According to the Blue Ribbon Commission, southern Nevada is expected to outstrip their fuel supply in the near future because of increased tourism and population growth. (BRC 2006)

1.3. Purpose of Proposed Action

The primary purpose of the Proposed Action is to respond to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, while balancing the needs of resources and other public interests in the area. Specifically, the purpose of the Proposed Action is to:

- Follow the recommendation of the Blue Ribbon Commission to provide a new petroleum products pipeline to Las Vegas from a source outside of California.
- Increase the capacity of the fuel delivery system into southern Utah and Nevada to address private, commercial, industrial, and military demand for refined fuel products.
- Enhance the reliability and efficiency of the current fuel delivery system for multiple refineries in the Salt Lake City area.

1.4. Decisions to be Made

1.4.1. Lead Agency

The BLM Utah State Office is the lead agency for the preparation of this EIS and is coordinating efforts with its Salt Lake, Fillmore, Cedar City, and St. George Field Offices, as well as the Las Vegas and Ely Field Offices through the BLM Nevada State Office. The BLM proposes to adopt this EIS per Title 40 CFR Part 1506.3 to meet its responsibilities under the National Environmental Policy Act of 1969 (NEPA) in considering UNEV's application for rights-of-way grants. Under Section 185(f) of the Mineral Leasing Act of 1920, the BLM has the authority to issue ROW grants for all affected federal lands. This would be in accordance with Title 43 CFR Parts 2800 and 2880, subsequent 2800 and 2880 Manuals, and BLM Handbook 2801-1.

The BLM's decision would be documented in a Record of Decision (ROD). If the BLM decides to approve the project, it would issue a new ROW grant and notice to proceed that would allow construction on federal lands. The ROW grant would include standard and site-specific stipulations of the affected land management agencies and conditions imposed on the project as the result of the NEPA process.

The proposal would also require an amendment to the BLM Salt Lake Field Office's Pony Express RMP to establish a new utility corridor prior to BLM granting the ROW. The Pony Express RMP amendment process to establish a new utility corridor would comply with (1) Decision 1 of the Transportation and Utility Corridors section of the Pony Express RMP which requires that proposals for major rights-of-way utilize established corridors, (2) 43 CFR 1600 regulations, and (3) BLM Handbook H-1601-1. BLM would then grant a ROW within the new utility corridor and authorize subsequent construction activities.

1.4.2. Cooperating Agencies

Several agencies have been identified as cooperating agencies for the EIS and include:

- Bureau of Indian Affairs
- Moapa Band of the Paiute Tribe
- U.S. Air Force, Nellis Air Force Base
- U.S. Army, Tooele Army Depot
- U.S. Forest Service, Dixie National Forest

The Dixie National Forest as well as other affected federal land management agencies (e.g., military bases crossed by the project) would issue a letter to the BLM that would concur or not concur with issuance of a ROW grant across their lands. These agencies' concurrence or non-concurrence would be based on consistency of the project with their respective land management plans and conformance with other applicable guidance and mandates. The BLM would consider the concurrence or non-concurrence of these agencies in making its decision whether to grant the ROW on all federal land, and any needed mitigation.

In addition to the lead and cooperating agencies, other federal, state, and local agencies will use the EIS to provide approvals or issue permits for all or part of the proposed project. Federal, state, and local permits, approvals, and consultations for the project are discussed in **Section 1.7**.

1.5. Plans, Policies, and Programs

1.5.1. Relationship to BLM Plans, Policies, and Programs

This EIS will ensure that the project is in compliance with the Council on Environmental Quality (CEQ) regulations for implementation of NEPA (40 CFR 1500-1508), BLM's NEPA Handbook (H-1790-1), and other BLM policies, regulations and guidelines (such as the 1997 Utah's Standards and Guidelines for Healthy Rangelands).

The proposed project area crosses six BLM Field Office areas administered by the Salt Lake, Fillmore, Cedar City, St. George, Ely, and Las Vegas Field Offices. Each has a pertinent land use management plan and any project elements that would occur on those lands must conform to the respective BLM plans and programs, subject to site-specific conditions that may be implemented as the result of this analysis, and are listed below:

- Cedar Beaver Garfield Antimony RMP was approved by the Cedar City Field Office in 1986.

- Ely RMP was approved by the Ely Field Office in November 2007. The new RMP replaces the Egan Resource Area RMP, and incorporates relevant sections from the Caliente Management Framework Plan Amendment.
- House Range Resource Area RMP was approved by the House Range Resource Area Manager, the Richfield District Manager, and the Utah State Director in 1987.
- Las Vegas RMP was approved by the Las Vegas Field Office in 1998.
- Pony Express RMP was approved by the Salt Lake Field Office in 1990. The Proposed Action and action alternatives would not be in conformance with *Transportation and Utility Corridor Decision 1* of the RMP and would require that the plan be amended to provide a new utility corridor. The plan will be amended concurrent with this project-level EIS (**Section 1.6**).
- St. George Field Office RMP was approved by the St. George Field Office in 1999.
- Warm Springs RMP was approved by the Warm Springs Resource Area Manager, the Richfield District Manager, and the Utah State Director in 1987.

Except for the Pony Express RMP, the Proposed Action would be in conformance with the land use plans' terms and conditions as required by 43 CFR 1610.5. More detailed discussion of these land use plans is found in **Chapters 3 and 4** under Land Use.

1.5.2. Relationship to Non-BLM Plans, Policies, and Programs

The Proposed Action would need to conform to other federal, state, and local agency plans, policies and programs by incorporating data, and adopting mitigation strategies and incorporating management recommendations where appropriate. Following is a partial list of other federal, state, and local land use plans that have been consulted in the development of this EIS and more detailed discussion of these land use plans is found in **Chapters 3 and 4** under Land Use:

- Beaver County General Plan, adopted in 1998 (amended)
- Clark County Comprehensive Plan, Northeast County Land Use Plan, adopted 2006
- Clark County Multiple Species Habitat Conservation Plan, approved 2001
- Davis County General Plan, 2006
- Dixie National Forest Land and Resource Management Plan, approved in 1986 (this plan is currently being revised—a Proposed Land Management Plan for the Dixie and Fishlake National Forests was published in 2006)
- Iron County General Plan, adopted in 1995
- Juab County General Plan, adopted in 1996
- Lincoln County Land Use Plan, 2006
- Millard County General Plan (as amended), 2008
- Salt Lake County General Plan
    - Combined Land Use Map, 1998
    - Draft West Bench General Plan, 2006
- Salt Lake County Shorelands Plan Vision, 2003
- Southeast Lincoln County Multiple Species Habitat Conservation Plan (no date)

- Tooele County General Plan, 1995
- Washington County General Plan, adopted in 1994

1.6. Plan Amendment and Utility Corridor

The Pony Express RMP, as amended, *Transportation and Utility Corridors Decision 1*, specifically states: “Future proposal for major rights-of-way such as pipelines, large power lines and permanent improved roads must utilize identified corridors as shown in Figure 10 [of the RMP]. Otherwise, a planning amendment and appropriate environmental analysis will be required.”

In accordance with this direction, this EIS will address the establishment of a single new utility corridor that would accommodate the proposed pipeline ROW within the BLM Salt Lake Field Office boundaries. Though only one would be selected, there are two potential utility corridor alignments associated with different action alternatives (see **Chapter 2**) that are analyzed as a part of this EIS.

Preliminary issues and management concerns have been identified by BLM personnel, other agencies, and in meetings with individuals and user groups. They represent the BLM’s knowledge to date of the existing issues and concerns with current management. The major issue themes that may be addressed in the planning effort include:

- Access to and transportation on the public lands.
- Wildlife habitat and management of summer and winter ranges and migration corridors for antelope, mule deer, elk, and moose.
- Cumulative effect of land uses and human activities on Threatened, Endangered, Candidate, and Sensitive species and their habitats.
- Vegetation, including impacts of invasive non-native species.
- Management of cultural and paleontological resources, including National Historic Trails.
- North Oquirrh Special Management Area.
- Visual Resource Management.
- Air and water quality.
- Sociology and economics.

The public is encouraged to help identify these issues and concerns during the scoping phase. An interdisciplinary approach will be used to develop the plan in order to consider the variety of resource issues and concerns identified.

In accordance with 43 CFR 1610.4-2, the BLM has identified preliminary planning criteria to help guide resolution of the issues considered in the planning effort. The BLM may revise these planning criteria during the planning process or in response to public comment. The criteria are:

- Recognize valid existing rights.
- Comply with laws, regulations, executive orders and BLM supplemental program guidance.
- Comply with the Endangered Species Act and follow interagency agreements with the USFWS regarding consultation.

- Ensure, within applicable laws and policies, that management prescriptions and planning actions complement those of neighboring federal, tribal, state, county and municipal planning jurisdictions.
- Coordinate with Indian Tribes to identify sites, areas and objects important to their culture and religious heritage.
- Evaluate cultural and paleontological resources for possible interpretation, preservation, conservation and enhancement.
- Management decisions will consider a reasonable range of alternatives that focus on the relative values of resources and ensure responsiveness to the issues. Management prescriptions will reflect multiple use resource principles.
- Address the social and economic impacts of the alternatives.
- Develop management actions that are responsive to the issues, concerns and opportunities identified for resolution in this plan amendment.
- Include management direction for public lands managed by BLM.
- Provide for public safety and welfare.

1.7. Applicable Laws and Regulations

Exhibit 1.7-1 lists federal and state laws and agency regulations potentially applicable to the Proposed Action and other action alternatives.

Exhibit 1.7-1 Laws and Regulations that may be Applicable to the Proposed Action

LAWS AND REGULATIONS	REFERENCE
American Indian Religious Freedom Act of 1978	42 USC 1996
Antiquities Act of 1906	16 USC 431 et seq.
Archeological Resources Protection Act, as amended (ARPA)	16 USC 470aa et seq.
BLM ROW regulations	43 CFR 2800
BLM NEPA Handbook H-1790-1 (2008)	BLM Manual Rel. 1-1710
Clean Air Act (CAA)	42 USC 7401 et seq.
Clean Water Act (CWA)	33 USC 1251 et seq.
Consultation and Coordination with Indian Tribal Governments	Executive Order 13084
Consultation and Coordination with Indian Tribal Governments	Executive Order 13175
Council on Environmental Quality (CEQ) general regulations implementing NEPA	40 CFR Parts 1500-1508
Department of the Interior's (DOI) implementing procedures and proposed revisions	65 FR 52211-52241
Departmental Responsibilities for Indian Trust Resources	512 DM 2.1
Endangered Species Act (ESA)	16 USC 1531 et seq.
Environmental Justice	Executive Order 12898
Federal Compliance with Pollution Control Standards	Executive Order 12088
Federal Land Policy and Management Act of 1976 (FLPMA)	USC 1701 et seq.
Floodplain Management	Executive Order 11988

LAWS AND REGULATIONS	REFERENCE
Indian Sacred Sites	Executive Order 13007
Invasive Species	Executive Order 13112
Memorandum for the Heads of Executive Departments and Agencies	Signed by President Clinton on April 29, 1994
Memorandum on Government-to-Government Relations with Native American Tribal Governments of 1994	
Migratory Bird Treaty Act	16 USC 703–711
National Environmental Policy Act	42 USC 4371 et seq.
National Historic Preservation	Executive Order 11593
National Historic Preservation Act (NHPA) and regulations implementing NHPA	16 USC 470 et seq.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)	25 USC 3001-30013 et seq.
NEPA, Protection and Enhancement of Environmental Quality	Executive Order 11512
Nevada Critically Endangered Flora Law	NRS 5.27-5.33
Noise Control Act of 1972, as amended (NCA)	42 USC 4901 et seq.
Occupational Safety and Health Act (OSHA)	29 USC 651 et seq. (1970)
Pollution Prevention Act of 1990 (PPA)	42 USC 13101 et seq.
Protection of Wetlands	Executive Order 11990
Responsibilities, and the Endangered Species Act, Secretarial Order 3206	June 5, 1997
Safe Drinking Water Act of 1974 (SDWA)	42 USC s/s 300f et seq.
Utility Environmental Protection Act	NRS 704.820-704.900
BLM Planning Handbook H-1601-1 (2005)	BLM Manual Rel. 1-1693
BLM planning regulations	43 CFR 1600 et seq.

1.8. Permits, Licenses, and Other Requirements

Exhibits 1.8-1, 1.8-2, and **1.8-3** list the major federal, state, and local permits, approvals, and consultations that have been identified for the construction and operation of the UNEV Pipeline. UNEV would be responsible for obtaining all permits and approvals required to implement the proposed project, regardless of whether they appear in this table.

Exhibit 1.8-1 Major Federal Permits, Approvals, and Consultations Required for the Proposed Project

Regulatory Agency	Required Permit or Approval	Agency Action
Advisory Council on Historic Preservation		
	Section 106 consultation, National Historic Preservation Act	Has opportunity to comment on the project.

Regulatory Agency	Required Permit or Approval	Agency Action
U.S. Department of Agriculture		
Forest Service	Special Use Permit for Dixie National Forest	Consider issuance of a SUP for the portion of the project that crosses national forest land.
U.S. Department of Defense		
Army Corps of Engineers	Section 404, Clean Water Act (CWA) Permit	Consider issuance of Section 404 Permits for the placement of dredge or fill material into waters of the U.S., including wetlands.
U.S. Department of the Interior		
Bureau of Indian Affairs	Archaeological Resource Protection Act Permit	Consider issuance of permit for cultural resource surveys on tribal land.
Bureau of Indian Affairs	ROW Grant for tribal lands	Consider issuance of a grant for easement on tribal lands.
Bureau of Indian Affairs	BIA Road Permit	Issue permits for crossing BIA roads in Nevada.
Bureau of Land Management	Antiquities and Cultural Resource Fieldwork Authorization	Consider issuance of permit to conduct surveys and to excavate or remove cultural resources on federal lands.
Bureau of Land Management	ROW Grant	Consider issuance of grant for portions of the project that would encroach on federal lands.
Bureau of Land Management	Temporary Use Permit	Consider issuance of permit for temporary construction activities that would occur outside of the permanent ROW.
Bureau of Land Management	Plan of Development	Consider approval of the detailed, construction, operation, and maintenance plan.
Bureau of Land Management	Notice to Proceed	Following issuance of ROW Grant and POD approval, consider issuance of notice to proceed with project development and mitigation activities on federal lands.
Fish and Wildlife Service	Section 7 consultation, Biological Opinion	Consider Lead Agency's finding of impact on federally listed or proposed species. Provide Biological Opinion if the project

Regulatory Agency	Required Permit or Approval	Agency Action
		is likely to adversely affect federally listed or proposed species, or their habitats.
U.S. Department of Transportation		
	Encroachment Permit	Consider issuance of permits for the crossing of federally funded highways.
U.S. Department of the Treasury		
Bureau of Alcohol, Tobacco, and Firearms	Explosive User's Permit	Consider issuance of a permit to purchase, store, and use explosives for site preparation during pipeline construction.
U.S. Environmental Protection Agency Regions 8 and 9		
	Section 401, CWA, Water Quality Certification	In conjunction with states, consider issuance of water use and crossing permits.
	Section 402, CWA, National Pollutant Discharge Elimination System (NPDES) Permit	In conjunction with states, review and issue NPDES permit for discharge of hydrostatic test water.
	Section 404, CWA	Review CWA, Section 404 applications for wetland dredge and fill applications with 404(c) veto power for wetland permits issued by the Army Corps of Engineers.
	Stormwater Discharge Permit	In conjunction with states, review and issue permit for activities associated with construction.

Exhibit 1.8-2 Permits, Approvals, and Consultations Required by the State of Utah and Local Jurisdictions

Regulatory Agency	Required Permit or Approval	Agency Action
Utah Department of Environmental Quality		
Division of Air Quality	Permit to Construct	Consider issuance of permit to construct facilities with the potential for air emissions.
Division of Air Quality	Permit to Operate	Consider issuance of permit to operate equipment with the

Regulatory Agency	Required Permit or Approval	Agency Action
		potential for air emissions.
Division of Air Quality	Dust Control Plan	Consider approval of a dust control plan for construction.
Division of Water Quality	Section 401, CWA, Water Quality Certification	Consider issuance of permit for stream and wetland crossings.
Division of Water Quality	Section 402, CWA, NPDES Permit	Consider approval of activities that may require a discharge into waters of the U.S.
Division of Water Quality	Groundwater Quality Protection Permit	Consider issuance of permit regulating discharge of hydrostatic test water from pipeline to land surface.
Division of Water Quality	Hydrostatic Test Permit	Consider issuance of permit regulating discharge of hydrostatic test water to land or U.S. waters.
Division of Water Quality	Construction Dewatering Permit	Consider issuance of permit regulating discharge of intruded water from construction excavation to land or U.S. waters.
Division of Water Rights	Water Rights Transfer	Consider issuance of permit for the transfer of water rights for hydrostatic testing.
Division of Water Rights	Stream Channel Alteration Permit	Consider issuance of permit for crossings that would require stream channel alternation.
Utah Department of Natural Resources		
Division of Forestry, Fire, and State Lands	Soil Erosion, Sedimentation Control, and Spill Plan Approval	Coordinate with local conservation districts and recommend erosion control measures.
Division of Wildlife Resources	Consultation	Review and comment on activities potentially affecting general wildlife and state-listed sensitive species.
Utah Department of Transportation		
	Encroachment Permits	Consider issuance of permits for any activities affecting state highways or within highway easements, including road crossings.

Regulatory Agency	Required Permit or Approval	Agency Action
Utah State Historic Preservation Office		
	Section 106, NHPA, consultation	Review and comment on activities potentially affecting cultural resources.
Utah Counties (Beaver, Iron, Juab, Millard, Salt Lake, Washington)		
	Encroachment Permits	Consider issuance of permits to cross county roads.
	Conditional Use Permits	Consider issuance of permits to authorize conditional land uses within established zones.
Union Pacific Railroad		
	Encroachment Permits	Consider issuance of permits to cross railroad tracks or within railroad easements.

Exhibit 1.8-3 Permits, Approvals, and Consultations Required by the State of Nevada and Local Jurisdictions

Regulatory Agency	Required Permit or Approval	Agency Action
Nevada Department of Conservation and Natural Resources		
Division of Environmental Protection	NPDES Discharge Permit	Consider issuance of permit regulating discharge of hydrostatic test water.
Division of Environmental Protection	Section 401, CWA, Water Quality Certification	Consider issuance of permit for stream and wetland crossings.
Division of Environmental Protection	Section 402, CWA, NPDES Permit	Consider approval of activities that may require a discharge into waters of the U.S.
Division of Environmental Protection	Air Quality Operating Permit	Consider issuance of a permit to construct and operate equipment with the potential for air emissions.
Division of Forestry	Take Permit for Nevada-listed Critically Endangered Plant Species	Consider issuance of permit for the take of Nevada-listed critically endangered plant species.

Regulatory Agency	Required Permit or Approval	Agency Action
Division of State Lands	Easement Permit	Consider issuance of permit for crossing of state lands, including streams and rivers.
Division of Water Resources	Rolling Stock Permit	Consider issuance of permit for crossing rivers and streams.
Division of Water Resources	Water Use or Water Use Change Permit	Consider issuance of permit for the use of water in hydrostatic testing.
Nevada Department of Wildlife		
	Consultation	Review and comment on activities potentially affecting state-listed species.
Nevada Department of Transportation		
	Encroachment Permits	Consider issuance of permits for any activities affecting state highways or within highway easements, including road crossings.
Nevada State Historic Preservation Office		
	Section 106, NHPA, consultation	Review and comment on activities potentially affecting cultural resources.
Clark County		
Department of Air Quality and Environmental Management	Dust Control Permit	Consider issuance of temporary permit for construction activities causing fugitive dust.
Department of Transportation	Encroachment Permit	Consider issuance of permits to cross county roads.
Health District Air Quality Division	Air Quality Construction and Operating Permit	Consider issuance of a permit to construct and operate equipment with the potential for air emissions.

Regulatory Agency	Required Permit or Approval	Agency Action
Lincoln County		
Road Department	Encroachment Permit	Consider issuance of permits to cross county roads.

1.9. Identification of Issues

1.9.1. Public Scoping Process

BLM announced the public scoping period in the Federal Register on August 9, 2007 (Vol. 72, No. 153). This notice initiated a 30-day public scoping process. Those having concerns, issues, or alternatives for consideration in the EIS were to submit written comments by September 10, 2007.

The BLM hosted public scoping meetings in Salt Lake City, Tooele, Delta, and Cedar City, Utah, and Las Vegas, Nevada. The BLM also met with the Moapa Band of the Paiute Tribe on several occasions to brief them and seek comments on the project. The issues evaluated in this EIS were derived from the UNEV EIS Scoping Summary issued in October 2007 (JBR 2007). In that document, the comments received during public scoping were summarized into categories, which became the basis for defining issues. The defined issues are presented under components of the human and natural environment that are customarily addressed in impact analysis. The numbers following the issues are the comment numbers from which the issue was derived.

In addition to the results identified in the Scoping Summary, Appendix A contains the Interdisciplinary Team Analysis Record Checklists from the BLM Field Offices. Resources that were identified as "present with potential for significant impact" (PI) by BLM Field Offices are included in **Section 1.9.2** along with scoping summary comments and reference **Appendix A** where the checklists are located.

The project proposal was also posted on Utah BLM's Electronic Notification Bulletin Board located at: https://www.blm.gov/ut/enbb/view_project.php. BLM also made information available online at: http://www.blm.gov/ut/st/en/prog/more/lands_and_realty/major_projects/unev_pipeline_eis.html.

1.9.2. Key Issues

1.9.2.1. Air Quality

The proposal will require an Approval Order (021-01).

Direct emissions (including CO_2) from construction and operation activities should be considered (021-02, 046-15, 058-05).

Indirect and cumulative emissions from Wasatch Front refineries should be considered (046-14).

Analyze impacts in EIS (Appendix A).

1.9.2.2. Areas of Critical Environmental Concern (ACECs)

4.3 miles of the pipeline would occur within the Beaver Slope Dam ACEC, containing critical habitat for desert tortoise (Appendix A).

1.9.2.3. Cultural Resources

Project would affect over 100 National Register of Historic Places eligible sites (Appendix A).

1.9.2.4. Cumulative Effects

Cumulative effects of CO_2 emissions from all facets of the Proposed Action should be considered (046-15).

Cumulative effects from future linear projects using the proposed UNEV alignment should be considered (046-10).

1.9.2.5. Environmental Justice

Minority and low income populations are present (Appendix A).

1.9.2.6. Farmlands (Prime or Unique)

Prime and unique farmlands and farmlands of statewide importance are present (within Fillmore Field Office) and would be intersected by the pipeline. Largely these farmlands are only considered prime and unique if irrigated. No BLM administered lands that would be intersected are currently irrigated. However, private lands along some of the alternatives are private and currently being used for agriculture. If any of these lands are intersected by the pipeline, coordination with the landowner must occur so that the pipeline does not remove lands from agricultural production (Appendix A).

1.9.2.7. Floodplains

Both of the proposed routes for the pipeline would cross floodplains within Salt Lake and Fillmore Field Offices. At a minimum, 100 yr flood event planning must be incorporated into the design criteria for the construction of the pipeline (Appendix A).

Project must be analyzed for and comply with Executive Order 11988 for floodplains (Appendix A).

1.9.2.8. Geology and Minerals

Natural or project-induced earth movement should be considered in the EIS (029-03, 046-08).

The entire route of the proposed pipeline goes through an active seismic area. Mineral resources may occur but the proposed action should not affect them. There are currently three Free-Use Permits in the vicinity of the proposed ROW. Coordination with these permit holders is necessary (Appendix A).

1.9.2.9. Hazardous and Solid Waste Materials

Consider the impacts due to spills and leaks (021-11, 029-01, 046-05, 058-04).

Consider the potential for natural hazards and their impact on the project (058-03).

Proposal goes through the Jacob Smelter OU2 boundary (Appendix A).

1.9.2.10. Land Use

The Proposed Action could impact private land uses and development potential (016-01, 031-01).

The Proposed Action could impact existing rights-of-way and claims on public lands (020-01, 040-01, 047-01).

Need to consult and coordinate with ROW holders and other entities along route. Project will require ROW analysis (Appendix A).

1.9.2.11. Native American Concerns

It is important to work closely with the Moapa Band of the Paiutes as the project would cross the reservation (014-04).

BLM to conduct tribal consultations (Appendix A).

1.9.2.12. NEPA Process

Having a scoping meeting in Delta was not convenient (007-01).

Direct, indirect, and cumulative effects should be analyzed in the EIS (021-10).

1.9.2.13. Prevention/Education (Fire)

The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and rehabilitation (Appendix A).

1.9.2.14. Proposed Action Issues

The BLM should allow fiber optic lines to be co-located with the pipeline (004-01, 030-01).

The Proposed Action should incorporate mitigation measures to avoid or minimize impacts to resources and the human environment (021-12, 021-15, 048-01, 058-02).

The impacts of ongoing maintenance activities and the ultimate responsibility for environmental impacts caused by future pipeline problems should be addressed (029-04, 046-09).

Potential effects of the Proposed Action on National Forest lands should be considered (020-02, 020-03).

When siting the pipeline in Clark County, Nevada it should not conflict with the Ground Water Development Project (018-01).

The Proposed Action needs to specify how often maintenance checks will be performed (014-03).

Water rights may be needed if the Proposed Action requires diverted water for construction or testing purposes (021-04).

1.9.2.15. Range

Grazing permittees should be consulted and range resource analyzed for impacts (019-01).

Potential impacts to grazing allotments and water pipelines (Appendix A).

The proposed pipeline crosses over water pipelines and through allotment and pasture fences. Any damage to the fences and waterlines must be repaired. There are several grazing allotments that would be involved. The proposed pipeline must be at least 50 feet from water troughs and fences (except where the proposed pipeline would cross them). There are also several stock watering reservoirs along the proposed routes (Appendix A).

1.9.2.16. Recreation and Special Interest Areas

Recreation activities and areas should be considered in siting the pipeline (021-03, 047-01).

Project alignment crosses the Castle Cliffs, Gunlock/Goldstrike, and Joshua Forest Loops of the routes used in the Tri-State ATV Jamboree. It either parallels, or is directly on top of 13 miles of the same routes. Impacts to ATV Jamboree are possible if construction occurs in early spring (Appendix A).

Impacts to recreation within the Fillmore Field Office would be an increase of OHV use on or adjacent to the pipeline if it is not rehabbed (Appendix A).

1.9.2.17. Socioeconomics

The Proposed Action may positively affect general socioeconomics of the local communities by providing jobs and helping businesses (014-02, 053-01).

The Proposed Action may negatively affect the local (Utah) economy by decreasing availability of refined petroleum products and increase prices (025-01, 056-01).

The Proposed Action may negatively affect property values or existing businesses (013-01, 016-01, 027-01).

The Proposed Action may increase local tax burdens of property owners (029-02).

An economic study should be completed to best site the terminal in Utah (026-01).

Socioeconomic values should be considered in the EIS (Appendix A).

1.9.2.18. Soils

Wetland soils may not be suitable for the project (032-01, 046-06).

Soil resources may be affected by vegetation removal and general disturbance (Appendix A).

Soils are capable of becoming prime or unique farmlands if water is applied. There may be prime or unique farmlands on private lands near New Castle (Appendix A).

1.9.2.19. Special Status Species

Construction and operation activities of the Proposed Action may have direct and indirect impacts on desert tortoise habitat and individuals within the project area. Mitigation and appropriate monitoring should be incorporated into the project (022-01, 022-02, 022-03, 022-04, 022-06).

Stream construction should be avoided during critical spawning months (021-13).

Access to construction or maintenance roads should be restricted to limit habitat degradation (022-05).

The following Special Status plant species may occur in the project area: Baird camissonia, Nevada willowherb, and pinyon penstemon. Other rare plants (*Eriogonum batemanii*, *Sclerrocactus spinosior*) may occur in vicinity of proposed alignment. Prior to any on the ground disturbances, a biological survey should be conducted to identify populations of these species which may occur in the project area. Any populations found within the project area should be clearly marked, and avoided if possible (Appendix A).

Sphaeralcea caespitosa (Jones globemallow) has been found in salt desert shrub communities east of the Cricket Mountains 4 miles south of the point where the Millard County Alternative and the Proposed Route join back together (Appendix A).

Penstemon angustifolius var. *dulcis* (Neese narrowleaf penstemon), *Cymopterus acaulis* var. *parvus* (small spring parsley), and *Atriplex canescens* var. *gigantea* (giant fourwing saltbush) occur on sandy soils, semi-stabilized dunes, or active sand dunes. The Millard County Alternative intersects 8-10 miles of potential sandy habitat for these three species north of IPP and the section just south and southeast of Little Sahara Recreation Area. The Proposed Action, however, only intersects a small portion of potential habitat southeast of Little Sahara Recreation Area (Appendix A).

All plant surveys for *Sphaeralcea caespitosa*, *Penstemon angustifolius* var. *dulcis*, *Cymopterus acaulis* var. *parvus*, and *Atriplex canescens* var. *gigantea* will need to be completed during the appropriate time of year when the particular plants in question can be found and positively identified by a qualified Botanist that has been approved by the BLM in advance. Plant surveys will be completed on BLM, state and private lands. Both the project proponent and the BLM-approved Botanist should coordinate with the BLM prior to starting plant surveys (Appendix A).

The following Special Status Species may occur in the project area: burrowing owl (permanent resident, uncommon), California condor, ferruginous hawk (permanent resident, uncommon), greater sage grouse (permanent resident, uncommon), Lewis' woodpecker (permanent resident, rare), Northern goshawk (permanent resident, rare), short-eared owl (transient, rare), bald eagle (winter visitor, uncommon), big free-tailed bat (summer resident, rare), fringed myotis (permanent resident, uncommon), kit fox (permanent resident, uncommon), pygmy rabbit (permanent resident, uncommon), Utah prairie dog, spotted bat (permanent resident, rare), Townsend's big-eared bat (permanent resident, fairly common), Western red bat (permanent resident, extremely rare), desert sucker (permanent resident, fairly common), Virgin spinedace (permanent resident, fairly common), Arizona toad (permanent resident, fairly common), Common chuckwalla (permanent resident, uncommon), desert iguana (permanent resident, rare), Desert night lizard (permanent resident, uncommon), Gila monster (permanent resident, rare), Mojave rattlesnake (permanent resident, uncommon), Sidewinder (permanent resident, fairly common), Speckled rattlesnake (permanent resident, uncommon), Western banded gecko (permanent resident, uncommon), Western threadsnake (permanent resident, rare), Western toad (permanent resident, uncommon), and Zebra-tailed lizard (permanent resident, fairly common). Overall impacts to small mammals, birds, and reptiles would be insignificant to populations in the general area. Larger animals would be temporarily disturbed and displaced to adjacent habitats. Once construction is completed, larger animals would return to the area. Any disturbance to small mammals, birds, and reptiles (once habitat has been restored) would be short-term (lasting several years). Impacts to Special Status Species would be similar to impacts to general wildlife in the area (Appendix A).

1.9.2.20. Transportation

Installation of the pipeline may reduce the number of petroleum trucks on the highway and improve traffic congestion (045-01, 054-01).

Traffic may be impacted if major repairs or maintenance are required (029-01)

1.9.2.21. Vegetation

Project will cause general vegetation disturbance (Appendix A).

Disturbed areas are prone to noxious weed establishment. The EIS needs to determine what vegetation resources would be disturbed and include revegetation and monitoring plans. There are areas of existing infestations of Scotch thistle, squarrose knapweed, and Dyers woad on the Kern River ROW that could be spread by the project. New noxious or invasive species could be brought in by equipment and vehicles traveling into the project area (039-01, 046-04, Appendix A).

Need to address riparian areas in EIS (Appendix A).

Along the Millard County Alternative there are riparian areas along the Sevier River Channel, the old river channels and several large wet areas including Swan Lake Salt Marsh, Swan Lake and Crafts Lake. The proposed pipeline would go between Swan Lake Salt Marsh and Swan Lake (Appendix A).

The pipeline would pass south and east of Delta and goes through some mud flats in sections 12, 13 & 14 of T.19S., R.8W. and across mud flats, riparian vegetation along drainage ditches and other wetlands from the eastern part of section 11 of T.18S., R.6W. through the northern part of Sections 28 of T.18S., R.7W. Much of the riparian areas along this proposed route can be avoided. However, where the pipeline would cross the Sevier River upstream from the DMAD Reservoir is a sizeable wetland and riparian area which cannot be avoided (Appendix A).

There would be potential impacts to woodlands (Appendix A).

1.9.2.22. Visual Resources

Proposed Action and action alternatives would mostly pass through VRM Class III and Class IV areas. The Proposed Action would pass through a combined total of less than 1 mile of VRM Class II areas within Salt Lake Field Office in Utah and Ely Field Office in Nevada. All pipeline alternatives may impact future view sheds in either direction (Appendix A).

1.9.2.23. Water

The Proposed Action could affect wetlands. The EIS should incorporate wetland delineations to determine wetland location, type, function, and potential impacts (005-01, 021-05, 021-06, 021-08, 046-01, 046-02, 046-07).

Prolonged flooding from the Great Salt Lake may affect the pipeline and habitat within the pipeline corridor (021-08).

Safeguards to protect surface and ground water from leaks should be taken. Impacts to water quality must be analyzed (Appendix A).

The proposed and alternative routes would cross existing water pipelines and associated troughs or ponds as identified on field office allotment and project maps (Appendix A).

1.9.2.24. Wild Horses and Burros

Project would run along the Westside of the Chloride Wild Horse Herd Management Area. Horses may move during construction to less productive water and forage sources (Appendix A).

1.9.2.25. Wildlife

The EIS should analyze potential impacts to waterfowl and migratory birds (021-07, 046-03).

Stream-related construction activities should include mitigation to protect fish species, including temporal restrictions and salvage operations as needed (021-13, 021-15).

The pipeline corridor should not fragment wildlife habitat (058-01).

Entire line needs raptor clearance (Appendix A).

1.10. Organization of the EIS

This document follows regulations promulgated by the CEQ for implementing the procedural provisions of NEPA; the BLM NEPA Handbook, H-1790-1; and Sections 201, 202, and 206 of FLPMA. This EIS describes the components of and reasonable alternatives to the Proposed Action and environmental consequences of this action and the alternatives.

The EIS is divided into several chapters for ease of reading and to organize information for decision-making.

Chapter 1 (this chapter) provides general background, the purpose of and need for the Proposed Action; roles of the BLM and coordinating agencies; decisions to be made and authorities regulating the process of analysis and disclosure; a summary of public participation in the EIS process; and key issues to be addressed.

Chapter 2 presents a reasonable range of alternatives to address the stated need and purpose for the project, including the Proposed Action, No Action, and other alternatives to the Proposed Action; discusses alternatives not carried forward for detailed analysis; lists potential mitigation actions to reduce or minimize impacts; discusses the agency-preferred alternative, and summarizes environmental impacts for each alternative.

Chapter 3 describes the affected human environment in the Project Area.

Chapter 4 details potential direct and indirect effects associated with the Proposed Action and other alternatives and discusses potential mitigation measures. Cumulative effects associated with the Proposed Action and other alternatives are also discussed.

Chapter 5 lists state and federal agencies that were consulted or contributed to the preparation of the EIS; describes Native American consultations; describes public participation during scoping; lists agencies, organizations, and persons to whom the EIS will be or has been sent, and provides the names and qualifications of those who prepared this document.

Chapter 6 provides the bibliography of existing information that was used to prepare the EIS.

Appendices contain information that supplement or support documentation and analyses presented in the EIS.

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CHAPTER 2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. Proposed Action

It is proposed that the BLM amend the Pony Express RMP to establish a utility corridor on federal lands administered by the Salt Lake Field Office and following the alignment shown in **Exhibit 2.1-1**. From MP 1 to MP 50 the proposed corridor would be 200 feet wide. The corridor on the remainder of lands administered by the Salt Lake Field Office would be 0.75 miles (3,960 feet) wide. In addition, it is proposed that BLM issue a ROW to UNEV pursuant to Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185) and the regulations in 43 CFR 2880 for the purpose of constructing the pipeline and all other facilities within the corridor as described below.

2.1.1. Description of Project Elements and Right-of-way

UNEV proposes to install a 12-inch outside diameter (OD) welded steel, common carrier mainline pipeline for refined liquid petroleum products such as multiple grades of gasoline and diesel fuel. The pipeline would extend approximately 399 miles from the cluster of five refineries in the North Salt Lake City area, including Holly Corporation’s Woods Cross Refinery, to the Apex Industrial Park northeast of Las Vegas, Nevada. The project would include an inlet pumping station at the origin; a pressure reduction station at a lateral terminal northwest of Cedar City, Utah; and a pressure reduction site at MP 355.5, and a receiving terminal near Las Vegas. A 10-inch OD lateral service pipeline would extend approximately 2.4 miles to the Salt Lake International Airport from the mainline at milepost (MP) 4.5. Another 8-inch OD lateral pipeline would extend approximately 10 miles from the mainline at MP 256 to the proposed Cedar City Terminal. The UNEV pipeline would be available to accept shipments of refined products from multiple refineries in the Salt Lake City area, Wyoming, and Montana.

In Utah, the pipeline would originate in Davis County and cross Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties. In Nevada, the pipeline would cross Lincoln County and terminate in Clark County. The routes for the main pipeline and two lateral lines would primarily cross BLM (208.4 miles) and private (133.7 miles) lands. It would cross lesser amounts of state (35.8 miles), USFS (17.8 miles), tribal (14.6 miles), and U.S. Department of Defense (2.4 miles) lands.

The proposed UNEV pipeline route would generally follow existing linear features as it traversed from the Salt Lake area to Las Vegas (see **Exhibits 2.1-2a, b, c** and detailed maps of the proposed alignment in **Appendix B**). The southern third of the corridor (from MP 250 to the Las Vegas Terminal) contains two natural gas pipelines owned by Kern River Gas Transmission Company, the most recent of which was completed in 2003. An EIS was completed in 2002 for this most recent Kern River pipeline (FERC & CSLC 2002).

The “mainline” refers to the 12-inch main pipeline from the Salt Lake area to the Las Vegas terminal. “Lateral” refers to one or both pipelines that extend from the mainline to either the airport or the Cedar City terminal. MP designations are used to identify locations along the length of the pipeline. The start of the pipeline at the refinery area near Salt Lake City is MP 0. Mileposts increase proceeding south to the terminal in Nevada near MP 399. The Airport lateral line would begin near mainline MP 4.5 and the lateral MPs increase from 0 to 2.4 as pipeline approaches the airport. The Cedar City lateral would begin near mainline MP 256 and the lateral MPs increase from 0 to the Cedar City Terminal at approximately MP 10. Mileposts are approximate and used for general locations only. For both the mainline and laterals, there would be a 75-foot temporary construction ROW and permanent 50-foot ROW, centered on the proposed pipeline, 25 feet to each side (**Exhibit 2.1-3**).

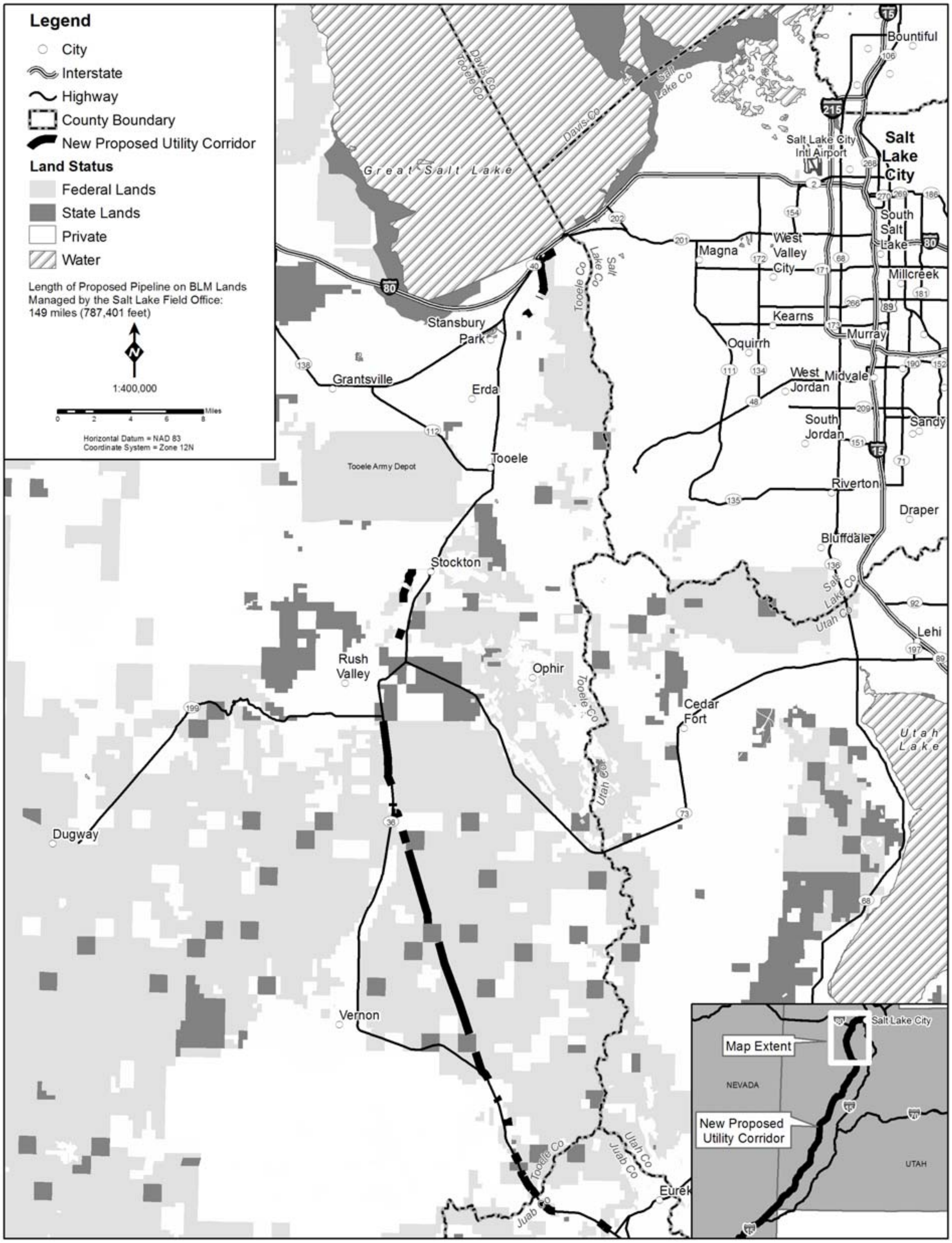


Exhibit 2.1-1 Proposed Utility Corridor for Amended Pony Express Resource Management Plan

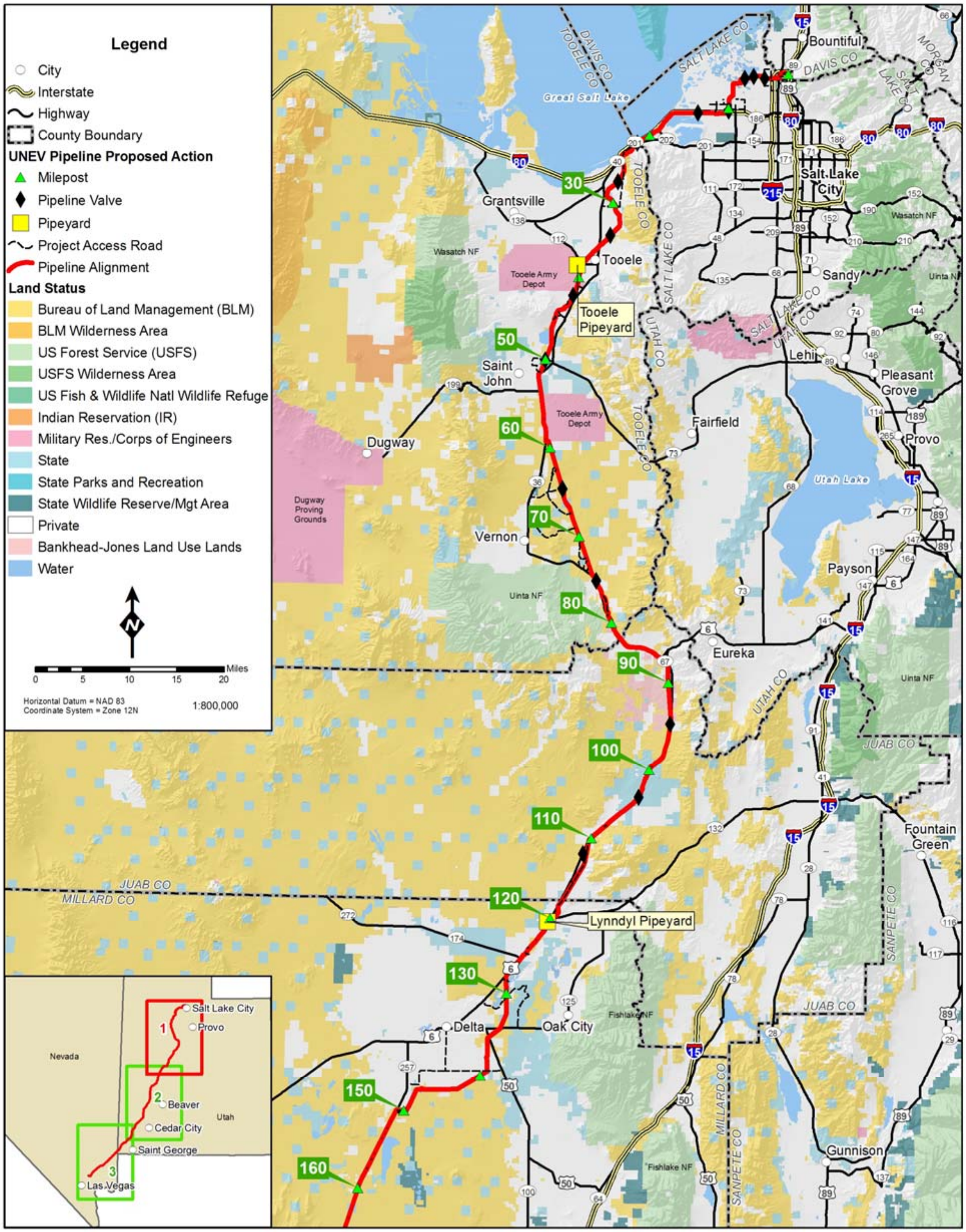


Exhibit 2.1-2a Proposed Action Alignment and Project Elements, Panel 1 of 3

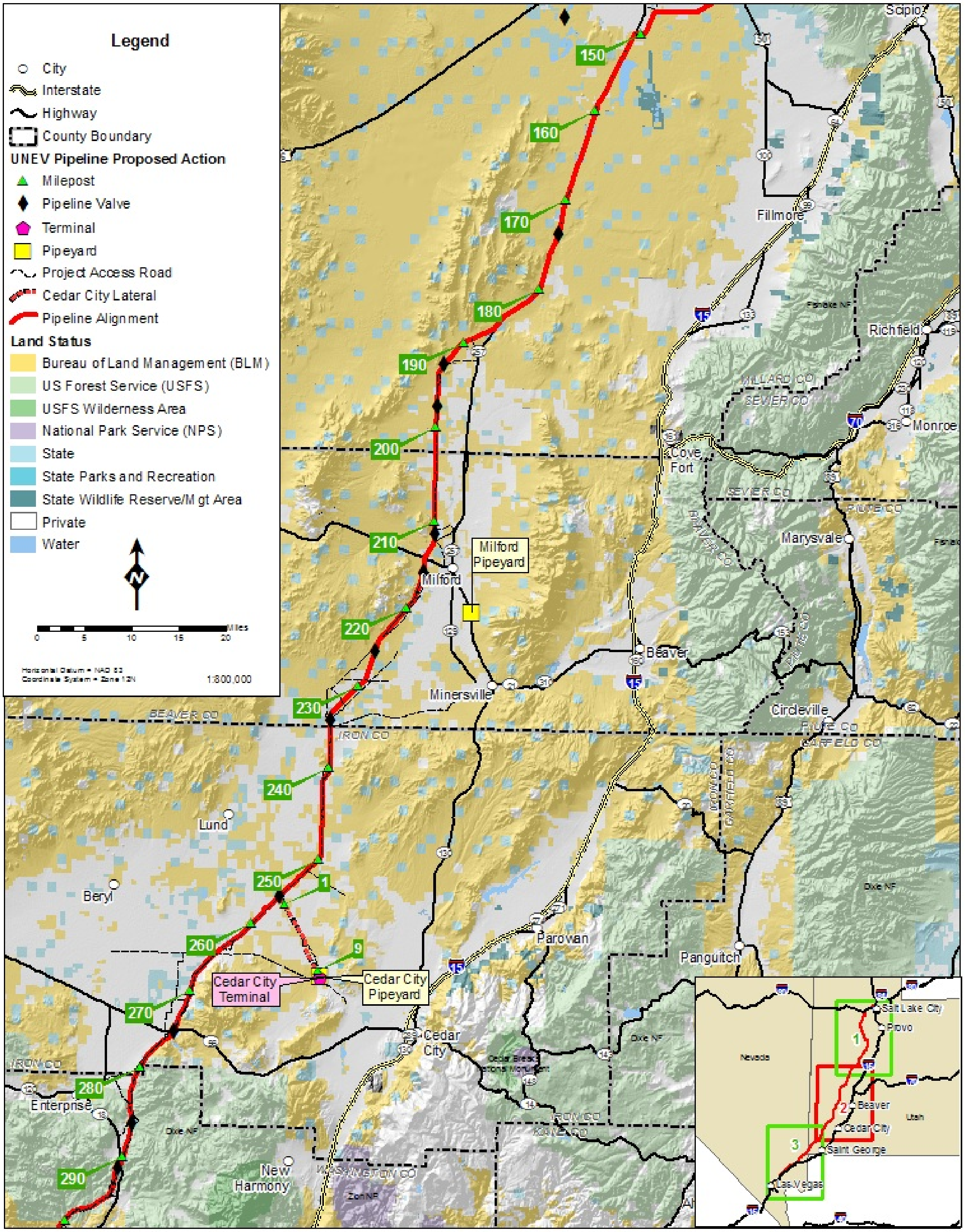


Exhibit 2.1-2b Proposed Action Alignment and Project Elements, Panel 2 of 3

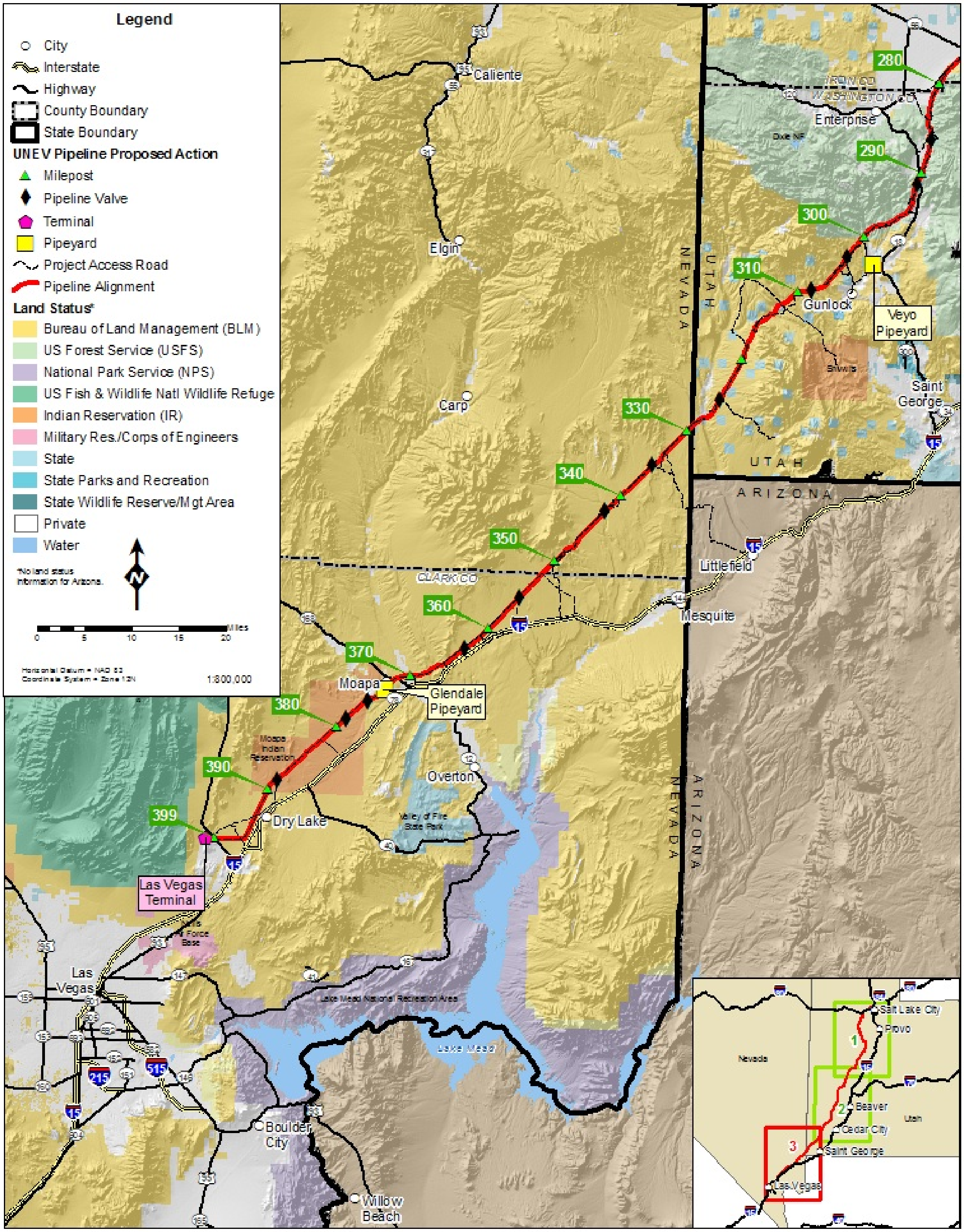


Exhibit 2.1-2c Proposed Action Alignment and Project Elements, Panel 3 of 3

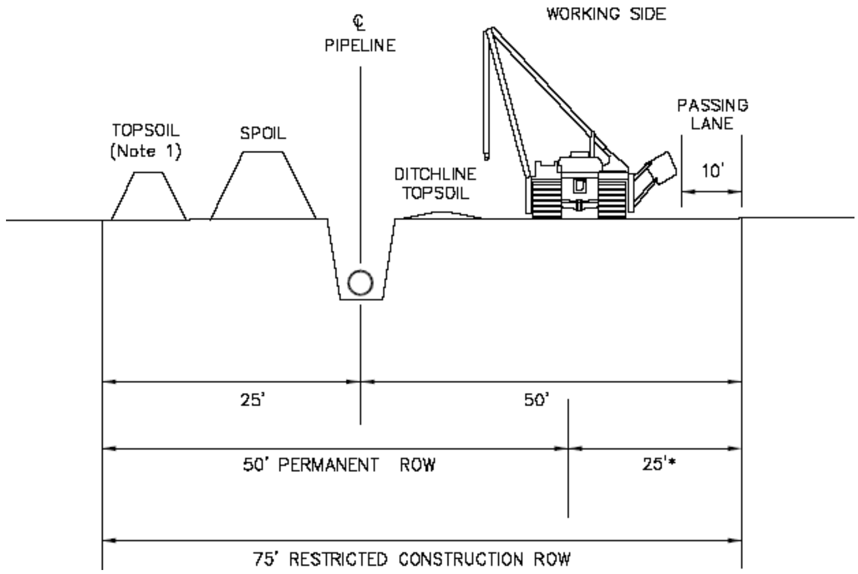


Exhibit 2.1-3 Temporary Construction and Permanent Rights-of-Way

2.1.1.1. Permanent Facilities

Proposed permanent facilities would include:

- 12-inch diameter buried mainline pipeline from the Salt Lake City, Utah area to Las Vegas, Nevada along with a permanent easement/ROW.
- 8-inch diameter buried lateral pipeline from the mainline near MP 256 to the Cedar City, Utah area along with a permanent easement/ROW (approximately 9 miles).
- Inlet pumping station (2.5 acres) near the Salt Lake City refineries.
- Pressure reduction station (0.09 acre) near MP 355.
- Terminal with a pressure reduction station at the Apex Industrial Park near Las Vegas, Nevada (33 acres).
- Lateral takeoff station (0.34 acre) at MP 256.
- Terminal with a pressure reduction station, near Cedar City, Utah (26 acres).
- Mainline sectionalizing valves along the length of the mainline pipeline and mainline/lateral take-off point.
- Check valves would be located along the pipeline to prevent reverse flow in the event of an emergency.
- Scraper stations, for sending and receiving cleaning and inspection “pigs.”
- Cathodic protection test stations at approximately 2-mile intervals to monitor and maintain corrosion protection system.
- Pipeline milepost and other markers to locate the approximate centerline at intervals along the route, and at road, railroad, waterway, supervisory control and data acquisition (SCADA) tower sites, foreign line and other crossings locations where excavating activities are likely.

- Project would utilize existing access roads, additional access may be required.

There is the possibility that an additional pump station located somewhere along the alignment in Millard County would be needed in the future if UNEV seeks to increase capacity. Because this action is speculative and no exact location can be identified at this point, analysis for an additional pump station is not included in this EIS. If such development is required in the future, additional permitting and NEPA analysis would need to be conducted.

The mainline itself would be 12-inch OD, welded steel pipe. The first 27 miles of the pipeline would include a progression of 0.500, 0.406, and 0.375-inch pipe wall thicknesses. After that point, a 0.219-inch wall thickness would primarily be used. Heavier wall pipe would be used at select crossings. The maximum operating pressure (MOP) would be 1,480 pounds per square inch (psi). The pipe would be coated, externally, at the pipe mill to protect the pipe and prevent corrosion. The pipe would come from the pipe mill in 40 and 60 foot lengths (joints). It would be transported by rail from the mill to rail sidings and to temporary pipe yards where the pipe would be stored prior to transport to the Project Area by truck.

Mainline valves would be placed at intervals along the pipeline. Mainline valves are used to isolate sections of the pipeline system in case of emergency or for purposes of operation and maintenance. Each mainline valve with operator and bypass piping would be located within a fenced 30 by 30 feet enclosure with a 4-inch thick graveled surface. The gate position would be field located for each enclosure to accommodate access. A pressure reduction site would be located at the valve site at MP 355.5. A pressure reduction site would be similar to a conventional valve site with the addition of a control valve inline with the manual valve and a small (approximately 8-foot square) building.

Check valves would be placed at locations near significant waterbodies to automatically prevent reverse flow of pipeline contents in the event of an emergency. Check valves allow the one-way flow of product as well as allow the passage of pipeline pigs. The valve sites themselves would be similar to those for mainline valves.

The UNEV pipeline system would require one pump station. The Inlet Pump Station would be located at the pipeline origin in Davis County, Utah (see **Exhibit 2.1-4**). It is designed to operate with two electric pumps of 1,750 and 1,250 Brake Horse Power (BHP). The Inlet Pump Station would have a pig launcher; the terminals would have pig receivers.

Two terminals are proposed for the UNEV pipeline system, one near Las Vegas, Nevada in the Apex Industrial Complex (**Exhibit 2.1-5**) and the other near Cedar City, Utah (**Exhibit 2.1-6**). Terminals (a complex of tankage, pressure reduction facilities, piping, load out racks and other components) provide a transition from the bulk mode transport of the pipeline itself, to separate storage tanks at each terminal for the different refined products, to the local and regional truck transport of those refined products. Each terminal would use tanker truck-loading racks. The racks would have bays (two or more) each able to accommodate a tanker truck. Each storage tank would be connected to one or more bays via above ground piping for loading product into the trucks. The tanker trucks would then distribute those products to their destination (e.g., local gas stations).

The refined products include the different grades of gasoline and diesel fuel. The products would be transported in the pipeline in batches. In the pipeline transport process some mixing of the adjacent batches of product occurs. This mixed product is called “transmix” and would be stored separately at the terminals to be transported and reprocessed elsewhere.

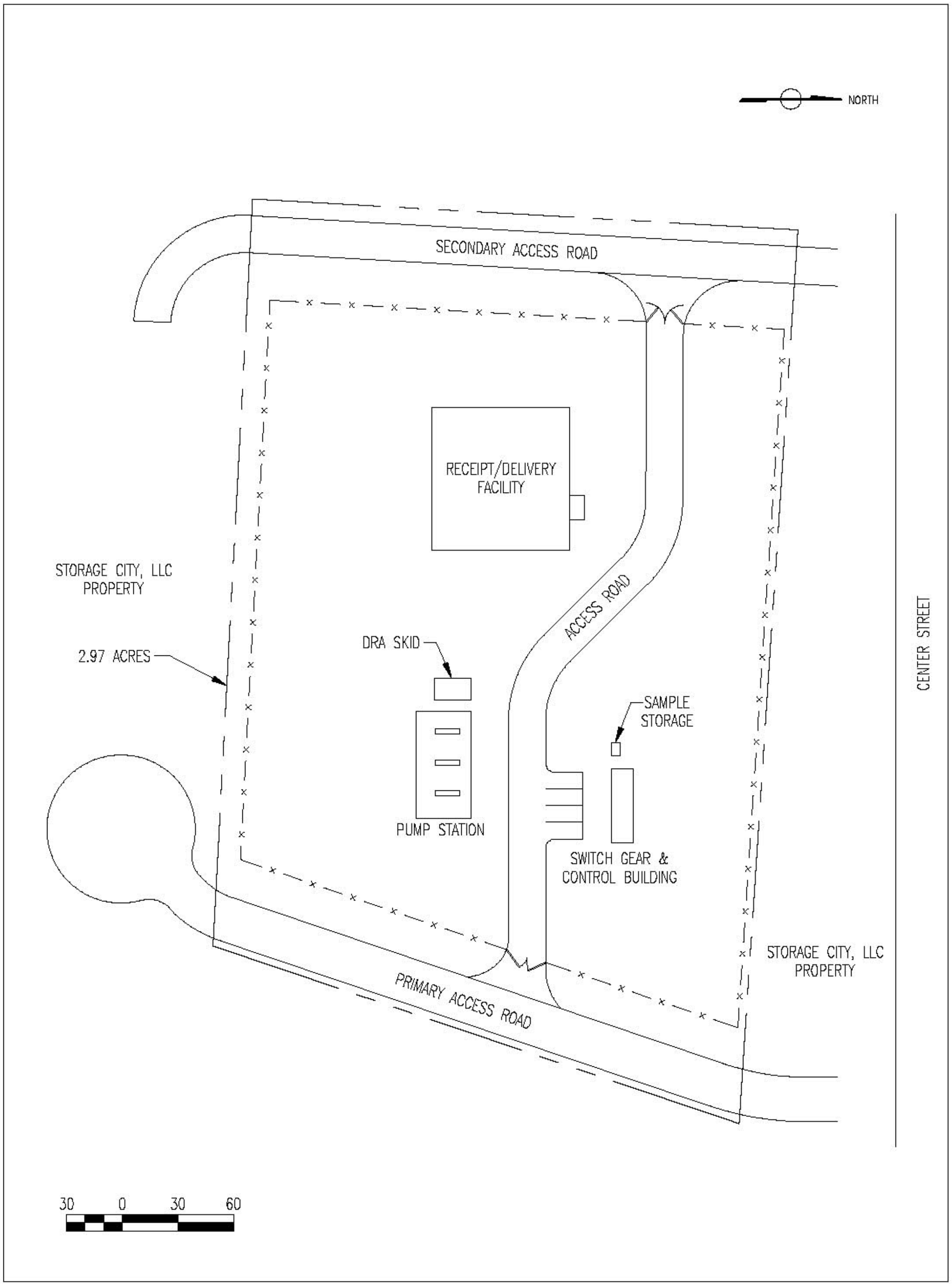


Exhibit 2.1-4 Inlet Pump Station Site Plan

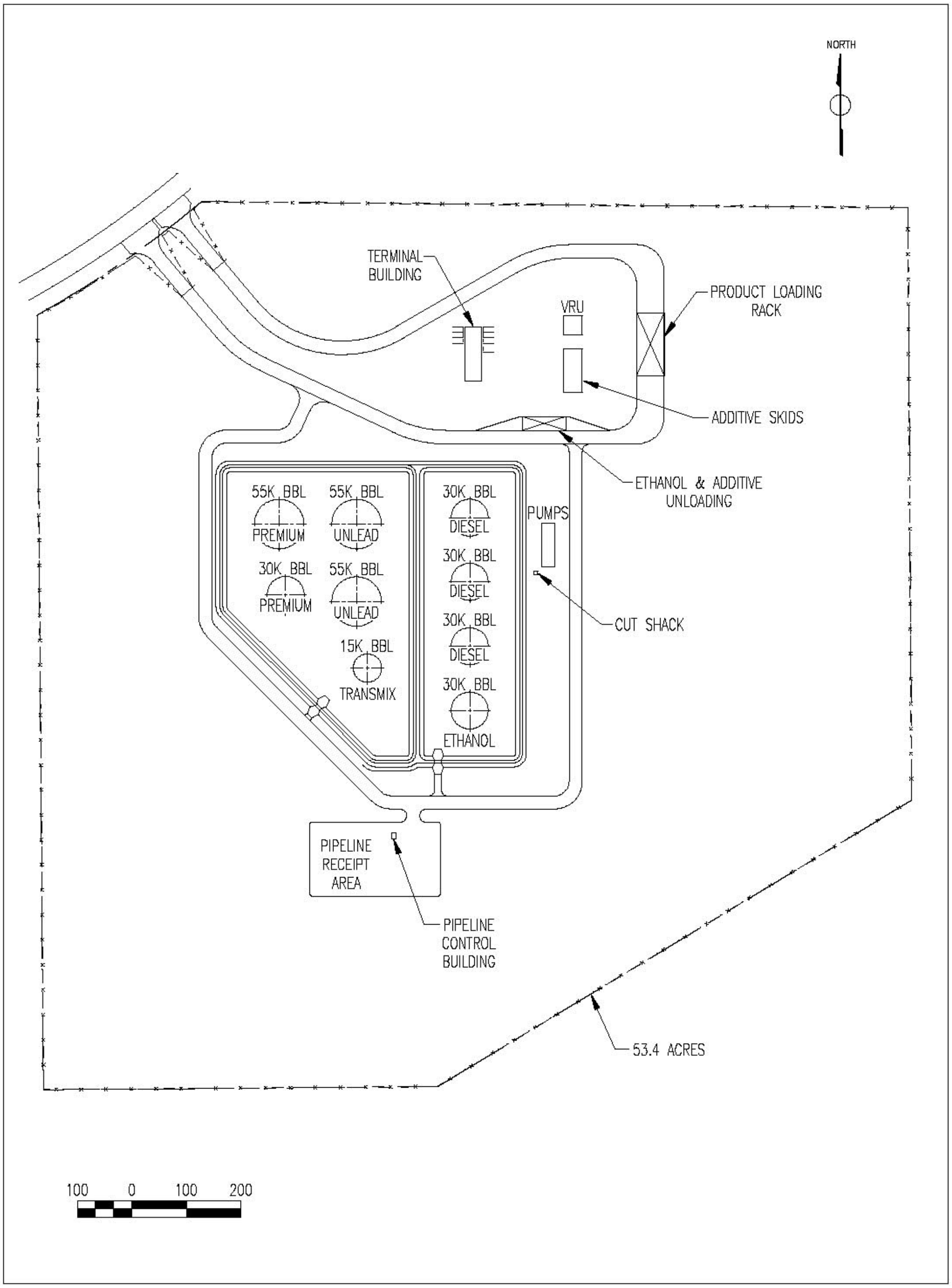


Exhibit 2.1-5 Apex Terminal Site Plan

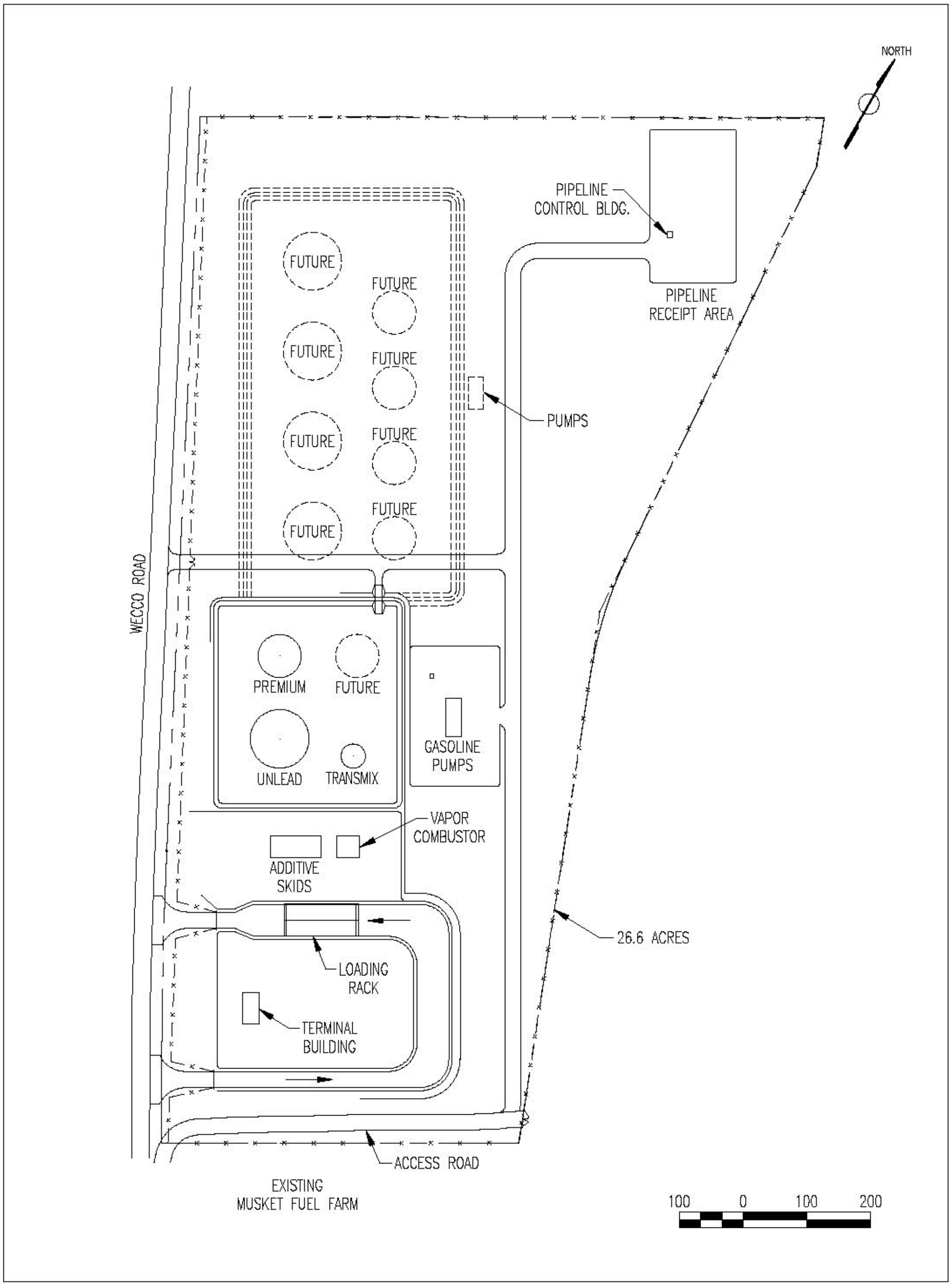


Exhibit 2.1-6 Cedar City Terminal Site Plan

The Apex terminal would be approximately 39.7 acres and have 8 tanks for storage of gasoline, ethanol (trucked in), diesel, and transmix (**Exhibit 2.1-7**).

Exhibit 2.1-7 Characteristics of the Storage Tanks at the Apex Terminal

Tank id	Nominal capacity (barrels)	Dimensions (diameter by height) (feet)	Product assignment
LV-T-151	15,000	52 by 40	Transmix/relief
LV-T-301	30,000	68 by 48	Premium unleaded gasoline
LV-T-302	30,000	68 by 48	Denatured ethanol
LV-T-303	30,000	68 by 48	Ultra-low-sulfur diesel
LV-T-304	30,000	68 by 48	Ultra-low-sulfur diesel
LV-T-551	55,000	91 by 48	Premium unleaded gasoline
LV-T-552	55,000	91 by 48	Regular unleaded gasoline
LV-T-553	55,000	91 by 48	Regular unleaded gasoline

The Cedar City lateral would branch off the Salt Lake to Las Vegas mainline pipeline near milepost 256. Above ground appurtenances at the location would include two above ground valves and an 8-inch launcher inside a fenced area. The area would not normally be lighted. Valves at the site would be remotely or manually operated. Vehicle access to the site would be via existing access road.

The Cedar City terminal would be approximately 26.6 acres and have 6 tanks for storage of gasoline, diesel and transmix (**Exhibit 2.1-8**).

Exhibit 2.1-8 Characteristics of the Storage Tanks at the Cedar City Lateral Terminal

Tank id	Nominal capacity (barrels)	Dimensions (diameter by height) (feet)	Product assignment
CC-T-051	5,000	32 by 40	Transmix/relief
CC-T-301	30,000	68 by 48	Regular unleaded gasoline
CC-T-302	30,000	68 by 48	Premium unleaded gasoline
CC-T-303	30,000	68 by 48	Ultra-low-sulfur diesel
CC-T-304	30,000	68 by 48	Ultra-low-sulfur diesel
CC-T-551	55,000	91 by 48	Regular unleaded gasoline

Access roads to the pipeline system for construction and operations would be on existing paved and unpaved roads. No new roads would be constructed for project access. A total of approximately 662.3 miles of existing paved, gravel, and unimproved roads would be used to provide access to the ROW. Most access roads need to accommodate trucks hauling pipe, fuel, construction and other equipment and supplies as well as use by other vehicle types including pickups and other light duty vehicles. Modifications (including grading and/or widening) of 5.8 miles of existing roads would be required (**Exhibit 2.1-9**). On the southern portion of the proposed route, the same access roads that were used during installation of the Kern River pipeline would be used to the extent they are still viable and are applicable to the proposed project. Other roads constructed by public and private entities along the pipeline route may also be used. Road ROWs would be obtained for all access roads on public land that would be used or modified for the purposes of the project (CH2MHill 2008f). Upgrading or widening of existing roads would remain after completion of project construction as these roads would provide future access to the pipeline ROW for operation and maintenance activities. The location and length of access roads proposed for use during project construction and that would require modifications are listed in **Exhibit 2.1-9**. Roads on BLM lands proposed for use or improvement in conjunction with the project would be approved by the BLM authorized officer prior to the start of construction.

Exhibit 2.1-9 Existing Access Roads Needing Modifications

MPs Where Road Would Access the Proposed Action ROW / Above Ground Facility	Disturbance (Acres)
MP 73, MP 162	0.65
MP 21, MP 187	0.41
MP 68	0.35
MP 77, MP 81, MP 289	0.95
MP 24, MP 25, MP 270	0.28
Total	**2.64**

Cathodic protection test stations would be installed at approximately 1-2 mile intervals to monitor the mechanical integrity of the pipeline. Above ground, the cathodic protection test station consists of a plastic pipe approximately 3 feet high, topped with a test terminal.

2.1.1.2. Temporary Facilities and Disturbance

Proposed temporary facilities and areas would include:

- Staging areas including pipe yards located at off-ROW sites or designated sites along the temporary construction ROW.
- Temporary construction widths beyond the permanent ROW limits and easements.
- Temporary access roads may be necessary in addition to existing access.
- Temporary markers, survey stakes and flagging

Staging areas (including temporary storage yards) are proposed for the temporary stockpiling of pipe, equipment and construction material. These locations would be either at sites owned or leased by Holly or its contractors, or in designated staging areas within the temporary construction ROW. Designated assembly points, for worker vehicles and supplies would be at approximately 20 mile intervals. The sites typically would be wider than the 75-foot construction ROW for a distance of 500 feet. Pump stations and terminal sites would also be used as staging areas. See **Exhibit 2.1-10** for locations.

Construction ROWs are needed to accommodate the additional temporary working space requirements of pipeline construction. The permanent easement typically would be 50 feet; 35 feet in some locations. The construction ROW would be 75 feet on relatively level ground with no significant impediments to safe construction operations. Other physical conditions such as side slopes, special crossings such as streams, may require temporary extra workspace beyond the 75 feet. Locations and dimensions would be site specific.

Exhibit 2.1-10 Proposed Locations of Staging Areas, Pump Station, and Terminals

Site name	Quarter	Section	Town-Ship	Range	County	State	Owner	Milepost	Acres
Staging Areas									
I-215	SW	11	1 N	1 W	Davis	Utah	California Oil Company C/0 Chevron	0.0	1.435
I-80 "A"	SW	35	2 N	2 W	Salt Lake	Utah	Zion's Securities Corporation	10.6	1.435
I-80 "B"	SW	35	2 N	2 W	Salt Lake	Utah	Desert Title Holding Group	10.8	1.435
Lake Point Junction	NE	19	1 S	3 W	Salt Lake	Utah	Kennecott Utah Copper Corporation	21.8	0.517
Faust Creek	SW	11	7 S	5 W	Tooele	Utah	BLM	62.4	1.435
State Hwy 148	NE	8	13 S	3 W	Juab	Utah	Jerico Wool-Growers Co.	103.6	1.435
State Hwy 125	SE	12	17 S	6 W	Millard	Utah	BLM	134.2	1.435
Red Rock Knoll	NE	24	24 S	11 W	Millard	Utah	BLM	193.0	1.435
Lund Hwy	SE	14	33 S	13 W	Iron	Utah	BLM	251.7	1.435
Newcastle	NW	10	36 S	15 W	Iron	Utah	BLM	273.6	1.435
Montoqua Road	SW	33	40 S	18 W	Washington	Utah	BLM	312.3	1.435
Mormon Mesa	NE	15	13 S	68 E	Clark	Nevada	BLM	355.4	1.435
US Hwy 93	NE	4	18 S	63 E	Clark	Nevada	Mendenhall Family Trust	399.4	1.435
Station Sites									
Origin Pumping Station						Utah	Private	0.0	

Site name	Quarter	Section	Town-Ship	Range	County	State	Owner	Milepost	Acres
Cedar City Lateral Terminal	NW	18	35 S	12 W	Iron	Utah	Unknown owner	255.8	20
Pressure Limiting Station								302.0	
Terminus Point	NE	4	18 S	63 E	Clark	Nevada	Mendenhall Family Trust	399.4	N/A
Mainline Valves									
Cedar City Lateral									
Cedar City Lateral Take off	SE	32	33 S	13 W	Iron	Utah	BLM	N/A	N/A
Cedar City Lateral Terminal	NW	18	35 S	12 W	Iron	Utah	Unknown owner	N/A	27.4

2.1.1.3. Disturbance Summary

Exhibit 2.1-10 below summarizes both the temporary (construction-related) and permanent disturbance anticipated for the proposed action.

Exhibit 2.1-10 Temporary and Permanent Land Disturbance Requirements in Acres

Project Element	Temporary Disturbance	Permanent Disturbance
Pipeline ROW	3,740.0	0
Temporary staging areas	17.6	0
Access roads	0	2.6
Inlet pump station	0	2.3
Cedar City lateral take-off point	0	0.5
Pressure limiting station	0	0.4
Pressure reducing station	0	0.4
Cedar City terminal	0	18.2
Las Vegas terminal	0	39.9
Mainline valves	0	0.9

2.1.1.4. Minor Route Deviations

The initial routing assumptions included paralleling the Kern River Gas Transmission Pipeline to the extent practicable with a 50-foot offset between Kern River pipeline and the UNEV pipeline. The UNEV pipeline would parallel the Kern River line from MP 250 to near the Las Vegas Terminal. Minor route deviations in design were deemed necessary to address site specific situations such as at Moody Wash. The proposed deviations below would be included as part of the Proposed Action:

- MP 265.5 to 267.5, deviation to the west.
- MP 275 to 276.5, deviation to the south (east).
- MP 285 to 285.2, deviation to the east.
- MP 335.5 to 335.6, deviation to the west.
- MP 347.2 to 347.5, deviation to the west.

2.1.2. Project Construction

2.1.2.1. Pipeline Construction Activities

The sequence of activities typical for pipeline construction and applicable to the UNEV project is described in general terms below. Descriptions and drawings with greater detail are found in the many plans and documents that support the required permits and approvals. Such documents include the Plan of Development (POD) and may be found in the BLM's project administrative record.

Prior to the development of those plans, a pipeline design process is carried out to develop the proposed project. The pipeline design must meet Federal agency requirements for safety and integrity. Those Federal agencies include the Department of Transportation (DOT), the Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Office of Pipeline Safety (OPS).

Numerous permits, grants and other authorizations and approvals are required by federal, state, and local entities before project construction can begin. These authorizations and approvals are supported by numerous plans specifically designed to meet regulatory as well as land and resource management objectives and requirements. These plans describe in detail how the project proponent intends to comply with those requirements. The plans are binding on the project proponent and their contractors and subcontractors.

The POD details the methods and procedures that would be used in constructing the UNEV Pipeline and associated facilities. The POD provides instructions to contractors, construction crews, agency personnel, resource inspectors, and monitors, for construction, operation and maintenance of the UNEV pipeline. The POD itself incorporates several other supplemental plans, such as the *Upland Erosion Control, Revegetation and Maintenance Plan* and the *Wetland and Waterbody Construction and Mitigation Procedures*. The POD would be incorporated into any ROW grant for the project if approved. UNEV has stated, “This POD incorporates site-specific stipulations, terms, and conditions in order to satisfy all project-related construction requirements, as well as operational and maintenance requirements.”

Project plans can also be used as supporting documentation for some permit applications.

The design and approval process is an iterative one where project components and plans are refined to meet project and regulatory needs.

Marking the ROW and Survey Activities

The project would be constructed within approved boundaries at approved locations. Land owners and land management agencies would be notified before preconstruction survey and staking was started. Professional surveying would be required to locate and mark those points and boundaries. Activities associated with pipeline construction, operation, and maintenance, as well as site restoration, would be conducted within the authorized limits of the temporary construction ROW and permanent ROW.

Special or sensitive sites where construction equipment would not be allowed would be clearly marked before any construction or surface-disturbing activity begins. Construction personnel would be trained to recognize these markers and understand the equipment and personnel movement restrictions involved.

Wooden stakes or lath along with color-coded flagging would be established to visually mark project limits. Some survey staking/flagging would take place outside work limits for purposes of establishing reference points. Stakes and flagging would be maintained until final cleanup. Ultimately, all temporary survey markers would be removed.

Construction zones would be marked with the appropriate warning signs and flags as required by federal, state, or local agencies having jurisdiction.

Prior to and during construction, survey crews would collect field data required to finalize construction design and as-built specifications. These activities include but are not limited to the following:

- Setting horizontal and vertical control points for future coordinate basis
- Staking the pipeline centerline and work area limits
- Staking associated pipeline facilities
- Surveying the installed pipeline

The duration of the surveys typically extends through the project design and permitting phase, construction phase, and project completion.

Site Preparation

The work areas for pipeline construction need to provide a safe, stable work surface with adequate room for the pipeline, trench, spoil/topsoil piles, and equipment including a passing lane. The truck transport of pipe and the temporary stringing of pipe adjacent to the trench must be accommodated. Some level of site preparation would be necessary in most places.

Site preparation may include tree, brush, shrub, and rock removal. The clearing/grading operation may require the use of heavy equipment, such as dozers, to grade the ROW to facilitate the transport and use of construction equipment and materials.

Brush piles, chippings, and other cleared materials would be stockpiled for later placement on the ROW as part of final reclamation, or they would be disposed of at approved landfills or other approved sites used for disposal of such materials.

A temporary fence section or gate would replace sections of existing fences that need to be temporarily removed for access. Existing fences would be braced prior to cutting to prevent any slacking of wires. If any natural barriers to livestock movement are removed during construction temporary fencing would be installed for livestock control.

Topsoil stripping, stockpiling, and segregation would be done in accordance with landowner or land management agency requirements. Topsoil would be handled on BLM administered land in accordance with the methods set forth in the POD for this project.

Temporary erosion and sediment control measures would be implemented from the start of surface disturbing activities in accordance with the POD and continue through construction until final reclamation.

After the pipeline is installed, the ROW would be regraded as necessary to reestablish the preexisting contours to the extent practicable. The topsoil would be redistributed on the disturbed areas during the last phase of final grading.

Transportation of Materials to Site

Materials and equipment that would be transported to the pipeline installation site include, but are not limited, to the following:

- Line pipe
- Valves
- Miscellaneous communications equipment
- Fence materials
- Electrical and lighting equipment
- Construction consumables (for example, welding material, coating, etc.)

Materials and equipment required for the pump station and terminals would be staged at the stations. Line pipe would be off-loaded along the ROW or would be staged at designated areas along the route. Other materials and equipment would be delivered on palettes and offloaded with a forklift or crane. Transport and offload equipment would be stored within the cleared ROW or a designated staging area.

Clearing and Grading

Prior to the clearing and grading crews entering an area, the fence crew, after contacting the landowner, would begin cutting fences to provide access for equipment. Existing fences would be braced prior to cutting to prevent slackening of wires. Temporary gates would be installed across openings across the ROW to control livestock and public access. Temporary fencing, including gates as necessary, would be installed where natural barriers that control livestock must be removed for construction.

Safe and effective pipeline construction requires a reasonably clear work area free of large obstacles such as trees, logs and large rocks. Clearing crews may brush or chip woody material and stockpile it along the ROW for later use during reclamation, or may dispose of woody material as required by landowners or land management agencies.

Grading of the ROW work surface would be necessary where the existing topography does not provide a reasonably level work surface for the pipe laying equipment or the passage of other equipment or vehicles. Pipelaying equipment, referred to as pipelayers or sidebooms, lift the pipe from one side and have a counter weight on the other. Safety requires a reasonably level surface side to side. Pipelayers can safely handle considerable upslopes and downslopes, but side slopes have to be limited.

Grading may also include the installation of temporary erosion control structures such as temporary slope breakers.

Topsoil, up to the top 12 inches of growth material where available, would be stripped from portions of the work areas as required by landowners and land management agencies.

Trenching

Ditches would be excavated up to a depth of 5 to 6 feet, although special conditions can require additional depth. A depth of cover over the pipe of at least 3 feet would be planned to create a pre-disturbance appearance. Trenches would be approximately 24 to 36 inches wide in stable soils, wider in sandy, unstable soils. The ditch would be excavated using trenchers or tracked and/or wheeled backhoes. The type of soils encountered would determine the type of equipment used for ditching. Harder soils, such as caliche, require larger trenchers and generally cannot be excavated using a backhoe. An exception to mechanical excavation is vacuum excavation or hand digging when necessary to locate buried utilities, such as other pipelines, cables, waterlines, and sewer lines.

The material excavated from the trench (trench spoil) would be stockpiled to one side of the trench and used later during the backfill operation. Efforts would be made to minimize the linear distance of open trench. Open trench segments longer than 1 mile would have wildlife ramps installed every 0.5 mile during non-construction hours. This would benefit local wildlife.

Bedrock is anticipated to be encountered in areas of shallow soils. Where conventional equipment cannot excavate the trench, blasting would be necessary. Anticipated blasting locations in both Utah and Nevada are shown in **Exhibit 2.1-11**.

Grading, ditching, and vehicle traffic on disturbed areas can create dust. Water trucks would be used for dust control along the ROW to comply with all applicable fugitive dust regulations.

Special construction procedures may be warranted in certain circumstances. A portion of the proposed route south of Tooele, Utah near Stockton, Utah (approximately MP 45.4 – MP 48.9) traverses an area that historically had heavy smelting activity. That portion of the proposed route would be field sampled for contamination according to a BLM-approved study plan.

Exhibit 2.1-11 Areas for Probable Blasting in Utah and Nevada

Milepost		Miles	General Rock and Rock-Like Material
Begin	End		
21.5	24.5	3.0	Limestone
30.0	30.3	0.3	Limestone
42.0	43.0	1.0	Tufa
43.5	44.0	0.5	Limestone
108.1	108.6	0.5	Limestone
193.0	193.2	0.2	Quartzite
287.6	291.7	4.1	Lava
297.5	298.5	1.0	Lava
309.7	311.7	2.0	Sandstone
330.5	364.0	33.5	Calcrete
371.5	387.3	15.8	Calcrete
Total		**12.6**	

Pipeline Handling and Stringing

Mainline pipe would be delivered from the pipe mills by rail to siding locations in the project area. Pipe would be off-loaded from the trains and transported by truck for temporary storage and ultimate delivery along the pipeline ROW. The pipe, coated at the mill, would come in 40- to 60-foot lengths from the mill, depending on the specific requirements of the construction segment. Where rail access is available, pipe would be offloaded directly from railcars at designated staging areas. Pipe trucks (stringing trucks) would transport the pipe along the ROW. Side-boom tractors would then unload the joints of pipe from the trucks and string them along the ditch, end to end, ready for line-up and welding.

As required, straight pipe would be bent by a mobile bending machine to fit the horizontal and vertical contour of the ditch. Construction ROW conditions may sometimes require pipe bends for which field bending would not be practicable. In these cases, manufactured pipe bends would be used.

Special clamps would hold the pipe sections in position until the proper alignment is secured and welding can be performed. Following the line-up crew, the welding crew would apply the remaining weld passes to bring the thickness of the weld to more than the thickness of the pipe in accordance with Holly's welding requirements. Each welding crew would require a welding rig typically mounted on a pickup or flatbed truck. Each crew would consist of one or two welders and a helper. The line-up crew uses a side-boom tractor to position the pipe so the line-up clamp can be used. This crew would consist of a side-boom operator and one or more laborers.

All welders must be qualified according to American Welding Society, American Society of Mechanical Engineers, and American Petroleum Institute standards. All welds would be visually inspected and tested by radiographic or other approved non-destructive examination (NDE) methods to assure compliance with DOT regulations. Welds not meeting specifications and established standards would be repaired or removed.

The pipe, welded together into long strings, would be placed on temporary supports along the edge of the trench to be lowered in. The lengths of strung pipe would vary, with breaks for roads, waterbody crossings or other access or crossing points.

Pipe Coating

The pipe already has a protective coating when it comes from the mill. However, after the on-site girth welds are completed and the pipe is radiographically inspected (x-rayed), the unprotected welds would be field coated to provide a continuous layer of coating over the length of the pipe. The uncoated girth weld area would be coated with a two-part liquid epoxy or a field-applied fusion bonded epoxy.

A detection test would be conducted along the pipe to determine if any coating discontinuities exist that could cause a concentrated point for corrosion. The testing device (holiday detector) generates an electrical potential between the pipe and an electrode in contact with the outside of the coating or ground. Pinholes in the coating of microscopic size can be located using the holiday detector. In the event pinholes or other damage to the coating are found, the testing crew would repair the coating by applying an approved method of coating repair to securely cover the damage. All coated pipe, including field joints, fittings, and bends, would be tested and repaired as necessary. The pipe coating crew consists of two laborers, and typically uses a pickup to transport the coating materials.

Lowering Pipe and Backfilling

Prior to placing the pipe, the trench would be inspected to ensure that it was free of rocks or other debris that could damage the pipe or the coating. The inspection would also ensure that no wildlife or other animals are in the trench. In rocky areas, bedding material such as sand bags would be placed on the trench bottom to support and protect the pipe.

If the trench contains water, dewatering may be necessary. Trench dewatering would be by pump, from the trench to a stable upland area through a filter bag to trap sediment. The filter bag would be removed later after it drains.

The strung pipe would be lifted off its temporary supports, positioned over the trench and lowered into the trench by a series of side-boom tractors spaced so that the weight of the unsupported pipe between adjacent sidebooms would not cause mechanical damage to the pipe. Cradles with rubber rollers or padded slings would be used so the tractors can maneuver the pipe without damaging the external coating as they travel along the trench. As each sideboom lowers its portion of the pipe to the trench bottom in turn, the trailing sideboom would be detached from the pipe and that sideboom moved to the front where it would pick up pipe still on the supports. This process would continue in a “leap frog” fashion. The long welded pipe behaves like a flexible tube.

Ditch welds (tie-in welds) may be required whenever the trench line is obstructed by other utilities crossing the pipe trench. These welds would usually be made in the trench at the final elevation, and each weld would require pipe handling for line-up, cutting to exact length, coating, and backfilling.

Backfill material would be obtained from the excavation trench spoils. Spoils would generally be returned to the ditch soon after lowering in. Topsoil would not be used for backfill. Spoils would be screened as the material is returned to the trench using standard construction screening equipment such as a padder. The pipe would be protected along the sides with a minimum of 12 inches of backfill that is free of rocks. In some areas, “rock shield” would be used on the pipe to protect it from damage.

In certain areas where damage might occur to the pipe coating from abrasive soils, clean sand or earth backfill would be used to pad the pipeline. Any required padding material would be obtained from screened trench spoil or local commercial sources. The backfill remainder of the trench above the pipeline would be native material excavated during trenching. Above ground identification markers would be placed at line of sight intervals to indicate the presence of a buried pipeline to future third-party excavators.

In paved roadways, the backfilled soil would be compacted using a roller or hydraulic tamper before paving. When use of a mechanical device is not practical, sand slurry would be used as backfill in order to obtain the required compaction.

Fueling and Oiling Mobile Equipment

Heavy construction equipment, such as dozers and track hoes, as well as some temporary stationary equipment such as pumps, need to be refueled along the construction right-of-way. Mobile fuel trucks, typically hauling diesel fuel, bring the fuel directly to the equipment. Similarly, oilers are used to check and maintain fluids on the equipment. This would include hydraulic fluids, lube oil, and grease.

Spill prevention measures are found in the UNEV Spill Prevention and Control Plan in the POD. Particular prevention measures include; training of personnel, fuels and lubricants would not be stored in wetlands or near waterbodies, refueling of construction equipment would be in upland areas only, authorized personnel would only dispense fuels during daylight hours, fuel dispensing operations would not be left unattended. In addition, construction crews would be supplied with spill containment kits containing sorbents and supplies adequate to contain and recover potential spills of fuels, hydraulic fluids and lubricants.

Hydrostatic Testing

The completed pipeline would be hydrostatically tested (hydrotest) using water under pressure to ascertain the integrity of the pipeline including valves. The testing would be in accordance with DOT regulations 49 CFR 195 and in compliance with guidelines and BMPs outlined in the General Permit for Construction Dewater/Hydrostatic Testing. Typically, the pipeline is divided into test sections where the length of test sections is dependent on topography and resultant hydrostatic pressures and DOT test requirements.

The water would be obtained from surface waters or existing wells from private land owners. No chemicals would be added to the test water. The pipeline would be filled in accordance with the Hydrostatic Test Plan (under development). The plan would detail the test section end points, filling sequence, water reuse, intake and discharge locations, and other parameters. It is planned that the water would be reused in several test sections. Reuse can reduce the total amount of water used for testing.

Test water would not be returned to the source. However, current discharge locations are not known. The Hydrostatic Test Plan would identify some of these; however this would be subject to change based on construction timing. Velocity dissipation devices would be used at discharge locations to ensure non-erosive velocity flow from the pipe to a water course so that the natural physical and biological characteristics and functions are maintained and protected. The water would be tested as it is discharged per any NPDES discharge permit requirements and would not be discharged into sensitive habitats that would adversely affect special status species.

Cleanup and Restoration

After lowering in and other active pipeline construction activities in an area are completed, the area would be regraded to approximate as close as practicable the preexisting ground surface contours. At that time the permanent erosion control structures such as water bars would be installed.

The restoration process would entail removal of debris, construction signs, surplus material, and equipment from construction areas, followed by fence replacement, repaving of any disturbed roadways, and restoration of disturbed lands along the pipeline ROW. Erosion and drainage control measures included in the Storm Water Pollution Prevention Plan (SWPPP) would be used where necessary to control erosion.

As part of the cleanup and restoration process, the ROW would be regraded to blend with original contours to retain overall site drainage characteristics. The surface disturbed area along the ROW would be left in a rough condition with rocks and an uneven surface to facilitate regrowth of vegetation and to limit motorized travel on the ROW. To accommodate some settling of the backfill material, a 1-foot berm of soil approximately the width of the ditch would be left over the backfilled trench in upland areas.

The segregated topsoil would be redistributed over the disturbed work area. Final cleanup would occur as soon as possible after backfill. Final seedbed preparation and seeding would occur at the proper time in accordance with final reclamation plans. Temporary erosion control measures would remain in place until final measures can be implemented.

After the ROW has been recontoured to its original grade, the contractor would reseed 100 percent of the ROW as directed by the BLM and private land owners. Where reseeding is required, the ROW would be seeded with a certified weed-free native seed mixture not to exceed 15 pounds per acre. The contractor would confer with BLM personnel at each Field Office to determine appropriate seed mixes and application rates.

2.1.2.2. Special Construction Techniques for Highway, Waterway, and Railroad Crossings

The proposed pipeline would cross numerous roads, railroads, rivers, and canals. Special construction methods would be employed to accomplish the crossing without impacting resources or use of the road, railroad, or waterway. **Appendix C** contains a list of anticipated highway, railroad, and waterway crossings required for each pipeline segment. Their locations by milepost (MP), crossing length, and crossing method are also listed but are subject to change. Crossing methods are briefly discussed below.

Directional Drill

A Horizontal Directional Drill (HDD) is designed to drill an opening large enough to accommodate the pipeline and its necessary protective concrete coating. The entry and exit points would be established back and away from the sensitive area of concern, such as a stream and associated riparian areas. There would be no surface disturbance between the work areas of the entry and exit locations (approximately 200 x 200 feet). The HDD operation does require adequate workspace for the drill and necessary equipment such as shown in **Exhibit 2.1-12**. The HDD is a drilling operation and requires the use of drilling muds under pressure to cut and clear the cuttings. HDDs do not work in all ground conditions; the substrate must be capable of being drilled and holding the hole open enough to allow the pipeline installation process.

There would be no clearing or grading within 100 feet of the edge of the waterbody and all equipment would be setup a minimum of 100 feet from the edge of the waterbody. Mud would be contained in suitable mud tanks or sumps to prevent contamination of the waterbody. Berms would be installed downslope from the drill entry and exit points to contain any release of drilling muds.

Rock cuttings, soil and mud would be disposed of off-site. Only bentonite-based (clay) drilling mud would be used. Additives would not normally be required.

Slick Bore

This technique refers to a horizontal bore, under a feature such as a waterbody, canal, road or railroad, which includes bellhole excavations on each side of the feature to be bored (see **Exhibit 2.1-13**). A boring machine drills a horizontal hole under the feature, through which the coated pipeline is pulled. The bore avoids surface disturbance between the bellhole locations. The bellholes and any necessary shoring or sloping of trench walls, usually requires additional workspace.

Due to its below grade position, shallow groundwater often enters the bellholes and needs to be removed by pumping. Dewatering of the excavation would be through an appropriate dewatering device, such as a silt filterbag to prevent entry of silt laden water into a waterbody. Bore work area sizes would vary depending on the terrain, but would be approximately 100 x 100 feet.

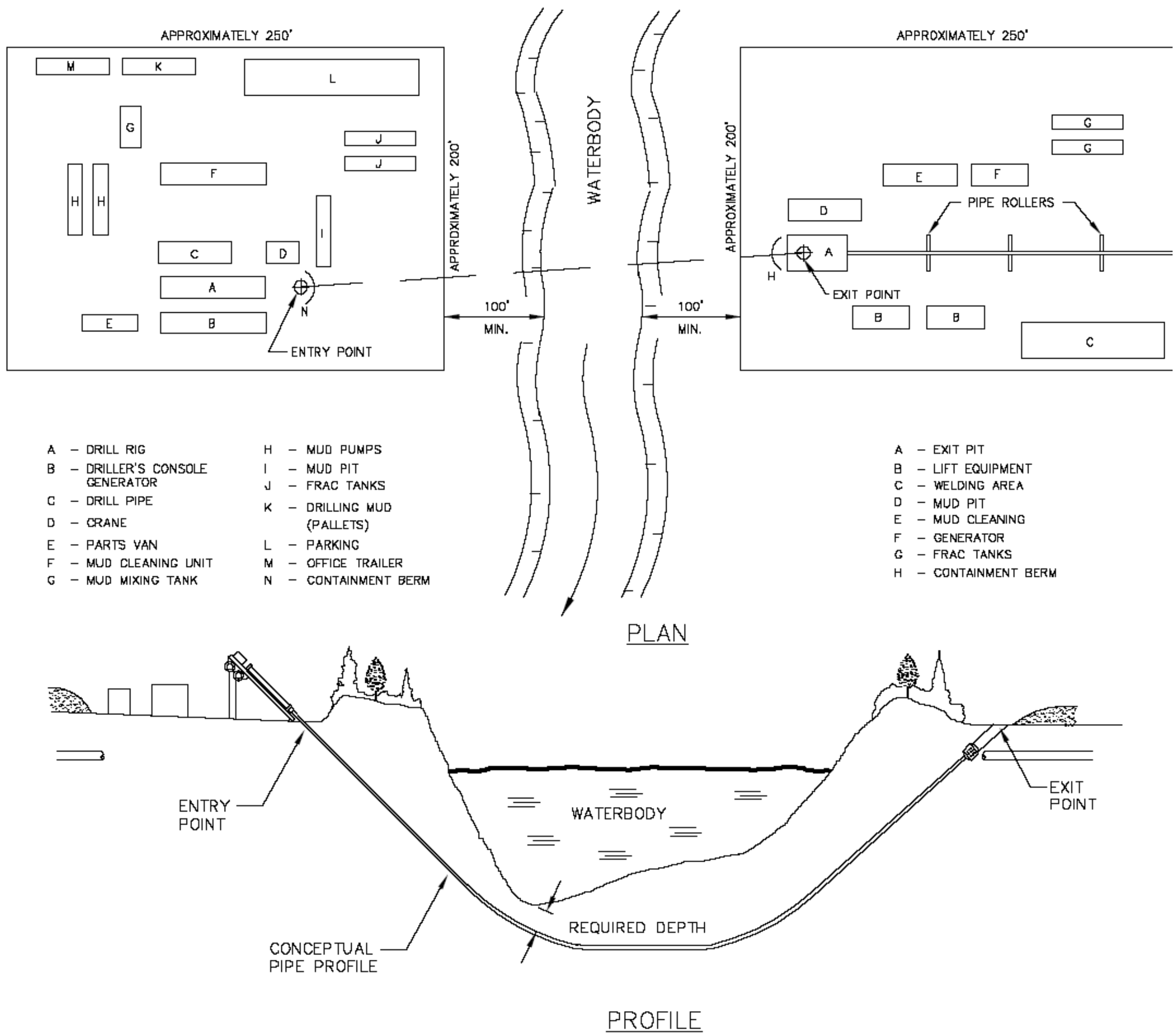


Exhibit 2.1-12 Typical HDD Technique for Stream or Other Crossings (drawing has vertical exaggeration for illustration purposes)

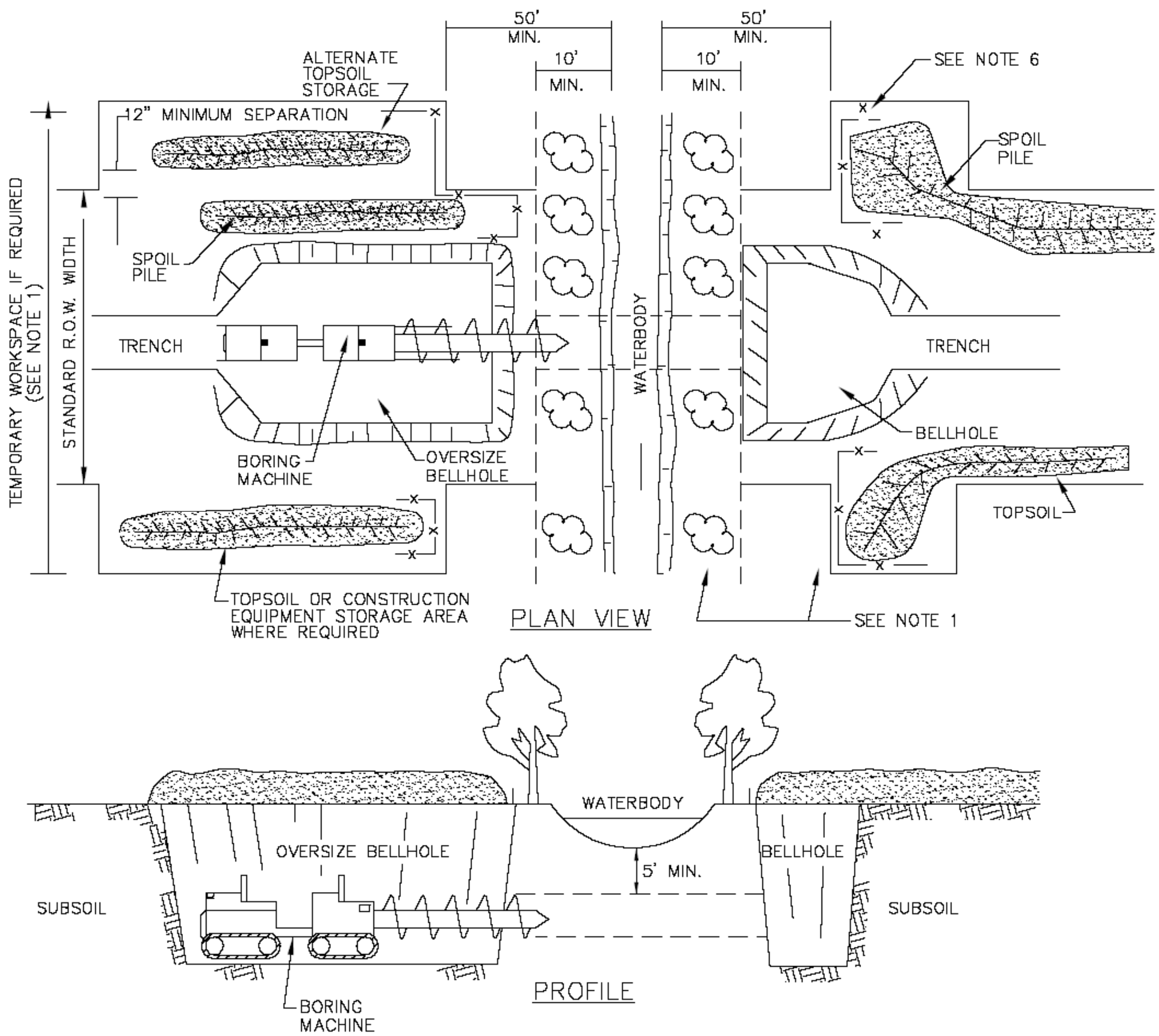


Exhibit 2.1-13 Typical Slick Bore Technique for Stream or Other Crossings

Open Cut

The standard open cut method has several variations that address different field situations. For flowing waterbody crossings, the open-cut dry flume, the open-cut dam and pump, and standard open-cut are options depending on the specific crossing. For non-flowing waterbody crossings the standard open-cut would be used unless there is a site-specific crossing plan.

Where bridges are necessary (not necessary at dry washes), several options are available: flatbed railroad-car, portable bridge, timber mat bridge, rock-flume bridge, bailey, and flexifloat bridges. Only clearing equipment would be allowed to cross flowing waterbodies before installation of the equipment bridge. Bridges must withstand and pass the highest anticipated flows that may occur while the bridge is in place. Culverts (e.g., rock flume) must be aligned to prevent bank erosion or streambed scour. Bridges must be supported above high bank and not settle into bank. Bridge decks are to be kept free of soil and mud. Erosion and sediment control measures are to be in place to prevent silt laden water or sediment from flowing back into waterbody. Any temporary barriers may be temporarily removed for construction, but must be replaced by the end of each work day.

Following construction, bridges and associated materials are removed. Banks and bed are restored to approximate pre-construction conditions. The size of the additional workspace required for creek crossings depends on a number of factors such as crossing width and depth, and the soil type. Approximately a 200 x 200-foot area would be required to stockpile the spoil from the crossing.

Blast Rock

Where subsurface conditions prevent the effective use of conventional trenching equipment such as track hoes or ditching machines, blasting is required. UNEV has provided its blasting specification as Appendix I in the POD. Blasting operations must adequately prepare the ditchline material for excavation, while at the same time not damaging adjacent or nearby surface or subsurface structures, utilities, pipelines or other improvements. In addition, noise and disturbance to neighbors and wildlife (including mandated restrictions) must be addressed. Timing of blasting operations can be critical.

Possible blasting locations are shown above in **Exhibit 2.1-11**. For areas requiring blasting, a Blasting Procedure would be developed and submitted to BLM for approval, including prior notifications and approvals, and safety measures including those for the general public. The Blasting Procedure must address the details of the blast in terms of the scope, location, site plan, blasting design criteria, flyrock control, safety including federal, state, and local requirements, and environmental requirements including mitigation and contingency planning. A dust abatement program to be implemented during drilling operations must be included in the Procedure. Blasting after dark would only be in an emergency and with jurisdictional agency permission. Special measures are in place for blasting within 150 feet of water wells and potable springs.

Federal, state and local requirements must be met for use, storage and transport of explosives.

A typical scenario for a blasting location would be to clear and grade if possible. Compressed air driven drills would be used to drill the holes in the configuration and depth appropriate for the nature of the rock and the depth of trench. Explosives with the necessary detonation materials are placed. Flyrock control is implemented. The firing procedures are followed. After the blasting and all is clear, excavation of the trench line with conventional equipment would follow. Documentation of blast parameters and relevant information would be recorded and retained.

Contractor’s Choice

Many crossings are not sensitive to the crossing method used. For these non-sensitive crossings, the contractors would choose from among BLM-approved methods, based upon the situation, equipment available, and other site-specific conditions.

2.1.2.3. Ancillary Facilities Construction

Ancillary facilities associated with the UNEV pipeline project would include the following:

- An inlet (origin) pumping station at the Woods Cross Refinery; a pressure reduction station at the lateral terminal northwest of Cedar City in Iron County, Utah; and a pressure-reduction station at MP 355; and the receiving terminal near Las Vegas.
- Mainline sectionalizing valves throughout the length of the pipeline for operational, maintenance, and safety reasons.
- Scraper stations used to launch and receive the pipeline cleaning and inspection “pigs.”
- Cathodic protection test stations at approximately 1-2 mile intervals to maintain and monitor the mechanical integrity of the pipeline.

Pipeline markers to mark the approximate location of the pipeline centerline at intervals so they are clearly visible along the route and at road, railroad, waterway, foreign lines, and other crossing locations where excavating activities are required.

Grading

Bulldozers and graders would be used to grade the respective site to the appropriate elevation previously marked by a land surveyor. It is anticipated that the site would be designed to balance the cut and fill required, preventing the need for the import/export of soil. Depending on the amount of grading required, compaction would occur during or after the grading operation. Compaction would be achieved using a roller or hydraulic tamper.

Foundations

Foundations would be excavated using a backhoe or other equipment, depending on the size. Once excavated, the foundation would be framed, secured in the ground, and ready to be poured. When required, an assigned inspector or inspection consultant would perform concrete testing.

Fabrication of Piping Assemblies

Large piping assemblies are typically fabricated and assembled off-site and transported to the construction site when ready for installation. When off-site fabrication is not feasible, piping assemblies would be fabricated at the construction site. This would occur at a nearby staging area on private land or at the actual station/terminal.

The fabrication crew consists of a pipe fitter, welder, helper, boom truck operator, and at least one laborer. It is anticipated that two or three fabrication crews would be required per station. As part of this process, all butt welds would be visually and radiographically inspected. When radiographic inspection is not practical, other methods of non-destructive testing would be used.

The fabrication crew would be responsible for assembling the piping components. This includes installing the valves and other equipment that are part of the piping assembly. Prior to assembly, trenches would be dug within the station to accommodate any underground pipe and electrical conduits required. Once the trench is ready, previously fabricated portions of pipe would be lowered into the trench and prepared for assembly with aboveground piping sections. All underground piping spools would be coated or wrapped. This process would include testing for coating damage.

Large pieces of equipment would be delivered to the site and set once concrete has been poured and has adequately cured. The pipe fabrication crew would be responsible for ensuring the proper installation of large equipment and materials requiring a support or foundations. The pipe fabrication crew would typically use one crane, one forklift, one or two welding rigs, one backhoe, and two or three pickups.

2.1.2.4. Construction Schedule

The construction schedule for the UNEV Pipeline Project provides for a 7- to 8-month construction period with completion by the end of 2009. Seven construction spreads are planned as follows:

- MP 0 to MP 26.7 (State Highway 36 - Tooele)
- MP 26.7 to MP 85.4 (Adjacent to State Highway 36)
- MP 85.4 to MP 161.5 (State Highway 257)
- MP 161.5 to MP 215 (State Highway 21)
- MP 215 to MP 276 (State Highway 56)
- MP 276 to MP 335 (Road 3454 – Gravel)

- MP 335 to MP 400 (Las Vegas Terminal Site)

Construction spreads would be constructed concurrently--not sequentially. Construction timing may vary according to terrain, weather, local conditions, species timing restrictions, and other factors.

The terminals at Cedar City and Las Vegas, and the origin pump station would be completed by the 4^{th} quarter of 2009. The construction activities at all aboveground facilities would be timed to avoid potential impacts to threatened and endangered species, wildlife and hunting, and other uses. Focus would also be placed on completing construction and initial restoration activities in the northern and higher-elevation areas before the onset of winter 2009.

2.1.2.5. Workforce and Equipment Requirements

An estimate of the manpower and equipment required for a given spread the various construction activities is provided below. It is anticipated that multiple spreads would be under construction concurrently. The total workforce would likely be 350 – 400 workers, although not all workers would be on the project at the same time. This total includes approximately 40 percent skilled, and 60 percent unskilled labor. The specialized nature of the skilled workforce usually requires that they be brought in from outside the project area. The unskilled portion of the workforce may be 50 percent locally-hired and 50 percent from outside the project area.

Exhibits 2.1-14 and **2.1-15** indicate the construction equipment and personnel required for the construction of the pipeline spreads and stations/terminals.

Exhibit 2.1-14 Typical Construction Equipment and Personnel Required for Pipeline Spreads by Activity

EQUIPMENT	PERSONNEL
Grading	
1 Pickup	1 Foreman
1 Dozer	2 Dozer Operators
Excavation (Normal Terrain)	
1 Pickup	1 Foreman
1 Trencher	1 Operator
1 Backhoe	1 Backhoe Operator
1 Dozer w/ Ripper	1 Dozer Operator
1 Trencher	1 Operator
	4 Laborers
Pipe Crew	
1 Welding Rig	1 Foreman
6 Welding Rigs	6 Welders
1 Crew Cab	6 Welders Helpers
3 Sidebooms	4 Assistants
1 Tow Tractor	3 Sideboom Operators
3 Pick-ups	3 Wrappers
2 Flatbed Trucks	1 Truck Driver

EQUIPMENT	PERSONNEL
1 Internal Line-up Clamp	4 Laborers
Tie-in/Bending Crew	
2 Welding Rig	2 Foreman
2 Welding Rigs	2 Welders
3 Sidebooms	3 Operators
1 Bending Mach.	1 Operator
2 Pickups	1 Bending Engineer
2 Crew Cab	4 Assistants
1 Backhoe	1 Operator
Lowering	
1 Pickup	1 Foreman
3 Sidebooms	3 Sideboom Operators
3 Cradles	2 Welders
2 Welding Rigs	2 Assistants
1 Water Pump	1 Oiler
1 Holiday Detector	5 Laborers
Backfilling	
1 Pickup	1 Foreman
1 Crew Cab	1 Backfill Operator
1 Dozer	1 Dozer Operator
1 Backhoe	1 Backhoe Operator
1 Backfiller/Front-end Loader	1 Oiler, 2 Laborers
Cleanup and Restoration	
2 Pickups	1 Foreman
1 Farm Tractor	1 Dozer Operator
1 Dozer	1 Loader Operator
1 Loader	2 Drivers
	6 Laborers
Hydrostatic Testing	
1 Pickup	1 Foreman
1 Test Trailer/Truck	1 Sideboom Operator
2 Air Compressors	1 Pump Operator
1 Pump	1 Hydrotest Technician
1 Fill Unit	1 Driver
1 Water Filter	4 Laborers

Exhibit 2.1-15 Typical Construction Equipment and Personnel Required for Stations and Terminals by Activity

EQUIPMENT	PERSONNEL
Berm Construction	
1 Scraper	1 Foreman
1 Bulldozer	Operators
11 Dump Trucks	Drivers
1 Pickup	
1 Vibratory Compactor	
1 Track-Mounted Excavator	
1 Water Truck	
Foundation Work	
1 Pickup	1 Foreman
5 Portable Generators	Operators
1 Cement Truck	Drivers
1 Boomed Cement Truck	
1 Hydrocrane	
Mechanical Work	
2 Pickups	1 Foreman
7 Welding Machines	Operators
1 Backhoe	Drivers
3 Sidebooms	Laborers
1 Hydrocrane	Welders
1 50-Ton Crane	Assistants
Tank Erection	
2 20-Ton Cranes	1 Foreman
7 100-HP Generators	Operators
2 Pickups	Drivers
3 Articulating Manlifts	Laborers
1 Water Pump	
Electrical Work	
1 Backhoe	1 Foreman
2 Pickups	1 Operator
	Laborers
Finish Grading Road Constr.	
1 Blade	1 Foreman
2 Dump Trucks	1 Operator
2 Vibrating Compactors	

EQUIPMENT	PERSONNEL
1 Skip Loader	
1 Paving Machine	
1 Pickup	

2.1.3. Project Operation and Maintenance

The projected maximum flow rate for the proposed UNEV pipeline system would be 5,854 barrels-per-hour (BPH) and 112,850 barrels-per-day (BPD). The projected flow rate for the UNEV pipeline as proposed and to be constructed is estimated as 62,000 BPD. The flow rate would vary depending on the type and quantity of product being transported, but would likely not exceed the projected maximum flow rate.

The proposed UNEV pipeline system is designed to have a maximum operating pressure of 1,480 psi in accordance with 49 CFR 195.106, *Internal Design Pressure*. However, the pipeline would not be operated at a pressure that exceeds the established maximum operating pressure (MOP) in accordance with 49 CFR 195.406, *Maximum Operating Pressure*.

2.1.3.1. Operations Activities

The operation of pipelines for the transportation of hazardous liquids is regulated by the DOT under 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*. This part of the CFR prescribes the safety standards and reporting requirements.

Activities at the inlet pump station area would be conducted in concert with activities at the refinery area and would be consistent with that industrial setting. Activities at the lateral takeoff would be remotely operated and monitored from the Artesia, New Mexico operations center. Operators in Artesia would direct “batches” of different grades of petroleum products to the Cedar City and Las Vegas terminals based on monthly nominated volumes into each facility. Operations at the two terminal locations would remain open 24 hours per day. Petroleum truck transports would have secure access to the automated facilities. Security systems would ensure documented access to contracted customers only. Transport drivers would be required to complete company operations and safety training prior to being granted access. Each facility would be manned during weekday business hours with operations personnel dispatched for periodic pipeline receipt and/or maintenance activities outside of normal business hours. Truck transport traffic would vary by customer demand and time of day. Maximum average daily traffic at the Cedar City terminal would be 225 transports and at Las Vegas it would be 400 transports assuming an average 180 barrels (7,560 gal) per transport load. The throughput of the pipeline system, as proposed, would be approximately half the maximum amount.

Along the pipeline itself, operation and maintenance (O&M) activities either can be scheduled or in response to need. Light truck access with limited personnel would be required for testing the cathodic protection system, inspecting valves and operators, maintaining communication systems, inspecting ROW conditions, erosion control structures etc. Occasionally, heavy equipment would be required for excavations, earth moving, or certain repairs such as at valves.

The pipeline ROW would have regular patrols to inspect for problems, unusual activities, storm damage, encroachments, leaks, or third-party equipment or activities. Surface and aerial patrols would occur every other week or at least 26 times a year. Surface patrols would use existing access roads to access the pipeline ROW. No surface overland travel would occur unless required for inspection, locating, marking, repair, or maintenance of pipeline facilities.

2.1.3.2. Workforce and Equipment Requirements

UNEV would staff the pipeline and terminal facilities to ensure safe and reliable operations. Current plans call for a total of 8 full time personnel to operate and maintain the system in Utah and Nevada. The majority of the personnel would be located in the North Salt Lake, Cedar City, and Las Vegas communities. In addition 2 personnel would be added to the Artesia, NM control center to remotely monitor and control the system operations 24 hours per day/7 days per week.

Operations/maintenance personnel would be equipped with the tools and equipment required to maintain the system. Operations personnel would use company trucks to traverse the system to conduct periodic maintenance and inspection of the system. In addition to full time personnel, UNEV would establish contracts with and use local contractors for periodic pipeline maintenance and construction activities. These contractors would be familiar with UNEV operations and be in a position to support emergency maintenance response if required on the system.

2.1.4. Future Plans and Abandonment

UNEV has proposed no definite plans for future expansion or additional facilities. During the scoping process, the possibility of a midpoint pump station to increase the throughput of refined products to the terminals above what is currently proposed was presented, but this remains speculative and is not part of the proposed action or alternatives. Additional tankage in the future at the two terminals is a possibility. Space for additional tanks is available at the terminals within their currently proposed footprints.

Abandoning pipeline facilities would include safe disconnection from an operating pipeline system, purging of combustibles, and sealing abandoned facilities left in place to minimize safety and environmental hazards. If a UNEV pipeline segment were to be taken out of service on a temporary basis, the line must be shut in under enough pressure to maintain a positive pressure on any segment of at least 50 psi minimum. The line would still be subject to biweekly inspections, the same as an active line and the pressure would be observed at regular intervals as a leak detection measure.

If a UNEV pipeline segment were to be taken out of service on a permanent basis, it must be isolated from any connected lines and emptied of the commodity by purging with an inert material or loading with inhibited water. The ends would then be sealed.

2.1.5. Environmental Compliance Inspection and Mitigation Monitoring

Environmental inspection and monitoring personnel are responsible for providing guidance, observation, and reporting for the project on all environmental issues. The Proponent would provide permitting and inspection staff to ensure that construction activities are performed in accordance with all applicable mitigation requirements, permit conditions, and environmental specifications. The Proponent’s Permitting Manager and Lead Environmental Inspector would coordinate directly with BLM’s Third-party Monitor Manager. The Third-party Monitor Manager would direct the efforts of the Third-party Environmental Compliance Monitors to inspect implementation of environmental compliance in the field as a representative of the BLM and to coordinate with the Environmental Inspectors, Resource Monitors, and mitigation teams. They also facilitate the involvement of BLM technical staff as necessary.

Detailed descriptions of duties, responsibilities and authority of environmental monitors and inspectors can be found in Section 4 of the POD.

2.1.6. Mitigation Measures

The project would adhere to applicable BMPs associated with the approved RMP for each BLM Field Office. Project-specific mitigation measures and BMPs listed by affected resource are included in **Appendix D** of this EIS.

2.1.6.1. Preconstruction Surveys

Cultural and biological preconstruction surveys or treatment would be required at various locations throughout the project and must occur prior to the BLM's issuance of a Notice to Proceed at that location, allowing construction activities to begin. These sites would require planning and coordination with the Environmental Inspector and Pipeline Construction Manager to identify when construction through these areas is anticipated to occur so that appropriate surveys (e.g., migratory birds, desert tortoise, and sensitive plant) can be conducted and completed prior to any construction activities. For desert tortoise habitat, construction sites, staging areas, and access routes would be cleared by a qualified tortoise biologist before the start of construction. An authorized biologist(s) would survey the site for desert tortoises using survey techniques providing 100-percent coverage of the area proposed for disturbance. Transects would be no greater than 10 meters apart. If construction occurs during the desert tortoise active season (March 1 through October 31), or when temperatures and environmental conditions are conductive to tortoise activity as determined by an authorized biologist, two surveys would occur. The first survey would be conducted within 14 days prior to surface-disturbance; and the second survey would occur immediately before surface disturbance. During the inactive season (November 1 through February 28, except as noted above) when conditions are not conducive to tortoise activity as determined by an authorized biologist, one survey would occur within 72 hours of surface disturbance or up to 5 days in advance of disturbance if conditions are not favorable for tortoise activity.

For cultural sites, the coordination of equipment and manpower would require considerable planning and cooperation with the contractor. In order to accomplish this, a three-week minimum notice of construction activities within the areas identified for preconstruction surveys and pretreatment activities would be required of the Pipeline Construction Manager.

2.1.6.2. Post-construction Surveys

A post-construction survey of the entire project would be conducted with the Compliance Field Official, Lead Environmental Inspector, and Pipeline Construction Manager to ensure that all compliance measures have been met. This would include the cleanup of all flagging and debris, repair/replacement of signs, etc., and verification that all special requests by the various agencies and landowners have been completed in an acceptable manner.

Reclamation inspections would also be conducted with the Lead Environmental Inspector, BLM staff or representative, and Pipeline Construction Manager to verify the reclamation activities.

2.2. Alternatives to the Proposed Action

Alternatives considered in the EIS are based on issues identified by the BLM and cooperating agencies as well as comments received during the public scoping process. The agency is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and that respond to the purpose of and need for the project.

System alternatives would include proposals to bring refined products to the target areas by means other than the UNEV proposal. The Clark County, Nevada Blue Ribbon Committee (BRC) recently explored possible solutions to improve the reliability and sustainability of southern Nevada's fuel supply. The BRC discussed the UNEV Pipeline. Their report also discussed Kinder Morgen and possibilities for additions to their existing system, possible Pacific Texas Pipeline connections from Texas to Nevada, and WesPac Pipeline possibly connecting Arizona to Nevada. At this time UNEV is the only pipeline being proposed to bring fuel into southern Nevada, and therefore other possible system alternatives were not analyzed. Surface transportation of fuels to the southern Nevada area currently exists and is discussed in the No Action Alternative.

There are routing alternatives along segments of the proposed alignment. These are discussed below as alternatives to the Proposed Action.

2.2.1. Airport Alternative Route

Following several meetings with Salt Lake City International Airport representatives, PacifiCorp representatives, and the general membership and appointed representatives of potentially affected duck clubs, it was agreed to allow the proposed pipeline alignment to cross airport property west of and adjacent to the PacifiCorp power line that crosses the west side of the airport to avoid all wetlands on duck club property west of the airport. However, south of the airport property it would be necessary to cross duck club property for a short distance and two options were selected. One of these became part of the Proposed Action and the other is an alternative alignment.

The Airport Alternative Route is 3.35 miles long and would diverge from the proposed alignment at MP 6.6 and rejoin it at MP 10. At MP 6.6 the alternative alignment would continue west on the west side of the airport but within property owned by the Blackhawk Duck Club (**Exhibit 2.2-1**). The pipeline would be placed just inside the duck club boundary in drainage areas currently covered with water. Because it does not have an outlet, the duck club would dewater the drainage area to get rid of the stagnant water. After passing through this area the pipeline would continue southwest and west, crossing Interstate 80. **Exhibit 2.2-2** below lists the totals of the temporary and permanent land disturbance from the Proposed Action listed in **Exhibit 2.1-10** above.

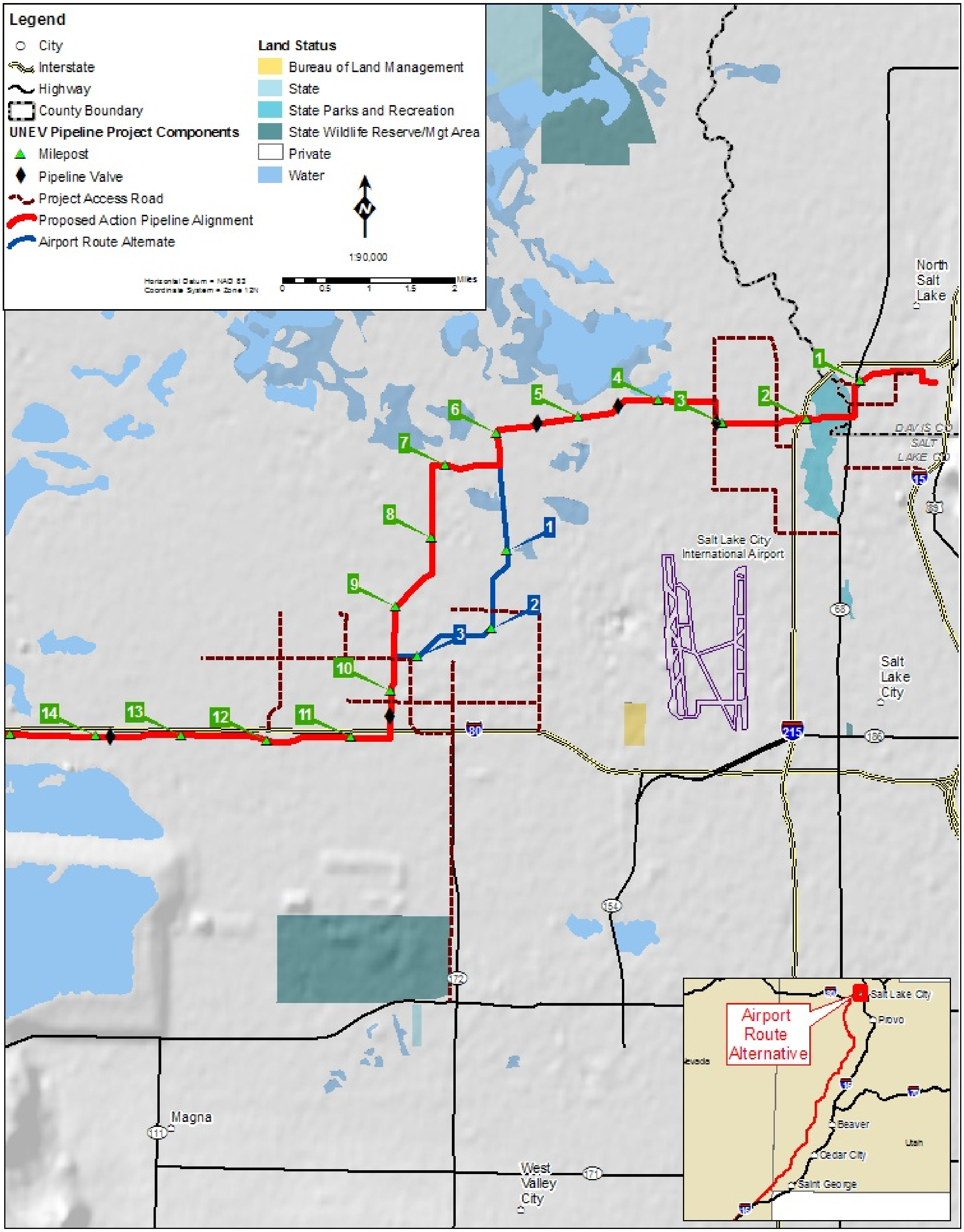


Exhibit 2.2-1 Airport Alternative Route Alignment

2.2.2. Tooele County Alternative Route

The Tooele County Alternative Route (**Exhibit 2.2-2**) was developed to address concerns of the Tooele County Commission regarding the proposed route along the eastern side of the northern Tooele Valley from approximately MP 25.3 (near Lakepoint) to MP 38.7 (north of the Tooele Ordnance Depot). The alternative route splits from the proposed route near Lakepoint and runs west southwest, crosses State Highway 36, proceeds southwest and along the north side of State Highway 138, north of the Tooele Airport. The route crosses the highway along the east side of Sheep Lane where the route heads south, running east of the Miller Motor Sports Park. Near the south end of the Park, the route turns southeast and parallels an abandoned railroad ROW. The alternative route runs southeast and then curves south to rejoin the proposed UNEV route south of the crossing of State Highway 112.

Other alternatives have been discussed further south in Tooele County in the vicinity of Stockton, Utah and Rush Lake (south of the Stockton Bar). The Stockton area historically was the site of several smelters serving mines in the area. These smelters (the exact locations of some are known, others remain unknown) released quantities of lead and arsenic into the air that subsequently settled onto the ground in the area. Investigations have been conducted by EPA and UDEQ to determine contamination levels and distribution for the Jacob’s Smelter. Three “Operable Units”, OU1, OU2 and OU3, have been designated and mapped. The UNEV proposed route lies within the western boundary of the OU2 investigation area west of Rush Lake.

2.2.3. Rush Lake Alternative Route

The Rush Lake Alternative Route (**Exhibit 2.2-3**) in Tooele County was developed to address concerns of the Salt Lake Field Office in an area having possible soil contamination within the Jacob Smelter Superfund Site OU2 Boundary, as well as to address the building of the proposed pipeline within wetlands adjacent to Rush Lake which are frequently inundated. This alternative departs from the Proposed Action alignment at the northern end of Rush Lake east of Stockton, Utah and parallels the proposed alignment approximately 0.25 mile to the west. It would rejoin the Proposed Action at approximately MP 49.

2.2.4. Millard County Alternative Route

An alternative route near Lynndyl, Utah was developed as a result of comments received during scoping to reduce impacts to private land holders that would result from the proposed alignment. The alternative alignment was located west of Lynndyl. The Lynndyl Route Alternative issues are incorporated and resolved in the Millard County Route Alternative.

The Millard County Alternative Route (**Exhibit 2.2-4**) was developed to reduce impacts to private land holders that would result from the proposed alignment between MP 132.5 to MP 143.2. Meetings were held with Millard County representatives, BLM offices, and UNEV to address alternatives. The alternative pipeline alignment would be located west of Lynndyl and Delta, UT (**Exhibit 2.2-4**). The alternative pipeline route splits from the proposed route near MP 110 and continues west around Delta and ties back into the original route approximately at MP 161. The alternative route is approximately 63 miles long.

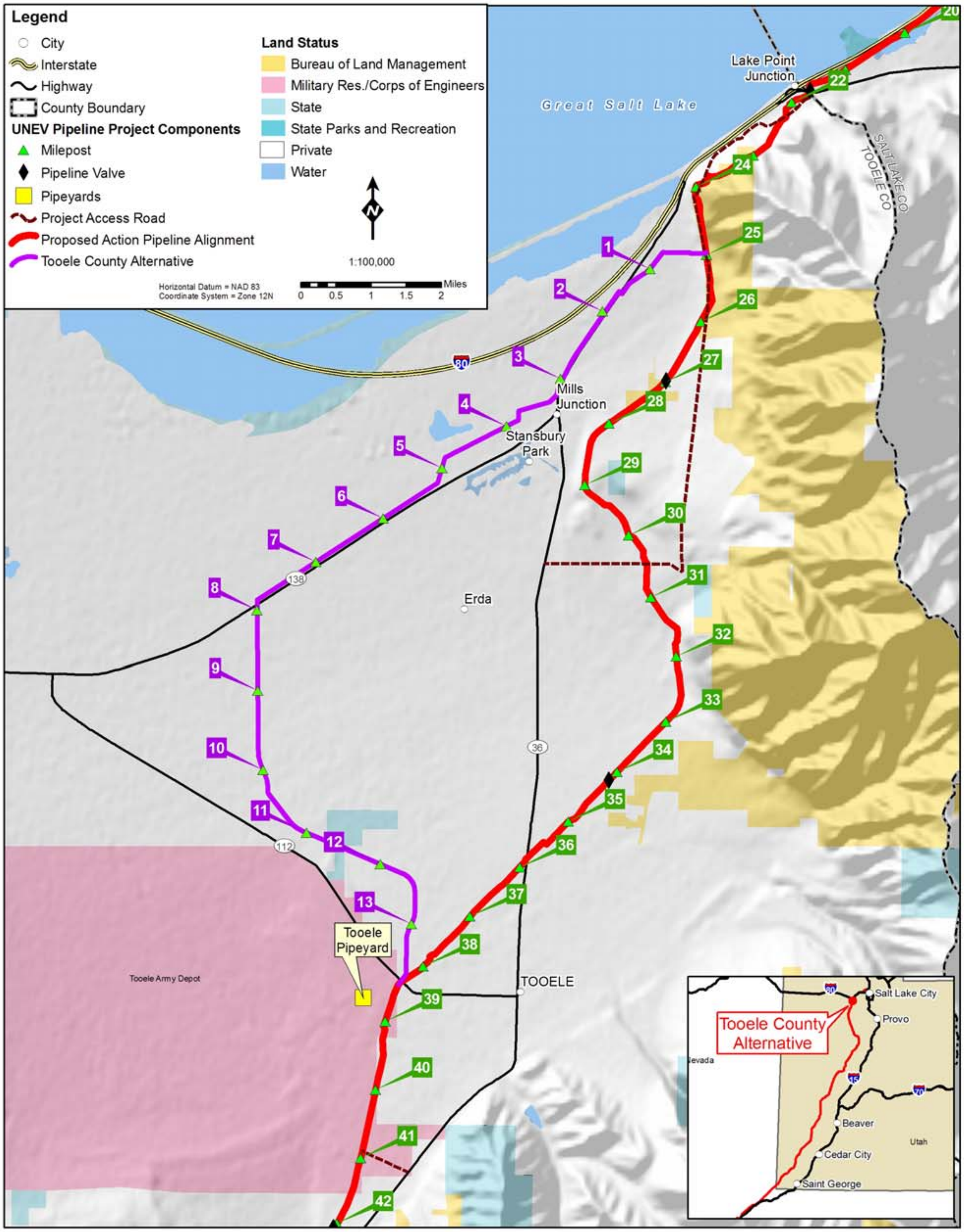


Exhibit 2.2-2 Tooele County Alternative Route Alignment

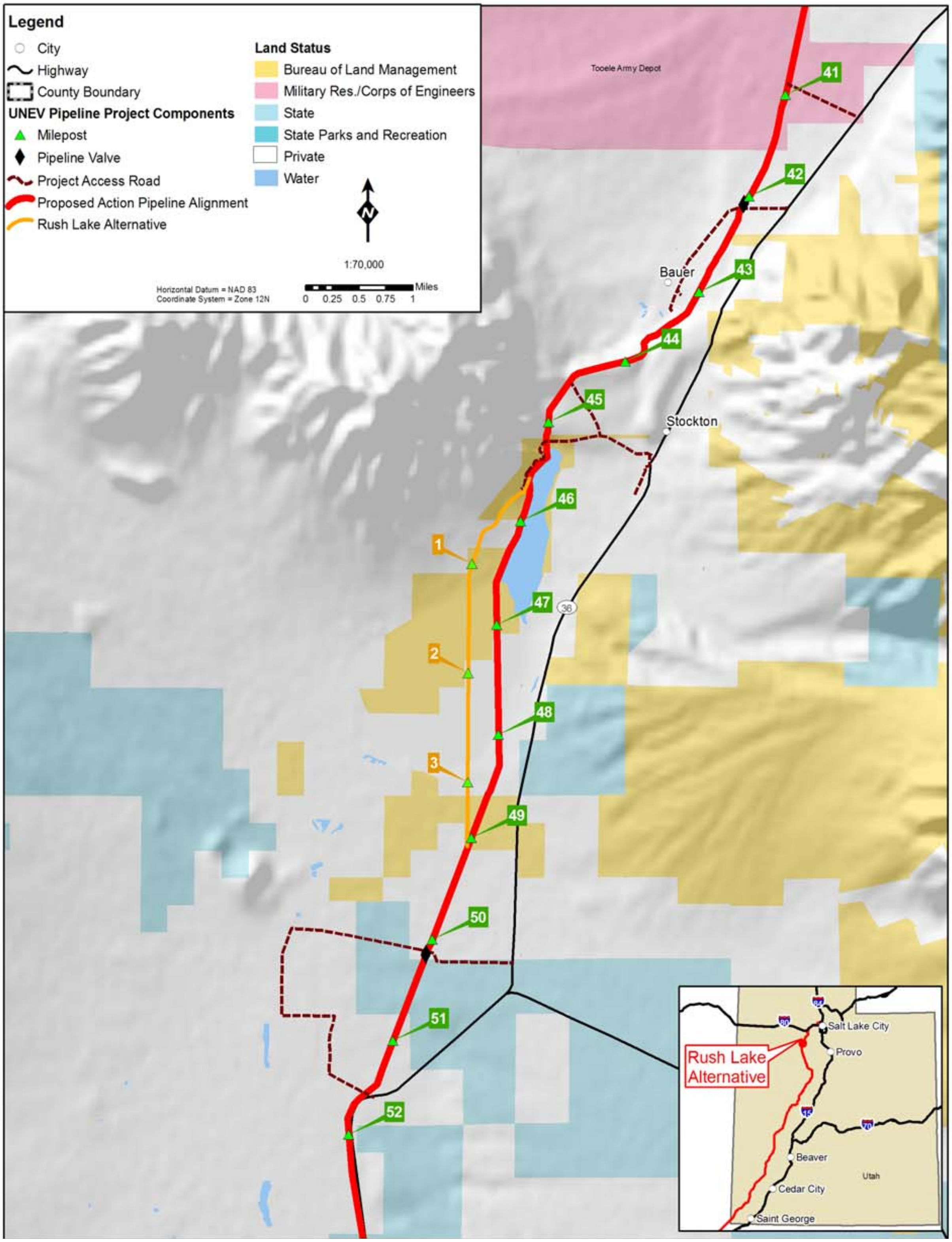


Exhibit 2.2-3 Rush Lake Alternative Route Alignment

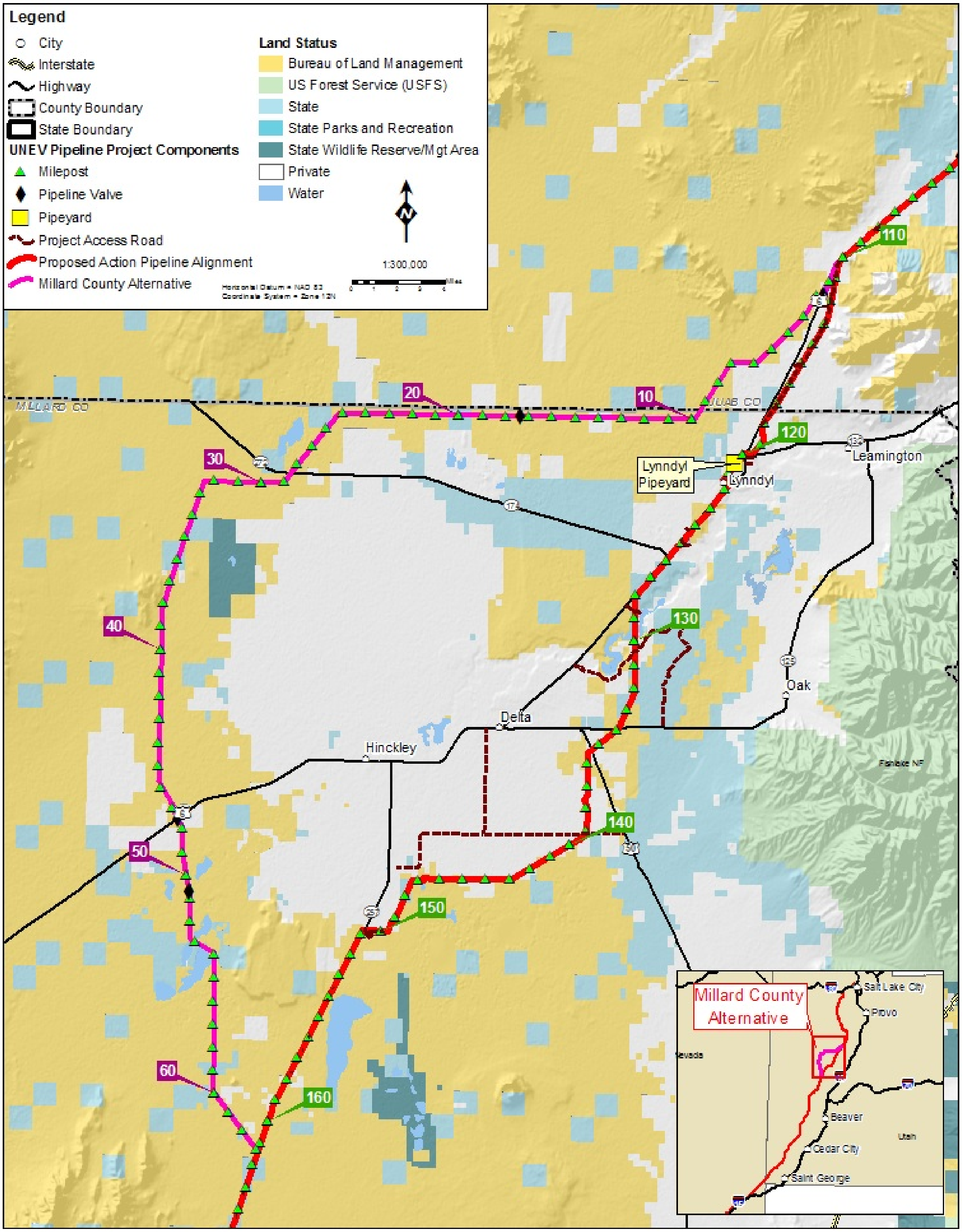


Exhibit 2.2-4 Millard County Alternative Route Alignment

2.3. No Action Alternative

If the proposed action were not approved and constructed, the existing refined petroleum products delivery systems would be used to meet current and future identified needs. The existing refined product delivery systems include two California-based pipelines, truck, and rail delivery. Currently, long-haul truck and rail are used to deliver refined fuels from the Salt Lake area refineries to southern Utah and Nevada via existing roads and rail lines. Personal, industrial, commercial and military fuel needs are expected to increase regardless of available delivery systems. The existing pipelines that deliver fuels to the Las Vegas area are at or near capacity. It would be likely that truck and/or rail bulk delivery would need to increase to meet increasing demand. If the UNEV pipeline were not built, redundancy in refined product delivery systems to the region would not be improved.

2.4. Alternatives Considered and Eliminated from Detailed Analysis

This section describes the alternatives to the Proposed Action that were considered but not carried forward in the detailed analysis for various reasons. A range of alternatives to be evaluated in an EIS should meet the purpose of and need for the project and certain key principles derived from NEPA case law including:

- All alternatives considered must meet the objectives of the Purpose and Need Statement.
- Alternatives must be "reasonable" (i.e., they must be technically and economically feasible).
- Alternatives that are speculative and geographically remote need not be considered.
- Alternatives with environmental impacts that are obviously worse than the Proposed Action or other alternatives under consideration can be eliminated.

Alternatives eliminated from further evaluation in the EIS did not meet the project objectives and/or were eliminated for one or more of the principles listed above. These alternatives and the reasons why they were eliminated from further consideration are briefly discussed in **Exhibit 2.4-1** below.

Exhibit 2.4-1 Alternatives Dismissed from Detailed Analysis

Alternative and Source	Description	Rationale for Elimination from Detailed Analysis
Route north of airport (Rev K, 5/5/07)	From MP 1 due west, north of airport and meeting at approx. MP 10.	This alternative avoided airport lands, but had substantial wetlands impacts and impacts to Duck Club lands. It was eliminated from detailed analysis as other alternatives helped mitigate these wetland and land ownership issues.
Route across airport (Rev 9/29/06)	From MP 4 southwest across airport, then west and south to I-80. Follow along north side of I-80 to MP 13.	This alternative was eliminated from detailed analysis to avoid the existing airport lands as well as the airport's 20-year plan for adding a new runway west of the existing runways.
Airport/I-215 route alternative (scoping)	From MP 1.5 east then south of airport, and along I-215 east of airport.	This alternative was eliminated from detailed analysis due to the fact that the Utah Department of Transportation would not allow construction within the I-215 ROW.

Alternative and Source	Description	Rationale for Elimination from Detailed Analysis
Airport/Kern River 1990 route alternative (scoping)	From MP 2 follow Kern River 1 ROW north and west of airport and electric transmission lines to approx MP 8.	This alternative was eliminated from detailed analysis as it was from the Kern River EIS (2002) to "...reduce impacts to wetlands."
Airport/Kern River 2002 route alternative (scoping)	From MP 2 follow Kern River 2 ROW within airport boundary, south and east of electric transmission lines to approx. MP 8. Runs north and west of runways.	This alternative was eliminated to accommodate airport expansion plans. The airport is in litigation to move their pipeline.
Kern River Alignment Alternative (BLM)	Follow adjacent and parallel to the existing Kern River alignment (two 36-inch gas pipelines) from approx. MP 10 to MP 250.	This alternative was eliminated from detailed analysis because population growth and development in the Salt Lake Valley have encroached on the existing ROW, leaving no additional room to construct and install another pipeline. This would require the northern portion of the alignment to traverse Tooele Valley. Thus, it was infeasible to bring the proposed alignment back to the Kern River alignment south of Salt Lake Valley due to topographic and construction constraints.
Saddleback alternative (UNEV: 9/06, 10/06, Rev. I)	The original alignment followed an existing pair of high-line power poles across the "Saddleback" in a relatively straight line connecting the current proposed alignment's MP 26 to MP 32.	This area is currently undeveloped, but there are plans for gravel mining and a subsequent large upscale housing development in this area. This alternative was eliminated from detailed analysis because mining of the overburden would be in direct conflict with the proposed pipeline.
West Tooele Valley alternative (BLM)	An unspecified route that would diverge from the proposed alignment at MP 29 to the west of Tooele and follow along the western boundary of the Tooele Army Depot, then southeast to approx. MP 52 or farther south.	This alternative was proposed by the BLM Salt Lake Field Office to avoid potentially contaminated soils in the Jacob's Smelter area and to carry the route to the west of most development in the area. Consultation occurred with the Utah Department of Environmental Quality, and they recommended certain surveys to be done that would enhance detection and mitigation. Tooele County representatives indicated that this alternative would impact wetlands (about 7.5 miles) within the County-designated Special Area Management Plan (SAMP). The alternative would have impacted an additional 6.5 miles of private land in the vicinity of several proposed housing developments, and would add 5.6 miles to the proposed alignment length (at an additional cost of $2.4 million). This alternative was eliminated from analysis.

Alternative and Source	Description	Rationale for Elimination from Detailed Analysis
Jacobs Smelter area alternatives (UNEV: 9/06, 10/06, Rev. I)	From approx. MP 42 to MP 49 several alternatives were proposed that roughly paralleled the west side of Highway 36 near Stockton, south of Tooele.	These alternatives were eliminated from detailed analyses because of potential contaminated soils that fall within historic smelter sites in this area. The initial alignments were well within the Jacobs Smelter OU2 boundary, as defined in the EPA ROD for the Jacob Smelter Superfund Site (1999).
Beryl alternative (scoping)	A public scoping comment that suggested an unspecified route moving the proposed alignment away from I-15 and closer to Beryl.	This alternative was eliminated from detailed analysis because there were no resource constraints or other issues that warranted moving the proposed alignment.
Different terminal location alternatives (scoping)	A public scoping comment suggested moving the proposed terminal from Cedar City to Milford or Beryl.	This alternative was eliminated from detailed analysis because there were no resource constraints or other issues that warranted moving the proposed terminal.
Lynndyl alternative (scoping)	The alternative alignment was located west of Lynndyl, Utah.	An alternative route near Lynndyl, Utah was developed as a result of comments received during scoping to reduce impacts to private land holders that would result from the proposed alignment. The alternative was dropped as a separate alternative and the issues are addressed and incorporated in the Millard County Route Alternative (Section 2.2.3).

2.5. Comparison of Alternatives and Summary of Impacts

This section provides a brief comparison of disturbance and summary of environmental effects by resource and compares these across alternatives (**Exhibits 2.5-1** and **2.5-2**).

Exhibit 2.5-1 Comparison of Disturbance for the Proposed Action and Action Alternatives

Project Alternative/Component	Approximate Length (miles)	Approximate disturbance Acres	
		Temp	Perm
Proposed Action			
Main Pipeline Route	399	3627.3	N/A
Airport Lateral	2.4	21.8	N/A
Cedar City Lateral	10	90.9	N/A
Staging Areas	N/A	17.6	N/A
Access Roads	N/A	N/A	2.64

Project Alternative/Component	Approximate Length (miles)	Approximate disturbance Acres	
		Temp	Perm
Above Ground Facilities	N/A	N/A	70.7
Airport Alternative			
Airport Alternative – PA Corresponding Segment	3.2	29.0	N/A
Airport Alternative Route	3.4	30.9	N/A
Tooele County Alternative			
Tooele County Alternative – PA Corresponding Segment	13.4	121.8	N/A
Tooele County Alternative Route	15.4	140.0	N/A
Rush Lake Alternative			
Rush Lake Alternative – PA Corresponding Segment	3.5	31.8	N/A
Rush Lake Alternative Route	3.6	32.7	N/A
Millard County Alternative			
Millard County – PA Corresponding Segment	51.1	464.5	N/A
Millard County Alternative Route	63.1	573.6	N/A

Exhibit 2.5-2 Summary of Environmental Effects of Proposed Action and Alternatives

Resource Topic	Proposed Action (including mainline, lateral lines, terminals, and all aboveground facilities)	Alternatives as Compared to the Corresponding Segments of the Proposed Action Route			
		Airport Alternative Route (MP 1-3)	Tooele County Alternative Route (MP 1-13)	Rush Lake Alternative Route (MP 1-3)	Millard County Alternative Route (MP 1-63)
General Disturbance	The Proposed Action would disturb approximately 3,830.9 total acres (3,757.6 acres temporary; 73.3 acres permanent).	The Airport Alternative Route would temporarily disturb 1.9 more acres than the corresponding segment of the Proposed Action.	The Tooele County Alternative would temporarily disturb 18.2 more acres than the corresponding segment of the Proposed Action.	The Rush Lake Alternative Route would temporarily disturb 0.9 more acres than the corresponding segment of the Proposed Action.	The Millard County Alternative Route would temporarily disturb 109.1 more acres than the corresponding segment of the Proposed Action.
Air Quality	Construction emissions would occur during construction of the pipeline, pumping stations, and terminals. Emission levels of VOCs, NO_2, CO, and PM_{10} would not be expected to exceed any predetermined standards for air quality. Construction activities would likely result in localized minor impacts of PM_{10} and nuisance dust. Emissions from blasting would result in additional PM_{10} and ammonia emissions. Total HAP emissions from Cedar City and Las Vegas Terminals would be less than 25 tons per year. Therefore, neither terminal would be a major source of HAPs emissions or be subject to NESHAP. Total emissions per facility would be less than 100 tons per year and the facilities would not require Part 70 operating permits.	Construction and operations impacts would be similar to the Proposed Action.	Construction and operations impacts would be similar to the Proposed Action.	Construction and operations impacts would be similar to the Proposed Action.	Construction and operations impacts would be similar to the Proposed Action. Fugitive dust issues would be greater with the Millard County Route as more acres would be disturbed than for the Proposed Action.
Noise	Onsite noise levels are anticipated to be in the 70 to 85 dB(A) range. Noise from construction equipment, drilling, and blasting would all cause temporary unwanted noise in the general vicinity. Blasting would likely be the most prominent source of unwanted noise. Noise produced during construction could disturb nesting birds and local wildlife. Construction noise from construction activities for near-by residence would be considered “nuisance” noise and would not likely exceed local noise ordinances or OSHA standards.	Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.	Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.	Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.	Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.

Geology & Minerals	Several types of bedrock would be encountered along the route that would require blasting to excavate for the pipeline. A blasting plan would safeguard against blasting risks and mitigate for potential damages. Problems associated with mass movement and subsidence are very slight. In consultation with Salt lake County, the northern portion of the route may require a Surface Fault Rupture Hazard Study prior to construction. Although mineral resource areas would occur within 0.5-mile of the proposed route, the disturbance would be temporary and not hinder access or exploitation of the mineral resources.	Impacts to geologic and mineral resources would be similar to the Proposed Action.	Impacts to geologic and mineral resources would be similar to the Proposed Action.	Impacts to geologic and mineral resources would be similar to the Proposed Action.	Because no geologic or mineral resources or potential geologic hazards are present on the Millard County Alternative Route, and no blasting would be required, there would be no impacts.
Paleontological Resources	Mitigation would reduce the potential impact from project-related ground disturbance on paleontological resources to an insignificant level by allowing for the recovery of fossil remains, and associated data that otherwise might be lost to earth-moving and to unauthorized fossil collecting. Construction could result in beneficial impacts to paleontological resources through the recovery of fossil remains that would otherwise not have been exposed and available for study.	Impacts to paleontological resources would be the same as the Proposed Action.	Impacts to paleontological resources would be the same as the Proposed Action.	Impacts to paleontological resources would be the same as the Proposed Action.	The Millard County Alternative Route would impact some areas of high paleontological resource potential. Prior to implementation, further paleontological evaluation would be required.
Soils	There would be surficial soil disturbance within the entire 75-foot construction ROW. Vegetation would be removed, exposing soils to potential erosion while vegetation is re-established. Soils in the active trenching areas would be removed, mixing horizons and changing compaction. A small percentage of disturbed soils are designated as prime farmland or land of statewide importance. Little or no agricultural production would be affected long-term.	The Airport Alternative Route would disturb approximately 0.5 acre more soils than the Proposed Action. It would disturb over 9 more acres of soils susceptible to erosion and approximately 4 more acres of soils susceptible to compaction, but nearly 5.5 fewer acres with shallow soils. However, the alternative route would disturb approximately 7 more acres of farmlands of statewide importance than the Proposed Action.	The Tooele County Alternative Route would disturb nearly 17.5 acres more soils than the Proposed Action. It would disturb approximately 4 fewer acres of shallow soils, approximately 37 fewer acres of stony soils, approximately 36 more acres of droughty soil, approximately 42 more acres subject to compaction, approximately 77 more acres with poor revegetation potential, and approximately 7 more acres of farmland of statewide importance.	The Rush Lake Alternative would disturb 0.91 acre more soils than the Proposed Action. Impacts to soil characteristics would be similar to the Proposed Action.	The Millard County Alternative Route would disturb approximately 109 more acres of soils than the Proposed Action. It would disturb approximately 212 more acres of soils with wind erosion potential, approximately 137 more acres of saline soils and approximately 89 more acres of soils with poor revegetation potential. However, the alternative route would disturb approximately 17 fewer acres of soils that would be prime farmland if they were irrigated, and approximately 15 fewer acres of farmland of statewide importance.

Water Resources	The construction process would temporarily alter surface contours causing minor changes to surface water runoff paths and create sediment sources that could potentially be entrained by surface waters and carried off-site. These impacts would be mitigated using BMPs and restoration of surface contours and vegetation and would be short-term and minor. In areas of high groundwater, trench dewatering may be necessary, but due to the brief period the effect would be negligible. Where perennial water bodies are crossed by the pipeline HDD would be used to minimize disturbance to the natural morphology and erosion. Open-trenching may be used to cross intermittent streams; impacts would be temporary and minor due to the use of BMPs. The pipeline would cross Kennecott Utah Copper Corporation lands (not the retention ponds) by Interstate 80 near the Salt Lake/Tooele County border. Precautions would be taken in this area to ensure that selenium-contaminated soils and groundwater would not be disturbed in ways that would spread the contamination. Total disturbance of potentially jurisdictional waters would be 68.78 acres. Total disturbance of potentially non-jurisdictional waters would be 39.73 acres. Operations and maintenance impacts to groundwater would be limited to accidental spills or repairs to the buried pipe. Potential impacts to surface water would be limited to sediment from service vehicle traffic, accidental spills, or disturbance caused by repair or maintenance activities.	The Airport Alternative Route would have the same types and degrees of general groundwater impact as the Proposed Action. Surface water impacts for the Airport Alternative Route would be similar in type to the Proposed Action. There would be no potentially non-jurisdictional impacts as a result of the Airport Alternative Route. The types of impacts to wetlands and waters of the U.S. under the Airport Alternative Route would be the same as for the Proposed Action.	Construction impacts for the Tooele County Alternative Route would be the same as for the Proposed Action with regards to groundwater. Surface water resources along the Tooele County Alternative Route include ephemeral washes and upland swales, less than 1 acre of which would be impacted by the alternative route. Total disturbance of potentially jurisdictional waters would be 0.079 acre. Total disturbance of potentially non-jurisdictional waters would be 0.048 acre.	Impacts to water resources from the Rush Lake Alternative Route would be similar to, but slightly less than those described under the Proposed Action.	Construction impacts for the Millard County Alternative Route would be the same as for the Proposed Action with regards to groundwater. Surface water resources along the Millard County Alternative Route include the Sevier River, ephemeral washes, and upland swales, of which less than 1 acre would be impacted. Total disturbance of potentially jurisdictional waters would be 0.12 acre. Total disturbance of potentially non-jurisdictional waters would be 0.18 acre.
Vegetation	All vegetation within the 75-foot temporary construction ROW would be removed. This would be the primary impact of the project on vegetation communities. Where widening the construction corridor outside currently disturbed areas is required, loss of additional native vegetation would primarily affect long-lived plant species that take years to reach maturity. This impact would be long-term and minor. Pipeline construction would potentially open up new areas to infestations of noxious weeds. This impact is anticipated to be long-term and minor to moderate.	The alternative would disturb 9 more acres of marsh mudflat and 9 fewer acres of Utah grassland/desert grassland than the Proposed Action. The Airport Alternative Route would also require the improvement of one additional access road disturbing 0.11 acre of marsh/mudflat vegetation near MP 2.	The alternative would disturb approximately 32 acres of agricultural lands whereas the Proposed Action disturbs none. However the alternative would impact disturbed grasslands rather than Utah grasslands/desert grasslands, reducing the overall grassland effect. The Tooele County Alternative Route would also require the improvement of one additional access road disturbing 0.41 acres of agricultural land.	Impacts to vegetation from the Rush Lake Alternative Route would be similar to the Proposed Action.	The alternative would disturb approximately 36 fewer acres of agricultural lands than the Proposed Action and would impact fewer or no acres of disturbed grassland, greasewood scrub and marsh mudflat, but instead would disturb sagebrush/sagebrush scrub. The Millard County Alternative Route would also require the improvement of one additional access road disturbing 0.13 acres of disturbed grassland.

Wildlife	Generally, impacts to wildlife would be greater in undisturbed habitat than previously disturbed habitat. However, habitat to be impacted are relatively abundant in the general area surrounding the proposed route, the loss of common habitat types would not result in significant effects to most wildlife populations. Construction would affect big game ranges, but losses would generally be minor and insignificant because these areas are abundant outside the proposed disturbance areas. Migratory birds (other than sensitive species) would not be significantly affected due to relative abundance of habitat and stability of local populations. Open-cut river crossings have the greatest potential to impact aquatic resources during construction through the direct disturbance of the streambed. Sediment run-off from construction should be primarily short-term and restricted to active construction and reclamation activities.	The Airport Alternative Route would not disturb Utah grassland/desert grassland habitat and there would be no impacts to species using these habitats. However, the alternative would impact a larger area of marsh/mudflat habitat, including wetland areas. The type of impacts to those species dependent upon these habitats would generally be the same as described for the Proposed Action; however, the impacts would be more pronounced under this Alternative due to the greater amount of disturbance. Impacts to sensitive or managed wildlife areas, big game ranges, and migratory birds would be similar to those described for the Proposed Action.	Impacts to wildlife under the Tooele County Alternative Route would be similar to those described under the Proposed Action with the exception of sagebrush-dependent species. Approximately 4 miles of sagebrush habitat would be disturbed under the Tooele County Alternative, whereas the corresponding section of the Proposed Action alignment would not cross sagebrush habitat. Sagebrush-dependent species may be displaced by the installation of the pipeline in this area. No big game ranges were identified within the alternative route. Therefore, the Tooele County Alternative Route would have less impact on big game ranges than the Proposed Action. Impacts to migratory birds would be similar to those described for the Proposed Action.	Impacts to wildlife from the Rush Lake Alternative Route would be similar to the Proposed Action.	Relative to the Proposed Action, impacts to sagebrush and sagebrush shrub dependent species under the Millard County Alternative Route may be more adverse as there is a large amount of sagebrush habitat that would be crossed by the Millard County alignment. The same would be true for species dependent upon juniper woodland and pinyon-juniper woodland habitat. There would be fewer impacts to wetland and greasewood shrub dependent species under the Millard County Alternative. The Millard County alignment would cross the Sevier River at a reach that may be dry and contains less marsh/mudflat habitat and slightly less riparian habitat. The impacts to fish populations would be less than for the Proposed Action.

Special Status Species	Species-specific impacts are detailed in **Exhibit 4.9-3** of the EIS. General impacts to special status species would be similar to those described for wildlife and fisheries described above. Habitat losses would be temporary or short-term, unless forested areas or late-succession shrubs (i.e., sagebrush) were disturbed. Impacts to endangered, threatened, or candidate species would be as follows: No effect-- California condor, Southwestern willow flycatcher. May affect, not likely to adversely affect-- Western yellow-billed cuckoo, Virgin River chub, Utah prairie dog, Shivwitz milkvetch, Ute ladies' tresses. May affect, likely to adversely affect-- desert tortoise. Raptor habitat loss would occur; no impacts to nesting raptors are expected. No impacts to leks or nesting sage grouse. Impacts to Preble's shrew possible from loss of wetland habitat at the northern end of the alignment. Impacts to kit fox possible due to displacement and loss of desert habitat, mainly in Nevada portion of the alignment. Temporary noise impacts on bighorn sheep possible in Nevada portion of alignment. Substantial loss of pygmy rabbit habitat.	Species-specific impacts are detailed in **Exhibit 4.9-3** of the EIS. Impacts to special status species from the Airport Alternative Route would be the same as under the Proposed Action because similar habitats would be disturbed.	Species-specific impacts are detailed in **Exhibit 4.9-3** of the EIS. Impacts to special status species under the Tooele County Alternative Route would be similar to those under the Proposed Action with the exception of grassland-dependent species (i.e., burrowing owl and short-eared owl). Approximately 115 acres of grassland habitat would be disturbed under the Proposed Action alignment, whereas the Tooele County Alternative Route would cross only 27 acres of grassland/blackbrush habitat and 63 acres of disturbed grassland. Thus, the Tooele County Alternative would disturb less undisturbed grassland habitat where burrowing owls or short-eared owls are likely to occur.	Species-specific impacts are detailed in **Exhibit 4.9-3** of the EIS. Impacts to special status species from the Rush Lake Alternative Route would be the same as under the Proposed Action because similar habitats would be disturbed.	Species-specific impacts are detailed in **Exhibit 4.9-3** of the EIS. More impacts to sage grouse and pygmy rabbit may occur under the Millard County Alternative Route because a larger amount of sagebrush and sagebrush scrub vegetation (468 more acres than the Proposed Action) would be crossed. The Millard County Alternative is farther away from human disturbance. Sage grouse and pygmy rabbit are more likely to occur in sagebrush areas that are more remote from human disturbances and noise (i.e., roads and inhabited areas), thus impacts to these species are more likely along the Millard alignment than under the Proposed Action. In addition, giant fourwing saltbrush, Neese narrowleaf penstemon, and small spring parsley are could occur along the Millard alignment and are not likely to occur along the Proposed Action alignment. These species occur on sandy substrates. The Millard County Alternative would pass closer to the Cricket Mountains, where various special status raptors could be nesting. Because the Millard alignment is closer to potential nests, noise impacts are more likely, particularly as a result of blasting.

Land Use & Transportation	Complies with existing RMPs, except for the Pony Express RMP which requires that a new utility corridor be established. This EIS serves as the vehicle for that plan amendment. The Proposed Action may conflict with local land use plans in some of the counties that the pipeline would cross. Millard County does not favor the proposed alignment through the county. Where project construction would cross grazing allotments, vegetation would be removed within the ROW, impacting short-term availability of forage. Operation of the pipeline would have a minimal impact (if any at all) on grazing allotments overlapping the project area. During construction horses on the Chloride Wild Horse Management Area may temporarily move into areas having less productive water and forage sources. Existing access roads would be used for construction and maintenance. The improvement of access roads would have a long-term-term positive impact to access. There would be minimal traffic associated with project operation and maintenance.	Impacts to land use would be the same as the Proposed Action.	The Tooele County Alternative Route would impact fewer BLM lands but more private lands. Selection of the Tooele County Alternative Route would result in 25.8 fewer acres of the Oquirrh Mountain-North grazing allotment being disturbed than the Proposed Action.	Impacts to land use would be similar to the Proposed Action.	The Millard County Alternative Route would affect 12 more miles of lands than the Proposed Action, impacting more BLM lands and fewer state and private lands.
Visual & Recreational Resources	Construction of the proposed pipeline and associated facilities would cause construction-related visual impacts. The impacts would be caused by vegetation removal, earthwork and grading scars, stockpiles of topsoil and subsoil, staging areas, heavy equipment tracks, trenching, blasting, rock formation alteration or removal, temporary support machinery and tool storage, and construction personnel and vehicles. The visual effects of the presence of construction equipment and activities would be temporary, lasting approximately 12 months.	Visual and recreational impacts would be the same as the Proposed Action. The Airport Alternative Route and the corresponding segment of the Proposed Action would both cross private land.	The Tooele County Alternative Route would cross approximately 0.05 miles more BLM VRM Class III lands than the proposed action. This alternative would increase the area south of I-80 where construction would be visible by motorists traveling through that area. Construction along the Tooele County Alternative Route would be more visible than the Proposed Action. Construction impacts to recreation would be similar to those described for the Proposed Action.	Impacts to visual resources from the Rush Lake Alternative Route would be similar to the Proposed Action.	The Millard County Alternative Route would cross U.S. 6 and would be visually noticeable to travelers in that vicinity, but overall construction activities along the Alternative Route would be less visible to the traveling public than the Proposed Action. The alternative would cross 6.3 miles of Class III lands and 33.7 miles of Class IV lands more than the Proposed Action. Total disturbance to grazing allotments would be approximately 683.4 acres, which would be approximately 286 acres more disturbance than under the Proposed Action.

Cultural Resources	A total of 323 cultural resource sites have been recorded within the surveyed areas of the proposed pipeline in Utah and Nevada. Final determinations of eligibility by the BLM and SHPOs have not yet been made on these sites. The professional recommendations, which could differ from that of the BLM's and the SHPO's recommendation, is: 161 sites are recommended to be eligible for NRHP listing, 162 sites are recommended ineligible. If any subsurface cultural materials are encountered during construction, all work would stop in the vicinity until a qualified archaeologist could assess the significance of the remains according to an approved Emergency Discovery Plan.	Construction of the Airport Alternative Route and associated facilities could result in direct impacts to two NRHP-eligible cultural resource sites.	Construction of the Tooele County Alternative Route and associated facilities could result in direct impacts to 14 NRHP-eligible cultural resource sites.	Construction of the Rush Lake Alternative Route and associated facilities could result in direct impacts to 1 NRHP-eligible cultural resource site.	Construction of the Millard County Alternative Route and associated facilities could result in direct impacts to 11 NRHP-eligible cultural resource sites.
Native American Concerns	There would be no direct or indirect impacts to known places of cultural and/or geographic interest to the Tribes. Consultation with the Tribes is on-going. No concerns have been raised to date by any of the Tribes.	Same as the Proposed Action.	Same as the Proposed Action.	Same as the Proposed Action.	Same as the Proposed Action.
Socio-economics & Environmental Justice	The effects of non-local workers residing temporarily in the project area would be spread out over a larger number of local jurisdictions. Peak numbers of workers would be in the area over a 60-90 day period. The percentage of those workers who would be hired from outside the local workforce, and the timing of crews along the length of the pipeline, construction is expected to have negligible to minor impacts on housing, public services, and employment in the project area. There would be some beneficial minor impacts from company and worker spending in the local economies and sales tax collections. The 16 permanent new hires to operate and maintain the pipeline following construction would likely be stationed in population centers that can easily accommodate them with existing housing and public services. Property and ad valorem taxes paid on the pipeline would exceed $3 million annually, which would benefit local communities. No minority racial, ethnic, or socioeconomic groups were identified in the project area and the proposed project would have no disproportionately high and adverse human health or environmental effects on minority, and/or low-income populations, during either construction or operations.	Same as the Proposed Action.	Same as the Proposed Action.	Same as the Proposed Action.	Same as the Proposed Action.

Hazardous & Solid Waste	There were 24 potential sources of hazardous and solid waste identified near the proposed pipeline route. Most of these sites would likely have little or no impact on pipeline construction and operation. The proposed route would cross a portion of the OU2 area within what is known as the Jacobs Smelter site in Tooele County, near Stockton. The proposed route would avoid all known contaminated soil sites. According to the Final Remedial Investigation (UDEQ 2003) the proposed pipeline route would avoid areas recommended for remediation. Mitigative measures ahead of and during construction would be implemented.	There would be no impacts to hazardous or solid waste from construction under the Airport Alternative Route.	There would be no impacts to hazardous or solid waste from construction under the Tooele County Alternative Route.	There are no hazardous or solid waste issues identified along the Rush Lake Alternative Route, except for those already discussed for the Jacob Smelter OU2 under the Proposed Action. The Rush Lake Alternative still crosses a portion of the OU2, but less than the Proposed Action. This further reduces the potential for encountering contaminated soils.	There would be no impacts to hazardous or solid waste from construction under the Millard County Alternative Route.

2.6. Preferred Alternative

The BLM has identified the Proposed Action alignment as the preferred alternative, including BMPs and mitigation measures (see **Section 2.1.6** and **Appendix D**) and with the following modifications:

- Selection of the Airport Alternative alignment to replace the corresponding portion of the Proposed Action alignment.
- Selection of the Tooele County Alternative alignment to replace the corresponding portion of the Proposed Action alignment.
- Selection of the Rush Lake Alternative alignment to replace the corresponding portion of the Proposed Action alignment.
- Selection of the Millard County Alternative alignment to replace the corresponding portion of the Proposed Action alignment.

CHAPTER 3. AFFECTED ENVIRONMENT

3.1. Introduction

This section describes the affected environment as it currently exists. The discussion is organized by the following major resource topics: air quality and noise, geology and minerals, paleontological resources, soils, water resources, vegetation, wildlife, special status species, land use and transportation, visual and recreation resources, cultural resources, Native American concerns, socioeconomics and environmental justice, and hazardous and solid waste.

3.1.1. Project Area

The proposed common carrier pipeline would extend approximately 399 miles from the cluster of five refineries in southern Davis and northern Salt Lake counties, including Holly's Woods Cross Refinery, to the Apex Industrial Park northeast of Las Vegas, Nevada, with two short lateral pipelines, one in Salt Lake County from the mainline to the Salt Lake City Airport, the other from the mainline to a terminal in the Cedar City, Utah area (see **Exhibit 1.1-1**). In Utah, the proposed main pipeline would originate in Davis County and cross Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington counties. In Nevada, the main pipeline would cross Lincoln County and terminate in Clark County. The main pipeline route would primarily cross BLM (203.79 miles) and private (125.56 miles) lands. It would cross lesser amounts of state (35.84 miles), U.S. Forest Service (17.78 miles), Moapa Band of Paiute Indian Reservation (14.57 miles), and U.S. Department of Defense (2.35 miles) lands for a total of 399.89 miles. The main pipeline route would cross approximately 2 miles of water. The proposed Airport Lateral in Salt Lake County would cross approximately 2.4 miles of private land. The proposed Cedar City Lateral in Iron County would cross 4.56 miles of BLM land and 5.8 miles of private land.

3.1.2. Resources Not Affected

Based on BLM Checklists (**Appendix A**) prepared by each Utah BLM Field Office and discussions with the Las Vegas and Ely Field Offices, the resources discussed below were not carried forward for detailed analysis.

3.1.2.1. Wild and Scenic Rivers

The Wild and Scenic Rivers Act, signed into law on October 2, 1968, protects the free-flowing waters of many of the country's most spectacular rivers. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for appropriate use and development. As of 2006, the National Wild and Scenic Rivers System protected more than 11,000 miles of 165 rivers in 38 states and the Commonwealth of Puerto Rico. There are no rivers within the states of Utah or Nevada designated as Wild and Scenic, therefore this resource is dismissed from detailed analysis (NWSRS 2007).

3.1.2.2. Wilderness/Wilderness Characteristics

The Wilderness Act was passed by Congress in 1964 and continues to be the guiding piece of legislation for all Wilderness areas. The Proposed Action would not cross any areas designated as Wilderness under the Wilderness Act, or any areas designated as Wilderness Study Areas that are currently managed for wilderness values, therefore this resources is dismissed from detailed analysis.

3.1.3. Affected Resources

The following affected resources are analyzed in detail in the following sections of Chapter 3:

- Air Quality and Noise

- Geology and Minerals
- Paleontological Resources
- Soils
- Water Resources
- Vegetation
- Wildlife
- Special Status Species
- Land Use and Transportation
- Visual and Recreation Resources
- Cultural Resources
- Native American Concerns
- Socioeconomics and Environmental Justice
- Hazardous and Solid Waste Materials

3.2. Air Quality and Noise

3.2.1. Area of Analysis

3.2.1.1. Air Quality

With respect to air quality, the proposed pipeline route navigates from northern Utah to southern Nevada through counties designated attainment or nonattainment areas and through Class I and II “clean air areas” (**Exhibits 3.2-3, 3.2-4, and 3.2-5**). Air masses and airsheds are, by definition, regional and mobile. The route would follow a proposed utility corridor that is being established by the BLM between Salt Lake City and Las Vegas. The pipeline would originate in North Salt Lake, Utah, connect to a lateral line servicing the Salt Lake City Airport, connect to a second lateral line and terminal in Cedar City, Utah, and finally terminate at the Apex Industrial Park, northeast of Las Vegas, Nevada. Although every major point along the proposed pipeline lies directly in or near the Great Basin, each has a different sub-climate dependent primarily upon location and elevation (CH2MHill 2008a).

3.2.1.2. Noise

The area of analysis for noise is limited to the area defined by the proximity of nearby sensitive receptors (see **Section 3.2.3.3**) (CH2MHill 2008b).

3.2.2. Data Sources and Methods

3.2.2.1. Air Quality

The air quality impact assessment was conducted using emission estimates based on regulatory-based available literature and airshed designation (Referring to attainment and nonattainment airsheds). No field studies were conducted; assessment was based on best available data and information (CH2MHill 2008a).

3.2.2.2. Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several different ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. In this discussion, some statistical noise levels are stated in terms of decibels on the A-weighted scale (dB(A)). Noise levels stated in terms of dB(A) reflect the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not detect well. The A-weighted scale is used in most ordinances and standards. The equivalent sound pressure level (L_{eq}) is defined as the average noise level, on an energy basis, for a stated period of time (for example, hourly). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighted curve. The sound level meter also performs the calculations required to determine the L_{eq} for the measurement period. **Exhibit 3.2-1** summarizes technical noise terms used in this report (CH2MHill 2008b).

Exhibit 3.2-1 Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A decibel is a unit used to express the relative intensity of sounds.
A-Weighted Sound Level, dB	A-weighted sound level de-emphasizes the very low and very high frequency components of the sound similar to the frequency response of the human ear. This metric correlates well with the perceived "loudness" of a sound. All sound levels in this technical report are A-weighted.
Equivalent Noise Level, L_{eq}	The energy average noise level during the measurement period.
Percentile Noise Level (L_n)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (for example, L_{10} is the noise level exceeded 10 percent of the time).
Day-Night Noise Level (L_{dn} or DNL)	The average A-weighted noise level during a 24-hour day, obtained after the addition of 10 decibels to the noise levels from 10:00 p.m. to 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Beranek, 1988 in CH2MHill 2008b

The effects of noise on people can be listed in the following three general categories:

- Subjective effects of annoyance, nuisance, or dissatisfaction,
- Interference with activities such as speech, sleep, or learning, and
- Physiological effects such as startling and hearing loss.

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the last category. No completely satisfactory method exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a standard is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise. **Exhibit 3.2-2** lists the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels (CH2MHill 2008b).

Exhibit 3.2-2 Typical Sound Levels Measured in the Environment and Industry

Noise Source At a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil defense siren (100 feet)	130		
Jet takeoff (200 feet)	120		Pain threshold
	110	Rock music concert	
Pile driver (50 feet)	100		Very loud
Ambulance siren (100 feet)			
	90	Boiler room	
Freight cars (50 feet)		Printing press plant	
Pneumatic drill (50 feet)	80	Kitchen with garbage disposal running	
Freeway (100 feet)			
	70		Moderately loud
Vacuum cleaner (10 feet)	60	Data processing center	
Department store			
Light traffic (100 feet)	50	Private business office	
Large transformer (200 feet)			
	40		Quiet
Soft whisper (5 feet)	30	Quiet bedroom	
	20	Recording studio	
	10		Hearing threshold

Source: Beranek 1988 in CH2MHill 2008b.

3.2.3. Existing Conditions for Proposed Action

3.2.3.1. Area Climatology

The proposed pipeline route traverses portions of the States of Utah and Nevada through a region that is classified as the Great Basin. The Great Basin is a region generally surrounded by the Sierra Nevada Mountains to the west and the Wasatch Mountains/Wasatch Plateau to the east. This region is effectively cut off from moist westerly flow from the Pacific where, due to orographic lifting, the majority of moisture precipitates out on the windward side of the Sierra Nevada. This effect produces a semi-arid climate in the Great Basin region where evaporation potential exceeds precipitation throughout the year. Interior basins are commonly around 4,000 to 5,000 feet above sea level and mean annual temperatures are near 64.4 °F (18 degrees C) (WRCC 2002). Diurnal temperature gradients during the summer months are nearly always greater than those of winter. This occurs as cold air from the surrounding mountains flows down the mountain barriers and settles at the bottom of the basin, thus allowing for hot days and cool nights. The prevailing upper-level wind in the Great Basin is west-southwesterly due to the strong upper-level predominate westerly flow known as the jet stream. Winds can become southerly or northerly depending upon the synoptic or more local mesoscale systems in the area. Easterlies are rarely observed on a large scale basis. On average, mixing of the atmosphere due to convection in the Great Basin region, promotes good air quality. Mean, minimum, maximum and annual temperatures including rainfall totals for the four stations along the pipeline are shown in **Exhibit 3.2-3**.

North Salt Lake Sub Climate

North Salt Lake lies approximately 4,430 feet above sea level, roughly 6 miles north of Salt Lake City. Temperatures in North Salt Lake in the summer frequently reach 100 °F during summer months and drop to near 20 °F during the winter months. Annual precipitation of 22.4 inches is normal for the area, some of which contributes to their nearly 59 inches of snow accumulation annually. Prevailing surface winds average 8.6 miles per hour (MPH) at a south-southeasterly direction (WRCC n.d. a).

Delta Sub Climate

Delta lies approximately 4,610 feet above sea level and is located approximately 130 miles southwest of Salt Lake City. Delta is arid to semi-arid with mean annual temperatures ranging between 34 °F and 66 °F from the cold to warm seasons. Maximum highs during the summer will often rise above 100 °F while winter temperatures drop to approximately 30 °F. Less rain is observed annually in the Delta Sub Climate area than the North Salt Lake Sub Climate area, with a mean of 8.43 inches of precipitation, some of which contributes to their near 22 inches of annual snowfall. Prevailing surface winds at the airport in Delta average 10.7 MPH from southerly direction (WRCC n.d. a).

Cedar City Sub Climate

Cedar City lies approximately 5,830 feet above sea level and is located nearly 245 miles from Salt Lake City. Despite having a higher elevation than North Salt Lake, Cedar City’s mean annual temperature resides only 0.5 °F lower than that of North Salt Lake at 50.5 °F. Maximum temperatures during the summer can reach 100 °F while winter temperatures often drop below 20 °F. Cedar City receives 44 inches of snowfall annually. Prevailing surface winds in Cedar City average 7.1 MPH from south- southwesterly direction (WRCC n.d. a).

Las Vegas Sub Climate

Las Vegas lies approximately 2,030 feet above sea level and is the most arid region along the pipeline. It is not located within the Great Basin due to its location with respect to the Sierra Nevada and Wasatch Mountains along with its diverse type of vegetation with respect to the Great Basin. Las Vegas is the warmest of the four sub-climates easily reaching high summer temperatures of 107 °F or more, with an annual mean temperature of 83 °F. Annual precipitation in Las Vegas is 4.05 inches, with less than 1 inch of snow per year. Prevailing surface winds average 8.1 MPH from southerly direction (WRCC n.d. a).

Exhibit 3.2-3 Monthly Climate Normals

	Temp (F) Precip. (in.) Wind Spd. (MPH)	January	February	March	April	May	June	July	August	September	October	November	December	Annual
North Salt Lake	Mean Max. Temp.	36.5	41.6	50.9	58.7	68.3	79.7	88.4	86.8	76.3	63	48	38.3	61.4
	Mean Temp.	29.1	33.2	41.2	48.2	57.7	67.7	75.8	73.9	63.8	52	39	30.7	51
	Mean Min. Temp.	21.6	24.8	31.5	37.6	47	55.7	63.2	60.9	51.2	41	30	23.1	40.6
	Mean Precip.	2	1.84	2.39	2.81	3	1.15	0.88	0.94	1.54	2.2	1.9	1.75	22.4
	Avg. Wind Spd.	6.9	7.6	8.9	9.8	9.2	9.6	9.5	9.8	8.9	8.2	7.5	7.5	8.6
	Prev. Wind Direction	S	S	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	SE	S	SSE
Delta	Mean Max. Temp.	38.7	46.2	56.3	64.5	74.1	85.8	93.6	91.8	81.5	68	52	40	66
	Mean Temp.	26.4	32.9	41.7	48.5	57.6	67.5	75	73.4	63.4	51	37	27.2	50.2
	Mean Min. Temp.	14.1	19.6	27	32.5	41	49.2	56.4	54.9	45.2	34	23	14.3	34.3
	Mean Precip.	0.6	0.65	0.85	0.83	0.99	0.48	0.56	0.64	0.78	1	0.6	0.43	8.43
	Avg. Wind Spd.	9.9	9.7	11	12.2	11.5	12.1	11.4	11.1	10.1	10	9.5	9.9	10.7
	Prev. Wind Direction	S	SSW	S	SSW	S	SSW	SSW	S	S	S	S	S	S
Cedar City	Mean Max. Temp.	41.8	46.7	53.5	61.2	71.1	83.1	89.4	87.1	78.9	66	52	42.7	64.4
	Mean Temp.	30.2	34.8	41	47.5	56.3	66.6	73.6	72	63.3	51	39	30.7	50.5
	Mean Min. Temp.	18.5	22.8	28.4	33.7	41.5	50.1	57.8	56.8	47.6	36	26	18.6	36.5
	Mean Precip.	0.9	0.97	1.34	1	0.91	0.45	0.93	1.15	0.83	1.3	1	0.65	11.4
	Avg. Wind Spd.	6.1	6.5	7.3	8.7	8.3	8.6	7.5	7.4	7	6.4	5.9	6.1	7.1
	Prev. Wind Direction	SSW	SW	SSW	SSW	SSW	SSW	SW	SSW	SSW	SW	N	SSW	SSW
Las Vegas	Mean Max. Temp.	59.7	66.2	72.7	81.6	91	102	108	105	97.6	85	70	60	83.1
	Mean Temp.	43.9	49.5	55.8	63.9	73	82.2	87.8	86.1	78.2	66	52	43.9	65.2
	Mean Min. Temp.	28	32.7	38.8	46.1	54.9	62.3	68.1	66.8	58.7	46	35	27.8	47.1
	Mean Precip.	0.59	0.57	0.59	0.21	0.27	0.08	0.24	0.45	0.17	0.3	0.3	0.3	4.05
	Avg. Wind Spd.	6.6	7.5	8.6	10.3	10.1	10.1	8.9	8.4	7.9	7.1	6.3	6.5	8.1
	Prev. Wind Direction	W	W	W	SW	SW	S	S	S	S	W	W	W	S

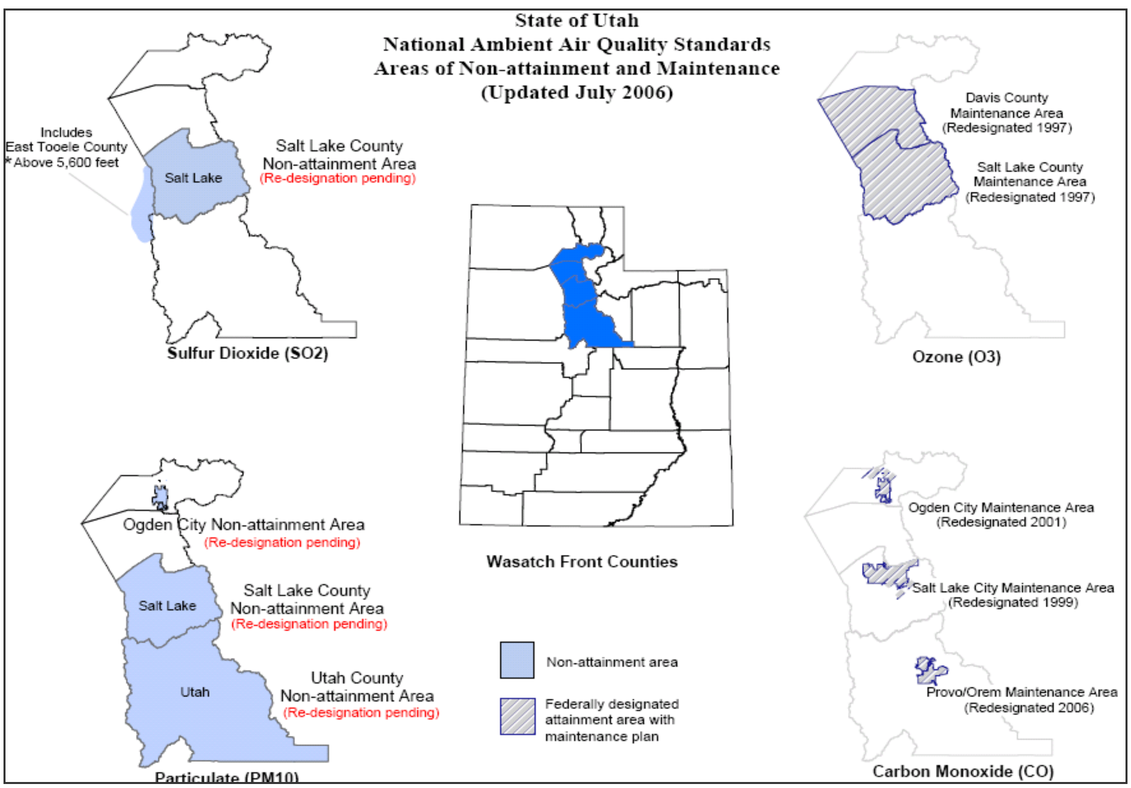
NCDC 1971-2000 - Temperatures and Precipitation

WRCC 1992-2002 - Average Wind Speed and Direction (Surface)

3.2.3.2. Air Quality

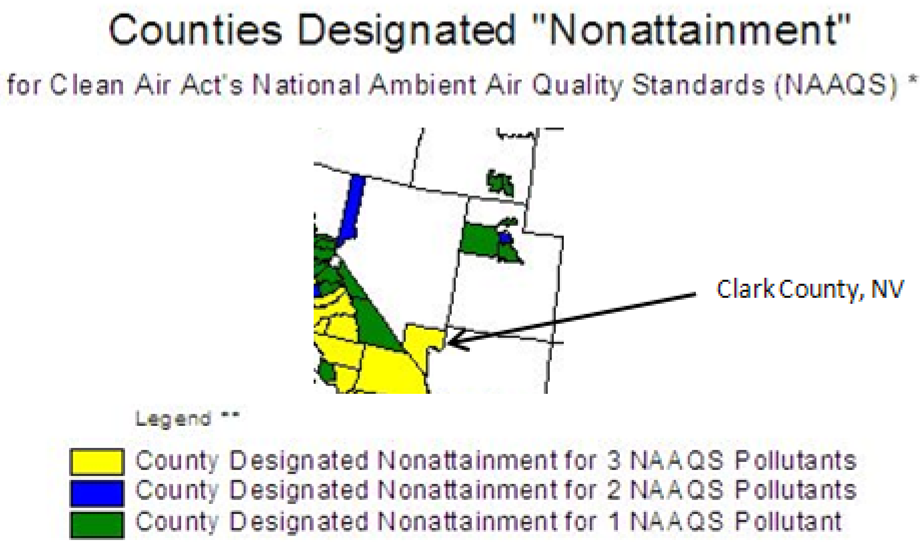
Air quality within these counties is generally considered to be good to excellent. However the surrounding urban areas have known air quality issues. Some of these urban areas are currently designated by the EPA as nonattainment areas for certain air pollutants and portions of these counties lie within these nonattainment areas. The Clean Air Act and Amendments of 1990 define a "nonattainment area" as a locality where air pollution levels persistently exceed National Ambient Air Quality Standards (42 USC 7407(d)). Maintenance areas are also found near the proposed pipeline route. Nonattainment and maintenance areas near or within the counties along the pipeline are shown in **Exhibits 3.2-4** and **3.2-5** and are summarized below:

- Davis County Maintenance Area (Re-designated from a nonattainment area in 1997).
- Salt Lake County Nonattainment Area (Particulates $[PM]_{10}$, CO, NO_x and VOCs.) General sources of particulates include combustion of fossil fuels and industrial plants.
- Tooele County Nonattainment Area (Sulfur Dioxide, general sources of SO_2 include industrial facilities with smelters). Only the extreme eastern portion of Tooele County above 5,600 feet is considered nonattainment for Sulfur Dioxide.
- Juab, Millard, Beaver, Iron, Washington and Lincoln counties are all considered attainment areas.
- Clark County Nonattainment Area for PM_{10}, CO, and ozone.



Source: UDEQ, Division of Air Quality 2007a

Exhibit 3.2-4 Air Resources Map, Air Monitoring Stations Map



Source: EPA 2007

Exhibit 3.2-5 Nonattainment Zones by County

Overall, air quality in these areas has improved since the mid 1970s as evidenced by some of the Davis, Tooele, and Salt Lake County nonattainment areas being re-designated as maintenance areas (**Exhibit 3.2-4**). However, episodic temperatures inversions during the winter months and high temperatures during summer months have resulted in high levels of ozone and particulates in the ambient air. The Salt Lake County nonattainment areas are also being considered for re-designation as maintenance areas; thus providing further evidence of improving air quality in the region.

Existing Sources

Emission sources for a variety of air pollutants are located within the outlined counties. Existing or potential sources near the pipeline and their criteria pollutants are summarized below:

- Prescribed burning and wildland fires (particulates, nitrogen oxides and carbon monoxide).
- Construction and use of unpaved forest roads (particulates, nitrogen oxides and carbon monoxide).
- Residential heating sources (insignificant source).
- Vehicle emissions (particulates, nitrogen oxides and carbon monoxide).
- Recreational activities, including motorized recreational vehicles such as powered watercraft, motorcycles, ATVs, and snowmobiles. The criteria pollutants of concern from such recreational vehicles are nitrogen oxides, carbon monoxide and particulates, and, to a lesser impact, from VOCs and sulfur dioxide.
- Fugitive Dust from vacant, but disturbed land.

- Industrial sources such as power plants, manufacturing pollution, mining operations, and refineries such as those in North Salt Lake.

Major industrial sources are located to the east of the proposed pipeline route and thus are not likely to impact the area by way of the prevailing winds. The major sources located in the North Salt Lake industrial area are associated with typical industrial operations, such as power plants, metal fabrication, chemical production and coatings. Major sources of PM_{10} in Clark and Lincoln counties include primarily fugitive dust and CO emission from mobile sources.

Existing Surrounding Sources

A large percentage of air pollutants within Utah originate from the urban Wasatch Front area. Davis, Salt Lake, and Utah counties account for roughly one-third of the statewide emissions of PM_{10}, volatile organic carbons, carbon monoxide, and sulfur dioxide. More than 50 percent of these pollutants and up to 80 percent of PM_{10} emissions come from motor vehicle exhaust.

Regional haze is caused by fine particles in the air that settle out very slowly. Regional haze occurs over a portion of the state. Because of the harm that haze has on visibility in national parks and designated Wilderness Areas, many efforts to control and reduce man-made haze, and the air pollutants that cause it, are under way through national laws and regional collaboration. In general, the most impacts from regional haze are expected along the more urban/industrial areas near the proposed pipeline route.

The specific pollutants of most concern within the Las Vegas area include ozone, carbon monoxide, and PM_{10}, although impacts from over 40 other trace pollutant species are present. The dominant source of elevated PM_{10} levels within the valley is windblown dust originating from arid disturbed and unstable desert soils during moderate to high wind conditions and secondarily from both paved and unpaved roads.

High ozone levels are of local origin, primarily from vehicle exhaust emissions, but are also significantly influenced by contaminants blown in from other areas. Studies show that emissions from the Los Angeles area can account for up to one-fourth of the ozone levels in the Las Vegas Valley, depending upon conditions and the time of day. Carbon monoxide levels are largely of local urban traffic origin (Argonne National Laboratory n.d.).

The NAAQS are defined in the Federal Clean Air Act as levels of pollutants above which detrimental effects on human health and welfare may occur. There are seven criteria pollutants for the NAAQS: ozone, carbon monoxide (CO), nitrogen oxide (NOx), sulfur dioxide (SO_2), PM with aerodynamic diameter less than or equal to 10 microns and 2.5 microns (PM_{10} and $PM_{2.5}$), and lead (Pb). The NAAQS are shown in **Exhibit 3.2-6.**

Exhibit 3.2-6 National Primary and Secondary Standards

Pollutant	Averaging Time	Concentration
Ozone	1 hour 8 hours	235 µg/m^3 (0.12 ppm) 157 µg/m^3 (0.08 ppm)
Carbon Monoxide (CO)	1 hour 8 hours	40,000 µg/m^3 (35 ppm) 10,000 µg/m^3 (9.0 ppm)
Nitrogen Oxides (NOx)	Annual Arithmetic Mean	100 µg/m^3 (0.05 ppm)
Sulfur Dioxide (SO2)	3 hours 24 hours Annual Arithmetic Mean	1,300 µg/m^3 (0.5 ppm) 365 µg/m^3 (0.14 ppm) 80 µg/m^3 (0.03 ppm)

Pollutant	Averaging Time	Concentration
Particulate Matter as PM10 (Aerodynamic diameter < 10 microns)	24 hours	150 µg/m^3
Particulate Matter as PM2.5 (Aerodynamic diameter < 2.5 microns)	24 hours Annual Arithmetic Mean	35 µg/m^3 15 µg/m^3
Lead (Pb)	Quarterly Arithmetic Mean	1.5 µg/m^3

Note: µg/m^3 = micrograms per cubic meter; ppm = parts per million

Source: Code of Federal Regulations, 40 CFR Part 50

Regulations state that ambient air quality standards for NOx and SO_2 must not be exceeded at any time during the year in areas with general public access. Short-term standards for CO, NOx, and SO_2 can be exceeded only once annually. Compliance with the 24-hour PM_{10} and $PM_{2.5}$ standards is based on the 98th percentile of 24-hour concentrations averaged over three years. The 3-year average ozone standard of the 8-hour concentration is less than or equal to 0.08 ppm. The 1-hour standard applies only to airsheds that were in nonattainment status when the ozone rules changed in 2002. Nonattainment areas in Utah are displayed in **Exhibit 3.2-5**. Based on 2000 census data, the Utah Division of Air Quality estimates that about 71 percent of Utahns reside in nonattainment areas (UDEQ 2002).

The situation for the criteria pollutants in Utah is briefly discussed below (UDEQ 2007b):

- Carbon Monoxide Prior to 1990 levels in Salt Lake County frequently exceeded NAAQS. Subsequent monitoring data indicates there was only one instance when air quality exceeded NAAQS in 1994 (UDEQ 2001). No exceedances were recorded in 1997-2000 (UDEQ 2001). The UDAQ projects Salt Lake County should meet the standard for the next 20 years (UDEQ 2005). The rest of Utah is expected to maintain acceptable levels.

- Ozone levels in Utah have dropped significantly over the last 10 years. In the 1980s, Salt Lake and Davis counties did not meet NAAQS. Emission reductions have improved air quality. In July 1997, Utah was re-designated from a nonattainment to maintenance area. Any future exceedances of the ozone standard in Utah will likely remain confined to major urban areas and locations immediately downwind of those areas. In 2000 ozone was monitored at 11 locations in Utah. In 1998 the one-hour and eight-hour standards in northern Utah were exceeded numerous times (UDEQ 2000). In 1999 there was only one excursion from the standard. In 2000 there were nine excursions (UDEQ 2002). These exceedances were not of sufficient duration and magnitude to violate the law. In the summer of 2000 there were several more exceedances of the ozone standard that may have some relation to hydro-carbon emissions from wildfires in the West occurring at that time. The relationship between wildfire emissions and ozone exceedances is not well understood.

- Nitrogen dioxide is monitored at five locations in Utah. Data indicates no violations of the nitrogen dioxide standard have occurred since record keeping was initiated (UDEQ 2000a and 2002). No violations are expected in the near future; however, increases in traffic along the Wasatch Front are expected to increase nitrogen dioxide emissions by 20 to 30 percent over the next 20 years. Nitrate aerosols are significant contributors to visibility problems along the Wasatch Front.

- Sulfur dioxide emissions are currently monitored at four locations. The EPA has identified Salt Lake County, and the eastern portion of Tooele County above 5,600 feet in elevation, as nonattainment areas. Data (UDEQ 2000, UDEQ 2005) indicate that standards have not been exceeded at monitoring sites in Utah since 1992. Kennecott Copper, Utah significantly reduced sulfur emissions with the implementation of their new shelter processor and increased stack height in 1987.

- PM levels have been of concern for many years. Significant pollution controls were implemented between 1992 and 1994 in counties along the Wasatch Front. These measures have led to a decrease in particulate pollution. UDAQ monitors PM_{10} levels at nine to 17 sites annually. In 1994 there were nine recorded exceedances in Salt Lake County. From 1995 and 2000, only three exceedances were recorded: two in North Salt Lake in 1996 and one in Lindon in 1997 (UDEQ 2000, UDEQ 2005).

- Lead levels in Utah meet NAAQS. With the national requirement for unleaded gasoline, Utah has experienced fewer and fewer problems with atmospheric lead and has met the standard for many years (UDEQ 2005).

Sensitive Areas

Class I areas have the highest air quality protection standards while Class II areas have a moderate level of protection. All lands along the proposed pipeline route have been designated Class II. The locations of sensitive areas that would potentially be impacted that are near the pipeline are identified in **Exhibits 3.2-7, 3.2-8, and 3.2-9**. Based on the designation status from the States of Utah and Nevada, and several Federal agencies, there are four Federal Class I and five Federal Class II areas that could be impacted by the Project. **Exhibit 3.2-10** presents selected Class I and Class II areas that are considered sensitive areas that may be considered when addressing impacts.

Source: About.com n.d.a

Exhibit 3.2-7 National Parks in Utah

Source: Utah Travel Center n.d.

Exhibit 3.2-8 National Forests in Utah

Source: About.com n.d. b

Exhibit 3.2-9 National Parks in Nevada

Exhibit 3.2-10 Sensitive Areas near the Proposed Pipeline Area

Federal Class I & II Areas (unless otherwise specified) [a]	Managing Agency [b]	Class Category	State
Zion NP	NPS	Class I	UT
Capitol Reef NP	NPS	Class I	UT
Bryce Canyon NP	NPS	Class I	UT
Death Valley NP	NPS	Class I	NV
Lake Mead NRA	NPS	Class II	NV
Wasatch-Cache	FS	Class II	UT
Uinta NF	FS	Class II	UT
Fish Lake NF	FS	Class II	UT
Dixie NF	FS	Class II	UT

[a] NP= National Park; WA=Wilderness Area; NWR=National Wildlife Refuge; NM=National Monument; NRA=National Recreation Area

[b] NPS= USDI National Park Service; FS= USDA Forest Service

Source: JBR 2007

The Air Quality Index (AQI) is a daily EPA rating system (**Exhibit 3.2-11**), evaluating the mix of air pollutants one is likely to breathe. If an airshed receives an AQI rating of 100, there are health-based concerns.

Exhibit 3.2-11 Air Quality Index Ratings

County	Davis (# of days with rating)			Salt Lake (# of days with rating)			Washington (# of days with rating)			Clark (# of days with rating)		
Rating	**2004**	**2005**	**2006**	**2004**	**2005**	**2006**	**2004**	**2005**	**2006**	**2004**	**2005**	**2006**
Good (0-50)	326	305	315	197	227	197	315	325	324	175	171	185
Moderate (51-100)	34	48	45	132	110	109	39	34	38	184	182	170
Unhealthy / Sensitive Groups (101-150)	5	9	3	31	28	9	0	3	0	6	10	10
Unhealthy (151-200)	1	1	0	6	0	0	0	1	2	1	2	0

Source: EPA AQI reports

AQI Data not found for Tooele, Juab, Millard, Beaver, Iron, and Lincoln counties

3.2.3.3. Noise

Regulatory Requirements

No federal noise limits or guidelines are available from the U.S. Environmental Protection Agency (1974) to assist state and local government entities in the development of state and local regulations for noise. The FERC has adopted these guidelines in their *Guidance Manual for Environmental Report Preparation* (August 2002), which states that the project must demonstrate that it "will comply with applicable noise regulations" and "must not exceed a day-night sound level (L_{dn}) of 55 dB(A) at any pre-existing noise-sensitive area." A L_{dn} of 55 dB(A) is equivalent to a continuous level of L_{eq} 49 dB(A). The FERC manual was developed to provide guidance for natural gas projects, which have the potential to be very loud. FERC guidelines do not regulate and are not directly applicable to petroleum product pipelines (CH2MHill 2007b).

The proposed pipeline route traverses portions of the States of Utah and Nevada, neither of which have regulations that limit industrial noise. Local noise regulations that were determined applicable to the proposed project are discussed below by jurisdiction from north to south. In the absence of local regulations, the operational noise levels from the project would be designed to comply with the FERC guideline of 55 dB(A) L_{dn} (49 dB(A) L_{eq}) at existing noise-sensitive areas (CH2MHill 2008b).

Onsite noise levels are regulated, in a sense, through the Occupational Safety and Health Administration. The noise exposure level of workers is regulated at 90 dB(A), over an 8-hour work shift to protect hearing (29 CFR 1910.95) (CH2MHill 2008b).

Davis County does not have a noise ordinance. The Sheriff's Department is tasked with dealing with nuisance noise. Planning documents are being reviewed for the presence of a noise element (CH2MHill 2008b).

The noise regulations for Salt Lake County are detailed in the Salt Lake Valley Health Department Health Regulation 21. Operation of equipment used in construction is prohibited in residential and commercial land use districts between the hours of 10 p.m. and 7 a.m. and in any land use district where the operation exceeds the sound level limits for an industrial land use. These limits are 80 dB(A) between the hours of 7 a.m. and 10 p.m. and 75 dB(A) between the hours of 10 p.m. and 7 a.m. (CH2MHill 2008b).

Maximum permissible sound levels in Salt Lake County are listed in **Exhibit 3.2-12**. Exemptions may be issued in the form of a permit for activities of temporary duration (CH2MHill 2008b).

Exhibit 3.2-12 Use District Noise Levels – Salt Lake County

Use District	10 p.m. to 7 a.m.	7 a.m. to 10 p.m.
Residential	50 dB(A)	55 dB(A)
Commercial / Agricultural	55 dB(A)	60 dB(A)
Industrial	75 dB(A)	80 dB(A)

Source: CH2MHill 2008b

The noise regulations for Tooele County are detailed in Chapter 21 of Title 6, Public Safety, of the county code. Noise not-to-exceed levels are prescribed by zoning district and are listed in **Exhibit 3.2-13**. The most restrictive limit of 55 dB(A) applies to residential areas between the hours of 10:00 p.m. and 7:00 a.m. Relief from noise restrictions must be in the form of a permit issued by the health department (CH2MHill 2008b).

Exhibit 3.2-13 Use District Noise Levels – Tooele County

Use District	10 p.m. to 7 a.m.	7 a.m. to 10 p.m.
Residential	55 dB(A)	65 dB(A)
Commercial / Agricultural	60 dB(A)	80 dB(A)
Industrial	75 dB(A)	90 dB(A)

Source: CH2MHill 2008b

Juab, Millard, and Beaver counties in Utah do not have noise ordinances. The Sheriff's Department for each county is tasked with dealing with nuisance noise (CH2MHill 2008b).

The noise regulations for Iron County, Utah are detailed in Chapter 8.20.060 of the county regulations. Iron County makes it unlawful to cause noise disturbances at any time and noise from construction activities between the hours of 10:00 p.m. and 7:00 a.m. Noise disturbances include "any noise which may reasonably be anticipated to annoy, disturb, injure or endanger the comfort, slumber, peace, health or safety of any reasonable person" (CH2MHill 2008b).

Washington County, Utah does not have a noise ordinance. The Sheriff's Department for each county is tasked with dealing with nuisance noise (CH2MHill 2008b).

Neither Lincoln County nor Clark County, Nevada has a noise ordinance. The Sheriffs' Departments are tasked with dealing with nuisance noise (CH2MHill 2008b).

Sensitive Receptors

While these areas have low human population densities, they may have high populations of some animal species. Ambient noise levels at these sites are quite low. Typically, primary noise sources around the project area would include noise caused by wind and vehicular traffic along the major roads. Other noise sources would be farm machinery (e.g., tractors) and animal noise (e.g., dog barking and bird chirping). In general, background noise levels are higher during the day than at night. For a typical rural environment, background noise is expected to be approximately 40 dB(A) during the day and 30 dB(A) at night (Harris 1979).

3.2.4. Existing Conditions for Alternatives

3.2.4.1. Airport Alternative Route

The Airport Alternative Route contains the same features as the Proposed Action between MP 6.6 and MP 10 for both air quality and noise.

3.2.4.2. Tooele County Alternative Route

Air quality existing conditions and sources for this route would be the same as those discussed above for Tooele County.

Noise conditions would generally be the same as rural areas along this route. For a typical rural environment, background noise is expected to be approximately 40 dB(A) during the day and 30 dB(A) at night (Harris 1979).

3.2.4.3. Rush Lake Alternative Route

The Rush Lake Alternative Route contains the same features as the Proposed Action for both air quality and noise.

3.2.4.4. Millard County Alternative Route

Air quality existing conditions and sources for this route would be the same as those discussed above for Millard County and the Delta sub climate.

Noise conditions would generally be the same as rural areas along this route. For a typical rural environment, background noise is expected to be approximately 40 dB(A) during the day and 30 dB(A) at night (Harris 1979).

3.3. Geology and Minerals

3.3.1. Area of Analysis

The area of analysis for the geology and mineral resources potentially affected by the proposed pipeline and its alternative alignment segments is a linear 1-mile-wide buffer zone that extends the length of the proposed alignment from the south Davis County area to North Las Vegas, the length of the lateral line servicing the Salt Lake City Airport, and the length of the Cedar City Lateral from its intersection with the main proposed pipeline route near MP 255, approximately 10 miles east to the proposed Cedar City Terminal. The area of analysis was extended radially 0.5 mile beyond each proposed terminus of the pipeline and also includes all staging areas and access roads. Some geologic features (for example, faulting and volcanics) may affect the pipeline from a greater distance than other geologic features (for example, landslides or rock type). Therefore, each type of geologic feature described in the following text was evaluated across a distance of impact specific to that feature. That distance is described in each section (CH2MHill 2008c).

3.3.2. Data Sources and Methods

Assessments of geology presented for the Kern River alignment are applicable to that portion of the UNEV alignment that is the same as the Kern River alignment. Information from the *Kern River 2003 Expansion Project Final Environmental Impact Statement/Environmental Impact Report* (FERC and CSLS 2002) has been supplemented by GIS and web-based information obtained from the U.S. Geological Survey (USGS), State of Utah, and State of Nevada (see multiple references). Field reconnaissance or field surveys of geology or geologic hazards were not performed as part of the current study (CH2MHill 2008c).

Using the Kern River EIS (FERC and CSLS 2002), readily available topographic maps, aerial photographs, and GIS information available from the internet, a database was assembled and reviewed to assess the potential impact of geology and geologic hazards on pipeline construction, and the effect of the pipeline on the development and exploitation of identified and available mineral resources. From MP 249.5 the proposed pipeline alignment shares the same ROW as the Kern River alignment, and the conclusions of the shared portion of the alignment are valid and presented here (CH2MHill 2008c) .

3.3.3. Existing Conditions for Proposed Action

3.3.3.1. Geologic Setting

The proposed pipeline and its alternative alignment segments would cross the Basin and Range physiographic province, one of the most seismically active regions in the United States. **Exhibit 3.3-1** summarizes geologic conditions along the proposed pipeline route. The Basin and Range physiographic province is characterized by a series of north-to-south trending mountains and valleys. The entire region has been subjected to tectonic extension that thinned and cracked the earth’s crust and, as it was being pulled apart, created faults. Along these roughly north-to-south trending faults, mountains were uplifted and valleys dropped down, producing the distinctive alternating pattern of linear mountain ranges and valleys of the province. Gentle slopes and lacustrine sediments are associated with the valley floors. Bedrock consists of various sedimentary and volcanic bedrock formations that comprise the steep, rugged mountain highs and mountain lows, with moderately steep to gentle-sloping alluvial sand and gravel fans forming the transition zone between the mountains and valleys. The geology, seismicity, stability, and mineral resources of the pipeline alignment are discussed below (CH2MHill 2008c).

Exhibit 3.3-1 Geologic Units Along the Proposed Pipeline Route

Approximate Mileposts	Age	Rock Types or Formations	Topography/ Typical Elevation
Utah			
0-281	Quaternary Mississippian Oligocene	Surficial alluvium and colluvium; surficial marsh deposits; water; surficial Lake Bonneville deposits; surficial mud and salt flat deposits; high-level alluvial deposits; eolian deposits Limestones and intercollated limestones/sandstones Salt Lake Fm and other valley-filling alluvium	Gently climbing in elevation from approximately 1,250 m to 1,650 m at MP 77. This area includes Lake Point at MP 22, Stockton Bar at MP 44 – 45, and Rush Lake at MP 46 – 47. The alignment crests at MP 82 at 1,950 m. The greatest relief is approximately 300 m between MP 77 and MP 92. From MP 92 to MP 276 the route dips and gently climbs again from 1,750 m down to 1,350 m and back up to 1,700 m at MP 276. This area includes the Sevier River between MP 130 – 131.
194	Cambrian	Prospect Mountain, Tintic, Ignacio, Geer	1,500 m-1,550 m
218	Tertiary	Intrusives	1,500 m-1,550 m
220	Permian	Kaibab, Toroweap, Park City and other Fm	1,500 m-1,550 m
223	Permian	Kaibab, Toroweap, Park City and other Fm	1,500 m-1,550 m
224	Permian	Kaibab, Toroweap, Park City and other Fm	1,550 m-1,600 m
Cedar City Lateral	Pliocene to Paleocene and Cretaceous to Triassic	Sedimentary and volcanics	1,585 m – 1,650 m
281-296	Pliocene to Paleocene and Cretaceous to Triassic	Sedimentary and volcanics	The route crests between MP287 and MP290 at approximately 1900 m
296-307	Quaternary	Alluvium	1,450 m-1,250 m

Approximate Mileposts	Age	Rock Types or Formations	Topography/ Typical Elevation
307-312	Triassic-Cretaceous	Sedimentary (sandstone, shales, and limestone)	1,250 m-1,200 m
312-316	Triassic	Sedimentary limestones, sandstones, and shales	1,200 m-1,150 m
316-329.4	Quaternary	Alluvium	1,150 m-800 m
Nevada			
329.4-399	Permian to Early Proterozoic; and Quaternary	Sedimentary, igneous, and metamorphic rocks; and alluvium	

Source: CH2MHill 2008c

In Utah, the pipeline route and its alternative alignment segments would be confined to the footslopes of the mountains for the most part, except where it is necessary to cross the intervening ranges. The proposed route generally follows topographic lows or breaks to avoid high mountain crossings and steeper slopes. From MP 0 to MP 281 the pipeline would generally be located in easily excavated materials (surficial alluvium and colluvium, surficial marsh deposits, water, surficial Lake Bonneville deposits, surficial mud and salt flat deposits, high-level alluvial deposits, or eolian deposits). At certain points (see **Exhibit 3.3-1**) the pipeline would pass through materials that may be more difficult to excavate, including shales, limestones, and sandstones. From MP 281 to the Utah-Nevada border (MP 329.4) the pipeline would pass through sandstones, limestones, volcanics, and shales. However, it is in these areas that the pipeline would share the right-of-way with the Kern River Pipeline. Additionally, throughout the length of the pipeline, shallow bedrock or caliche may be encountered (CH2MHill 2008c).

The majority of the proposed facilities in Nevada would generally be located in older sedimentary and volcanic rocks rather than in the younger rock formations found in Utah (CH2MHill 2008c).

3.3.3.2. Geologic Hazards

Geologic hazards are natural physical conditions that can, when active, result in damage to the land and structures or injury to people. Such hazards typically include seismicity (active faults, earthquakes/ground shaking, and soil liquefaction), slope stability (landslides), subsidence, flash floods and debris flows, volcanism, and avalanches. (CH2MHill 2008c)

Exhibit 3.3-2 lists the potential geologic hazards identified along the pipeline route.

Exhibit 3.3-2 Summary of Geologic Hazards along the Proposed Pipeline Route

Milepost(s)	Hazard
0	West Valley and Wasatch Fault Zones Liquefaction, ground shaking
17	Great Salt Lake Fault/liquefaction/ground failure, ground shaking
0-22, Airport Lateral	Ground shaking/ liquefaction/ground failure/slope failure

Milepost(s)	Hazard
25-35	North Oquirrh Fault Zone, ground shaking
151-155	Desert Faults
155-161	Clear Lake Fault Zone
230-235	Escalante Faults
261-275	Antelope Range Fault
373-374.5	Liquefaction
22	Shallow landslide / debris flow
23.25	Landslide
112	Landslide
186.5	Landslide

Source: CH2MHill 2008c

Much of the pipeline route and its alternative alignment segments would be located in areas of past seismic activity. The Intermountain Seismic Belt (ISB) is a zone of earthquake activity that runs north to south through the intermountain west from northwestern Montana, through Wyoming, Idaho, Utah, southern Nevada, and northern Arizona. Although the ISB is not as seismically active as areas in southern California known for their seismic activity, there is still a relatively high level of earthquake activity along its entire length. Potential seismic hazards include active faults, earthquakes or ground shaking, and soil liquefaction (CH2MHill 2008c).

New information on Quaternary faults relevant to the UNEV Pipeline Project has been developed for the Las Vegas Valley (Slemmons et al. 2001). The pipeline route would terminate in the Las Vegas shear zone. Data suggest that the Las Vegas Valley shear zone is inactive but has shown activity within the quaternary period (less than 1.8 million years) (CH2MHill 2008c).

Based on the research described in the preceding text, the pipeline route would cross 15 faults or fault zone areas. These faults and fault zones are summarized in **Exhibit 3.3-3** and include the West Valley Fault Zone between MP 0 and MP 10, the Great Salt Lake Fault at MP 17, the Milford Fault Zone from MP 211 to MP 215, and the Antelope Mountain Faults from MP 261 to MP 275. Other potentially active faults crossed by the pipeline route (including the Las Vegas shear zone at MP 384) are not considered to pose a significant hazard. **Exhibit 3.3-4** lists the faults or faults zones identified within 5 miles of the pipeline that are not considered to pose a significant threat (CH2MHill 2008c).

Earthquakes/Ground Shaking

Earthquakes can occur virtually everywhere in Utah, but most, including larger-magnitude earthquakes, occur in the ISB. In Utah, the ISB coincides with the boundary between the Basin and Range physiographic province to the west and the Middle Rocky Mountains and Colorado Plateau physiographic provinces to the east. The proposed pipeline route in Utah lies within the eastern portion of the Basin and Range physiographic province. Utah's most active area of stress is along the eastern edge of the Basin and Range physiographic province (CH2MHill 2008c).

The USGS has developed national maps of earthquake shaking hazards, which are used to assess probabilistic seismicity and provide information used to create and update design provisions of building codes in the United States. The codes provide design standards for buildings, bridges, highways, and utilities such as pipelines. Values on these seismic hazard maps are expressed as a percentage of the acceleration of gravity, and represent the change in velocity of ground movement; the higher the value, the greater the potential hazard (CH2MHill 2008c).

The project area in Utah and Nevada has a peak acceleration (levels of horizontal shaking) range from 9 to 30 percent gravity, with a 1 in 10 chance of being exceeded in 50 years. With the exception of the Salt Lake City area, peak acceleration values are typically less than 10 percent gravity. The USGS National Seismic Hazard Mapping Project website did not list any significant earthquakes, defined as a magnitude 4+, within 1/2-mile of the proposed pipeline alignment (USGS 2007).

In Utah, ground shaking resulting from earthquakes is a potential hazard to the proposed pipeline facilities, especially in the northern parts of Utah. Several faults crossed by the pipeline route, and other active faults within the vicinity of the project area, have the potential of generating earthquakes that could cause strong ground motions. Damage to buried pipelines is most often caused by the differential movements of geologic material as opposed to shaking itself. Aboveground structures would more likely be damaged by ground shaking. The research conducted for this report identified 215 individual faults that fall within 0.5 mile of the proposed pipeline alignment. Although there are individual faults that are near or cross the alignment, most of the faults can be grouped into 1 of 15 faults or fault zones. The areas of active seismicity are the combined Wasatch-West Valley and North Oquirrh Fault Zones (MP 0 to 35, Airport Lateral), the Milford Fault Zone (near MP 211 to MP 215), and the Antelope Mountain Faults (MP 261 to MP 275). The Wasatch, West Valley, and North Oquirrh fault zones have been active within the last century and pose the greatest risk to the pipeline and related facilities (CH2MHill 2008c).

The Wasatch Fault is an earthquake fault line located primarily on the western edge of the Wasatch Mountains. The fault line is 240 miles long and is made up of several segments, each of which can independently produce earthquakes as powerful as magnitude 7.5. Experts note that the fault is overdue for another major earthquake. Similarly the West Valley and North Oquirrh fault zones are active, but at lower magnitudes. Catastrophic damage is predicted in the event of an earthquake, with major damage resulting from the liquefaction of the clay- and sand-based soil and the possible permanent flooding of portions of the city by the Great Salt Lake (CH2MHill 2008c).

In addition to the active fault zones described above, there have been recent earthquakes near MP 254, MP 260, and MP 304. **Exhibit 3.3-3** summarizes the locations of fault zones along the proposed pipeline route in Utah that may be considered a threat to the pipeline (CH2MHill 2008c).

Exhibit 3.3-3 Faults and Fault Zones Within 0.5-mile of the Proposed Alignment in Utah that may Pose a Threat to the Pipeline

Fault/Fault Zone	Milepost(s)	Direction	Orientation
West Valley and Wasatch Fault Zones	0	East	Parallel, although not directly underlying the pipeline, it is close enough that extension faulting in these areas could propagate and have an effect on the pipeline
Great Salt Lake Fault	17	North	Parallel, although terminating north of the pipeline, it is close enough that movement may affect the pipeline
North Oquirrh Fault Zone	25-35	South and east	The pipeline goes west and turns to the south
Desert Faults	151-155	West, but crossing the route and joining	Crossing northwest to southeast

Fault/Fault Zone	Milepost(s)	Direction	Orientation
		with the Clear Lake Fault Zone	
Clear Lake Fault Zone	155-161	East but crossing the route and joining with the Desert Faults	Crossing northwest to southeast
Escalante	230-235	Crossing	Northwest to southwest
Antelope Range Fault	261-275	East	Parallel

Source: CH2MHill 2008c

Exhibit 3.3-4 Faults and Fault Zones within 5 Miles of the Proposed Alignment in Utah Posing No Threat

Fault/Fault Zone	Milepost(s)	Direction	Orientation
North Oquirrh Fault Zone	25-35	South and east	The pipeline goes west and turns to the south
Saint John Station Fault Zone	51-54	East	Parallel
Clover Fault	54-58	West	Parallel
Vernon Hills	71	East	
East Tintic Fault Zone	87-98	East	Parallel
Antelope Range Fault	261-275	East	Parallel
Enterprise Faults	282-285	West	Parallel

Source: CH2MHill 2008c

Strong and major earthquakes (magnitude 6.0 or greater) have occurred in the northern and west-central portions of Nevada, approximately 300 miles northwest of the pipeline in the general vicinities of Fallon and Wells, Nevada. Since 1852, three earthquakes greater than magnitude 5.0 have been recorded in the project area (southern Lincoln and Clark counties). The maximum recorded magnitude of these three earthquakes was 5.1 (University of Nevada, Reno 2001). The proposed pipeline route terminates within the Las Vegas Shear Zone, northeast of the city of Las Vegas. Although the pipeline route terminates within the Las Vegas Shear Zone, this is not considered a threat to public safety because there are few homes and businesses in the area. **Exhibit 3.3-5** summarizes the locations of fault zones along the proposed pipeline route in Nevada that may be considered a threat to the pipeline (CH2MHill 2008c).

Exhibit 3.3-5 Faults and Fault Zones within 0.5-mile of the Proposed Alignment in Nevada

Fault/Fault Zone	Milepost(s)	Direction	Orientation
Unnamed	329.6	Crossing	North to south linear
Unnamed	334	Northeast crossing	Crossing in a northwest-southeast orientation

Fault/Fault Zone	Milepost(s)	Direction	Orientation
Unnamed Cenozoic	340-341	Northeast	Crossing
Unnamed Cenozoic	346-347	Crossing	North-northwest to south-southeast
Las Vegas Shear Zone, Cenozoic	384	Northeast	Crossing pipeline approximating a north-south orientation

Source: CH2MHill 2008c

Liquefaction

Secondary seismic effects triggered by strong ground shaking are often more serious than the shaking itself. Soil liquefaction is a phenomenon in which saturated, cohesionless soils temporarily lose their strength and liquefy when subjected to dynamic forces such as intense and prolonged ground shaking. Soil liquefaction typically occurs when the water table is less than 50 feet below the ground surface and the soils are predominantly unconsolidated. The potential for soil liquefaction increases as the groundwater approaches the surface. For soil liquefaction to occur, a relatively shallow water table; rapid, strong ground motions; and susceptible soils must all be present (CH2MHill 2008c).

Soil liquefaction can affect a pipeline by causing lateral spreading, flow failures, loss of bearing strength, and flotation. Lateral spreading (the horizontal movement of competent surficial soils resulting from the liquefaction of an underlying deposit) is a potential hazard to pipeline integrity. Lateral spreads normally develop on very gentle slopes and involve displacements ranging from 3 to 6 feet. Flow failures are a greater potential hazard associated with liquefaction. They generally occur in saturated, loose sands with ground slopes ranging between 10 and 20 degrees and can involve large amounts of material that could bend and weaken a pipeline along slopes. Given the linear extent and ductility of modem pipelines, little impact is likely to result from loss of bearing strength or floatation (CH2MHill 2008c).

Soil Liquefaction appears to be a risk in the Salt Lake Valley between MP 0 and MP 22 (and including the Airport Lateral) in the Salt Lake City area. From MP 0 to MP 19, soil liquefaction potential appears to be high. From MP 19 to MP 21 the proposed route appears to pass in and out of the zone of liquefaction potential yielding potentials ranging from high to low. Beyond MP 22 no significant risk of liquefaction has been identified in the published liquefaction hazard maps throughout the remainder of the Utah section (State of Utah 2003a).

In Nevada, the only area with liquefaction potential is adjacent to the Muddy River near MP 373 and MP 374.5. However, limited data are available on liquefaction in Nevada (CH2MHill 2008c).

Landslides

Potential slope failure hazards occur in a number of areas along the proposed pipeline route. As part of the original Kern River pipeline project, detailed slope stability evaluations along the pipeline route were conducted. The southern 151 miles of the proposed pipeline route are coincident with this existing Kern River pipeline (CH2MHill 2008c).

In areas of slope instability, construction and operation of pipeline facilities could cause landslides. Construction activities may affect soil structure, bulk density, and subsurface water flows that could adversely affect slope stability. A change in groundwater movement resulting from cuts and fills for road and pipeline construction, or pipeline trenching and backfilling on steep slopes, can affect soil moisture content. This change in soil moisture content can potentially change the percent of soil saturation and cause landslides and debris flows. Excessive precipitation, seismic shaking, construction grading, and other natural or human-related causes are all potential factors in triggering landslides. Significant landslides, rockfalls, and debris flows have the potential to damage pipeline facilities (CH2MHill 2008c).

Landslide areas identified by the Utah Geologic Survey (Harty 1991) are present at a few locations on or near the proposed pipeline route. Identified landslide areas within one mile of the pipeline route were considered to represent potential areas of slope instability. These areas are listed in **Exhibit 3.3-6**. In addition to these areas, slope instability has been observed along the western slopes of the Pine Valley Mountains near MP 262 through MP 275. However, the proposed route would skirt these mountains and thus avoid the areas that are susceptible to landslides (CH2MHill 2008c).

Four landslide areas were identified from the Utah Geologic Survey map. Two of these are near the start point, within the Salt Lake City metropolitan area. At MP 22, one landslide area is situated directly on the pipeline route, with similar areas to the east. These are mapped as shallow landslides or debris flows. Nearby, at MP 23.5, a landslide area exists on a slope 0.4 mile southeast of the pipeline. Farther south, landslide areas are present at MP 112 and MP 186.5. Both of these areas are located 0.6 mile east of the pipeline. These areas are mapped as "Landslides and landslides undifferentiated from talus, colluvial, rock-fall, glacial, and soil-creep deposits" (CH2MHill 2008c).

Exhibit 3.3-6 Landslide Hazards along the proposed route in Utah

Milepost	Approximate Distance from Pipeline Route	Landslide Type
22	0 feet	Shallow landslide/debris flow
23.5	0.4 mile southeast	Landslide/undifferentiated deposit
112	0.6 mile east	Landslide/undifferentiated deposit
186.5	0.6 mile east	Landslide/undifferentiated deposit

Notes: (Harty 1991)

Source: CH2MHill 2008c

No landslide information was available for the Nevada portion of the route (CH2MHill 2008c).

Volcanism

Hazards associated with volcanic activity include eruptions, lava flows, glowing avalanches, ash flows, volcanic mudflows (lahars), tephra falls, and emission of volcanic gases, some of which could jeopardize the integrity of the pipeline and/or aboveground facilities (CH2MHill 2008c).

In Utah, the proposed pipeline route would pass near one area of volcanic activity—a basaltic center within the Basin and Range physiographic province near the Black Rock Volcano at MP 156.7, however it is not an active volcano. No volcanic hazards were identified in Nevada (CH2MHill 2008c).

Subsidence

Subsidence is the loss of surface elevation resulting from the removal of subsurface support and is one of the most diverse forms of ground failure. It ranges from small or local collapses to broad regional lowering of the earth's surface. Some areas in the vicinity of the proposed pipeline have the potential for subsidence resulting from first-time wetting of moisture-deficient low-density soils (hydrocompaction), and have experienced subsidence because of excessive groundwater withdrawal (CH2MHill 2008c).

Ground failure assessments have not been conducted from MP 0 to MP 249.5. However, the Kern River alignment was previously evaluated and it was determined that the maximum potential settlement because of collapsing soils along the pipeline route is not expected to be greater than 6 feet (vertical) with stresses spread horizontally over hundreds of feet. The types of material and topography evaluated for the Kern River alignment are similar to those encountered along the UNEV pipeline route from MP 0 to MP 249.5 (CH2MHill 2008c).

Holocene alluvial fans and many Quaternary fans in the Basin and Range physiographic province are potentially susceptible to some degree of soil collapse if they become fully saturated. Subsidence resulting from excessive groundwater withdrawal could occur along the route in the Escalante Desert near Milford, Utah. Similar to the potential for subsidence in Milford, Utah, the large withdrawal of groundwater from the generally unconsolidated alluvial sediments underlying Las Vegas has resulted in local surface subsidence of as much as 6 feet since the 1930s (CH2MHill 2008c).

3.3.3.3. Mineral Resources

Historically, various fuel and non-fuel mineral commodities/resources have been mined and processed in Utah and Nevada. Within these two states, fuel commodities include crude oil, natural gas, and natural gas liquids. In addition, coal is mined in Utah, and uranium mines and uranium reserve areas are located in Utah and Nevada. Typical non-fuel mineral resources in the area include construction aggregate, Portland cement, bentonite, borates, ornamental stone, shale, gypsum, salines, and gemstones, in addition to base and precious metals such as copper, gold, and silver (CH2MHill 2008c).

The construction and operation of a pipeline near or over mineral resources could affect existing and future production at active or currently inactive mineral resource areas by restricting activities within the pipeline ROW. In general, potential significant effects include diminished mineral land value, loss of mineral land access, and loss of revenues generated by future mineral production. No known active mineral areas are crossed by the pipeline's proposed route. However, 3 mines, and 76 mineral resource areas (oil and gas wells, sand, gravel, raw materials, and aggregate) have been identified within 0.5-mile of the proposed route in Utah (see **Exhibit 3.3-7**) (CH2MHill 2008c).

Exhibit 3.3-7 Mines and Mineral Resources -- Utah

Pipeline Milepost	Name	Direction /Distance
Mines		
224	Mammoth Lode Mine	0.33 mile, NW
89	Swansea Mine	0.56 mile, ENE
89	West Swansea Mine	0.65 mile, NE
Mineral Deposits		
22-43	Unnamed	Multiple areas; field reconnaissance of this section recommended.
43	Stockton (Rush Valley)	Passing through the deposit, however a road already exists and the pipeline is following that road.
89-91	Unnamed and the Main Tintic	
211-213	Rocky	0.5 mile W
216-224	Star-North Star	Large area as close as 0.2 mile MP217
267-272	Unnamed	As close as 0.5 mile
Potash Deposits		
18-24	Great Salt Lake	North /adjacent to pipeline

Pipeline Milepost	Name	Direction /Distance
Mineral Resource Areas		
14	Halite	0.14 mile ESE
21	Limestone	0.10 mile ENE
23	Copper, lead, silver, arsenic, and iron	0.03 mile NW
23	Copper, lead, silver, arsenic, and iron	0.38 mile W
25	Copper, lead, silver, arsenic, and iron	0.38 mile ESE
25	Sand and gravel	0.32 mile NW
25	Sand and gravel	0.44 mile NNW
29	Sand and gravel	0.50 mile NNW
29	Sand and gravel	0.51 mile SW
30	Sand and gravel	0.55 mile SSE
32	Sand and gravel	0.39 mile SSE
34	Sand and gravel	0.32 mile WSW
37	Sand and gravel	0.51 mile ESE
39	Sand and gravel	0.37 mile NNE
42	Sand and gravel	0.49 mile SE
42	Sand and gravel	0.57 mile SSE
43	Sand and gravel	0.12 mile E
44	Sand and gravel	0.22 mile SSW
44	Lead, silver, zinc, iron, copper, and gold	0.13 mile NW
45	Sand and gravel	0.53 mile SE
51	Sand and gravel	0.50 mile NE
54	Sand and gravel	0.49 mile SW
57	Sand and gravel	0.28 mile SSE
59	Sand and gravel	0.16 mile SE
59	Sand and gravel	0.24 mile SE
65	Sand and gravel	0.27 mile NE
76	Sand and gravel	0.35 mile NW
78	Sand and gravel	0.16 mile N
79	Lead, zinc, silver, and gold	0.33 mile NE
80	Limestone	0.10 mile NE
80	Sand and gravel	0.37 mile N
86	Sand and gravel	0.43 mile SE
89	Gold, silver, lead, and copper	0.49 mile NNE

Pipeline Milepost	Name	Direction /Distance
89	Sand and gravel	0.55 mile NNE
89	Gold, silver, lead, zinc, and copper	0.51 mile NE
90	Copper and iron	0.44 mile ENE
90	Sand and gravel	0.49 mile NE
90	Iron	0.55 mile ESE
101	Sand and gravel	0.16 mile SE
104	Sand and gravel	0.48 mile N
104	Sand and gravel	0.35 mile NE
104	Sand and gravel	0.26 mile NE
108	Sand and gravel	0.17 mile SE
109	Sand and gravel	0.33 mile ENE
110	Sand and gravel	0.35 mile ENE
111	Sand and gravel	0.42 mile NNE
112	Iron	0.50 mile SSE
112	Sand and gravel	0.35 mile SE
113	Sand and gravel	0.40 mile ENE
121	Sand and gravel	0.27 mile WSW
157	Sand and gravel	0.46 mile E
157	Gem	0.36 mile NE
164	Geothermal	0.04 mile SE
169	Sand and gravel	0.44 mile NNW
169	Sand and gravel	0.40 mile W
172	Sand and gravel	0.14 mile WSW
176	Sand and gravel	0.21 mile SE
177	Sand and gravel	0.34 mile SW
179	Sand and gravel	0.22 mile NW
180	Sand and gravel	0.42 mile SW
184	Sand and gravel	0.31 mile WSW
185	Sand and gravel	0.43 mile NW
186	Sand and gravel	0.07 mile SE
218	Lead, zinc, copper, silver, manganese, and iron	0.46 mile NW
218	Lead, zinc, copper, silver, manganese, and iron	0.40 mile NW
219	Lead, gold, silver, zinc, and copper	0.49 mile NW
224	Lead, zinc, and silver	0.38 mile NW
267	Unknown	0.60 mile SE
275	Sand and gravel	0.45 mile SW

Pipeline Milepost	Name	Direction /Distance
276	Unknown	0.37 mile SE
290	Copper	0.48 mile ESE
307	Uranium and antimony	0.19 mile ESE

Source: CH2MHill 2008c

Airport Lateral

Geology and minerals for the Airport Lateral would be the same as those conditions described for the main pipeline route.

Cedar City Lateral

No undescribed geologic hazards, faults or landslides are encountered by the Cedar City lateral. No mineral deposits are known to occur in the area.

Nevada

No known active mineral resource areas are crossed by the proposed alignment in Nevada and none have been identified within 300 feet of the proposed alignment. One inactive sand and gravel resource is located 41 miles southeast of MP 372 (FERC and CSLC 2002).

3.3.4. Existing Conditions for Alternatives

3.3.4.1. Airport Alternative Route

No geologic or mineral resources or potential geologic hazards are present along the alternative alignment. Based on Web-based maps (USGS 2007), the alternative alignment lies near several fault-rupture special study zones. Fault and fault zones include the West Valley Fault Zone between MP 0 and MP 10.

3.3.4.2. Tooele County Alternative Route

The geological setting is the same as was described for the first 281 miles of the proposed alignment. A geologic hazard ground shaking in the area is the North Oquirrh Fault Zone situated to the east of both the Proposed Action route and Tooele County Alternative Route. The direction of the fault zone is south and east. Landslide hazards are not present. With regard to mineral resources, no mines were identified in the area. There are multiple areas with unnamed mineral deposits. Numerous sand and gravel resource areas are present.

3.3.4.3. Rush Lake Alternative Route

Geology and minerals for the Rush lake Alternative Route would be the same as those conditions described for the Proposed Action.

3.3.4.4. Millard County Alternative Route

Geologic hazards on this alternative are similar to those described above for the proposed route between MP 110 and MP 160. These include the Desert Faults and Clear Lake Fault Zone as previously described. Landslide areas are present at MP 112 in the area where this alternative deviates from the proposed route (Utah Geological Survey 2008). Mineral resources on this alternative include sand and gravel and gem resources.

3.4. Paleontological Resources

3.4.1. Area of Analysis

The area of analysis follows the proposed pipeline, the lateral line servicing the Salt Lake City Airport, and Cedar City Lateral route, and examines paleontological resources intersected by the centerline of the alignment inclusive of access roads and staging areas.

3.4.2. Data and Methods

The section of the proposed UNEV pipeline from MP 0 to about MP 248, would be a new ROW and has not been subject to previous assessment for paleontological sensitivity. Paleontological data along this section will be assessed by using Potential Fossil Yield Classification (PFYC) system. Also, Paleontological sensitivity assessment was conducted based on geomorphological surveys available for the Lake Bonneville Basin (Currey 1982, Oviatt 1991). (CH2M HILL 2008d)

The PFYC system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources. The PFYC system contains five classes ranging from very low to very high. Using the PFYC system, geological units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential (BLM 2007d).

The paleontological data along a section of the pipeline, extending from about MP 248 to the western terminus of the project at the Apex Industrial Park in the Dry Lake Valley, northeast of Las Vegas, Nevada, has previously been assessed during planning for the installation of the Kern River Gas Transmission (KRGT) pipelines. Under the FERC Certificate for the original pipeline, KRGT evaluated and surveyed paleontological resources along the pipeline route. Areas of high paleontological sensitivity, previously and newly surveyed sedimentary units where scientifically significant fossils were identified were monitored during construction (CH2MHill 2008d).

3.4.3. Existing Conditions for Proposed Action

Paleontological resources are fossils—the remains or traces of prehistoric life preserved in the geological (rock stratigraphic) record. They range from the well known and well publicized, (e.g., dinosaur and mammoth bones) to the more obscure but nevertheless scientifically important (for example, paleobotanical remains, trace fossils, and microfossils) (CH2MHill 2008d).

Fossils are important scientific and educational resources because of their use in: (1) documenting the presence and evolutionary history of particular groups of now-extinct organisms; (2) reconstructing the environments in which these organisms lived; and (3) determining the relative ages of the strata in which they occur and the geologic events that resulted in the deposition of the sediments that formed these strata. Paleontological resources include the casts or impressions of ancient animals and plants, their trace remains (e.g., burrows, trackways), microfossils (e.g., fossil pollen, ostracodes, diatoms), and unmineralized remains (e.g., the bones of Ice Age mammals or the trunks of trees that lived long ago) (CH2MHill 2008d).

Paleontological sensitivity assessments for this project are based on the assumption that the maximum depth of disturbance during excavation for installation of the pipeline would be 7 feet. The paleontological sensitivity assessment of a particular stretch is also based in part on whether erosion may have exposed paleontologically productive sediment near to or at the surface (CH2MHill 2008d).

This section discusses the types of rock units and sediments that occur along the proposed pipeline alignment, and their paleontological sensitivity based on their known fossil record as well as the paleoenvironments they represent (CH2MHill 2008d).

Paleozoic Sediments

Although these rocks occur episodically throughout the length of the proposed pipeline ROW, they are not commonly encountered because it is not economical to attempt to bury a pipeline in bedrock. Limestone and other fine-grained marine sediment such as that of the Oquirrh Formation near the start of the ROW and the Kaibab Limestone near the Nevada/Utah border can yield abundant invertebrate fossils. These aerially extensive formations are normally not accorded the level of paleontological sensitivity as those geological formations that are more likely to yield vertebrate remains. This is in part because they are extensive, and, as a consequence, a fossil assemblage in any one area is less likely to represent a unique resource (CH2MHill 2008d).

Mesozoic Continental and Marine Sediments

These sediments are found near the border with Nevada and Arizona but, like Paleozoic rocks, are not commonly encountered along the ROW because pipeline installation in bedrock is more costly than in unconsolidated sediment. Fossil remains from the Triassic rocks such as the Thayne Formation can be considered significant but have rarely been encountered (Dames and Moore 1992). (CH2MHill 2008d)

Late Tertiary and Quaternary Alluvium

Late Tertiary and Quaternary alluvium (alluvial fan deposits) is assigned low paleontological sensitivity. These coarse-grained sediments represent high-energy, subarial depositional regimes where fossil preservation is unlikely. Typically, fossils from these units are unknown. Although deposition on alluvial fans may be rapid from a geological standpoint, the depositional events on these surfaces (floods, debris flows, mud flows) are not they types of events that lead to the burial of organic material in anoxic environments where fossil preservation may occur (CH2MHill 2008d).

Exposed stretches of pluvial lake sediment rarely yield fossil remains. The upper 10 feet or so of lacustrine sediment represents material that has been reworked by post-glacial flooding events and is normally thoroughly oxidized with chromas in the red and brown range. In contrast, lacustrine sediment that yields fossils is usually unoxidized with chromas in the grey through green range. However, the near-shore facies and beach ridges of the same pluvial lake can, in contrast, yield scientifically important fossils. The local microenvironments near the shores of pluvial lakes can be conducive to the relatively rapid burial of organic remains, and Pleistocene vertebrate fossils can be relatively common in these shoreline environments (Waters 1989). (CH2MHill 2008d)

Late Quaternary Packrat Middens

Although packrat (*Neotoma* spp.) middens have been recovered from the niches and cavities in the caliche cliffs exposed along the proposed ROW in Nevada, this current assessment does not find these remains to be scientifically significant. This is based on the fact that middens from Quaternary alluvium are seldom more than 3,000 years old (Spaulding et al. 1990) and, therefore, the plant macrofossils they contain reflect only late Holocene vegetation conditions, and not environments substantially different from those of the present (CH2MHill 2008d).

3.4.3.1. Milepost 0 to 248

As noted above, this section of the proposed alignment has not been subject to paleontological resources assessment prior to this project, and, therefore, is dealt with in more detail than the second section of pipeline to the western terminus of the project in Nevada. By coincidence this section is also characterized by a suite of sediments that are not crossed again by the remainder of the project alignment, those of pluvial Lake Bonneville (Benson and Thompson 1987, Benson et al. 1990). From north to south, first the Bonneville Basin and then the Sevier Basin of Lake Bonneville are crossed by the alignment, followed finally by the southern, Escalante Arm of pluvial Lake

Bonneville. The last time the ROW crosses a shoreline of pluvial Lake Bonneville, in the Escalante Desert, is between MP 237 and MP 239 (see **Exhibit 3.4-1**) (CH2MHill 2008d).

Pluvial Lake Bonneville is so named because it reached maximum lake depths during “pluvial” climatic episodes, which are generally correlated with Pleistocene glacial ages in western North America (Smith and Street-Perrott 1983, Spaulding 1991). The end of the last high-lake episode is correlated with the end of the Rancholabrean Land Mammal Age at about 10,000 years ago (B.P.), and it left a series of recessional shorelines at progressively lower elevations. The declining level of the lake ultimately led to the isolation of a series of saline lakes in now-isolated basins such as the Bonneville, Great Salt Lake, and Sevier Basins. The recessional shorelines dating to the last 5,000 to 10,000 years of the Rancholabrean are, in sequence of decreasing elevation and age, the Bonneville, Provo, and Gilbert shorelines. Because of isostatic rebound of the Earth’s crust after the great weight of Lake Bonneville’s water was removed, the elevations of these shorelines are different in different areas. However, geomorphological surveys have been conducted throughout the area (for example, Currey 1982, Oviatt 1991) and, as a consequence, these shorelines have been identified throughout Lake Bonneville’s vast basin (CH2MHill 2008d).

Exhibit 3.4-1 Paleontological Sensitivity Assessments Along the Proposed Pipeline ROW from its Beginning to the Point Where it Meets the Pre-existing KRGT ROW

Beginning MP	Ending MP	Formation/Rock Type	PFYC Class[1]	Age	Feature and Notes
0.0	0.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
0.5	4.7	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
4.7	8.0	Surficial marsh deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
8.0	13.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
13.1	16.6	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
16.6	20.0	Surficial mud and salt flat deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
20.0	22.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
22.5	23.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
23.0	23.2	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville

Beginning MP	**Ending MP**	**Formation/Rock Type**	**PFYC Class[1]**	**Age**	**Feature and Notes**
23.2	24.5	Oquirrh Group	2	Pennsylvanian-Permian	Depositional shoreline including beach ridges of pluvial Lake Bonneville; also, from MP 22.3 to MP 24.2 outcrops of the fossiliferous Oquirrh Limestone.
24.5	28.1	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
28.1	28.8	Oquirrh Group	2	Pennsylvanian-Permian	Depositional shoreline including beach ridges of pluvial Lake Bonneville; also, from MP 22.3 to MP 24.2 outcrops of the fossiliferous Oquirrh Limestone.
28.8	45.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
45.5	48.2	Surficial marsh deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
48.2	54.0	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
54.0	54.5	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
54.5	62.2	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
62.2	62.8	Salt Lake Fm, alluvium,lacustrine	3	Oligocene-Pliocene	High beach ridges of the pluvial maximum shoreline of pluvial Lake Bonneville (Bonneville Shoreline at 5,209 ± 7).
62.8	65.0	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
65.0	67.7	Salt Lake Fm, alluvium,lacustrine	3	Oligocene-Pliocene	High beach ridges of the pluvial maximum shoreline of pluvial Lake Bonneville (Bonneville Shoreline

Beginning MP	**Ending MP**	**Formation/Rock Type**	**PFYC Class[1]**	**Age**	**Feature and Notes**
					at 5,209 ± 7).
67.7	74.2	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
74.2	76.5	High-level alluvial deposits	3	Miocene-Pleistocene	Valley fill of the Late Tertiary Salt Lake formation
76.5	77.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
77.0	78.0	High-level alluvial deposits	3	Miocene-Pleistocene	Valley fill of the Late Tertiary Salt Lake formation
78.0	82.7	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
82.7	103.5	Salt Lake Fm, alluvium,lacustrine	3	Oligocene-Pliocene	High beach ridges of the pluvial maximum shoreline of pluvial Lake Bonneville (Bonneville Shoreline at 5,209 ± 7).
103.5	103.8	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
103.8	106.0	Salt Lake Fm, alluvium,lacustrine	3	Oligocene-Pliocene	High beach ridges of the pluvial maximum shoreline of pluvial Lake Bonneville (Bonneville Shoreline at 5,209 ± 7).
106.0	110.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
110.5	131.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
131.0	132.1	Surficial eolian deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
132.1	139.5	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
139.5	144.7	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville

Beginning MP	Ending MP	Formation/Rock Type	PFYC Class[1]	Age	Feature and Notes
144.7	146.3	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
146.3	148.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
148.5	150.3	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
150.3	166.9	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
166.9	169.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
169.0	172.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
172.5	187.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
187.1	188.3	Salt Lake Fm, alluvium,lacustrine	3	Oligocene-Pliocene	High beach ridges of the pluvial maximum shoreline of pluvial Lake Bonneville (Bonneville Shoreline at 5,209 ± 7).
188.3	217.6	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
217.6	218.6	Intrusive rocks	1	Tertiary	Multiple crossings (oblique angle intersections) of the west shore (the Bonneville Shoreline) of the Escalante Arm
218.6	220.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
220.1	220.5	Kaibab, Toroweap	3	Permian	Multiple crossings (oblique angle intersections) of the west shore (the Bonneville Shoreline) of the Escalante Arm
220.5	223.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake

Beginning MP	Ending MP	Formation/Rock Type	PFYC Class[1]	Age	Feature and Notes
					Bonneville
223.1	223.8	Daibab, Toroweap	3	Permian	Multiple crossings (oblique angle intersections) of the west shore (the Bonneville Shoreline) of the Escalante Arm
223.8	239.3	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
239.3	239.7	Volcanic rocks	1	Miocene	Basalt, rhyolite, andesite, tuffaceous rocks
239.7	KRGT ROW	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Salt Lake City Airport Lateral					
0.0	2.5	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Cedar City Lateral					
0.0	9.5	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Airport Alternative Route					
0.0	1.5	Surficial marsh deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
1.5	3.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Tooele County Alternative Route					
0.0	15.2	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Rush Lake Alternative Route					
0.0	2.7	Surficial marsh deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville

Beginning MP	Ending MP	Formation/Rock Type	PFYC Class[1]	Age	Feature and Notes
2.7	3.5	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
Millard County Alternative Route					
0.0	0.2	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
0.2	5.1	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
5.1	5.2	Surficial eolian deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
5.2	6.6	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
6.6	7.0	Surficial eolian deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
7.0	12.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
12.0	12.9	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
12.9	14.0	Surficial eolian deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
14.0	20.3	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
20.3	30.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
30.0	37.3	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
37.3	42.0	Surficial alluvium and colluvium	1	Quaternary	Surficial deposits of pluvial Lake Bonneville
42.0	63.0	Surficial Lake Bonneville deposits	1	Quaternary	Surficial deposits of pluvial Lake Bonneville

Source: CH2MHill 2008d

[1] The classes included in this exhibit are Class 1 – Very Low, Class 2 – Low, Class 3 – Moderate or Unknown.

3.4.3.2. Milepost 248 to Milepost 399 (within KRGT ROW)

This segment of the pipeline would follow the Kern River Gas Transmission Line ROW. Data regarding paleontological sensitivity and resources for this segment can be found in the associated EIS (FERC and CSLC 2002). In all, five locations (4 miles of line) were noted where significant fossils were discovered during 1991 construction of the first Kern River line. All were described as disturbed by the previous construction and were surveyed (FERC and CSLC 2002). Tasks accomplished prior to this project for implementation of the prior KRGT projects included the following:

- Evaluation of the ROW for sensitive paleontological resources.
- Development of a Paleontological Resources Monitoring and Mitigation Plan (PRMMP).
- Monitoring sensitive stretches of the project ROW during construction pursuant to the PRMMP.
- Direct construction away from any discovered resource.
- Scientifically recover, analyze, and curate recovered fossils.
- Prepare and submit a technical report of these efforts at the completion of field work (CH2MHill 2008d).

No significant paleontological resources have been identified as occurring in the area (FERC and CSLC 2002).

3.4.3.3. Airport Lateral

The Salt Lake City Airport Lateral pipeline is proposed to begin right after MP 4.5 and head in a southern direction. This particular lateral will run about 2.5 miles. The airport lateral will run through surficial alluvium and colluvium, which poses a very low level of paleontological sensitivity with a PFYC of 1.

3.4.3.4. Cedar City Lateral

The Cedar City Lateral pipeline off the proposed UNEV pipeline will be approximately 10 miles in length. The spur off of the UNEV will be at about MP 256, which is located in the area that has been previously assessed for the KRGT pipeline. The surficial alluvium and colluvium in this region poses a very low level of paleontological sensitivity with a PFYC of 1.

3.4.4. Existing Conditions for Alternatives

3.4.4.1. Airport Alternative Route

The alternative route for the Airport Lateral would begin at MP 6.3 and run just over 3 miles long and reconnect to the proposed route at MP 9.7. The alternative route would run through surficial marsh deposits as well as surficial alluvium and colluvium, both of which are of low levels of paleontological sensitivity with a PFYC of 1.

3.4.4.2. Tooele County Alternative Route

A Tooele County alternative route would run just over 15 miles. This alternative would lie west of the proposed route from MP 25 to MP 38.3. This alternative would run through surficial Lake Bonneville deposit, which poses a low level of paleontological sensitivity with a PFYC of 1.

3.4.4.3. Rush Lake Alternative Route

Paleontological resources under the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

3.4.4.4. Millard County Alternative Route

This alternative route passes through multiple formations with a low potential for paleontological resources, as was described for the proposed pipeline route between MP 110 and MP 161.5. The alternative would run about 63 miles through surficial Lake Bonneville deposit, surficial eolian deposit, and surficial alluvium and colluvium. All three formations have a PFYC of 1.

3.5. Soils

3.5.1. Area of Analysis

The soils area of analysis follows the proposed pipeline route, which originates in Davis County, Utah and cross Salt Lake, Utah, Juab, Millard, Beaver, Iron, and Washington counties in Utah. In Nevada, it would cross Lincoln County and terminate in Clark County. The project area also includes the proposed sites of pipeline facilities for the main pipeline, the lateral line servicing the Salt Lake City Airport, and the Cedar City Lateral, including the one pump station and two terminals, as well as site access road locations. All soils that would be crossed by the proposed pipeline, staging areas, access roads, and associated project facilities were identified (CH2MHill 2008e). The area of analysis for soils would be the disturbance area, which includes a 37.5-foot buffer either side of the centerline of the main pipeline route, the proposed laterals and alternative routes. Disturbance acreage for all other aboveground facilities was calculated based on a 37.5-foot buffer, less the buffers for the pipeline and lateral. Disturbance resulting from improvements to access roads was calculated assuming a 10-foot width.

3.5.2. Data and Methods

The soils crossed by the proposed pipeline and associated facilities were analyzed using the State Soil Geographic (STATSGO) database, the Soil Survey Geographic (SSURGO) database, and USDA Natural Resources Conservation Service (NRCS) county soil surveys (CH2MHill 2008e).

The SSURGO data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. This data set consists of georeferenced digital map data and computerized attribute data. The map data include a detailed, field verified inventory of soils and nonsoil areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties. Soil types or associations are listed by the Map Unit Name (MUNs). SSURGO data are not available for the entire pipeline route. Approximately 77.6 percent of the pipeline route is covered within the SSURGO database (CH2MHill 2008e).

The STATSGO database was developed by the NRCS for use in regional, multi-state, river basin, state, and multi-county resource planning. STATSGO spatial data are compiled by combining geologically and topographically related soil series found in county soil surveys into larger map units called Map Unit Identifiers (MUIDs). The STATSGO database provides information on soil limitations or the vulnerability of a soil to development impacts. All the STATSGO data are located in Utah. The STATSGO database is much less detailed than the SSURGO database and not all soil limitation classes were available for the analysis. Only erosion and compaction data could be retrieved from the database. Approximately 22.4 percent of the pipeline route is covered within the STATSGO database (CH2MHill 2008e).

County soil survey reports are detailed descriptions of soil series and soil associations found in a particular county or set of counties. They are prepared by the NRCS and contain a description of each soil series, selected soil series attributes, and maps showing locations of the soil series. Not all parts of the pipeline route are covered by soil survey information (CH2MHill 2008e).

3.5.3. Existing Conditions for Proposed Action

3.5.3.1. Overview

In Utah, the proposed pipeline route crosses 141 MUNs/MUIDs. Soil textures found on the route are varied and include clays, silty clays, cobbly clays, clay loams, silty loams, sandy loams, silty clay loams, cobbly loams, gravelly clay loams, fine sandy loams, gravelly fine sandy loams, very gravelly fine sandy loams, very gravelly silty loams, gravelly loams, very gravelly silty loams, stony loams, very stony loams, very gravelly loams, very cobbly loams, loamy fine sand, gravelly fine sand, extremely gravelly sand, very gravelly loamy sand, and cobbly coarse sand. Badland and rocky outcrops are common on the southern portion of the route in Utah. Most soils on the pipeline route in Utah are utilized for rangeland and wildlife habitat because they are shallow, sloping, poorly drained, or not developed. Some soils are more fertile and are used for agriculture (CH2MHill 2008e).

In Nevada, the proposed pipeline route crosses 31 MUNs/MUIDs. Soil textures found on the route include silty clays, clayey alluviums, silty clay loams, loams, fine sandy loams, sandy loams, gravelly loams, very gravelly sandy loams, extremely gravelly fine sandy loams, very stony fine sandy loams, and very cobbly fine sandy loams. Areas of badland and rockland occur primarily on the northern portion of the route in Nevada while many soils on the southern portion of the route are covered by a gravelly desert pavement. The soils primarily support rangeland and wildlife habitat because they are generally coarse textured and dry (CH2MHill 2008e).

Biological soil crusts, also known as cryptogamic, cryptobiotic, microbiotic, or microphytic soil crusts, occur on undisturbed soils in arid or semi-arid regions. They are the result of complex communities of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria that form crusts that protect the soils from erosion. The crusts function as a living mulch that aids in moisture retention and nitrogen fixation and hinders annual weed growth. Biological soil crusts would be expected to be found along the pipeline ROW on undisturbed, fine-textured soils within native desert habitats. Biological soil crusts are sensitive to soil disturbance and slow to recover.

Potential soil impacts were evaluated within the proposed project area to identify characteristics that would result in soil loss, increase pipeline installation difficulty, or impair restoration potential. Soil loss was evaluated by examining for high wind or water erosion potential. Pipeline constructability relative to soil was assessed by identifying areas with shallow bedrock or rocky soils. Droughty soils, saline areas, and soils susceptible to compaction were identified to locate areas of poor revegetation potential where revegetation would be difficult. The total percentage of each MUN/MUID with these characteristics was summarized for each limitation. These percentages, together with the length of pipeline route in each MUN/MUID, were used to estimate the acreage of soils with limitations that would be crossed by the pipeline. **Exhibit 3.5-1** displays the soil characteristics used to evaluate project effects on soil (CH2MHill 2008e).

Erosion Potential

Erosion is the result of the detachment and movement of soil particles. Erosion leads to the loss of soil productivity as nutrient rich topsoil horizons are lost, and to changes in textural composition of surface horizons. Factors such as soil texture, surface roughness, vegetative cover, slope length, percent slope, management practices, and rainfall all influence the susceptibility of a soil to erosion. Loose, bare soils on moderate to steep slopes are prone to water erosion during storm events. Locations subject to strong winds and with sparse vegetative cover can experience wind-induced erosion if the soils are silty or composed of fine sands (CH2MHill 2008e).

Soil Compaction

Compaction of the soil impacts the ability to restore a site by reducing porosity, infiltration, and aeration. Compacted soil conditions decrease root health, which leads to poor plant establishment and growth. It may also affect soil biota responsible for nutrient cycling affecting site productivity. Compaction is usually a problem associated with fine-textured soils. However, almost all soils under certain moisture conditions are susceptible to compaction. Additionally, organically rich soils with high moisture content are also highly susceptible to compaction. These soils are typically somewhat poorly drained to very poorly drained and sometimes classified as hydric. Compaction is particularly detrimental on sloping land, as it significantly decreases the water infiltration potential and increases the potential for sheet and rill erosion (CH2MHill 2008e).

Large Stones and Shallow Soils

Soils that have either a cobbly, stony, or gravelly modifier to their textural class, or have greater than 5 percent (weight basis) of stones larger than 3 inches in the surface layer, are considered to be stony (FERC and CSLC 2002). Shallow soils are soils where impervious layers or bedrock occur at depths of less than 7 feet (FERC and CSLC 2002). These soils affect both revegetation and constructability. Blasting may be required to construct on both of these soil types and pipeline installation in these soils may often result in excess rock being placed on the proposed ROW surface (CH2MHill 2008e).

Droughty Soils

Soils that have a surface texture of sandy loam or coarser and are moderately well to excessively drained can have droughty characteristics. Available water content would be a more accurate indicator of droughty soils, but this information is not available for the entire route. Surface horizon texture was used as a surrogate. Droughty soils can have insufficient soil moisture within the plant root zone to support plant establishment and growth and can, in turn, be difficult to revegetate (CH2MHill 2008e).

Saline Soils

When soil salinity exceeds 8 mmhos/cm, all but very salt tolerant plants have difficulty establishing and surviving. Saline soil conditions will affect the ability to revegetate sites by limiting the number of species acclimated to saline conditions (CH2MHill 2008e).

Poor Revegetation Potential

As discussed above, droughty soils and those prone to erosion can adversely affect the ability to revegetate a site. Other major limitations such as salinity and compaction also restrict revegetation. These limitations can restrict the range of species available for revegetation to those that are adapted to these conditions. They can also require additional effort and time to restore these areas to preconstruction conditions (CH2MHill 2008e).

Prime Farmland and Farmland of Statewide Importance Soils

The NRCS determines acreage to classify as Prime Farmland, based on that land with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime Farmland soils can include either actively cultivated land or land that is currently not cultivated, but is readily available for cultivation. The importance of Prime Farmland soils in contributing to the agricultural output of the country makes impacts on them of particular concern. All Prime Farmland on the proposed pipeline route is classified as "Prime if

Irrigated." The NRCS also identifies Farmland of Statewide Importance. These lands include farmland that is nearly Prime Farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods (CH2MHill 2008e).

Exhibit 3.5-1 Soil Characteristics used to Evaluate Project Effects on Soil

Characteristic	Criteria For Susceptibility
Water Erosion Potential	Medium or higher runoff class
Wind Erosion Potential	1-7 wind erodibility index
Soil Compaction	Somewhat poorly drained to poorly drained soils
Large Stones	Cobbly, stoney, bouldery, gravelly, shaly or slaty modifier or greater than 5 percent stones larger than 3 inches
Shallow Soils	Depth < 7 feet to bedrock or hardpan
Droughty Soils	Sandy loam or coarser and moderately well to excessively drained
Saline	> 8 mmhos/cm
Poor Revegetation Potential	Droughty, soil compaction, or salinity condition
Prime Farmland (if irrigated)	Determined by NRCS
Farmland of Statewide Importance	Determined by NRCS

Source: CH2MHill 2008e

Complete lists of soil series present along, and acreages that would be disturbed by, all Proposed Action components and alternatives to the Proposed Action are located in **Appendix E**.

3.5.3.2. Pipeline Facilities Soils

Exhibit 3.5-2 summarizes soil limitations on the main pipeline route. The main pipeline route would disturb a total of 3,626 acres. **Exhibit 3.5 3** summarizes soil limitations on the segments of the proposed pipeline route that correspond with the alternatives. The segment of the main pipeline route corresponding to the airport alternative would include 29.11 acres. The segment of the main pipeline route corresponding to the Tooele County Alternative Route would include 121.84 acres. The segment of the main pipeline route corresponding to the Millard County Alternative Route would include 464.19 acres.

3.5.3.3. Airport Lateral Soils

Exhibit 3.5-4 summarizes soil limitations on the Airport Lateral route. The Airport Lateral would disturb a total of 21.66 acres of soils.

3.5.3.4. Cedar City Lateral Soils

Exhibit 3.5-5 summarizes soil limitations on the proposed Lateral. A total of 77.72 acres of soils would be disturbed by the Cedar City Lateral. No soil limitations associated with soil compaction and stony and/or shallow soils were identified on the Lateral (CH2MHill 2008e).

3.5.3.5. Aboveground Facilities

In addition to the construction of pipeline facilities addressed above, other facilities would be constructed. These include an inlet pumping station near a cluster of five refineries, including Holly Corporation's Woods Cross Refinery, in the south Davis County area; a lateral terminal near Cedar City, Utah; and a receiving terminal in the Apex Industrial Park northeast of Las Vegas. The pumping station would require approximately 2.3 acres of land, the lateral terminal approximately 25 acres, and the receiving terminal approximately 39 acres. In total, aboveground facilities would disturb approximately 70 acres. **Exhibit 3.5-6** summarizes the soil characteristics and limitations at each of these facilities. Approximately 2.3 acres of Prime Farmland or Farmland of Statewide Importance would be affected by the proposed aboveground facilities (CH2MHill 2008e).

3.5.3.6. Access Roads

Improvements would need to be made to existing roads to access the project ROW to construct the pipeline. Roads to be improved range from unimproved pipeline maintenance roads to paved rural roads. Impacted acres along access roads were estimated by assuming a 10-foot wide disturbance area. (CH2MHill 2008e) **Exhibit 3.5-7** summarizes soil limitations along proposed access roads. Total disturbance for access roads for the proposed action and alternatives is 3.29 acres.

3.5.3.7. Existing Conditions for Staging Areas

Staging areas would be needed along the project ROW for temporary storage of equipment and materials during construction. **Exhibit 3.5-8** summarizes soils limitations in staging area locations. Total disturbance for staging areas would be 17.6 acres.

Exhibit 3.5-2 Summary of Soil Characteristics and Limitations on the Main Proposed Pipeline Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	139.46	466.09	251.93	573.40	501.14	294.98	886.43	1481.9	166.68	485.82
Existing Disturbance	195.20	143.12	204.16	66.74	173.56	0.00	16.10	189.67	17.38	35.49
Utah Total Disturbance	334.67	609.21	456.09	640.14	674.70	294.98	902.53	1671.5	184.06	521.31
Nevada										
New Disturbance	146.57	146.57	144.83	98.42	102.79	2.27	6.93	110.09	0.00	0.00
Existing Disturbance	326.85	326.85	334.26	223.23	248.26	1.15	0.29	237.95	0.00	0.00
Nevada Total	473.42	473.42	479.09	321.65	351.05	3.42	7.22	348.04	0.00	0.00

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Disturbance										
Total Disturbance	808.09	1082.6	935.18	961.79	1025.8	298.40	909.75	2019.6	184.06	521.31
% Utah	41.41	56.27	48.77	66.56	65.78	98.85	99.21	82.77	100.00	100.00
% Nevada	58.59	43.73	51.23	33.44	34.22	1.15	0.79	17.23	0.00	0.00
STATSGO Data										
Utah										
New Disturbance	41.13	0.00	31.85	0.00	0.00	16.99	0.00	16.99	0.00	0.00
Existing Disturbance	79.86	0.00	132.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	120.99	0.00	164.66	0.00	0.00	16.99	0.00	16.99	0.00	0.00

Exhibit 3.5-3 Summary of Soil Characteristics and Limitations on Segments of the Proposed Action that Correspond with the Alternative Routes

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
Airport Alternative Route	19.83	19.83	5.47	0.00	0.00	25.30	3.81	29.11	0.00	4.32
Tooele County Alternative Route	0.00	0.00	7.76	97.89	0.00	0.00	0.00	0.00	0.00	71.74
Millard County Alternative Route	18.95	18.95	0.00	13.11	161.21	106.19	260.10	421.32	27.56	30.10

Exhibit 3.5-4 Summary of Soil Characteristics and Limitations on the Airport Lateral Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	9.27	11.92	0.00	0.00	8.60	18.56	19.69	21.66	0.00	0.00

Exhibit 3.5-5 Summary of Soil Characteristics and Limitations on the Cedar City Lateral Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	0.00	30.06	0.00	0.00	17.83	0.00	16.54	34.37	0.00	8.25

Exhibit 3.5-6 Summary of Soil Characteristics and Limitations at Aboveground Facilities

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	0.00	8.34	0.00	0.00	2.30	2.30	2.82	2.82	2.30	8.34
Nevada										
New Disturbance	38.74	38.74	38.74	38.74	0.00	0.00	0.00	0.00	0.00	0.00

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Existing Disturbance	1.24	1.24	1.24	1.24	0.00	0.00	0.00	0.00	0.00	0.00
Total Disturbance	39.99	48.32	39.99	39.99	2.30	2.30	2.82	2.82	2.30	8.34
% Utah	0.00	17.25	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00
% Nevada	100.00	82.75	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00

Exhibit 3.5-7 Summary of Soil Characteristics and Limitations Along the Access Roads

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	0.5	0.0	1.39	0.55	0.13	0.16	1.0	1.52	0.13	0.49

Exhibit 3.5-8 Summary of Soil Characteristics and Limitations within Staging Areas

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	2.87	4.32	4.25	1.95	4.28	4.80	3.38	9.10	1.43	4.32
Nevada										
New Disturbance	2.80	2.80	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Total Disturbance	5.67	7.12	7.05	1.95	4.28	4.80	3.38	9.10	1.43	4.32
% Utah	50.59	60.66	60.28	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% Nevada	49.41	39.34	39.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5.4. Existing Conditions for Alternatives

3.5.4.1. Airport Alternative Route

Exhibit 3.5-9 summarizes the existing soil conditions along Airport Alternative Route. It is assumed that all staging areas and facilities soil data are similar to the Proposed Action. The Airport Alternative Route would disturb 29.64 acres of soils. No agricultural lands are present between MP 6.6 and MP 10 where the alternative route diverges.

Exhibit 3.5-9 Summary of Soil Characteristics and Limitations Along the Airport Alternative Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	29.35	29.35	0.00	0.00	0.00	29.35	3.42	29.64	0.00	11.60

3.5.4.2. Tooele County Alternative Route

Exhibit 3.5-10 summarizes the soil conditions along the Tooele County Alternative Route. It is assumed that all staging areas and facilities data are the same as the Proposed Action. The Tooele County Alternative Route would disturb a total of 139.31 acres of soils.

Exhibit 3.5-10 Summary of Soil Characteristics and Limitations Along the Tooele County Alternative Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	0.00	0.00	3.39	60.73	35.75	42.06	0.00	77.80	0.00	78.36

3.5.4.3. Rush Lake Alternative Route

Soils along the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

3.5.4.4. Millard County Alternative Route

Exhibit 3.5-11 summarizes the soil conditions along the Millard County Alternative Route and the Proposed Action. It is assumed that all facilities and staging areas data are the same as the Proposed Action. The Millard County Alternative Route would disturb a total of 572.95 acres of soils.

Exhibit 3.5-11 Summary of Soil Characteristics and Limitations Along the Millard County Alternative Route

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	0.00	230.50	1.40	21.86	121.57	38.19	397.19	503.20	10.13	14.81

3.6. Water Resources

3.6.1. Area of Analysis

Water resources, including surface water, groundwater, wetlands and water supply, were identified for the area that could potentially be affected by the Proposed Action or its alternatives. The area of analysis for the inventory of water supply wells and springs extends the length of the primary pipeline from Salt Lake City, Utah to North Las Vegas, Nevada; along the length of the lateral line servicing the Salt Lake City Airport; along the length of the Cedar City Lateral; and horizontally approximately 200 feet perpendicular to the pipeline centerline in either direction (for a total survey area width of 400 feet). The area of analysis also includes all staging areas and access roads.

The potential for impacts to migrate off the project site into surface waterbodies that would be crossed by the pipeline has also been assessed by extending the project area down gradient from the pipeline where appropriate. The project area extends into the subsurface on average 6 to 8 feet below ground surface (bgs) for the installation of the pipeline infrastructure and up to several hundred feet bgs in association with water supply wells and springs (CH2MHill 2008f).

The area of analysis for wetlands and Waters of the U.S. extends the length of the primary pipeline and along the Airport lateral line, the Cedar City lateral line and horizontally approximately 100 feet perpendicular to the pipeline centerline (for a total survey area width of 200 feet). The entire project area encompassed approximately 9,994 acres (9,694 acres for the primary alignment and 58 acres for the Airport Lateral, and 242 acres for the Cedar City Lateral and terminal) (CH2MHill 2008).

3.6.2. Data Sources and Methods

The majority of water resources data that was reviewed and analyzed was provided by State of Utah Divisions of Water Rights, Water Quality, and Drinking Water, and the Automated Geographic Reference Center. GIS datasets from these institutions were integrated with the areas of analysis for the proposed pipeline alignment and the Kern River 2003 Expansion Project to produce tables of all water resources that would be crossed by the proposed pipeline or within approximately 200 feet of the centerline perpendicular to the pipeline route in either direction. These data tables were analyzed to remove duplicate data and to ensure the inclusion of relevant water resources (CH2MHill 2008f). Water rights data for the portion of the proposed project area located in Nevada was provided by the State of Nevada Division of Water Rights.

Field surveys for wetlands and Waters of the United States were conducted between November 2006 and August 2007 along the proposed pipeline alignment. The objective of the field surveys was to identify and map all wetlands and Waters of the United States within the project area. During the surveys, recent aerial photography, USGS 7.5-minute topographic maps, and information from the National Wetlands Inventory were utilized to identify potential aquatic features (CH2MHill 2008g).

Linear features within the area of analysis were identified and mapped based on physical properties (bed and bank characteristics), vegetation, and hydrologic regime. Where present, the ordinary high water mark (OHWM) was determined and recorded based on indicators such as shelving, changes in soil characteristics, accumulation of litter and debris, and destruction and/or lack of vegetation within the channel in accordance with guidance provided by the United States Army Corps of Engineers (USACE 2005, Lichvar and Wakeley 2004). Constructed linear features, such as canals and excavated drainage ditches, were also identified and mapped based on the limits of the constructed channel (CH2MHill 2008g).

Non-wetland habitats, such as open water (e.g., ponds and reservoirs), were also mapped and classified during the field survey. Small reservoirs, ponds, and catchment basins were mapped in the field based on the limits of the OHWM or the limits of the constructed basin. Large lakes and reservoirs, as well as inaccessible areas, were identified and mapped using high resolution aerial photography (CH2MHill 2008g).

3.6.3. Existing Conditions for Proposed Action

3.6.3.1. Climate

The area of analysis spans portions of two of the Environmental Protection Agency's (EPA) designated Level III Ecoregions, the Central Basin and Range Region and the Mojave Basin and Range Region (Omernik 1987).

In the Central Basin and Range Region, the average annual precipitation ranges between 5 to 15 inches in the valleys, and up to 49 inches in the mountains. Most of the rainfall occurs as high-intensity, short-duration storms during the spring and early summer, with relatively little precipitation from mid-summer to early autumn. During the winter months, precipitation is primarily in the form of snow. At the north end of the corridor, in the Salt Lake City area, average temperatures range from a low of 22˚F in January to a high of 91˚F in July. Average annual rainfall is 15.3 inches and average snowfall 56.3 inches. The growing season in the Central Basin and Range region typically ranges from 110 to 215 days depending on elevation (WRCC 2007).

The Mojave Basin and Range Region is comparatively warmer and drier than the Central Basin and Range Region. Average annual rainfall in Las Vegas, Nevada, is 4.8 inches due largely to convective thunderstorms during the summer months. Snow is uncommon at lower elevations, with an average snowfall of approximately 1 inch in the Las Vegas Area. Average temperatures range from a low of 31˚F January to a high of 104 ˚F in July (WRCC 2007). The lower valleys have a year-round growing season, with temperatures rarely below freezing (WRCC 2007).

3.6.3.2. Groundwater

General Setting

The Basin and Range Aquifer system covers the entire extent of the proposed pipeline route (and its alternative segments) through Utah and Nevada. The Basin and Range Aquifer system comprises three principal aquifer types: volcanic-rock aquifers, which are primarily tuff, rhyolite, or basalt of Tertiary age; carbonate-rock aquifers, which are primarily limestones and dolomites of Mesozoic and Paleozoic age; and basin-fill aquifers, which are primarily unconsolidated sand and gravel of Quaternary and Tertiary age. One, two, or all three aquifer types may underlie the pipeline route in a particular area. Where they occur together, they may constitute three separate sources of water or may be hydraulically connected to form a single source (CH2MHill 2008f).

The alluvial basin-fill aquifers are the most commonly used aquifers in the Basin and Range Aquifer system. These aquifers exist in thick deposits of basin-fill consisting primarily of unconsolidated to moderately consolidated gravel, sand, silt, and clay, bounded by mountain ranges of relatively impermeable bedrock. The thickness of the basin-fill deposits is not well known but can range from 0 feet at basin margins to greater than 10,000 feet at basin centroids, with an average thickness of several thousand feet. Recharge of these aquifers is primarily derived from precipitation in the mountains and surrounding basins. Depth to groundwater can vary from several feet to 30 feet bgs in valleys, to more than 30 feet bgs in the mountain regions (USGS 1998). (CH2MHill 2008f)

Water from the Basin and Range Aquifer system and the basin-fill aquifers is generally suitable for most uses, except in natural discharge geothermal areas, or areas impacted by industrial, mining, and agricultural activities. The primary uses of groundwater from these aquifers are for irrigation, domestic, stockwater, and public supply. The alluvial basin-fill aquifers also have an important role in regard to the quality of surface waters and wetlands within Utah and Nevada (CH2MHill 2008f).

Tooele and Rush Valleys

Available technical documents and Driller's logs were reviewed to assess the hydrogeologic conditions along the pipeline alignment through Tooele and Rush Valleys. Key aspects of the hydrogeology that might affect the likelihood of drinking water aquifers being impacted by a potential release of petroleum products including depth to groundwater and presence of clays between the land surface and groundwater were evaluated.

Shallow unconfined and deep confined aquifers, separated by a clayey shallow confining layer are present in the northern and central parts of the Tooele Valley (Lambert and Stolp 1999; Razem and Steiger 1981). The confining layer is conceptualized as laterally extensive and continuous and should provide a large degree of protection to the deep confined aquifer, which is the primary source of drinking water in Tooele Valley. The shallow unconfined aquifer is generally present within the upper 50 feet of valley-fill sediments. Few wells tap this aquifer, which typically contains groundwater of poor quality. Groundwater supplies most of the drinking water in Tooele Valley.

The northern part of Tooele Valley is a discharge area, while the central part of the valley is a "secondary recharge area" and the southern part of the valley is a "primary recharge area." Although much of the pipeline alignment through Tooele Valley is shown as a "primary recharge area" by Steiger and Lowe (1997), driller's logs from wells within 500 feet of the alignment indicate that substantial thicknesses of clay are present in the upper 50 feet of the subsurface to about MP 31. South of MP 31, the prevalence of clay in the shallow subsurface decreases. However, driller's logs from several wells further south show some clay in the upper 50 feet. **Exhibit 3.6-1** summarizes the approximate clay thicknesses and depths to groundwater obtained from driller's logs for wells within 500 feet of the alignment in Tooele and Rush Valleys. Copies of these driller's logs are provided in the PAR.

Groundwater is present in both unconfined and confined aquifer in northern Rush Valley (Hood et al 1969). A review of the few driller's logs (see logs in the back of Hood and others 1969 available along the pipeline alignment indicates abundant clays are present in the shallow subsurface in northern Rush Valley.

Exhibit 3.6-1 Clay Thickness and Depth-to-Groundwater reported on Well Driller's Logs along Pipeline Alignment in Tooele and Rush Valleys, Tooele County

Water Right Number	Nearest Milepost	Clay Thickness (ft)[1]	Depth-to-Groundwater (ft)[2]
15-3642/4003	27	22	120
15-3365	30	96	240
15-2716	31	<173	195
15-3415	31	<158	170
15-3402	31	<91	130
15-4450	31	>81	No Data
15-2913/3572	32	0	46
15-3347	34	24	227
15-4448	36	32-52	80
15-514	36	16-386	570
15-3634	38	11	90

Water Right Number	Nearest Milepost	Clay Thickness (ft)[1]	Depth-to-Groundwater (ft)[2]
15-3902	36	20-50	66
15-513	36	>4	410
15-4132	42	<11	264
15-4406	76	<40	46
15-3601	77	61	65-71

[1] Clay thickness as reported on Driller's logs. Ranges and minimum/maximum values best express reported mixed lithologic units (e.g., combinations of clay and sand).

[2] Static water level reported in well. May not represent depth of first groundwater at well location.

Water Supply Wells and Springs

Utah

The proposed pipeline route comes within 200 feet (from the pipeline centerline) of approximately 40 water supply wells and 5 springs (**Exhibit 3.6-2**). There also exists the chance for occurrence in this same area of water supply wells that have been constructed without notification of the State of Utah and/or undocumented springs (CH2MHill 2008f).

Exhibit 3.6-2 Water Supply Wells and Springs within 200 Feet of the Proposed Pipeline Centerline

Water Right Number	Uses	Source	Nearest Milepost	Distance from Pipeline Centerline (feet)
59-1650	Stockwater	Underground Water Well	1	22
59-2342	None Listed	Underground Water Well	16	56
59-4685	Other	Underground Water Well	22	17
15-1763	Other	Underground Water Well	30	6
15-1981	Domestic/Irrigation	Underground Water Well	30	33
15-3015	Domestic/Irrigation/Stockwater	Unnamed Spring	31	18
15-3041	Domestic/Irrigation/Stockwater	Rose Spring (also known as Bryan Spring)	31	54
15-611	None Listed	South Bryan Spring	31	45
15-3130	Irrigation	Underground Water Wells	35	50
15-3514	Domestic/Other	Underground Water Well	35	55
15-3727	Irrigation	Underground Water Wells	35	50
15-3814	Irrigation	Underground Water Wells	35	50
15-3831	Irrigation	Underground Water Well	35	50
15-3835	Irrigation	Underground Water Well	35	50
15-3838	Irrigation	Underground Water Well	35	50

Water Right Number	Uses	Source	Nearest Milepost	Distance from Pipeline Centerline (feet)
15-3841	Irrigation	Underground Water Wells	35	50
15-3844	Irrigation	Underground Water Well	35	50
15-3902	Irrigation	Underground Water Wells	35	50
15-4012	Irrigation	Underground Water Wells	35	50
15-4189	Irrigation	Underground Water Well	35	50
15-4386	Irrigation	Underground Water Wells	35	50
15-4448	Irrigation	Underground Water Wells	35	50
15-514	Irrigation	Underground Water Well	35	50
15-4406	Domestic/Irrigation/Stockwater	Underground Water Well	75	43
15-1347	Domestic	Underground Water Tunnel	76	105
15-3601	Other	Underground Water Well	77	126
68-2780	Domestic/Irrigation/Stockwater	Underground Water Well	89	16
68-3069	Stockwater	Underground Water Well	119	59
68-475	None Listed	Underground Water Well	130	28
68-476	None Listed	Underground Water Well	130	28
68-477	None Listed	Underground Water Well	130	28
68-478	None Listed	Underground Water Well	130	28
68-479	None Listed	Underground Water Well	130	28
68-480	None Listed	Underground Water Well	130	28
68-481	None Listed	Underground Water Well	130	28
68-482	None Listed	Underground Water Well	130	28
71-616	Domestic/Stockwater	Underground Water Well	229	32
71-3216	Power	Underground Water Well	248	21
71-2051	Stockwater	Underground Water Well	272	46
71-347	Domestic/Stockwater	Underground Water Well	275	28
71-786	Irrigation/Stockwater	Canfield Spring	285	32
81-468	Domestic/Irrigation/Stockwater	Unnamed Developed Spring	289	7
81-3671	Irrigation	Underground Water Well	327	7

Source: Utah Department of Natural Resources, Division of Water Rights (2007a) in CH2MHill 2008f.

Drinking Water Source Protection (DWSP) Rule R309-600 governs the protection of groundwater sources of drinking water in Utah through source protection areas established by the public water supplier. Based on information from the Utah Division of Drinking Water, a total of 17 DWSP Areas would be crossed by the pipeline route in Utah. The water supply well identification (ID) and the starting and ending mileposts crossed by the DWSP Zones along the pipeline are provided in **Exhibit 3.6-3**. Also presented in **Exhibit 3.6-3** are the DWSP Zones encompassed within each DWSP Area.

DWSP Zones One through Four are defined as follows (Utah Administrative Code [UAC] No. R309-600):

> (i) Zone One is the area within a 100-foot radius from the wellhead or margin of the collection area.
>
> (ii) Zone Two is the area within a 250-day ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer. If the available data indicate a zone of increased ground-water velocity within the producing aquifer(s), then time-of-travel calculations shall be based on this data.
>
> (iii) Zone Three (waiver criteria zone) is the area within a 3-year ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer. If the available data indicate a zone of increased ground-water velocity within the producing aquifer(s), then time-of-travel calculations shall be based on this data.
>
> (iv) Zone Four is the area within a 15-year ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer. If the available data indicate a zone of increased ground-water velocity within the producing aquifer(s), then time-of-travel calculations shall be based on these data. (CH2MHill 2008f)

Exhibit 3.6-3 Drinking Water Source Protection Zones Crossed by the Proposed Pipeline

Well ID	Starting Milepost	Ending Milepost	DWSP Zone(s)
23044-01	24	24	2, 3, and 4
23083-01	27	27	2, 3, and 4
23003-03	29	32	4
23003-01	29	33	4
23003-02	31	33	4
23022-02	38	39	2, 3, and 4
23022-03	40	40	4
23022-01	41	41	4
12004-08	87	89	3 and 4
14008-01	119	120	4
14008-02	120	121	4
14008-03	121	122	4
14024-01	125	125	4
14024-02	125	125	4
27002-02	291	293	4
27003-01	291	294	4
27090-01	294	295	3 and 4

Source: Utah Department of Environmental Quality, Division of Water Rights (2007a) in CH2MHill 2008f.

<u>Nevada</u>

No designated wellhead protection areas or springs would be crossed by the proposed pipeline route in Nevada (CH2MHill 2008f).

3.6.3.3. Surface Water

General Setting

<u>Utah</u>

The 399-mile-long main pipeline would traverse through two major drainage regions, or hydrologic unit codes (HUCs), as defined by the United States Geologic Survey (USGS), including the Great Basin and Lower Colorado HUCs. These two major regions are divided into five smaller sub-basins within the project area, consisting of the Jordan, Sevier, Beaver, and Lower Colorado River sub-basins and the Great Salt Lake sub-basin. A sub-basin includes the area drained by a river system, a reach of a river and its tributaries in that reach, or a closed basin(s) (CH2MHill 2008f). Drainage in the Central Basin and Range Region is internal and occurs predominantly by ephemeral streams and washes (NRCS 2006b). Major hydrologic features in the northern part of the project area include the Great Salt Lake and Sevier Lake. Most of the streams in this area are small and support only intermittent flows. **Exhibit 3.6-4** identifies the five sub-basins crossed by the proposed pipeline route and its alternatives, and the approximate starting and ending mileposts along the pipeline.

Exhibit 3.6-4 Drainage Basins Crossed by the Pipeline

State	Sub-basin Name	Starting Milepost	Ending Milepost
Utah	Jordan River	0	22
Utah	Great Salt Lake	22	81
Utah	Sevier River	81	153
Utah	Beaver River	153	290
Utah/Nevada	Lower Colorado River	290	399

Source: CH2MHill 2008f

Surface waters are classified according to the most beneficial existing and potential future uses of the waterbody, in order to provide protection for a variety of uses. The Utah Department of Environmental Quality classifies water quality for waters of the State. The state water quality classifications are designated to conserve the waters of the State; to protect, maintain, and improve the quality for public water supplies; to allow for the propagation of wildlife, fish, and aquatic life; and to allow for domestic, agricultural, industrial, recreational, and other legitimate beneficial uses (UAC No. R317-2). (CH2MHill 2008f)

<u>Nevada</u>

Water quality standards for the State of Nevada are set by the Division of Environmental Protection and define water quality goals of a waterbody by designating uses of the water and by setting criteria necessary to protect the beneficial uses of the waterbody. The State of Nevada considers beneficial uses to include recreation, aquatic life, fisheries, irrigation, and drinking water (Nevada Division of Environmental Protection 2003). (CH2MHill 2008f)

Floodplains

There are no mapped special flood hazard areas within the analysis area for the proposed project (FEMA 2008).

Wetlands and Waters of the U.S.

Wetlands and other waters of the United States are ecological habitats that are protected by federal and state laws and regulations. The Clean Water Act (CWA) is the primary statute providing protection of aquatic resources and is administered primarily by the United States Army Corps of Engineers (USACE). The USACE has jurisdictional authority to regulate discharge of dredge material and fill into waters of the United States (including wetlands) under Section 404 of the CWA (CH2MHill 2008g).

Regulatory Requirements

The following sections provide a framework of the USACE regulations, definitions, regulatory guidance, and case history relevant to the jurisdictional determination pertinent to this discussion (CH2MHill 2008g).

Waters of the United States. 33 CFR 328 defines waters of the United States as:

> *…all navigable waters, including: 1) all tidal waters; 2) all interstate waters and wetlands; 3) all other waters such as lakes, rivers, streams (perennial or intermittent), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce; 4) all impoundments of water mentioned above; 5) all tributaries to waters mentioned above; 6) territorial seas; and 7) all wetlands adjacent to waters mentioned above.*

Wetlands. Wetlands are defined as areas that are "…inundated by surface water or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (40 CFR 230 and 33 CFR 238). The 1987 Wetland Delineation Manual requires positive evidence for the presence of three criteria: hydrophytic vegetation, wetland hydrology, and hydric soils for an area to be considered a wetland, except in limited instances (USACE 1987). (CH2MHill 2008g)

The USACE has issued numerous Regulatory Guidance Letters (RGLs) that are intended to interpret or clarify policies and procedures pertaining to the regulatory program. In addition, the USACE recently issued guidance to identify wetlands and other waters of the United States, including the *1987 Wetland Delineation Manual* (USACE 1987), the *Interim Regional Supplement to the Corps of Engineers Manual: Arid West Region* (USACE 2006), *Delineating Playas in the Arid Southwest* (Brostoff et al. 2001), and *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (Lichvar and Wakeley 2004). Information provided in these documents is intended to identify general and regional conditions and indicators of wetlands in drier environments. Information from these resources was used in making wetlands and water determinations during the field surveys (CH2MHill 2008g).

Limits of U.S. Army Corps of Engineers Jurisdiction. Recent rulings by the U.S. Supreme Court, including the Solid Waste Agency of Northern Cook County (SWANCC) v. United States (2001) and Rapanos v. Unites States (2006), have resulted in new limitations and interpretations on how and under what circumstances the USACE can assert jurisdiction under the CWA. In the SWANCC (2001) ruling, the Court stated that non-navigable, isolated, intrastate waters could not be regulated solely by the use of migratory birds as a connection to interstate commerce. In the more recent Rapanos (2006) case, there was no majority decision that definitively determined the limits of USACE jurisdiction under the CWA. Justice Kennedy stated that waters subject to USACE jurisdiction must have a "significant nexus" to traditionally navigable waters and that the USACE must determine the existence of this nexus on a case-by-case basis. The Court did not define what constitutes a significant nexus. Justice Kennedy's opinion does state that continuous flow is not required and recognized that intermittent and ephemeral waters perform important ecological functions that are important to the integrality of the watershed and should be protected even in areas where there is not a direct surface hydrologic connection through overland flow (Murphy 2006). (CH2MHill 2008g)

Generally, federal jurisdiction under the CWA includes any wetlands and waters that have a direct (surface flow) hydrologic connection to a navigable water, as well as any wetlands that are considered to be adjacent to waters of the United States (33 CFR 320-330). (CH2MHill 2008g)

Direct Hydrologic Connection to a Navigable Waters. USACE jurisdiction includes all traditionally navigable waters and all tributaries to navigable waters upstream to the highest reaches of the tributary systems. For the purpose of this analysis, tributary systems include natural drainage features or excavated channels constructed in wetlands that have a direct surface flow connection with navigable waters (CH2MHill 2008g).

Adjacent Wetlands. The USACE defines adjacent as "…bordering, contiguous, or neighboring" and states that "wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes, and the like are 'adjacent wetlands'" (33 CFR 328). Adjacent wetlands do not necessarily require a direct hydrological connection to other waters of the United States. In the U.S. v. Riverside Bayview Homes (1985), the Supreme Court upheld USACE jurisdiction of a wetland adjacent to navigable waters, even though the wetland was not subject to flooding by the adjacent waterway and was only intermittently connected during storm events. Additionally, the U. S. Court of Appeals has consistently upheld that wetlands adjacent to any non-navigable waters that are tributary to navigable waters are subject to USACE jurisdiction (Treacy v. Newdunn Associates 2003; U.S. v. Deaton 2003; and Headwaters, Inc. v. Talent Irrigation District 2001). Therefore, any wetland present in the project area with a hydrologic nexus (such as intermittent surface connection resulting from storm events) between the wetland and any adjacent waters was considered jurisdictional (CH2MHill 2008g).

Isolated Wetlands and Waters. Wetlands and other waters in which there is no direct hydrologic connection or adjacency to other waters of the United States may be considered isolated wetlands and could be potentially excluded from USACE jurisdiction (CH2MHill 2008g).

Wetlands in the Project Area

The delineation for the proposed pipeline project and its alternative segments identified a number of wetlands, linear water features, and other aquatic features that were considered to be potentially jurisdictional waters of the U.S. Other areas that were identified or evaluated as part of the delineation included water conveyance canals, ephemeral washes, erosion channels, and upland swales. The following sections provide the results of the wetland delineation, including descriptions of the mapped features and sample locations, acreage summaries, and the preliminary jurisdictional determinations (CH2MHill 2008g). Detailed maps showing the location and preliminary jurisdictional determinations are provided in Appendix E of CH2MHill (2008b). Formal determination of jurisdiction by the USACE had not been completed by the date of publication of this analysis.

Jurisdictional Wetlands and Other Waters

A total of 141.49 acres of potential jurisdictional wetlands including emergent wetlands, seasonal wetlands, and salt flat wetlands were identified in the Proposed Action project area (**Exhibit 3.6-5**). An additional 58.67 acres of other jurisdictional waters, including the Jordan River, the DMAD Reservoir (an impoundment of the Sevier River), Rush Lake, ponds, open water, and intermittent creeks, canals, excavated drainages and ephemeral washes also occur within the Proposed Action project area (**Exhibit 3.6-5**). Several other features were identified that were considered to be non-jurisdictional (**Exhibit 3.6-6**). The majority of these features were constructed in uplands for water storage or conveyance such as retention ponds, reservoirs, canals, and drainage ditches. Naturally occurring features, such as non-tributary ephemeral washes and erosional channels and playas, were also identified in the project area. A total of 169 upland swales were also identified and mapped (CH2MHill 2008g).

Exhibit 3.6-5 Summary of Potential Jurisdictional Features Identified in the Study Area

Jurisdictional Wetlands	Acres
Emergent Wetlands	50.66
Seasonal Wetlands	53.23
Salt Flat Wetlands	39.58
Total Jurisdictional Wetlands	141.49
Other Jurisdictional Waters	**Acres**
Jordan River	0.22
Rush Lake	31.48
DMAD Reservoir	3.98
Ponds	6.27
Open Water	0.11
Intermittent Creeks	2.32
Canals	2.54
Excavated Drainages	0.78
Ephemeral Washes	11.07
Total Other Jurisdictional Waters	58.67
Total Potential Jurisdictional	200.16

Exhibit 3.6-6 Summary of Potential Non-Jurisdictional Features Identified in the Study Area

Other Waters	Acres
Kennecott Mine Retention Ponds	3.99
Red Rock Reservoir	0.09
Catchment Basin	1.45
Canals	0.94
Excavated Drainages	3.14
Ephemeral Washes (non-tributary)	4.74
Erosional Channels	2.88
Playas	90.73
Total Potential Non-Jurisdictional	107.96

Source: CH2MHill 2008g

The following sections provide descriptions of the wetlands and other aquatic features observed in the project area based on field observations and data collected during the wetland delineation.

Emergent Wetlands. A total of 50.66 acres of jurisdictional emergent wetlands were identified in the project area. Extensive emergent wetlands are present between MP 19 and MP 22 associated with the Kennecott Mine retention ponds. These areas are characterized by dense monocultures of common reed (*Phragmites australis).* These areas occur around the outer edges of the pond and cover approximately 40.5 acres of the project area. (CH2MHill 2008g) Additional emergent wetlands occur along the southern part of Rush Lake around MP 48. Vegetation was largely characterized by dense Olney's bulrush (*Scirpus americanus*) with Baltic rush (*Juncus balticus*) and silverweed cinquefoil (*Argentina anserina*) common in some areas. These areas were ponded with several inches of water at the time of the survey and appear to be inundated for extended periods of time during the spring and early summer months (CH2MHill 2008g).

Seasonal Wetlands. A total of 53.23 acres of seasonal wetland habitat was identified in the project area. The majority of the seasonal wetland habitat occurs between MP 3 and MP 10 and is associated with managed duck clubs and other seasonally inundated areas around the outer edges of the Great Salt Lake. Seasonal wetlands were also identified around the margins of Clover Reservoir near MP 55. Seasonal wetlands around the Great Salt Lake are generally characterized by salt tolerant hydrophytes such as saltgrass (*Distichlis spicata*), halberd-leaf saltbrush (*Atriplex prostrate*), pickle weed (*Salicornia utahensis, S. europea*), and Mediterranean barley (*Hordeum marinum* ssp. *gussonianum).* Some areas that appear to be subject to more prolonged inundation support more emergent species such as Baltic rush, Olneys's bulrush, and spike rush *(Eleocharis palustris).* Seasonal wetlands around Clover Reservoir were characterized by dense salt grass as well as Nebraska sedge *(Carex nebrascensis).* At the time of the survey these areas were dry, but appeared to be subject to seasonal inundation during the months when the water level in the Great Salt Lake and Clover Reservoir are high (CH2MHill 2008g).

Salt Flat Wetlands. Salt flat wetlands total 37.60 acres and typically occur in a mosaic with seasonal wetlands around the margins of the Great Salt Lake between MP 3 and MP 10, but they also occur in the area just south of the Clover Reservoir near MP 55. These areas are characterized by very sparse vegetation cover consisting almost entirely of pickleweed. Total vegetation cover is less than 50 percent and often less than 20 percent, with the remaining area open soil. As with the seasonal wetlands, these areas were dry at the time of the survey, but appeared to be saturated and/or inundated when lake and reservoir levels are high. Large, deep cracks were often observed in the open soils in these features (CH2MHill 2008g).

Other Waters in the Project Area

Other waters observed in the project area included both natural and constructed features that either hold or convey water. In a few areas the water is perennial. However, in many areas flows are either intermittent during the wetter months of the year, in response to snow melt, or highly ephemeral with flows typically occurring only in response to heavy rainfall events and subsequent runoff. The following sections provide descriptions of these water features (CH2MHill 2008g).

Jordan River. The project area crosses the Jordan River just west of MP 2. In this area the river channel is approximately 35 feet wide and is characterized by open water. The narrow band of riparian vegetation along the upper banks of the river includes cottonwood (*Populus fremontii*), Lombardy poplar (*Populus nigra*), Siberian elm (*Ulmus pumila*), peach leaf willow (*Salix amygdaloides*), and Russian olive (*Elaeagnus angustifolia*) trees. Understory vegetation includes reed canary grass (*Phalaris arundinace*), orchard grass (*Dactylis glomerata*), saltgrass, and redtop bentgrass (*Agrosteris stolinefiera*) (CH2MHill 2008g).

<u>Rush Lake.</u> Rush lake is a large, seasonal lake in Tooele County, Utah. The pipeline alignment crosses through the lake approximately between MP 45 and MP 48. Shallow inundation was observed in the lake at the time of the surveys, but much of the lake appears to become dry for some period of time during the later summer months (CH2MHill 2008g). This is entirely influenced by climatic conditions. The lake was seasonally dry between 2000 and 2007 during drought conditions.

<u>DMAD Reservoir.</u> DMAD Reservoir is located in Millard County, near the town of Delta, Utah. The reservoir was created in 1959 with an earth fill dam and north dike on the Sevier River. The reservoir has a total surface area of approximately 1,200 acres and a storage capacity of 10,990 acre-feet. Water is primarily used for agricultural irrigation and cooling two coal-fired power plants. The reservoir is also open to the public for recreational purposes. The project area crosses the reservoir just south of MP 130 (CH2MHill 2008g).

<u>Ponds and Open Water.</u> Most of the ponds and open water areas occur west of the Salt Lake City International Airport, in managed duck club areas, between MP 5 and MP 8. These features are often adjacent to seasonal wetlands and salt flats, and water levels are often manipulated to provide favorable waterfowl habitat. A total of 6.38 acres of ponds and open water occur along the margin of the Great Salt Lake. Although these areas are manipulated, they are considered part of a naturally created mosaic of wetlands and open water habitats and were therefore considered jurisdictional waters of the U.S. Approximately 4 acres of open water habitat is also found between MP 20 and MP 21 associated with the Kennecott Mine retention ponds. These retention ponds were not considered to be Waters of the U.S. (CH2MHill 2008g)

<u>Intermittent Creeks.</u> A total of 11 intermittent creeks were identified in the project area. These features ranged from small, approximately 4-foot-wide channels (Boulter Creek near MP 77) to large, open floodplain areas with multiple braided channels, such as Moody Wash (MP 299) and Beaver Dam Wash (MP 327). Some of these features contained flowing water at the time of the survey and others were dry. All of these features have well-defined flow channels and appear to support relatively prolonged flows in response to seasonal rainfall and/or snowmelt (CH2MHill 2008g).

<u>Canals.</u> Fifteen canals were identified in the study area, many of which appear to have been excavated in uplands for the conveyance of treated municipal water or for agricultural irrigation. Approximately 1.6 acres of canals in the study area appear to have either been constructed in wetlands, such as the canal features associated with managed duck clubs west of the airport (between MP 6 and MP 7), and canal features that appear to be realigned and channalized natural creeks such as Lee Creek near MP 14. The remaining 0.94 acres of canal appear to have been constructed entirely in uplands and were considered nonjurisdictional waters of the U.S. All of the canals within the study area appeared to be maintained and were largely devoid of vegetation, with the exception of the occasional patch of common reed along the banks. (CH2MHill 2008g)

<u>Excavated Drainages.</u> Thirty-nine excavated drainages were identified in the study area. The vast majority of these features (3.12 acres) appear to have been constructed entirely in uplands and were considered nonjurisdictional waters of the U.S. Only three features for a total of 0.87 acres appeared to have been constructed in wetlands or appeared to be realigned natural creeks. Excavated drainages ranged in size from small 1- to 2-footwide channels constructed to improve site drainage, to large 15- to 20-foot-wide agricultural irrigation ditches. Many of the drainages appeared to be routinely maintained while other areas had become overgrown with common reed. (CH2MHill 2008g)

<u>Ephemeral Washes.</u> Ephemeral washes were the most common feature observed in the study area. Of the 266 washes that were identified and mapped, 199 (approximately 75 percent) appeared to be tributary to other waters of the U.S. such as Spring Creek, Magotsu Creek, Beaver River, Virgin River, Muddy River, or Santa Clarita River, and were therefore considered jurisdictional waters of the U.S. The remaining 67 washes appeared to dissipate into overland flow and showed no direct

connection or significant nexus with other waters of the U.S. and were considered non-jurisdictional. Channel size, morphology, and substrate were highly variable. Some of the ephemeral washes were small, 2- to 3-foot-wide, well-defined channels with open sandy channels and others were broad, weakly expressed, gravel cobble channels that contained scattered upland shrubs. Many of the washes showed evidence of flowing water, such as litter and debris deposits, flow lines in the sand or gravel, shelving, and steeply cut banks. Unlike intermittent creeks, these features appear to convey water for short periods only in response to heavy rainfall events. (CH2MHill 2008g)

Erosional Channels. After ephemeral washes, erosional channels were the next most common feature observed in the project area. A total of 230 erosional scour channels, generally ranging from 1 to 3 feet wide, were identified in the project area. These features are generally more poorly defined than ephemeral washes (CH2MHill 2008g).

Playas. Two large playa areas were identified in the project area, from MP 154 to MP 156 and from MP 171 to MP 172.5. The extensive playa areas were characterized by sparse vegetation and open soils, but lacked any evidence of an ordinary high water mark (CH2MHill 2008g).

Other Areas. Other features observed included an abandoned catchment basin near MP 57 and the Red Rock Reservoir, which is a small, isolated, shallow reservoir near MP 197(CH2MHill 2008g) .

Upland Swales. A total of 169 upland swales were identified and mapped. These features are low topographic areas that appear to convey overland flow resulting from storm events. Upland vegetation is present throughout the area and, while in some areas there is erosional scouring, these areas lack defined channels and evidence of an ordinary high water mark (CH2MHill 2008g).

3.6.4. Existing Conditions for Alternatives

3.6.4.1. Airport Alternative Route

The Airport Alternative Route crosses the same features as the Proposed Action between MP 6.6 and MP 10 (CH2MHill 2008d). Specific information on each individual feature is provided in Appendix D of CH2M Hill (2008b).

3.6.4.2. Tooele County Alternative Route

Exhibit 3.6-7 summarizes water resources along the Tooele County Alternative Route.

Exhibit 3.6-7 Summary of Potential Jurisdictional and Non-Jurisdictional Features Identified along the Tooele County Alternative Route

Jurisdictional Waters	Acres
Ephemeral Washes	0.079
Total Potential Jurisdictional	**0.079**
Non-Jurisdictional Waters	
Upland Swales	0.048
Total Potential Non-Jurisdictional	**0.048**

3.6.4.3. Rush Lake Alternative Route

The Rush Lake Alternative Route crosses very similar water resource features and is slightly higher in elevation than the Proposed Action between MP 45.5 and MP 49.

3.6.4.4. Millard County Alternative Route

There are no established water rights (wells or springs) within 200 feet of the Millard County Alternative Route.

Exhibit 3.6-8 summarizes water resources along the Millard County Alternative Route. Swan Lake and the Swan Lake Salt Marsh have small areas of perennial riparian areas which have sedges and rushes included in the vegetation. The proposed pipeline would go between the two features. The riparian vegetation associated with the crossing of the Sevier River was dominated by Tamarisk.

Exhibit 3.6-8 Summary of Potential Jurisdictional and Non-Jurisdictional Features Identified in the Millard County Alternative Route

Jurisdictional Waters	Acres
Sevier River	0.10
Ephemeral Wash	0.02
Total Potential Jurisdictional	**0.12**
Non-Jurisdictional Waters	
Upland Swales (2)	0.18
Total Potential Non-Jurisdictional	**0.18**

3.7. Vegetation

3.7.1. Area of Analysis

The project area follows the proposed and alternative pipeline alignments, which traverse portions of the states of Utah and Nevada. The project area for vegetation is defined as 100 feet on either side of the proposed pipeline centerline and its alternatives, the lateral line servicing the Salt Lake City Airport, the Cedar City Lateral, the periphery of proposed UNEV facilities (CH2MHill 2008h), as well as all staging areas and access roads.

3.7.2. Data Sources and Methods

The existing Kern River pipeline route, as described in FERC and California State Lands Commission (2002), and the proposed pipeline route are essentially the same from approximately MP 250 of the pipeline route south approximately 150 miles to Las Vegas. The routes diverge significantly from MP 0 to MP 250 of the proposed pipeline route (and its alternative alignment segments). Therefore, pertinent site-specific vegetation information related to MP 250 and higher (to MP 399) was taken from FERC and CSLS (2002). General observations regarding plant communities along the pipeline route from MP 0 to MP 250 were made during field reconnaissance conducted in conjunction with wetland surveys. The Nevada Department of Wildlife (NDOW) recently prepared the Nevada Wildlife Action Plan (NDOW 2006), in which general wildlife use of the habitat types that occur along the pipeline route were described. Resources available on the NDOW (2006) and Utah Division of Wildlife Resources (UDWR 2005) web sites were also accessed for pertinent information. The NatureServe website (2008) was also accessed for certain species information (CH2MHill 2008h).

3.7.3. Existing Conditions for Proposed Action

3.7.3.1. Upland Vegetation Communities/Habitat Types

The proposed main pipeline route and its alternative segments traverse a number of different vegetation communities. The northern section of the route primarily passes through urban and/or industrial lands on the northern end of Salt Lake City, from approximately MP 0 to MP 19. This section of the route crosses the most disturbed land, but much of the southern route segment, from approximately MP 250 south to MP 399, lies within a previously established and disturbed utility corridor. Approximately 150 miles of pipeline in this southern segment would be on previously disturbed land. Much of the approximately 250 miles of pipeline in the northern segment would traverse vegetative communities that are either located within the proposed Westwide Energy Corridor or are parallel to the existing Kern River pipeline in the Salt Lake City area, or are adjacent to existing powerline rights-of-way in other areas. **Exhibit 3.7-1** summarizes vegetation types located along the 399-mile-long main proposed pipeline route and its corresponding alternative segments, by linear mileage. The *Habitat Change Figures 1 through 88* (CH2MHill 2008h) can be found in the Project Record and show the locations of vegetation communities, by milepost, along the proposed alignment, and the following descriptions correspond to those communities (CH2MHill 2008h).

Exhibit 3.7-1 Miles of Existing Vegetation Communities Within the Proposed Pipeline Route and Segments Corresponding to Alternatives

<table>
<tr><th colspan="2" rowspan="2">Vegetation Community</th><th rowspan="2">Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)</th><th rowspan="2">Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)</th><th rowspan="2">Airport Lateral Line</th><th rowspan="2">Cedar City Lateral Line</th><th colspan="3">Proposed Action Segments Corresponding to Alternative Segments</th></tr>
<tr><th>Airport Alternative MP 6.6 – MP 10</th><th>Tooele County Alternative MP 25.3 – MP 38.7</th><th>Millard County Alternative MP 110 – MP 161</th></tr>
<tr><td rowspan="2">Agricultural Lands</td><td>Total Miles</td><td>9</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td>4</td></tr>
<tr><td>MPs</td><td>MP 0 – MP 2, MP10 - MP11, MP 57 – MP 58, MP 86 - 87, MP118-MP122</td><td>MP118-MP122</td></tr>
<tr><td rowspan="2">Blackbrush Shrub/ Joshua Tree Forest</td><td>Total Miles</td><td rowspan="2">0</td><td>9</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td></tr>
<tr><td>MPs</td><td>MP 315 – MP 317, MP 320 – MP 322, MP 324 – MP 329</td></tr>
<tr><td rowspan="2">Blackbrush Shrub/ Juniper Woodland and Pinyon-Juniper Woodland</td><td>Total Miles</td><td rowspan="2">0</td><td>10</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td></tr>
<tr><td>MPs</td><td>MP304 – MP314</td></tr>
<tr><td>Desert Saltbrush Shrub</td><td>Total Miles</td><td>25</td><td>4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>2</td></tr>
</table>

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments		
						Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
	MPs	MP 61 – MP 63, MP 69 – MP 71, MP 73 – MP 74, MP 94 – MP 97, MP 158 – MP 160, MP 161 – MP 167, MP 174- MP 175, MP 199 – MP 202, MP 205 – MP 209, MP 216 – MP 217	MP 394 – MP 398					MP 158 – MP 160
Disturbed Grasslands (>50 percent weeds/exotic species)	Total Miles	44	0	0.10	0	0	0	17

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments		
						Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
	MPs	MP 2 – 3, MP 11 – MP 23, MP 43 – MP 44, MP 48 – MP 50, MP 106 – MP 118, MP 127 – MP 128, MP 137 – MP 138, MP 145 – MP 147, MP 148 – MP 154, MP 167 – MP 168, MP 171 – MP 172, MP 176 – MP 177, MP 186 – MP 187, MP 226 – MP 228		MP 2.03 – MP 2.13				MP 110 – MP 118, MP 127 – MP 128, MP 137 – MP 138, MP 145 – MP 147, MP 148 – MP 154,
Greasewood Shrub	Total Miles	29.5	0	0	0	0	0	17

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments		
						Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
	MPs	MP 55 – MP 57, MP 63 – MP 69, MP 122 – MP 127, MP 128 – MP 130, MP 130 – MP 137, MP 156 – MP 158, MP 160 – MP 161, MP 168 – MP 169, MP 170 – MP 171, MP 229 – MP 232						MP 122 – MP 127, MP 128 – MP 130, MP 130 – MP 137, MP 156 – MP 158, MP 160 – MP 161,
Industrial Gravel/ Asphalt	Total Miles	0	0	1.14	0	0	0	0
				MP 1.16 – MP 2.03, MP 2.13 – MP 2.40				
Joshua Tree Forest/Grass-land	Total Miles	0	5	0	0	0	0	0
	MPs		MP 317 – MP 320, MP 322 – MP 324					
Juniper Woodland	Total Miles	1	12	0	0	0	0	0

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments: Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
and Pinyon-Juniper Woodland	MPs	MP 93 – MP 94,	MP 291 – MP 292, MP 293 – MP 304					
Juniper Woodland and Pinyon-Juniper Woodland/ Sagebrush Shrub	Total Miles	0	2	0	0	0	0	0
	MPs		MP 289 – MP 291					
Marsh/Mud-flats	Total Miles	19	0	0.14	0	2.4	0	10
	MPs	MP 3 – MP 7, MP 8 – MP 10, MP 46 – MP 48, MP 54 – MP 55, MP 138 – MP 145, MP 147 – MP 148, MP 154 – MP 156		MP 0 – MP 0.14		MP 6.6 – MP 7, MP 8 – MP 10,		MP 138 – MP 145, MP 147 – MP 148, MP 154 – MP 156
Mojave Creosote-Bursage Shrub	Total Miles	0	40	0	0	0	0	0
	MPs		MP 329 – MP 331, MP 357 – MP 394, MP 398 – MP 399					

<table>
<tr><th rowspan="2" colspan="2">Vegetation Community</th><th rowspan="2">Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)</th><th rowspan="2">Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)</th><th rowspan="2">Airport Lateral Line</th><th rowspan="2">Cedar City Lateral Line</th><th colspan="3">Proposed Action Segments Corresponding to Alternative Segments</th></tr>
<tr><th>Airport Alternative MP 6.6 – MP 10</th><th>Tooele County Alternative MP 25.3 – MP 38.7</th><th>Millard County Alternative MP 110 – MP 161</th></tr>
<tr><td rowspan="2">Mojave Creosote-Bursage Shrub/ Joshua Tree Forest</td><td>Total Miles</td><td rowspan="2">0</td><td>26</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td></tr>
<tr><td>MPs</td><td>MP 331 – MP 357</td></tr>
<tr><td rowspan="2">Riparian Woodland</td><td>Total Miles</td><td>0.5</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td>0.5</td></tr>
<tr><td>MPs</td><td>MP 130</td><td>MP 130</td></tr>
<tr><td rowspan="2">Sagebrush Shrub/ Grassland</td><td>Total Miles</td><td>1</td><td>10</td><td rowspan="2">0</td><td rowspan="2">7</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td></tr>
<tr><td>MPs</td><td>MP 245 – MP 246</td><td>MP 254 – MP 261, MP 263 – MP 266</td></tr>
<tr><td rowspan="2">Sagebrush Shrub/ Grassland/ Juniper Woodland and Pinyon-Juniper Woodland</td><td>Total Miles</td><td rowspan="2">0</td><td>2</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">0</td></tr>
<tr><td>MPs</td><td>MP 279 – MP 281</td></tr>
<tr><td>Sagebrush/ Sagebrush Shrub</td><td>Total Miles</td><td>58</td><td>14</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>

Vegetation Community		**Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)**	**Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)**	**Airport Lateral Line**	**Cedar City Lateral Line**	**Proposed Action Segments Corresponding to Alternative Segments**		
						Airport Alternative MP 6.6 – MP 10	**Tooele County Alternative MP 25.3 – MP 38.7**	**Millard County Alternative MP 110 – MP 161**
	MPs	MP 41 – MP 43, MP 44 – MP 46, MP 50 – MP 54, MP 58 – MP 61, MP 71 – MP 73, MP 74 – MP 86, MP 90 – MP 91, MP 97 – MP 98, MP 102 – MP 104, MP 187 – MP 188, MP 209 – MP 216, MP 217 – MP 218, MP 219 – MP 221, MP 224 – MP 228, MP 234 – MP 245, MP 246 – MP 250	MP 250 – MP 254, MP 266 – MP 267, MP 281 – MP 289, MP 292 – MP 293					
Urban Lands	Total Miles	2	0	0	0	0	.7	0
	MPs	MP 38 – MP40					MP 38 – MP38.7	
Utah Grassland/	Total Miles	61	14	1.02	3	1	12.7	0

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments: Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
Desert Grassland	MPs	MP 7 – MP 8, MP 23 – MP 38, MP 40 – MP 41, MP 87 – MP 90, MP 91 – MP 93, MP 98 – MP 102, MP 104 – MP 106, MP 169 – MP 170, MP 172 – MP 174, MP 175 – MP 176, MP 177 – MP 186, MP 188 – MP 189, MP 202 – MP 205, MP 218 – MP 219, MP 221 – MP 222, MP 223 – MP 224, MP 228 – MP 229, MP 232 – MP 234,	MP 261 – MP 263, MP 267 – MP 279	MP 0.14 – MP 1.16		MP 7 – MP 8	MP 25.3 – MP 38	
Utah Grassland/ Desert Grassland/ Blackbush Shrub	Total Miles	0	1	0	0	0	0	0
	MPs		MP 314 – MP 315					

Vegetation Community		Proposed Action: Northernmost 250 Miles (MP 1 - 250, undisturbed)	Proposed Action: Southernmost 150 Miles (MP 250 - 399, adjacent to Kern River ROW)	Airport Lateral Line	Cedar City Lateral Line	Proposed Action Segments Corresponding to Alternative Segments		
						Airport Alternative MP 6.6 – MP 10	Tooele County Alternative MP 25.3 – MP 38.7	Millard County Alternative MP 110 – MP 161
Playa	Total Miles	0	0	0	0	0	0	0
	MPs							

Source: CH2MHill 2008h

Sagebrush/Sagebrush Shrub

Undisturbed sagebrush (*Artemisia tridentata*) habitat is uncommon along the proposed pipeline route and is found in small patches, often intermixed with juniper (*Juniperus spp.*) in the northern to middle segments of the route. Primary understory grasses are needle-and-thread grass (*Hesperostipa comata*), Indian ricegrass (*Achnatherum hymenoides*), and squirreltail (*Elymus elymoides*). Sagebrush is found with a variety of other shrubs, but rubber rabbitbrush (*Ericameria nauseosa*) is a component of almost all sagebrush stands. The largest segments of sagebrush are located between MP 71 and MP 86 and between MP 234 and MP 254 (CH2MHill 2008h).

Desert Saltbrush Shrub

Desert saltbrush shrub is dominated by several species of saltbrush (*Atriplex spp*.) and is located on soils that tend to be alkaline, saline, or both. Remnants of this habitat type are predominantly found in the northern segments of the proposed pipeline route between MPs 61 to 97, 158 to 175, and 199 to 217 (CH2MHill 2008h).

Greasewood Shrub

The greasewood (*Sarcobatus vermiculatus*) shrub community (MP 122 to MP 136) is dominated by greasewood but can also be a mixture of Gardner's saltbrush (*Atriplex gardneri*) and spiny saltbrush (*Atriplex confertifolia*). Although relatively uncommon as a dominant stand type along the proposed pipeline route, it is widely distributed throughout Utah and occurs as a subdominant in many other shrub types (CH2MHill 2008h).

Utah Grassland/Desert Grassland

Grasslands dominated by native species (including needle-and- thread grass, Indian ricegrass, and squirreltail) start near MP 7 and continue with disruptions through MP 279. Forbs are important components of many of the less disturbed areas of grassland. Some areas have inclusions with overstories of sagebrush, greasewood, and rabbitbrush but grasses remain a large component. Desert grasslands appear to be infested with the exotic Mediterranean grass (*Schismus spp.*). Desert areas are classified as a shrub type, not as grassland (CH2MHill 2008h).

Juniper Woodland and/Pinyon-Juniper Woodland

Within the proposed pipeline ROW, juniper *(Juniperus osterosperma*) woodlands are more prevalent than pinyon-juniper. Understory grasses described for the sagebrush habitat type also occur in this habitat type. One of the largest segments of sagebrush and juniper communities is located between MP 280 and MP 303. The existing utility crossing National Forest land has already disturbed a large segment of this habitat type (CH2MHill 2008h).

Blackbrush Shrub

Blackbrush (*Coleogyne ramosissima*) occurs primarily in the transition zone between the Mojave and Great Basin Deserts (MP 304 to 329), forming a band across southwestern Utah and into Nevada. Blackbrush shrub is predominantly blackbrush, but Anderson's desert thorn (*Lycium andersoni*) and Mojave yucca (*Yucca schidigera*) are common in some areas. This community is broadly ecotonal with Joshua tree (*Yucca brevifoila*) woodlands and Mojave yuccas *(Yucca schidigera*) at lower elevations and juniper woodland at higher elevations. Much of the blackbrush shrub community in the project area has been severely impacted by fire (CH2MHill 2008h).

Mojave Creosote-Bursage

The Mojave creosote-bursage community (MP 329 to MP 399) is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). This is the most common association of plants in the Mojave Desert, covering as much as 70 percent of the desert. This community occurs primarily on lower portions of valley floors and bajadas (geologic formations created by the lateral merging and blending of a series of alluvial fans). Other shrubs commonly occurring with these species include Mojave yucca, spiny menodora (*Menodora spinescens*), wolfberry (*Lycium* spp.), green ephedra (*Ephedra viridis*), ratany (*Krameria* spp.), rayless goldenhead (*Acamptopappus sphaerocephalus*), soft prairie clover (*Dalea mollissima*), and whitestem paperflower (*Psilostrophe cooperi*). Yucca and cacti are also common within the Mojave creosote-bursage community (CH2MHill 2008h).

Joshua Tree Forest

Joshua tree stands are a relatively rare vegetation type along the pipeline ROW, originally occurring as inclusions within Mojave creosote-bursage and blackbrush shrub communities. These stands are even rarer now, after fire burned through some of the best remaining stands within the pipeline ROW (CH2MHill 2008h).

3.7.3.2. Riparian Woodland and Marsh/Mudflats

Riparian woodlands along the pipeline ROW have been heavily impacted by invasion of Russian olive (*Elaeagnus angustifolia*) and salt cedar (*Tamarix spp.*). Riparian areas with native willows (*Salix spp.*) and cottonwood (*Populus spp.*) are uncommon. Some areas have remnant Fremont's cottonwood (*Populus fremontii*) and coyote willow (*Salix exigua*) stands. Marsh/mudflat areas are located on the northernmost portion of the route, in the vicinity of the Salt Lake City International Airport (CH2MHill 2008h). The proposed pipeline goes through mudflats in sections 12, 13, and 14 of T. 19 S., R. 8 W. and across mud flats and other wetlands from the eastern part of section 11 of T. 18 S., R. 6 W. and through the northern part of Sections 28 of T.18S., R.7W. These riparian and marsh/mudflat areas occur along the proposed alignment –between MP 3 to 10.

3.7.3.3. Agricultural Lands

These lands occur primarily along the northern segment of the proposed pipeline route (MP 0 to 2, and MP 10 to 11). Several communities, such as Delta, Utah, have some irrigated farmlands directly adjacent to the proposed pipeline route (MP 118 to 122) (CH2MHill 2008h).

3.7.3.4. Noxious Weeds

The BLM defines an invasive weed as "a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. Its presence deteriorates the health of the site, it makes efficient use of natural resources difficult and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all" (BLM National List of Invasive Weed Species of Concern). They have the ability to readily establish and spread rapidly, particularly in disturbed areas, and may cause damage to agriculture, range resources, and forestry, as well as increase fire susceptibility and affect human health and safety.

Federal Executive Order 13112, *Prevention and Control of Invasive Species* (February 3, 1999), defines invasive species as "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." This order requires any Federal agency whose action may affect the status of invasive species to undertake reasonable and appropriate measures to prevent or minimize the spread of invasive species, and to monitor and manage their conditions. A number of additional Federal laws address identification, treatment, and monitoring of invasive species, including the following:

- Lacey Act as amended (18 U.S.C. 42)
- Nuisance Prevention and Control Act of 1990 as amended (16 U.S.C. 4701 et. seq.)
- Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (Section 1453 "Management of Undesirable Plants on Federal Lands" U.S.C. 2801 et. seq.)

- Federal Plant Pest Act (7 U.S.C. 150aa et. seq.)
- Carlson-Foley Act of 1968 (Public Law 90-583)
- Salt Cedar and Russian Olive Control Demonstration Act (Public Law 109-320)
- Safe, Accountable, Flexible, Efficient Transportation Equity Act (Public Law 109-59)
- Noxious Weed Control and Eradication Act (Public Law 108-412)

In addition to federal regulations, the State of Utah Department of Agriculture and State of Nevada Department of Agriculture serve to regulate noxious weed presence. The Federal Noxious Weed List, Utah and Nevada State Noxious Weed List, and BLM Invasive Weed Species of Concern List are provided in **Appendix F**.

Noxious weeds (e.g., squarrose knapweed, Scotch thistle, Dalmation toadflax, Dyers woad) are prevalent on the northern section of the proposed route in Salt Lake, Tooele, Juab, and Millard counties, and on portions of the southern section of the route along the previously disturbed utility corridor, past burned sites, disturbed areas such as overgrazed areas, mining areas, gravel pits and recreation/ATV use areas. In degraded salt desert shrub communities in Salt Lake and Tooele counties, noxious weeds consisting primarily of Squarrose knapweed (*Centaurea virgata*), Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), musk thistle (*Carduus nutans*), Russian knapweed (*Acroptilon repens*), hoary cress (Cardaria draba) and dalmation toadflax (Linaria genistifolia) dominate large areas of the proposed ROW. Field bindweed (Convulus arvensis) is also prevalent on many disturbed areas mainly on private irrigated lands. (CH2MHill 2008h)

Hoary cress is a perennial weed with creeping rootstocks. It reproduces by root segments and seeds. Dalmatian toadflax, found on the Nevada Noxious Weed List, is a perennial weed that prefers disturbed sites on sandy soils. It is aggressive and hard to control because of deep roots and a waxy leaf. It reproduces by root segment and seeds. Field bindweed is a perennial with prostrate stems up to 6 feet long and extensive roots. It reproduces by both seed and rootstock. (CH2MHill 2008h) Squarrose knapweed is a taprooted perennial, with deciduous seed heads that fall off the stems soon after seeds mature. Canada, Scotch, and musk thistle are members of the aster family. These thistles range in size from as little as 12 inches to over 60 inches in height. They are readily identified by dark green leaves with a light central vein, deep lobed, and spiny tips. Thistles commonly invade pastures, range and forest lands, grain fields, stream and ditch banks, roadsides, waste areas, vacant lots, and abandoned farmland (Whitson ed. 2004).

Although not legally designated as noxious in Utah or Nevada, cheatgrass (*Bromus tectorum*), tumble weed (*Salsola kali*), mustard (*Syssimbrium altissimum*), halogeton (*Halogeton glomeratus*) burr buttercup (*Ranunculus testiculatus*), and tansy mustard (*Descurainia sophia*) have invaded both states to the degree that they are present in varying amounts on all sections of the proposed pipeline ROW. The degradation of upland habitats by cheatgrass is of special concern because of its influence on the natural fire cycle. Cheatgrass carries fire better than most native species and responds quickly to expand after fire on most western rangelands (CH2MHill 2008h).

Riparian areas along the proposed pipeline ROW are infested with three invasive species of concern to land management agencies: Russian olive, especially in the northern section; Phragmites; and salt cedar. The degradation of riparian areas by salt cedar is especially detrimental to wildlife. Once established, salt cedar and Russian olive are extremely difficult to control (CH2MHill 2008h).

3.7.4. Existing Conditions for Alternatives

Exhibit 3.7-3 details vegetation found along the proposed alternative routes. Vegetation community descriptions would be the same as those described above.

Exhibit 3.7-3 Miles of Existing Vegetation Communities within the Alternative Routes

Vegetation Community		Airport Alternative	Tooele County Alternative	Rush Lake Alternative Route	Millard County Alternative
Agricultural Lands	Total Miles	0	3.5	Same as Proposed Action	0
	MPs		MP 1 – MP2, MP 3 – MP 3.5, MP 8 – MP 9.5, MP 13 – MP 13.5		
Blackbrush Shrub/ Joshua Tree Forest	Total Miles	0	0		0
	MPs				
Blackbrush Shrub/ Juniper Woodland and Pinyon-Juniper Woodland	Total Miles	0	0		0
	MPs				
Desert Saltbrush Shrub	Total Miles	0	0		2.5
	MPs				MP 26 – MP 28.5
Disturbed Grasslands (>50 percent weeds/exotic species)	Total Miles	0	6.9		4
	MPs		MP 1 – MP 1, MP 2 – MP 2.5, MP 9.5 – MP 13, MP 13.5 – MP 15.4		MP 0 – MP 3, MP 49.25 – MP 50.25
Greasewood Shrub	Total Miles	0	0		0
	MPs				
Joshua Tree Forest/Grass-land	Total Miles	0	0		0
	MPs				
Juniper Woodland and Pinyon-Juniper Woodland	Total Miles	0	0		3.5
	MPs				MP 3 – MP 6.5
Juniper Woodland	Total Miles	0	0		0

Vegetation Community		Airport Alternative	Tooele County Alternative	Rush Lake Alternative Route	Millard County Alternative
and Pinyon-Juniper Woodland/ Sagebrush Shrub	MPs				
Marsh/Mud-flats	Total Miles	3.4	0		1.5
	MPs	MP 0 – MP 3.4			MP 55 – MP 56.5
Mojave Creosote-Bursage Shrub	Total Miles	0	0		0
	MPs				
Mojave Creosote-Bursage Shrub/ Joshua Tree Forest	Total Miles	0	0		0
	MPs				
Riparian Woodland	Total Miles	0	0		0.5
	MPs				MP 49 – MP 49.25, MP 50.25 – MP 50.5
Sagebrush Shrub/ Grassland	Total Miles	0	0		0
	MPs				
Sagebrush Shrub/ Grassland/ Juniper Woodland and Pinyon-Juniper Woodland	Total Miles	0	0		0
	MPs				
Sagebrush/ Sagebrush Scrub	Total Miles	0	1		51.0
	MPs		MP 2.5 – MP 3, MP 3.5 – MP 4		MP 6.5 – MP 26, MP 28.5 – MP 49, MP 40.5 – MP 55, MP 56.6 – MP 63
Urban Lands	Total Miles	0	0		0
	MPs				

Vegetation Community		Airport Alternative	Tooele County Alternative	Rush Lake Alternative Route	Millard County Alternative
Utah Grassland/ Desert Grassland	Total Miles	0	4		0
	MPs		MP 4 – MP 8		
Utah Grassland/ Desert Grassland/ Blackbush Shrub	Total Miles	0	0		0
	MPs				
Playa	Total Miles	0	0		0
	MPs				

3.8. Wildlife

3.8.1. Area of Analysis

The area of analysis for wildlife has been defined as an area extending out 100 feet on either side of the proposed pipeline, the lateral line servicing the Salt Lake City Airport, and Cedar City Lateral centerline (for a total width of 200 feet) or periphery of other proposed UNEV facilities (i.e., terminals, pump stations, etc.), as well as all staging areas and access roads. The analysis area would follow the proposed pipeline route through portions of the States of Utah and Nevada. The pipeline would originate in Davis County, Utah and cross Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington counties in Utah. In Nevada, it would cross Lincoln County and terminate in Clark County. (CH2MHill 2008h)

3.8.2. Data Sources and Methods

From approximately MP 250 of the proposed pipeline route south approximately 150 miles to Las Vegas, the proposed pipeline would follow the existing Kern River pipeline route described in FERC and CSLS (2002). Therefore, much of the pertinent site-specific wildlife information for the portion of the pipeline from MP 250 to approximately MP 399 was taken from FERC and CSLS (2002). The more northern portions of the proposed pipeline route (from MP 0 to MP 250) diverge significantly from the Kern River pipeline route. Data for these sections comes from general wildlife observations made during wetland surveys conducted by CH2M Hill in 2007 and from the UDWR website (2007). Field observations also were recorded along the Kern River portion of the pipeline route during surveys conducted in 2007. Furthermore, The Nevada Department of Wildlife (NDOW) recently prepared the Nevada Wildlife Action Plan (NDOW 2006), in which general wildlife use of the habitat types that occur along the proposed pipeline route were described. Much of the information used below to describe general wildlife and habitats along the route is summarized from NDOW (2006). The NatureServe website (2007) was also accessed for certain species information (CH2MHill 2008h).

3.8.3. Existing Conditions for Proposed Action

3.8.3.1. Terrestrial Wildlife Habitat Types and Common Wildlife Species

Based on results of the field surveys and information in the Kern River document (FERC and CSLC 2002), the proposed pipeline route crosses six major non-agricultural vegetation communities. These communities are described in detail in **Sections 3.6.3.3, Wetlands and Waters of the U.S.** and **3.7.3.1, Upland Vegetation Communities/Habitat Types**, and include:

- Sagebrush/sagebrush shrub
- Juniper woodland/pinyon juniper woodland
- Mojave creosote-bursage /blackbrush shrub/greasewood shrub/Joshua tree woodland
- Utah grassland/desert grassland
- Desert saltbrush shrub
- Wetlands and riparian areas

Each of these vegetation communities provides breeding, nesting, cover, and foraging habitat for a variety of wildlife. In general, the Mojave creosote-bursage and sagebrush shrub vegetation communities are the most abundant habitat types along the proposed pipeline route. The location (MP) of each habitat type that would be crossed by the proposed pipeline route is presented in **Exhibit 3.7-1**. NDOW (2006) described each of these vegetation communities and the wildlife species common to each of these areas. This information is summarized in the following section by habitat type and a list of wildlife species common to each habitat type is presented in **Exhibit 3.8-1** below.

Sagebrush/Sagebrush Shrub

Sagebrush shrublands generally occur throughout the Great Basin and are most common in valleys and mountain ranges north and northeast of the Mojave Desert, although they do occur in the Mojave Desert ecoregion, mostly at mid-elevations and higher on mountain ranges. Along the pipeline route, sagebrush shrublands are found almost entirely in Utah. As shown in **Exhibit 3.7-1**, sagebrush and sagebrush shrub may be found in a mosaic with other habitat types as well as in large monotypic expanses (CH2MHill 2008h). Approximately 58.0 miles of the proposed route (15 percent) is dominated by sagebrush and sagebrush shrub, with 2.0 miles (less than 1 percent) of juniper woodland and pinyon-juniper woodland/sagebrush shrub, and 11.0 miles (3 percent) of sagebrush shrub/grassland. Further, the proposed pipeline route appears to cross at least four separate areas covering 50 miles that are designated as shrub steppe (sagebrush/sagebrush shrub) focus areas by the UDWR in their assessment of key habitats for species of greatest conservation need (UDWR 2005). Shrub steppe focus areas are designated because they support populations of one or often multiple rare or declining species. These approximate locations of these focus areas are as follows: between MPs 190 – 200, 205 – 220, 265 – 280, and 310 – 320 (CH2MHill 2008h). Shrub steppe habitat may also occur outside these areas but the habitat is concentrated within the focus areas along the alignment.

Eight wildlife species are predominantly dependent on sagebrush habitat for most of their life history needs, including pygmy rabbit, Great Basin pocket mouse, sagebrush vole, sagebrush lizard, greater sage grouse, sage thrasher, Brewer’s sparrow, and sage sparrow. Mule deer are also dependent on the sagebrush type to meet some of their life history requirements. Of all the sagebrush dependent species, the pygmy rabbit and greater sage grouse are the species most highly adapted to the use of sagebrush itself. Both of these species are Utah BLM state and USFS sensitive species, and are discussed in further detail in **Section 3.9, Special Status Species**. Sage thrashers, Brewer’s sparrows, and sage sparrows depend heavily on the shrub component for nesting substrate, and their distribution is closely tied with that of sagebrush. Black-throated sparrows, loggerhead shrikes (*Lanius ludovicianus*), and gray flycatchers also nest in the mature shrub component (CH2MHill 2008h).

A landscape characteristic that is unique to the sagebrush community is the presence of snow bank swales. These are small mesic communities where snow accumulates under ridges or in depressions and persists well past normal snowmelt. These snow-watered communities are important to the sagebrush wildlife community because they provide a temporal transition between the desiccation of understory on the uplands and the shift in dependence to meadows for herbaceous food. Green-tailed towhees thrive in these microsites, brooding greater sage grouse seek the fresh forbs in these mesic microsites after the upland forb component has desiccated, and mule deer use these swales for feeding and bedding within their summer range, as well as a number of other species (CH2MHill 2008h).

Washes are also prominent features and have unique attributes for certain terrestrial species including endemic amphibians because of their function as a conduit for surface runoff and subsoil moisture. By retaining higher soil moisture than surrounding upland areas, they can serve as enhanced movement and migration pathways for these species and facilitate their distribution across the landscape, perhaps serving an important role in amphibian metapopulation maintenance (CH2MHill 2008h).

Juniper Woodland/Pinyon Juniper Woodland

Pinyon-juniper woodlands include pure to nearly pure stands of single leaf pinyon, or any of three species of junipers – Utah, Western, or Rocky Mountain (CH2MHill 2008h). Along the proposed pipeline route approximately 13.0 miles (3 percent) is dominated by juniper woodland or pinyon-juniper woodland, approximately 10.0 miles (3 percent) is a mix of blackbrush shrub and pinyon-juniper woodland, and approximately 4.0 miles (1 percent) is a mix of pinyon juniper woodland and sagebrush shrub or grasslands.

Juniper and pinyon-juniper woodlands provide a variety of sheltering functions for wildlife that range from hiding cover to cavities and nest sites for birds, bats, and small mammals. As an evergreen cover, the forests provide important thermal protection for wildlife during winter, and provide shelter from summer’s intense sun. For example, the ferruginous hawk (*Buteo regalis*; discussed in **Section 3.9, Special Status Species**) exploits pinyon-juniper by relying on older trees of sufficient size and structure to support their large nest platforms. For other birds, and bats in particular, the pinyon-juniper woodland provides structure for nesting, roosting, and foraging. These features are particularly important since the majority of the proposed pipeline route is dominated by shrubs. In addition, species such as the pinyon jay are strongly tied to the pinyon nuts available in pinyon-juniper woodlands. Though not so closely tied to a single species, the juniper berry crop is also an important food resource for birds and small mammals (CH2MHill 2008h).

Mojave Creosote-Bursage/Blackbush Shrub/Greasewood Shrub/Joshua Tree Woodland

NDOW (2006) characterizes the Mojave creosote-bursage, blackbrush shrub, greasewood shrub, and Joshua tree woodland vegetation types as the Mojave/Sonoran Warm Desert Shrub ecoregion (CH2MHill 2008h). In total, these vegetation types cover approximately 30 percent of the proposed route. Blackbrush shrub/Joshua tree forest covers approximately 9.0 miles (2 percent), joshua tree/grassland 5.0 miles (1 percent), greasewood shrub 29.5 miles (7 percent), Mojave creosote-bursage 40.0 miles (10 percent), Mojave creosote-bursage/Joshua tree forest 26.0 miles (7 percent), with approximately 1.0 mile (less than 1 percent) covered by a mix of grasslands and blackbrush shrub. These vegetation types are uniquely adapted to the harsh conditions present in desert ecosystems and provide key habitat for a large compliment of wildlife species, including many bird, small mammal, and reptile species (CH2MHill 2008h). This key habitat is also critical to the survival of multiple special status species, which are discussed in detail in **Section 3.9, Special Status Species**.

Utah Grassland/Desert Grassland

Grasslands and desert grasslands cover approximately 75.0 miles (19 percent) of the proposed pipeline route. Areas of grasslands mixed with sagebrush or blackbrush cover an additional 11.0 miles (3 percent) and 1.0 mile (less than 1 percent), respectively. The wildlife values of grassland and meadow habitats vary significantly among the different ecological systems bundled in this group by NDOW (2006), and they vary significantly among plant communities within a single ecological system. Irrigated hay meadows may be important to many migrating and nesting shorebirds and waterfowl, including willet and cinnamon teal. These sod-forming meadows also build up abundant rodent populations when dry, serving as important hunting grounds for hawks and owls. Grassland habitats are also important to a variety of birds including the broad-tailed hummingbird, violet-green swallow, western meadowlark, and a variety of special status species, including the Utah prairie dog (discussed in **Section 3.9** below). (CH2MHill 2008h)

Montane meadows also serve as critical brooding habitat for greater sage grouse when found within the sagebrush landscape, offering succulent forbs vital to the development of the chicks as well as brooding hens. Further, when these meadows are allowed to build up residual grass materials (such as occurs within a rested pasture), population numbers of montane voles and other rodents will increase, in turn attracting short-eared owls (discussed in **Section 3.9, Special Status Species**) that nest on the ground under grassy hummocks. Mule deer also feed on the forbs in meadows (CH2MHill 2008h).

Desert Saltbrush Shrub

Desert Saltbrush covers approximately 29 miles (7 percent) of the proposed pipeline route. Saltbrush species are quite valuable for wildlife. Fourwing saltbrush provides valuable habitat and year-round browse for wildlife because of its high levels of protein, fat, and carbohydrate. As an evergreen plant, it is especially valued in winter and during drought. In southeastern Oregon, an area of the Great Basin similar to the northern portions of the proposed pipeline route, mule deer preferred antelope bitterbrush to fourwing saltbrush but browsed both (Kindschy 1996). Fourwing saltbrush showed better growth than antelope bitterbrush in drought years, providing more (and sometimes crucial) forage for wintering deer (Kindschy 1996). Fourwing saltbrush also provides browse and shelter for small mammals and migratory birds, with granivorous birds, including quail species, grouse, and gray partridge, consuming the fruits (CH2MHill 2008h).

Wetlands and Riparian Woodlands

The proposed pipeline route would include approximately 0.5 mile (less than 1 percent) of riparian woodlands and 19.0 miles (5 percent) of habitat classified in **Exhibit 3.7-1** as marsh/mudflats. This includes approximately 11.7 miles (3 percent) of jurisdictional wetlands.

While these areas represent a relatively small proportion of the proposed route, they provide greater vertical structure (riparian woodlands) than upland plant communities and, along with the associated seasonal sources of water (wetlands and riparian woodlands), support the most diverse wildlife assemblages. Many of the wetland- and riparian woodland-related features in the southern portion of the project area are ephemeral washes that range in size from small, weakly expressed erosional-scour channels to large, well-defined arroyos. However, the proposed route would cross through extensive wetland areas in the vicinity of Salt Lake and Tooele counties, Utah. Major streams with well developed riparian areas that would be crossed by the proposed route include the Jordan River, Sevier River, Beaver Dam Wash, Mogotsu Creek, Moody Wash, Toquop Wash, and the Muddy River (CH2MHill 2008h).

Exhibit 3.8-1 Terrestrial Wildlife Habitat Types and Associated Wildlife Species

Habitat Type	Common Species	
Sagebrush/sagebrush shrub	Mammals	Coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), Elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), Nuttall's cottontail (*Sylvilagus nuttallii*), pygmy rabbit (*Brachylagus idahoensis*).
	Birds	Black-billed magpie (*Pica hudsonia*), black-chinned hummingbird (*Archilochus alexandri*), black-throated sparrow (*Amphispiza bilineata*), chipping sparrow (*Spizella passerina*), greater sage-grouse (*Centrocercus urophasianus*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), horned lark (*Eremophila alpestris*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), sage thrasher (*Oreoscoptes montanus*), Say's phoebe (*Sayornis saya*), vesper sparrow (*Pooecetes gramineus*),
	Reptiles and Amphibians	Great Basin collared lizard (*Crotaphytus bicinctores*), night snake (*Hypsiglena torquata*), racer (*Coluber constrictor*), sagebrush lizard (*Sceloporus graciosus*), side-blotched lizard (*Uta stansburiana*), short-horned lizard (*Phrynosoma hernandesi*), striped whipsnake (*Masticophis taeniatus*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*).
Juniper woodland/pinyon juniper woodland	Mammals	Elk, desert cottontail (*Sylvilagus audubonii*), desert wood rat (*Neotoma lepida*), mule deer, Townsend's big-eared bat (*Corynorhinus townsendii*).
	Birds	Ash-throated flycatcher (*Myiarchus cinerascens*), black-chinned hummingbird, Brewer's sparrow (*Spizella breweri breweri*), chipping sparrow, common raven (*Corvus corax*), gray flycatcher, house finch, mourning dove, northern flicker (*Colaptes auratus*), pine siskin (*Carduelis pinus*), pinyon jay (*Gymnorhinus cyanocephalus*), red-tailed hawk, Say's phoebe.
	Reptiles and Amphibians	King snake (*Lampropeltis getula*), racer, sagebrush lizard, short-horned lizard, striped whipsnake (*Masticophis taeniatus*), tree lizard (*Urosaurus ornatu*s), wandering garter snake (*Thamnophis elegans vagrans*), western skink.
Mojave creosote-bursage/blackbrush shrub/greasewood shrub/Joshua tree woodland	Mammals	Black-tailed jackrabbit (*Lepus californicus*), desert bighorn sheep (*Ovis canadensis nelsoni*), desert cottontail, desert woodrat, least chipmunk (*Neotamias minimus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*).
	Birds	Ash-throated flycatcher, black-chinned hummingbird, black-throated sparrow, common raven, Gambel's quail (*Callipepla gambelii*), gray flycatcher, horned lark, house finch, meadowlark (*Sturnella neglecta*), mourning dove, northern harrier, red-tailed hawk, Say's phoebe, western sage thrasher (*Oreoscoptes montanus*).
	Reptiles and Amphibians	Desert tortoise (*Gopherus agassizii*), Great Basin collared lizard, sagebrush lizard, side-blotched lizard, striped whipsnake.

Habitat Type	Common Species	
Utah grassland/desert grassland	Mammals	Bobcat (*Lynx rufus*), black-tailed jackrabbit, coyote, deer mouse, desert cottontail, elk, Great Basin pocket mouse (*Perognathus parvus*), least chipmunk, mule deer, pronghorn, yellow-bellied marmot (*Marmota flaviventris*).
	Birds	American kestrel (*Falco sparverius*), broad-tailed hummingbird (*Selasphorus platycercus*), common raven, horned lark, red-tailed hawk, vesper sparrow, violet-green swallow (*Tachycineta thalassina*), western meadowlark, willet (*Catoptrophorus semipalmatus*), long-billed curlew (*Numenius americanus*), cinnamon teal (*Anas cyanoptera*).
	Reptiles and Amphibians	Racer, night snake, striped whipsnake.
Desert saltbrush shrub	Mammals	Coyote, deer mouse, mule deer, pronghorn, Nuttall's cottontail.
	Birds	Black-billed magpie, black-throated sparrow, chipping sparrow, greater sage-grouse (*Centrocercus urophasianus*), gray flycatcher, green-tailed towhee, horned lark, house finch, mourning dove, northern harrier, vesper sparrow.
	Reptiles and Amphibians	Great Basin collared lizard, night snake, racer, side-blotched lizard, short-horned lizard, striped whipsnake, western fence lizard, western skink.
Wetlands and riparian woodlands	Mammals	Beaver (*Castor canadensis*), desert cottontail, Great Basin pocket mouse, meadow vole (*Microtus pennsylvanicus*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), pocket gopher (*Thomomys spp.*), western jumping mouse (*Zapus princeps*).
	Birds	American robin (*Turdus migratorius*), black-billed magpie, Brewer's blackbird (*Euphagus cyanocephalus*), broad-tailed hummingbird, chipping sparrow, common yellowthroat (*Geothlypis trichas*), European starling (*Sturnus vulgaris*), house finch, Savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), violet green swallow, yellow warbler (*Dendroica petechia*), northern harrier (Circus cyaneus).
	Reptiles and Amphibians	Milk snake, northern leopard frog (*Rana pipiens*), racer, sagebrush lizard, striped whipsnake, smooth green snake (*Opheodrys vernalis*), wandering garter snake, western skink, Woodhouse's toad (*Bufo woodhousii*).

Source: NDOW 2006 in CH2MHill 2008h

3.8.3.2. Sensitive or Managed Wildlife Areas and Big Game Ranges

A number of areas identified as big game range would be crossed by the pipeline route and associated disturbances. Information regarding big game ranges in Utah was obtained from UDWR range maps and metadata (UDWR 2008a).

Parts of the pipeline route in Utah cross designated pronghorn, mule deer, and some elk habitat. In terms of seasonal use, these areas include those designated as year-long, winter/spring, summer, and winter. In terms of habitat value, descriptions for these species were converted by the UDWR from a value system using critical, high, substantial and limited value system to one using crucial and substantial only. Crucial value habitat is habitat the local population of a wildlife species depends for survival because there are no alternative ranges or habitats available. Crucial value habitat is considered essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial habitat would lead to significant declines in carrying capacity and/or numbers of the wildlife species in question. Substantial value habitat is habitat used by a wildlife species but is not considered crucial for population survival. Degradation or unavailability of substantial value habitat would not lead to significant declines in carrying capacity and/or numbers of the wildlife species in question. The mapping data for mule deer, pronghorn, and elk represent use areas in Utah as determined by wildlife biologists during 2001. For mule deer the data included updates in the southwestern part of Utah during the spring of 2004 (UDWR 2008).

Utah

The pipeline route would cross about 133 miles of crucial year-long pronghorn habitat. The habitat is located between MP 52 and MP 79 (which includes several access road improvements and a staging area); MP 105 to 111; and MP 169 and MP 269 (which includes two staging areas and an access road improvement;UDWR 2008). These portions of the alignment support large expanses of grassland and sagebrush shrub vegetation.

In Utah, the pipeline route would cross approximately 39 miles of mule deer habitat including areas designated as combinations of year-long, winter/spring, summer, and winter use and as having both crucial and substantial value, as follows. The 3.5 miles of habitat between MP 23 and MP 45 (which includes two access road improvements) is crucial habitat for winter and winter/spring seasons. Approximately 35.5 miles lies between MP 268 and MP 317(which includes two staging areas and two access road improvements); of this approximately 6.6 miles is crucial winter habitat and 5.9 miles is crucial summer habitat. This area encompasses the entire juniper woodlands present adjacent to the proposed project alignment.

The pipeline route would cross about 1.1 miles of elk habitat designated as crucial winter range. This area is situated between approximately MP 23 and MP 24 (which includes an access road improvement;UDWR 2008). This area is situated in grassland vegetation.

There is no designated black bear habitat crossed by the proposed alignment in Utah (UDWR 2008).

No big game habitat was identified within the Proposed Action route segments corresponding to either the Airport or the Millard County Alternative routes. **Exhibit 3.8-2** details areas of big game ranges potentially impacted within the segment of the Proposed Action Route corresponding to the Tooele County Alternative Routes.

Exhibit 3.8-2 Areas of Big Game Ranges Potentially Impacted by the Segments of the Proposed Action Route corresponding to the Tooele County Alternative Route

Species	Season	Value	Miles Impacted
Elk	Winter	Crucial	1.1
Mule Deer	Winter	Crucial	0.6

Nevada

High value big game ranges are not crossed by the proposed pipeline alignment in Nevada. High value mountain habitat supporting Nelson's bighorn sheep (*Ovis canadensis nelsoni*) is in close proximity to the proposed alignment in the East Mormon Mountains and Arrow Canyon Range (McQivey 1978) from approximately MP 345 to MP 350. However, there are no recorded observations within 10 miles of the proposed alignment based on a data query conducted by Nevada Department of Wildlife (NDOW) in December 2007. No State-owned Wildlife Management Areas (WMAs) managed by the NDOW are crossed by the proposed alignment (Nevada Department of Wildlife 2006).

3.8.3.3. Migratory Birds

Migratory birds in North America are primarily neotropical species that nest in the United States and Canada during the summer, and migrate south to the southern United States and tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. These species are protected under the Migratory Bird Treaty Act, which implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Executive Order 13186 (January 2001) directs federal agencies to consider the effects of agency actions and plans on migratory birds, with emphasis on species of concern (CH2MHill 2008h). BLM memorandum 2008-050 has specific guidance for considering migratory birds in NEPA documents. This includes analyzing the impacts of the proposed project on and Birds of Conservation Concern (BCC) and Utah Partners in Flight (PIF) Priority Species that may occur in the project area.

The following USFWS Birds of Conservation Concern may use habitat that would be crossed by the proposed pipeline route: American avocet(*Recurvirostra americana*), American bittern (*Botaurus lentiginosus*), Arizona woodpecker (*Picoides arizonae*), Baird's sparrow (*Ammodramus bairdii*), Bell's vireo (*Vireo bellii*), Benaire's thrasher (*Toxostoma bendirei*), black swift (*Cypseloides niger*), black-chinned sparrow (*Spizella atrogularis*), blackpoll warbler (*Dendroica striata*), black-throated gray warbler (*Dendroica nigrescens*), Botteri's sparrow (*Aimophila botterii*), Brewer's sparrow (*Spizella breweri*), broad-billed hummingbird (*Cynanthus latirostris*), buff-breasted flycatcher (*Cynanthus latirostris*), burrowing owl, cactus wren (*Campylorhynchus brunneicapillus*), Cassin's sparrow (*Aimophila cassinii*), chestnut-collared longspur (*Calcarius ornatus*), colima warbler (*Vermivora crissalis*), common black hawk (*Buteogallus anthracinus*), common yellowthroat (*Geothlypis trichas - sinuosa ssp.* only), Costa's hummingbird (*Calypte costae*), Crissal thrasher (*Toxostoma crissale*), elf owl (*Micrathene whitneyi*), ferruginous hawk, flammulated owl (*Otus flammeolus*), gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), golden eagle, Grace's warbler (*Dendroica graciae*), grasshopper sparrow (*Ammodramus savannarum*), gray hawk (*Buteo nitidus*), gray vireo (*Vireo vicinior*), greater pewee (*Contopus pertinax*), Henslow's sparrow (*Ammodramus henslowii*), hooded oriole (*Icterus cucullatus*), horned Lark (*Eremophila alpestris - strigata ssp.* only), lark bunting (*Calamospiza melanocorys*), Lawrences's goldfinch (*Carduelis lawrencei*) , Le Conte's thrasher (*Toxostoma lecontei*), Lewis's woodpecker (*Melanerpes lewis*), loggerhead shrike (*Lanius ludovicianus* - all except endangered *meamsi spp,*), long-billed curlew (*Numenius americanus*), Lucifer hummingbird (*Calothorax Lucifer*), McCown's longspur (*Calcarius mccownii*), Nelson's sharp-tailed sparrow (*Ammodramus nelsoni*), northern beardless-tyrannulet (*Camptostoma imberbe*), northern goshawk (*Accipiter gentiles* - resident *iangi spp.* only), northern harrier (*Circus cyaneus*), olive warbler (*Peucedramus taeniatus*), olive-sided flycatcher (*Contopus cooperi*), painted bunting (*Passerina ciris*), peregrine falcon (*Falco peregrinus* - resident *pealei spp.* only), pinyon jay (*Gymnorhinus cyanocephalus*), prairie falcon, pygmy nuthatch (*Sitta pygmaea*), red-faced warbler (*Cardellina rubrifrons*), red-headed woodpecker (*Melanerpes erythrocephalus*), red-naped sapsucker (*Sphyrapicus nuchalis*), rufous hummingbird (*Selasphorus rufus*), rufous-winged sparrow (*Aimophila carpalis*), sage sparrow (*Amphispiza belli*), short-eared owl (*Asio flammeus*), snowy plover (*Charadrius alexandrinus*), solitary sandpiper (*Tringa solitaria*), song sparrow (*Melospiza melodia - graminea, maxillaries, pusilluta,* and *samuelis spp.* only), spotted towhee (*Pipilo maculatus - clementae spp.* only), Swainson's hawk, upland sandpiper (*Bartramia longicauda*), varied bunting (*Passerina versicolor*), vesper sparrow (*Pooecetes gramineus - affinis ssp.* only), Virginia's warbler (*Vermivora virginiae*), whiskered screech-owl (*Megascops trichopsis*), white-headed woodpecker (*Picoides albolarvatus*), Willet (*Catoptrophorus semipalmatus*), Williamson's sapsucker (*Sphyrapicus thyroideus*), Wilson's phalarope (*Phalaropus tricolor*), yellow warbler (*Dendroica petechia - sonorana ssp.* only), and yellow-billed cuckoo (*Coccyzus americanus*). (USFWS n.d.)

The following Utah Partners in Flight Priority Species may use habitat that would be crossed by the proposed pipeline route: Lewis's woodpecker, Abert's towhee, American avocet, mountain plover, Lucy's warbler, sage grouse, American white pelican, bobolink, Virginia's warbler, Bell's vireo, gray vireo, black rosy-finch, long-billed curlew, sharp-tailed grouse,Brewer's sparrow, black swift, black-necked stilt, broad-tailed hummingbird, ferruginous hawk, black-throated gray warbler, three-toed woodpecker, sage sparrow, and Gambel's quail (Parish et al. 2002).

All of the vegetation types that would be crossed by the pipeline support seasonal populations of migratory birds. In general, bird diversity increases in the southern portion of the project area along the proposed pipeline route during spring and fall when neotropical migrants pass through en route to summer breeding or wintering grounds. The southern portion of the pipeline also receives migrant birds, and in the winter when summer resident birds from the north (for example, robins) arrive to spend the winter. (CH2MHill 2008h)

In addition to the Birds of Conservation Concern listed above, many species of migratory birds that use habitats along the proposed pipeline route have suffered substantial habitat loss and population declines and are on the Nevada and Utah lists of Species of Greatest Conservation Need (NDOW 2006; UDWR 2005). In Utah several of these declining species that use habitats that would be crossed by the pipeline include the black-necked stilt, American avocet, black swift, sage thrasher, sage sparrow, Brewer's sparrow, bobolink, long-billed curlew, and grasshopper sparrow. Species of special conservation concern in Nevada that use habitats crossed by the proposed pipeline route include Bendaire's thrasher, yellow-billed cuckoo, western burrowing owl, Arizona Bell's vireo, Brewer's sparrow, bobolink, and black-chinned sparrow. The following segments of the route pass through areas identified as Utah Draft Bird Habitat Conservation Areas (UDWR 2005): MPs 0 – 130, 210 – 225, and 320 – 330 (CH2MHill 2008h).

3.8.3.4. Aquatic Resources

The proposed pipeline route crosses multiple perennial and intermittent streams (see **Section 3.6.6.3, Surface Water**). Seven of the streams (three perennial and four intermittent) support fish populations. The perennial streams that support fisheries in Utah are the Jordan River (MP 1) and Sevier River (MP 129) in Salt Lake and Millard counties, respectively. In Nevada, the only perennial stream supporting fisheries is the Muddy River (MP 371) which is located in Clark County (CH2MHill 2008h). The Jordan and Sevier rivers are within the Bonneville Basin and contain fish native to this basin as well as a variety of non-native species. In contrast, the intermittent streams (Beaver Dam Wash, Magotsu Creek, Meadow Valley Wash, and Moody Wash) and the Muddy River contain fishes native to the Colorado River Basin, as well as non-native fish. Of the intermittent streams, Beaver Dam Wash, Magotsu Creek, and Moody Wash are in Washington County, Utah. Meadow Valley Wash is located in Clark County, Nevada, near the Muddy River.

Perennial Fish Bearing Streams

<u>Jordan River</u>

The Jordan River is the outlet of Utah Lake and a tributary to the Great Salt Lake. It is currently a highly channelized, developed, and polluted river. The abundance of native fish species in the Jordan River has been greatly reduced because of channelization, dredging, poor water quality, removal of riparian vegetation, and invasion of non-native fish species (Salt Lake County 2007). Native fish species that may still be present include Utah sucker (*Catostomus ardens*) and Utah chub (*Gila atraria*). In addition, a suite of non-native fish may be found, including rainbow trout

(*Onchorhynchus mykiss*) and channel catfish (*Ctalurus punctatus*) as described in Salt Lake County (2007). The pipeline would cross beneath the Jordan River using horizontal directional drilling (CH2MHill 2008h).

<u>Sevier River</u>

The proposed pipeline route would cross the Sevier River above the DMAD Reservoir. Because of habitat modifications and fish introductions associated with the DMAD Reservoir, a large variety of non-native fish may be present within this section of river. Native fish that may be present include mottled sculpin (*Cottus bairdii*), speckled dace (*Rhinichthys osculus*), Utah chub, and Utah sucker. Non-native fish may include black bullhead (*Ameiurus melas*), channel catfish, common carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), mosquito fish (*Gambusia affinis*), northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), western yellow perch (*Perca flavescens*), and white bass (*Morone chrysops*). The Sevier River would be crossed by horizontal directional drilling underneath the channel.

<u>Muddy River</u>

The Muddy River is within the Colorado River basin and provides habitat for several species of native fish including flannelmouth sucker (*Catostomus latipinnis*), Moapa dace (*Moapa coriacea*), Moapa speckled dace (*Rhinichthys osculus moapae*) and Virgin River chub (*Gila seminuda*). Flannelmouth sucker, Moapa dace, and Virgin River chub are all special status species and are discussed in **Section 3.9, Special Status Species**. In addition, the Muddy River is also classified as a game fish spawning area and is reported to support populations of redside shiner, flathead minnow, common carp, western mosquito fish, channel catfish, and largemouth bass (FERC and CSLC 2002). The Muddy River would be crossed by horizontal directional drilling (CH2MHill 2008h).

Intermittent Fish Bearing Streams

Intermittent waterbodies crossed by the pipeline route that are capable of supporting fisheries include Beaver Dam Wash (MP 326), Magotsu Creek (MP 288), Meadow Valley Wash (MP 386), and Moody Wash (MP 297). Beaver Dam Wash, Magotsu Creek, and Moody Wash are in Utah, while Meadow Valley Wash is a tributary to the Muddy River in Nevada. All these streams are tributaries to the Virgin River and are within the Colorado River basin. While these streams have been impacted by past human activities, they continue to support populations of native fish. Beaver Dam Wash, Magotsu Creek, and Moody Wash support populations of desert sucker (*Catostomus clarki*), speckled dace, and Virgin spinedace (*Lepidomeda mollispinis mollispinis*). With the exception of speckled dace, these species are all special status species and are discussed in **Section 3.9, Special Status Species**. It is important to note that Moody Wash is one of the only tributaries remaining in the Virgin River in which the Virgin spinedace has its historic range intact and occupied (USFS 2007). It is anticipated that all intermittent waterbodies, including those with fisheries, along the pipeline in Utah would be crossed by the open-cut construction method during low-flow or base-flow conditions. Magotsu Creek would be crossed by HDD (**Appendix C**).

3.8.4. Existing Condition for Alternatives

The general habitat descriptions for common wildlife species, sensitive or managed wildlife areas and big game ranges, migratory birds, and aquatic resources would be the same as for the proposed pipeline route. This section discusses the amount of each habitat type that occurs along each alternative route, which is presented in **Exhibit 3.7-3**. The amount of each habitat type that occurs along the segment of the proposed pipeline route that corresponds to each alternative route (presented in **Exhibit 3.7-1**) is also discussed. This is done in order to facilitate a comparison of impacts in Chapter 4.

3.8.4.1. Airport Alternative Route

Terrestrial Wildlife Habitat Types

The Airport Alternative Route would be approximately 3.4 miles long and would primarily cross marsh/mudflats. In contrast, the segment of the Proposed Action corresponding to the Airport Alternative would cross approximately 1.0 mile of Utah grassland/desert grassland and 2.4 miles of marsh/mudflats.

Sensitive or Managed Wildlife Areas and Big Game Ranges

Affected environment for sensitive or managed wildlife areas and big game ranges would be similar to that described for the proposed action. There is no big game habitat identified within the Airport Alternative Route (nor is there big game habitat on the Proposed Action segment corresponding to the Airport Alterantive Route).

Migratory Birds

Migratory birds would generally be the same as those described for the Proposed Action above.

Aquatic Resources

The Airport Alternative Route and the segment of the Proposed Action corresponding to the Airport Alternative do not cross any streams that support fish populations.

3.8.4.2. Tooele County Alternative Route

Terrestrial Wildlife Habitat Types

The Tooele County Alternative Route is approximately 15.4 miles long. It would cross approximately 1.0 mile (6 percent) of sagebrush and sagebrush shrub habitat and 4.0 miles (25 percent) of Utah grassland/desert grassland. The segment of the Proposed Action corresponding to the Tooele County Alternative Route would cross 12.7 miles of Utah grassland/desert grassland.

Sensitive or Managed Wildlife Areas and Big Game Ranges

Affected environment for sensitive or managed wildlife areas and big game ranges would be similar to that described for the proposed action. There is no big game habitat identified within the Tooele County Alternative Route.

Migratory Birds

Migratory birds would generally be the same as those described for the Proposed Action above.

Aquatic Resources

The Tooele County Alternative Route and the segment of the Proposed Action corresponding to the airport alternative do not cross any streams that support fish populations.

3.8.4.3. Rush Lake Alternative Route

All wildlife habitat along the Rush Lake Alternative Route would be similar to that described for the Proposed Action.

3.8.4.4. Millard County Alternative Route

Terrestrial Wildlife Habitat Types

The primary habitat type along the Millard County Alternative Route is sagebrush and sagebrush shrub (51 miles, 82 percent). Other habitat types present are desert saltbrush shrub 2.5 miles (4 percent), juniper woodland and pinyon-juniper woodland 3.5 miles (6 percent), and riparian woodland 0.5 mile (less than 1 percent). In contrast, along the segment of the Proposed Action corresponding to the Millard County Alternative Route there is approximately 2.0 miles of desert saltbrush shrub, 17.0 miles of desert saltbrush shrub, 10 miles of marsh/mudflats, and 0.5 mile of riparian woodland.

Sensitive or Managed Wildlife Areas and Big Game Ranges

Affected environment for sensitive or managed wildlife areas and big game ranges would be similar to that described for the proposed action. The Millard County Alternative Route contains approximately 32.4 miles of crucial winter pronghorn range.

Migratory Birds

Migratory birds would generally be the same as those described for the Proposed Action above.

Aquatic Resources

Both the Millard County Alterative Route and the segment of the Proposed Action would cross the Sevier River. Fish species present in the Sevier River are listed in **Section 3.8.3.4**. The Proposed Action would cross the river northeast of Delta, Utah, above the DMAD Reservoir. The alternative route would cross the river below the reservoir, west of Delta.

3.9. Special Status Species

3.9.1. Area of Analysis

The area of analysis for special status species is the same as **Section 3.8.1**, and is defined as 100 feet on either side of the proposed main pipeline, the lateral line servicing the Salt Lake City Airport, the Cedar City Lateral or periphery of proposed facilities (CH2MHill 2008h) as well as including all staging areas and access roads.

3.9.2. Data Sources and Methods

Information sources for special status species included reconnaissance field surveys conducted in conjunction with wetland delineations; and supplemented by reference books, journal articles, websites, government databases, topographic maps, aerial photography, and review of other projects in the vicinity of the proposed pipeline project. Special status species include those listed by the USFWS as endangered, threatened, proposed, or candidates for listing; BLM sensitive species; Forest Service sensitive species; and species of concern to the states of Utah and Nevada (see **Section 3.9.3.1** for applicable definitions). These lists of species, and information on their general location and habitat requirements, were compiled and their potential to occur within the project area was evaluated. All species identified as occurring within a county crossed by the proposed UNEV project were considered. Those species whose locations or habitat requirements (for example, mountain meadows) were not present in the project area were eliminated from further consideration. For species protected under the Endangered Species Act (ESA), the Biological Opinion (BO) for the Kern Gas Transmission Company Project (USFWS 2002) was reviewed for previous effects determinations, impact assessments, and mitigation, particularly from approximately MP 250 of the proposed pipeline route south to Las Vegas where the proposed pipeline would be within the same ROW as the Kern River pipeline (CH2MHill 2008h). A Biological Assessment (BA) would be completed for Endangered, Threatened, and Candidate (TEC) species that may occur along the entire length of the proposed pipeline, and this document discloses all potential impacts to TEC species and compliance with the Endangered Species Act. The USFWS will issue a BO for the proposed action, dependent on the impact disclosure and effects determination, before the proposed action could go forward.

3.9.3. Existing Conditions for Proposed Action

3.9.3.1. Introduction

Special status species include those listed by the USFWS as endangered, threatened, proposed, or candidates for listing. The applicable USFWS definitions for these species are:

- Endangered (E) – Any species that is in danger of extinction throughout all or a significant portion of its range.
- Threatened (T) – Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- Candidate (C) – Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened (CH2MHill 2008h).

These species are addressed in **Section 3.9.3.2 Federally Listed Species (Endangered Species Act)**.

Special status species also include Sensitive Species (Utah and Nevada). The BLM maintains state Sensitive Species Lists that identify rare or protected species of concern to the BLM in a given state (Utah and Nevada). Where the proposed project crosses the Dixie National Forest, species listed as Sensitive on the Regional Forester's Sensitive Vertebrate Species List for the Intermountain Region (Region 4) are addressed in **Section 3.9.3.3, Sensitive Species**.

For Threatened, Endangered, or Candidate species, **Exhibits 3.9-1 and 3.9-2** lists special status wildlife and plant species listed for each county in Utah crossed by the UNEV pipeline and whether or not the species may occur within or near the project area. For Sensitive species, **Exhibits 3.9-1 and 3.9-2** list all species listed for each county in Utah. There is a large number of Nevada sensitive species in Clark and Lincoln counties, many of which would not be found within the relatively small area of each county crossed by the pipeline. Therefore, in **Exhibits 3.9-1** and **3.9-2**, only species that may occur within or near the project area in Nevada are included. Species information in the table was taken primarily from Bosworth (2003), UDWR (2006), UNHP (2008), and NDOW (2006).

Exhibit 3.9-1 Special Status Wildlife Species Potentially Occurring in or Near the Proposed Pipeline Project Area

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Amphibians			
Arizona toad (*Bufo microscaphus*)	BLM-U	Lowland riparian	YES Muddy River (MP 374) and Moody Wash (MP 297)
Columbia spotted frog (*Rana luteiventris*)	BLM-U	Cold water ponds, streams, lakes, and springs adjacent to coniferous and subalpine forest, grassland, or brush.	NO
Relict leopard frog	BLM-U	Wetlands and lotic waters	NO (Extirpated in Utah)

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
(*Rana onca*)			
Western toad (*Bufo boreas*)	BLM-U	High elevations wetlands and woodland habitat (seasonal).	YES MP 290-315 (juniper woodland habitat)
Birds			
American white pelican (*Pelecanus erythrorhynchos*)	BLM-U	Nesting sites are islands associated with fresh water lakes; foraging areas are shallow lakes, marshlands, and rivers.	NO
Black swift (*Cypseloides niger*)	BLM-U	Require waterfalls surrounded by coniferous forests for nesting.	NO
Bald eagle (*Haliaeetus leucocephalus*)	BLM-U BLM-N USFS	Potential wintering (foraging) habitat along the majority of the proposed alignment. Record of nesting near Delta.	YES Majority of alignment, particularly northern end (MP 1 - 20) and around Delta, Utah (MP 125 - 150).
Bobolink (*Dolichonyx oryzivorus*)	BLM-U	Nest and forage in wet meadows, wet grassland, and irrigated agricultural areas.	NO
Burrowing owl (*Athene cunicularia*)	BLM-N BLM-U	Open areas, particularly grasslands and prairies, as well as golf courses, cemeteries, and airports.	YES MP 0-60, 104-121, 146-155, 169-198, 228 -233, and 252-279.
California condor (*Gymnogyps californianus*)	E	Colonies roost in snags, tall open-branched trees, or cliffs; currently the likelihood of a condor occurring within the project area appears remote based on descriptions of the reintroduced population’s known locations.	YES Foraging or roosting habitat is scattered along the alignment.
Ferruginous hawk (*Buteo regalis*)	BLM-N BLM-U	Grasslands, agricultural lands, shrublands, and at the periphery of pinyon-juniper forests.	YES Entire project area.
Flammulated owl (*Otus flammeolus*)	FS	Montane forested habitats	NO
Golden eagle (*Aquilia chrysaetos*)	BLM-N	Open country, especially mountainous regions.	YES Entire project area.
Grasshopper sparrow (*Ammodramus	BLM-U	Northern Utah; nests on the ground at the base of	NO

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
savannarum)		grass clumps.	
Greater sage-grouse (*Centrocercus urophasianus*)	BLM-U FS	Dependent on sagebrush habitat.	YES Sagebrush habitats along the alignment (MP 45.5 - 78.5 and 85.5 - 118).
LeConte's thrasher (*Toxostoma lecontei*)	BLM-N	Sparsely vegetated creosote and saltbrush areas in Mojave desert shrub areas.	YES Nevada portion of alignment (MP 324 and MP 328)
Lewis's woodpecker (*Melanerpes lewis*)	BLM-U	Main breeding habitat is open, park-like ponderosa pine forests in dead trees or stumps; also attracted to other conifers and pinyon-juniper woodlands.	YES Adjacent to the project area in juniper woodlands (MP 290 – 304).
Loggerhead shrike (*Lanius ludovicianus*)	BLM-N	Grasslands, pastures, desert shrub habitats, open woodlands, and other open areas.	YES Entire project area.
Long-billed curlew (*Numenius americanus*)	BLM-U	Summer resident and migrant mainly in central and northern valleys of Utah; for nesting, require short grass, bare ground components, shade, and vertebrate prey.	YES Near Great Salt Lake and further south (MP 1 - 60) and around Delta, Utah (MP 100-150).
Lucy's warbler (*Vermivora luciae*)	BLM-N	The preferred and principal breeding habitat of this species is dense, shrubby, mostly riparian vegetation, including mesquite woodland.	YES The proposed alignment traverses marginal riparian vegetation near the crossing location of Meadow Valley Wash (MP 370.5) and along the Muddy River (MP 374).
Mexican spotted owl (*Strix occidentalis lucida*)	T	Use a variety of habitats, in Utah found primarily in forested, steep rocky canyons.	NO
Northern goshawk (*Accipiter gentilis*)	BLM-N BLM-U (Conservation Agreement Species) FS	Nests are constructed in mature forests; prefers mature mountain forest and riparian zone habitats; forages in open areas.	YES Entire project area.

Species	**Status**	**Preferred Habitat**	**Possible presence within or near Project Area?** **If YES, Possible Location**
Peregrine falcon (*Falco peregrinus*)	BLM-N FS	Nest mainly on cliffs; found in wide variety of open habitats while foraging, usually along marshes, streams, and lakes.	YES Entire project area.
Phainopepla (*Phainopepla nitens*)	BLM-N	The preferred and principal breeding habitat of this species is dense, shrubby, mostly riparian vegetation, including mesquite woodland.	YES The proposed alignment traverses marginal riparian vegetation near the crossing location of Meadow Valley Wash(MP 370.5) and along the Muddy River (MP 374).
Prairie falcon (*Falco mexicanus*)	BLM-N	Open habitats such as plains and prairies.	YES Entire project area.
Short-eared owl (*Asio flammeus*)	BLM-U	Sagebrush/sagebrush shrub and grasslands	YES Entire project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E NP	No suitable riparian or wetland breeding habitat on the proposed alignment. Suitable habitat in other portion of Meadow Valley Wash and the Muddy River	UNLIKELY
Swainson's hawk (*Buteo swainsoni*)	BLM-N	Primarily mid-elevation shrub and grassland habitats.	YES Entire project area.
Three-toed woodpecker (*Picoides tridactylus*)	FS	Montane coniferous forests, especially mature forests	NO
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	C	Required riparian and wetland habitats are largely absent although marginal habitat may occur along the Sevier River.	POSSIBLE along Sevier River
Whooping crane (*Grus americanus*)	BLM-U	Primarily wetlands, but pastures and cultivated fields are also used.	NO (Extirpated in Utah)
Yuma clapper rail (*Rallus longirostris yumanensis*)	E	Occurs along Colorado River and tributaries in southern NV; generally in freshwater and alkali marshes	NO

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Fish			
Big Spring spinedace (*Lepidomeda mollispinis pratensis*)	T	Occurs in 3-mile reach of Meadow Valley Wash (NV); inhabits runs and pools at least 10 inches deep with instream cover.	NO – far upstream of alignment.
Bluehead sucker (*Catostomus discobolus*)	BLM-U	Mainstem rivers and tributary streams from mouth of Grand Canyon upstream to Green and Colorado River headwaters	NO
Bonneville cutthroat trout (*Onchorhynchus clarkia utah*)	BLM-U	Cool, well-oxygenated waters	NO
Bonytail (Gila elegans)	BLM-U	Mainstem rivers: deep, swift, rocky canyon regions; also found in reservoirs	NO
Colorado cutthroat trout (*Onchorhynchus clarkia pleuriticus*)	BLM-U	Cool, well-oxygenated waters	NO
Colorado pikeminnow (*Ptychocheilus lucius*)	E	Endemic to Colorado River system; occurs in large mainstem rivers and lower reaches of major tributaries; deep-water habitats.	NO
Desert sucker (*Catostomus clarki*)	BLM-U BLM-N	Utah populations are limited to the Virgin River drainage. Occurs in swift water in a variety of streams; inhabits deep runs and pools during low flow periods.	YES Magotsu Creek (MP 295), Moody Wash (MP 298), Beaver Dam Wash (MP 327), and Meadow Valley Wash (MP 370.5).
Devils Hole pupfish (*Cyprinodon diabolis*)	E	Occurs in deep limestone pools, limited to Devil's Hole, Ash Meadows, and Death Valley NP (NV).	NO
Flannelmouth sucker, (*Catostomus latipinnis)*,	BLM-U BLM-N FS	Pools and deeper runs of large and medium sized rivers in the Colorado Basin; cool waters not usually above 1,880 meters elevation.	YES Muddy River (confirmed) (MP 374)

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Hiko White River springfish (*Crenichthys baileyi grandis*)	E	Endemic to White River drainage (NV); occurs in vegetated warm springs and their outflows and marshes.	NO
Humpback chub (*Gila cypha*)	E	Large rivers, primarily canyon-bound reaches of the Colorado River drainage. Adults found in deep water habitats.	NO
June sucker (*Chasmistes liorus*)	BLM-U	Lakes (obligate)	NO
Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)	T	Requires cool, well-oxygenated waters; in streams, occurs in rocky areas, riffles, deep pools, and areas under logs and overhanging banks.	NO
Least chub (*Lotichthys phlegethontis*)	BLM-U	Spring complexes, streams, freshwater ponds, wetlands, and lakes left by receding Lake Bonneville and Lake Provo	NO
Moapa dace (*Moapa coriacea*)	E	Endemic to warm spring area at headwaters of Muddy River; restricted to clear pools and outlet streams of moderate to high temperatures.	NO – upstream of alignment
Pahranagat roundtail chub (*Gila robusta jordani*)	E	Restricted to Ash Spring (NV).	NO
Pahrump poolfish (*Empetrichthys latos*)	E	Populations exist at three refuge sites in Clark and White Pine counties (NV); occurs in shallow, warm springs and alkaline mineral springs.	NO
Razorback sucker (*Xyrauchen texanus*)	E	Endemic to Colorado River system and occurs in Lake Mojave and in Lake Mead (NV); inhabit pools, slow runs, backwaters, and flooded off-channel areas.	NO

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Roundtail chub (*Gila robusta*)	BLM-U	Pool-riffle habitats with sand-gravel substrates in mainstem and larger tributaries of Colorado River Basin.	NO
Southern leatherside chub (*Gila copei*)	BLM-U	Small to medium rivers	NO
Virgin River chub (*Gila seminuda*)	E	Mainstem Virgin River and Muddy River (NV): deep pools with swift but non-turbulent waters, associated with boulders or other cover	YES Muddy River (MP 374)
Virgin spinedace (*Lepidomeda mollispinis mollispinis*)	BLM-U BLM-N	The Virgin spinedace is endemic to the Virgin River Basin; occurring in the mainstem Virgin River and multiple tributaries. In Nevada it occurs in Beaver Dam Wash. Found most often in clear cool streams, in pools with some type of cover.	YES Beaver Dam Wash (MP 327), Magotsu Creek (MP 295), and Moody Wash (MP 298)
White River springfish (*Crenichthys baileyi baileyi*)	E	Restricted to Ash Spring (NV).	NO
Woundfin (*Plagopterus argentissimus*)	E	Mainstem Virgin River; residents absent below Mesquite (NV).	NO
Mammals			
Allen's big eared bat (*Idionycteris phyllotis*)	BLM-U	Wide range of habitats	YES May occur throughout the alignment.
Big free-tailed bat (*Nyctinomops macrotis*)	BLM-U	Lowland riparian, desert shrub, and montane forest	YES May occur throughout the alignment.
Brown (Grizzly) bear (*Ursus arctos*)	BLM-U	Many habitats	NO (Extirpated in Utah)
Dark kangaroo mouse (*Microdipodops megacephalus*)	BLM-U BLM-N	Sagebrush areas with sandy soils.	NO (determined by Black 2008)
Fringed myotis (*Myotis thysanodes*)	BLM-U BLM-N	Wide range of habitats; Maternity roosting sites most often found in abandoned buildings.	YES May occur throughout the alignment.

Species	**Status**	**Preferred Habitat**	**Possible presence within or near Project Area?** **If YES, Possible Location**
Gray wolf (*Canis lupus*)	BLM-U	Many habitats	NO (Extirpated in Utah)
Kit fox (Vulpes macrotis)	BLM-U	Could occur throughout the route in Utah and Nevada, particularly in Mojave desert shrub habitat type.	YES Entire length of alignment.
Nelson's bighorn sheep (*Ovis canadensis nelsoni*)	BLM-N	Rocky mountain habitat with available water adjacent to the alignment in Nevada.	POSSIBLE
Preble's shrew (*Sorex preblei*)	BLM-U BLM-N	Occupies many types of habitat, has an affinity for wetland areas.	YES Great Salt Lake area – northern end of alignment (MP 3 – 10).
Pygmy rabbit (*Brachylagus idahoensis*)	BLM-U BLM-N FS	In Utah, prefers the taller big sagebrush within sagebrush/sagebrush shrub habitat.	YES Sagebrush habitats along the alignment (MP 44 - 46, MP 50 - 54, MP 59 - 61, MP 74 - 86, MP 90 - 91, MP 97 - 98, and MP 102 - 104).
Spotted bat (*Euderma maculatum*)	BLM-U BLM-N FS	Wide range of vegetation in addition to buildings and in towns; in southwestern Utah, cracks and crevices in cliffs may be important roost sites; foraging in riparian areas	YES May occur throughout the alignment.
Townsend's big-eared bat (*Corynorhinus townsendii*)	BLM-U BLM-N FS	Wide variety of habitats; roosts in mines, caves, and buildings	YES May occur throughout the alignment.
Utah prairie dog (*Cynomys parvidens*)	E	In Utah, grasslands in level mountain valleys and in areas with deep well-drained soils.	YES Iron and Beaver counties. Surveys conducted - No habitat or colonies recorded.
Western red bat (Lasiurus blossevillii)	BLM-U BLM-N	Towns and cottonwood groves in lowland riparian vegetation; roosts in caves and mines.	YES Most likely to occur in Virgin River drainage (Washington County, Utah).
Mollusks			
Multiple species see **Exhibit 3.9-3**	BLM-U	Mainly aquatic habitats, usually springs	NO

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Reptiles			
Common chuckwalla (*Sauromalus obesus*)	BLM-U BLM-N	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Desert iquana (*Dipsosaurus dorsalis*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 330 to 400).
Desert night lizard (*Xantusia vigilis*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 315 to 356).
Gila monster (*Heloderma suspectum*)	BLM-U BLM-N	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Mojave desert tortoise (*Gopherus agassisizi*)	T	Mojave desert shrub and blackbush shrub of.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Mojave rattlesnake (*Crotalus scutulatus*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Sidewinder (*Crotalus cerastes*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Smooth greensnake (*Opheodrys vernalis*)	BLM-U	Meadows and stream margins	NO
Speckled rattlesnake (Crotalus mitchellii)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).

Species	**Status**	**Preferred Habitat**	**Possible presence within or near Project Area?** **If YES, Possible Location**
Western banded gecko (*Coleonyx variegates*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Western threadsnake (*Leptotyphlops humilis*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Zebra-tailed lizard (*Callisaurus draconoides*)	BLM-U	Mojave desert shrub and blackbush shrub.	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).

Notes:

*Conservation Agreement in place.

Federal categories
E = Endangered
T = Threatened
BLM--U = BLM Sensitive Species in Utah
BLM--N = BLM Sensitive Species in Nevada
FS = Forest Service Sensitive

Exhibit 3.9-2 Special Status Plant Species Potentially Occurring in or Near the Proposed Pipeline Project Area

Species	**Status**	**Preferred Habitat**	**Possible presence within or near Project Area?** **If YES, Possible Location**
Baird's camissonia (*Camissonia bairdii*)	BLM-U	Blackbrush shrub and pinyon-juniper woodland community between 3,900-4,300 feet	YES Washington County (Utah; MP 289-313)
Franklin's penstemon (*Penstemon franklinii*)	BLM-U	Grassland, or shrub communities including desert saltbrush, greasewood, and blackbrush	YES Cedar City Lateral; north end of Cedar Valley and west of Iron Spring.
Giant fourwing saltbrush (*Atriplex canescens* var. *gigantea*)	BLM-U	Interdune valleys with other sand-loving plants between 4,750 and 5,250 feet elevation	YES Millard County Alternative alignment
Holmgren milkvetch (*Astragalus holmgreniorum*)	E	Sparsely vegetated warm desert shrub community; shallow soils overlain with gravel and receiving runoff	NO

Species	**Status**	**Preferred Habitat**	**Possible presence within or near Project Area?** **If YES, Possible Location**
Jones globemallow (*Sphaeralcea caespitosa*)	BLM-U	Mixed desert shrub, pinyon juniper, shadscale, and grassland; Sevy Dolomite Formation and calcerous gravels between 4,500 and 6,400 feet	YES East of Cricket Mountains in salt desert shrub (MP 170-200). Possible along both Proposed Action route and Millard County Alternative alignment.
Las Vegas bearpoppy (*Arctomecon californica*)	BLM-N	Blackbrush and saltbrush shrub, Mojave creosote-bursage community; gypsiferous clays of the Muddy Creek Formation	YES Southwestern Utah and entire Nevada portion of the project area (MP 316 to 400).
Neese narrowleaf penstemon (*Penstemon angustifolius* var. *dulcis*)	BLM-U	Fourwing saltbrush, sagebrush-*Eriogonum*, and juniper communities in dune sands between 4,600 and 5,400 feet	YES Millard County Alternative alignment
Nevada willowherb (*Epilobium nevadense*)	BLM-U BLM-N	Pinyon juniper woodland; talus slopes, rocky limestone, and quartzite soils between 5,100 and 8,800 feet	YES Washington County in pinyon-juniper habitat (MP 289-313)
Pinyon penstemon (*Penstemon pinorum*)	BLM-U	Pinyon-juniper woodlands; gravelly soils	YES MP 277-287
Shivwitz milkvetch (*Astragalus ampullarioides*)	E	Warm desert shrub and juniper community; unstable gypsiferous Chinle Formation substrates	YES Washington County
Small spring parsley (*Cymopterus acaulis* var. *parvus*)	BLM-U	Desert shrub, sagebrush, and juniper community; often on aeolian sand, between 4,600 and 5,200 feet.	YES Millard County Alternative alignment
Sticky buckwheat (*Eriogonum viscidulum*)	BLM-N	Blackbrush shrub, Joshua tree forest, and Mojave creosote-bursage; deep, loose, sandy soils in washes, flats, and areas of stabilized dune. Often occurs with threecorner milkvetch	YES MP 315-399

Species	Status	Preferred Habitat	Possible presence within or near Project Area? If YES, Possible Location
Threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*)	BLM-N	Blackbrush shrub, Joshua tree forest, and Mojave creosote-bursage; open, deep, sandy soils of dunes stabilized by vegetation or gravel veneer. Often occurs with sticky buckwheat	YES MP 329-399
Ute ladies'-tresses (*Spiranthes diluvialis*)	T	Wetland grass-forb community below 7,000 feet; riparian edges, gravel bars, channels, or wet meadows along perennial streams	YES Across Salt Lake Valley and into northeastern Tooele County or in Rush Valley near Faust (Utah).

Notes:

*Conservation Agreement in place.

Federal categories
E = Endangered
T = Threatened
BLM--U = BLM Sensitive Species in Utah
BLM--N = BLM Sensitive Species in Nevada
FS = Forest Service Sensitive

3.9.3.2. Federally Listed, Candidate, and Proposed Species for Listing under the Endangered Species Act

Birds

California Condor

The California condor (*Gymnogyps californianus*) is federally listed as Endangered. This species has wingspans up to nine and one half feet, the largest of any North American land bird. They formerly ranged over much of western North American from British Columbia to Baja California (Terres 1980). Their habitat is mountainous country at low and moderate elevations, especially rocky and brushy areas near cliffs. Colonies roost in snags, tall open-branched trees, or cliffs, often near important foraging grounds (CH2MHill 2008h).

Condors were first released into the Southwest in northern Arizona in December 1996. The reintroduced population currently has a nonessential experimental population status when they are within a designated area. This area is defined as "Interstate Highway 40 on the south, U.S. Highway 191 on the east (parallel to the New Mexico and Colorado state borders), Interstate Highway 70 on the north, and Interstate Highway 15 to U.S. Highway 93 near Las Vegas, Nevada on the west (Southwest Condor Review Team [SCWG] 2007)". This area is close to the project alignment (particularly along Interstate 15 as the alignment approaches Las Vegas), but because the project area is north of Interstate 15 it is outside of the designated area. Therefore, any condors occurring in the project area would receive the full protection of the ESA. However, currently the likelihood of a condor occurring within the project area appears remote based on descriptions of the reintroduced population's known locations (SCWG 2007). The nearest known location (no date) recorded by the UDWR (2008) is approximately 200 miles from MP 269 of the proposed project alignment

(CH2MHill 2008h). This species range and distribution is likely to continue to expand and as frequency of sitings continues to increase.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a federally listed Endangered species. It is a small bird with a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. The breeding range of the southwestern willow flycatcher includes Arizona, southern California, New Mexico, the extreme southern parts of Utah and Nevada, southwestern Texas, and extreme northwestern Mexico. The preferred habitat of this species includes riparian habitats or other wetlands with a dense growth of willows, arrowweed, and tamarisk, often with a scattered overstory of cottonwood (USFWS 1995a). Breeding usually occurs in swampy thickets with willow and buttonbrush (American Ornithologists Union 1983). During migration, southwestern willow flycatchers use a variety of habitats and may be encountered in all but the most sparsely vegetated desert habitats (CH2MHill 2008h).

The only marginally suitable habitat for the southwestern willow flycatcher is known along Meadow Valley Wash (MP 370.5) and the Muddy River (MP 374). The USFWS and BLM visited Meadow Valley Wash and the Muddy River in 2001 to assess the quality of habitat in these locations as part of the second Kern River pipeline project. They determined at that time that habitat for the species was mostly absent from the project area and was only marginally suitable where present. The BLM and USFWS noted that the proposed Kern River pipeline crossing locations did not support suitable southwestern willow flycatcher habitat (USFWS 2002). UNEV proposes to cross these drainages immediately adjacent to the existing Kern River crossings. Surveys conducted in February 2007 confirmed that habitat conditions at Meadow Valley Wash and the Muddy River are unchanged (CH2M HILL 2006/2007 surveys). The proposed alignment does not cross any suitable southwestern willow flycatcher breeding habitat on the Muddy River or in Meadow Valley Wash (C. Manville, USFWS, personal communication, 2008). UDWR (2008) identified one observation at 2 miles from MP 324 of the proposed route in Utah. No date was given for this observation; however, it is greater than 10 years and most likely a migrant. The nearest known nesting locations in Nevada are located downstream on the Muddy River in the Overton Wildlife Management Area, over 10 miles southeast of MP 370 (C. Manville, USFWS, personal communication, 2008) (CH2MHill 2008h).

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is a distinctive neotropical migrant that nests in dense, deciduous, streamside forests. Most nesting in the west occurs within relatively large patches (25+ acres) of riparian forest containing cottonwoods or willows. Yellow-billed cuckoos require a humid, shady environment for nesting to protect eggs and fledglings from the otherwise unsuitably dry and hot desert conditions. Nesting typically begins in mid-June and lasts less than three months, which is the shortest incubation and nestling period of any bird. Yellow-billed cuckoos eat a wide variety of insects, including caterpillars that are toxic to most other animals (Rodriguez 2008). Western yellow-billed cuckoos are unlikely to occur along the alignment but marginal habita is present along the Sevier River and occurrence is possible.

Fish

Virgin River Chub

The Virgin River chub (*Gila seminuda*), an Endangered fish species, is a silvery, medium-sized minnow that averages about 8 inches in total length, but may grow to exceed 18 inches. The Virgin River chub was listed as endangered (54 FR 35305) on August 24, 1989 and critical habitat was designated on January 26, 2000 (65 FR 4140). Critical habitat has been designated for this species in the Virgin River and its 100-year floodplain from the confluence with La Verkin Creek in Utah downstream to Halfway Wash in Nevada. Although very little is known of the life history of Virgin chub, they are apparently adapted to swift, shallow, turbid, sand-bottomed streams. Virgin chubs are most often associated with deep runs or pool habitats of slow to moderate velocities with large boulders or instream cover, such as root snags. Adults and juveniles are often associated together within these habitats. Chubs are omnivorous, showing considerable dietary shifts with age. In general, young Virgin River chubs feed on macroinvertebrates, small fish, and debris. As they get older, their diet shifts more to vegetative debris. Adult thermal preference is approximately 75° F (CH2MHill 2008h). Spawning is known to occur in the spring, and ripe females have been reported during the months of April, May, and June (Hickman 1987). It is likely that Virgin River chub live for many years, perhaps for decades, but they mature rapidly and probably spawn in their second or third year of life (Williams and Deacon 1998).

The Virgin River chub historically occurred in the main stem Virgin River from La Verken Springs, Utah, downstream to the confluence with the Colorado River in Nevada (Virgin River Fishes Recovery Team 1985). The present distribution of this species includes the main stem Virgin River from La Verkin Springs, Utah, downstream to near the Mesquite Diversion, Nevada. Another distinct population, which is isolated by Lake Mead, occurs in the middle and upper portions of the Muddy River in Nevada. The only water body this species inhabits that is crossed by the proposed pipeline route is the Muddy River (Jon Sjoberg, NDOW, 2001; in USFWS 2002) (FERC and CSLC 2002). The nearest recorded observation of this species is 20 miles from the proposed project alignment, south of Saint George on the Virgin River (UDWR 2008). (CH2MHill 2008h)

Mammals

Utah Prairie Dog

The Utah prairie dog (*Cynomys parvidens*) was down-listed from Endangered to Threatened status by the USFWS in 1984 (49 FR 22330-22334). It is also a Utah-listed threatened species. The UDWR has it listed in four counties (Beaver, Millard, Iron, and Washington) through which the pipeline would pass. It is one of three prairie dog species found in Utah, occurring in the southwestern part of the state. Populations have declined dramatically from historic levels due to factors such as habitat loss, intentional control efforts, and the plague (UDWR 2003). (CH2MHill 2008h)

Utah prairie dogs once occurred in at least ten distinct areas across southwestern and south central Utah, in the southern Bonneville Basin and on high-elevation plateaus of central Utah (UDWR 2003). The species' range is currently limited to the southwestern quarter of Utah concentrated in three recovery population areas: 1) the Awapa Plateau (predominantly in Wayne County), 2) Paunsaugunt Plateau (Garfield County), and 3) West Desert (much of Iron and Beaver counties). Habitat factors important to the species include an elevation below 9,000 feet, water availability in addition to precipitation, heterogeneity of plant community, less than 10 percent of the vegetation cover composed of "tall" (12 inches) vegetation, and non-alkaline soils (Collier 1975). They primarily feed on grasses and forbs and, therefore, are restricted to relatively open plant communities with short-stature vegetation. Utah prairie dogs prefer short grass prairie where vegetation height is low enough to allow standing prairie dogs to scan their environment for predators and sparse enough to enable them to see through it (UDWR 1998). (CH2MHill 2008h)

According to UDWR data, High Value Habitat for the Utah prairie dog may occur near the proposed pipeline route in Beaver and Iron counties. High Value Habitat is defined as an area that provides for "intensive" use by wildlife species. Distribution records from 1983 indicate known occurrences in the counties in which the proposed pipeline route passes are concentrated in Iron County (UDWR 2003). Iron County also contains the highest concentration of High Value Habitat. The majority of Utah prairie dog habitat in Iron County is between Cedar City and Beaver, east of the proposed pipeline route. The nearest recorded observation of a Utah prairie dog is 1.4 mile from MP 170 of the proposed alignment recorded in 1996 (UDWR 2008). (CH2MHill 2008h)

During the overall environmental field survey of the proposed route in 2007, no individuals or colonies of Utah prairie dogs were observed. Active season surveys for Utah prairie dog were conducted in August 2007 on the proposed route in Iron and Beaver counties, and along Highway 257 in southern Millard County. The proposed route is east of UDWR identified High Value Habitat in Washington County; therefore, the route in Washington County was not surveyed specifically for Utah prairie dogs. The majority of the proposed pipeline route in Iron, Beaver, and southern Millard counties consists of mixed shrubs and grasses, with little potential prairie dog habitat. Little potential Utah prairie dog habitat was found within the proposed pipeline ROW (CH2MHill 2008h); however prairie dogs may still occur near the project area in Iron or Beaver counties.

Reptiles

<u>Desert Tortoise</u>

The southern desert portion of the project area is located within desert tortoise (*Gopherus agassizi*) habitat. The desert tortoise is federally listed as a Threatened species (USFWS 1990). As a federally listed Threatened species it is therefore included on the Utah Sensitive Species List and is protected under NRS 501 in Nevada. The desert tortoise is one of four gopher tortoises in North America. The desert tortoise is distinguished by a high-domed shell with prominent growth rings on both the carapace (upper portion of the shell) and the plastron (lower portion of the shell; Stebbins 1985). The desert tortoise is completely terrestrial and requires firm, suitable substrates for digging burrows and nest sites or providing other shelter sites, such as rock crevices. Throughout the Mojave Region, desert tortoises occur on flats and bajadas with soils ranging from sand to sandy-gravel, and they occur on rocky terrain and slopes (USFWS 1994a). They require sufficient suitable plants for forage and cover. Preferred vegetation is usually scattered shrubs and abundant inter-shrub space for growth of herbaceous plants. The most common plant associated with their habitat is creosote bush. Desert tortoises often place their burrows directly under creosote bushes, taking advantage of the substrate stability created by the creosote bush roots. Desert tortoises are primarily herbivores, foraging on grasses, forbs, cacti, and the flowers of annual plants. They live to be 30 to 100 years of age and reach sexual maturity at 12 to 30 years (Woodbury and Hardy 1948). Females lay an average of 4.2 eggs per clutch inside the burrow and have an average of 1.9 clutches per year (Turner and Berry 1984). Their variable reproductive success is correlated with environmental conditions (USFWS 1994b). (CH2MHill 2008h)

Activity patterns of the desert tortoise are closely tied to ambient temperatures and forage availability. Desert tortoises spend much of their lives in burrows, emerging to feed and mate during late winter and early spring. They remain active through the spring and portions of the summer through late fall. Their active season is typically defined as being from March 1 through October 31(CH2MHill 2008h).

Threats to this species include direct and indirect human-caused mortality. Impacts such as destruction, degradation, and fragmentation of their habitat from urbanization, agricultural development, livestock grazing, mining, roads, vehicle-oriented recreational use, and losses from human take and disease have contributed to population declines (USFWS 1994b). The primary impetus for listing the Mojave populations was the documentation of an outbreak of a virulent respiratory disease and heavy predation by ravens (*Corvus corax*) on juvenile tortoises which, combined, were believed to be causing dramatic declines in some subpopulations (CH2MHill 2008h).

Within tortoise habitat, the proposed pipeline alignment closely parallels the two existing Kern River pipelines. The pipeline trench would be located within the area of previous disturbance. Extensive surveys for desert tortoises were conducted in 1990 prior to installation of the first Kern River pipeline. Based on these surveys, the proposed pipeline alignment would traverse desert tortoise habitat from approximately MP 315 south 84 miles to the project terminus in Nevada at MP 399. Of this total, approximately 13.5 miles are in Utah, and 70.5 miles are in Nevada (CH2MHill 2008h).

In Utah, tortoises occupy blackbush shrub/Joshua tree woodlands and creosote bush shrub habitats. Blackbush shrub/Joshua tree intergrades with pinyon-juniper woodland at higher elevations with creosote bush shrub and calcareous rocky outcrops at lower elevations. In general terms, tortoise habitat starts at the edge of the pinyon-juniper habitat. Survey results indicated densities of less than 10 adult tortoises per mile in Utah but tended to increase to 10 to 45 adult tortoises per square mile near the Nevada border. Most areas in Nevada were estimated to have less than 10 adult tortoises per square mile with relatively smaller areas reaching densities of 45 to 140 adult tortoises per square mile (Dames & Moore 1990 *in* USFWS 2002). Much of the blackbush shrub/Joshua tree woodlands in Utah and creosote bush shrub in Nevada was severely burned subsequent to the 1990 surveys and the habitat value to tortoises is likely reduced and tortoise numbers may have decreased. All tolled, approximately 20 miles of the proposed alignment have been impacted by fire. For the second Kern River pipeline the USFWS, BLM, and state agencies in Utah and Nevada did not require desert tortoise surveys to estimate numbers of tortoises within the project area (USFWS 2002). (CH2MHill 2008h)

Critical habitat has been designated for the desert tortoise (USFWS 1994b). The designation of critical habitat is used to identify areas where federal agencies need to exercise special care to avoid damage to a species' habitat. These areas are considered to be essential to the long-term survival and recovery of a species. Critical habitat does not preclude all modification of habitat in the designated area. In Utah, the proposed alignment traverses the Beaver Dam Slope Critical Habitat Unit (CHU) for 9.1 miles. In Nevada, it crosses the Beaver Dam Slope CHU for 13.5 miles and the Mormon Mesa CHU for 23.3 miles for a total of 36.8 miles. All tolled the proposed alignment traverses 45.9 miles of desert tortoise critical habitat (USFWS 2002). (CH2MHill 2008h)

Plants

<u>Shivwitz Milkvetch</u>

Shivwitz milkvetch is endemic to Washington County and is known from only a few scattered locations. The species is restricted to unstable gypsiferous subsrates of the Chinle Formation in warm desert shrub and juniper communities (Franklin 2005). This species has been found in the vicinity of the alignment and could occur within the proposed construction disturbance area.

<u>Ute ladies'-tresses orchid</u>

On January 17, 1992, the USFWS designated the Ute ladies'-tresses orchid as Threatened across its entire range. Within the area covered by this listing, this species now occurs or once occurred in Colorado, Idaho, Montana, Nebraska, Utah, Washington, and Wyoming (CH2MHill 2008h).

This orchid prefers riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. It typically occurs in stable wetland and seepy areas associated with old landscape features within historical floodplains of major rivers. It also is found in wetland and seepy areas near freshwater lakes or springs (CH2MHill 2008h).

Habitat for this orchid is dominated by wetland grass-forb communities below 7,000 feet in elevation (low to mid-elevations) in wetlands and riparian zones. Wetlands with populations of other wetland orchids, such as hooded ladies tresses (*Spiranthes romanzoffiana*), bog orchids (*Habernaria* spp.), or giant helleborine (*Epipactis gigantea*), are usually good indicators of excellent Ute ladies'-tresses habitat. This species is often found in association with other specific wetland species (CH2MHill 2008h).

This orchid may exhibit prolonged dormancy. It can persist underground for several years before leaves emerge above ground, and it may not consistently flower in consecutive years. These dormancy periods are possible because of a symbiotic relationship with mycorrhizal fungi (USFWS 1995b). Plants with prolonged dormancy require special survey considerations because it may take 7 years of study to obtain 5 years of accurate information, and orchids occurring in drought- or flood-prone habitats may have both higher proportions of dormant plants and longer periods of dormancy (Lesica and Steele 1994). (CH2MHill 2008h)

The historical distribution of Ute-ladies' tresses is believed to have encompassed the same geographic area that it currently occupies, but to have been more widespread within that range. Currently, it occurs in disjunct locations in Colorado, Utah, Idaho, Wyoming, and Montana. Populations of Ute ladies'-tresses orchids are known from three broad general areas of the interior western United States -- near the base of the eastern slope of the Rocky Mountains in southwestern Wyoming and adjacent Nebraska and north-central and central Colorado; in the upper Colorado River Basin, particularly in the Uinta Basin; and in the Bonneville Basin along the Wasatch Front and westward in the eastern Great Basin, in north-central and western Utah, extreme eastern Nevada, and southeastern Idaho. The orchid also has been discovered in southwestern Montana and in the Okanogan area and along the Columbia River in north-central Washington (CH2MHill 2008h).

This species is listed as Threatened and is known to occur in Juab and Tooele counties in Utah and Lincoln County in Nevada. Appropriate habitat for Ute-ladies'-tresses was not observed during field habitat surveys of the proposed pipeline route in 2007 (CH2MHill 2008h). However, occurrence of the species is possible across the extreme northern portion of the line, across Salt Lake Valley, and into northeastern Tooele County. It may also occur in Rush Valley near Faust (Tooele County). The nearest known observation as recorded by UDWR in 1953 is 9.4 miles from MP 11 (UDWR 2008). Although populations are not currently known, Ute-ladies' tresses may occur from MP 0-56.

3.9.3.3. Sensitive Species

Amphibians

Arizona Toad

The Arizona toad (*Bufo microscaphus*) is listed as a BLM sensitive species and wildlife species of concern (WSC) in Utah. It is found in disjunct populations in southern Nevada, extreme southwest Utah, and across central Arizona into western New Mexico. It also occurs in the Sierra Madre Occidental of Mexico (Stebbins 1985). In Utah, its distribution is described as concentrated within the Virgin River Basin (UDWR 2006). The species tends to be found in areas of shallow, flowing, permanent water over sandy or rocky substrates. It is most abundant in lowland riparian habitat (UDWR 2006). In southwest Utah the height of the breeding season is June, although it can be later at higher elevations (Stebbins 1985). Based on habitat descriptions for this species, the only water bodies crossed by the proposed pipeline route that could support the Arizona toad is the Muddy River and Moody Wash. The nearest recorded observation (2003) of this species in Utah is 0.4 mile from the proposed project alignment near MP 300 in Moody Wash (UDWR 2008). (CH2MHill 2008h)

Western Toad

The western toad (*Bufo boreas*) is listed as a BLM sensitive species in Utah and WSC in Utah. The range of the species extends from southern Alaska to Baja California and from the Rocky Mountains to the Pacific coast. It is not found in the more arid portions of the Southwest. It occupies a variety of habitats including desert streams and springs, grasslands, woodlands, mountain meadows ponds, lakes, and reservoirs (Stebbins 1985). Its current range in Utah is restricted to 10 counties as described by the UDWR (2006), and does not include those crossed by the proposed alignment. However, based on the range maps for this species and habitat descriptions, potential habitat for this species could be located in the vicinity of the project area between approximately MP 290 and MP 315 that support juniper woodland habitats. The UDWR (2008) provides a recorded observation of this species within 77 feet of the proposed project alignment near MP 14 along Highway 80. No data are given for this observation, although it was prior to 1997 (CH2MHill 2008h).

Birds

BLM Sensitive Raptors

Raptor species listed by the BLM as sensitive may occur in the vicinity of the proposed pipeline route. These sensitive species include the golden eagle (*Aquilia chrysaetos*; BCC), bald eagle (*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*; BCC, PIF), northern goshawk (*Accipiter gentilis*), Swainson's hawk (*Buteo swainsoni*; BCC), peregrine falcon (*Falco peregrines*; BCC), and prairie falcon (*Falco mexicanus*; BCC). These species are also assigned various statuses by the states of Utah and Nevada. The bald eagle, northern goshawk, and peregrine falcon are also a USFS sensitive species. The USFWS published a set of species-specific guidelines to protect raptors from human-caused disturbances (Romin and Muck 2002); this document is used by most agencies in Utah as guidance when raptor nests are found in a disturbance area (**Appendix D**). UDWR (2008) data indicated several known raptor nests, including the species listed above, within 2 miles of the proposed route. The majority of these known nests are located from MP 1 to 280. Specifically, UDWR (2008) reports observations of northern goshawk 1.2 miles from MP 130 (1987); golden eagle 0.7 mile from MP 280 (no date), ferruginous hawk 16 feet from MP 259 (2002), Swainson’s hawk 550 feet from MP 324 (2002) and 26 feet from MP 230 (1980), prairie falcon 1 mile from MP 272 (before 1997), and peregrine falcon 393 feet from MP 21 (2003) and 354 feet from MP 152 (1988) (CH2MHill 2008h). Aerial raptor surveys along the alignment were conducted from 28 to 30 April 2008. Five raptor species were observed nesting, including red-tailed hawk (2 nests, near MP 27-28 and 1 mile from MP 218), ferruginous hawk (3 nests; MP 173, between MP 221 and 222, MP 280, between MP 310-311,), golden eagle (6 nests; MP 218, MP 239, between MP 308-309, between MP 310-311, near MP 366, and near MP 367), peregrine falcon (2 nests; near MP 327 and 1 mile from MP 328), and prairie falcon (3 nests; 2 along the Millard Alternative, 1 near MP 310; CH2MHill 2008p).

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is a BLM sensitive species as well as a WSC in Utah and protected under NRS 501 in Nevada. This species is also protected by BLM Utah raptor guidelines (see BLM-Sensitive raptors). Burrowing owls occupy open areas, such as grasslands, desert shrub, and the edges of agricultural fields. They also inhabit golf courses, airports, cemeteries, vacant lots, and road embankments or wherever there is sufficient friable soil for a nesting burrow. Their breeding habitat/distribution occurs across much of western North America as far east as Texas extending south through Mexico, Central America, and South America. Owls use burrows for nesting and also require access to alternate burrows providing escape cover for adults and fledglings. Burrowing owls are dependent on fossorial mammals such as badgers, ground squirrels, and prairie dogs to create burrows. The winter range is similar to the breeding range, except most owls from the northern areas of the Great Plains and Great Basin migrate south (Haug et al. 1993). Burrowing owls have declined in abundance throughout most of their range. UDWR habitat maps indicate Primary Breeding Habitat throughout much of western Utah. Potential habitat for this species is widespread throughout the project area with the greatest potential occurring from MP 0 to 37, MP 104 to 121, MP 146 to 155, MP 169 to 198, MP 228 to 233, and MP 252 to 279. The nearest recorded burrowing owl observation (2002) in Utah is 100 feet from the proposed project alignment near MP 160 (UDWR 2008). (CH2MHill 2008h)

Greater Sage-Grouse

The greater sage grouse is designated as a sensitive species by the BLM and USFS, and is considered a species of special concern in Utah due to a declining population and limited range. Sagebrush is the primary year-round source of food for the sage grouse. Sagebrush also serves as the critical component in leks (breeding grounds), nesting, feeding sites, brood habitat, and wintering grounds. UDWR data indicate 65.5 miles of potential brood habitat along the proposed ROW from MP 45.5 to 78.5 and 85.5 to 118 (approximately 360 acres). The total amount of brood habitat available in Utah is 7,630,999 acres (UDWR 2008). The proposed project would disturb approximately 0.005 percent of the total available brood habitat. Of the 65.5 miles of habitat, 23 miles are medium quality and the remaining 42.5 miles are low quality habitat. These 42.5 miles are located adjacent to an existing ROW such as highway or railroad. Habitat quality was determined to be high, medium, or low quality based on an evaluation of sagebrush height and density, amount of available forage, patch size, and adjacency to other areas of suitable habitat (CH2MHill 2008h).

CH2M Hill identified 8 known leks within 2 miles of the proposed pipeline route using UDWR (2008) data. These lek sites are between MP 46 and MP 105 with the closest known lek site approximately 0.25 mile away from the proposed route. The closest lek site was last observed in 2004 as providing wintering, nesting, and brood habitat (UDWR 2008). Six of the eight lek sites were last observed as active in 2004 while the other two were observed in 2006. (CH2MHill 2008h)

LeConte's Thrasher

The Le Conte's Thrasher (*Toxostoma lecontei*) is on the list of BLM sensitive species in Nevada. This species occurs in desert shrub habitats of extreme northwestern Mexico (parts of Sonora and Baja California) and the southwestern United States (parts of Arizona, California, Nevada, and Utah). In Utah, it is known only from the Beaver Dam Slope area in the extreme southwestern corner of the state, where it occurs in small numbers. This would be the area between MP 324 and 328 (approximately 31 acres) where the proper habitat occurs in the Beaver Dam Wash area. Throughout its range, there are approximately 27,954,403 acres of available habitat for this species (NMSU 2008). Disturbing 31 acres is approximately 0.0001 percent of the available habitat. The nearest known observation of a LeConte's thrasher in the Utah project area is 7.2 miles from MP 327 (UDWR 2008). This observation is over 10 years old (CH2MHill 2008h).

Lewis's Woodpecker

The Lewis's woodpecker (*Melanerpes lewis*) is listed as a BLM sensitive species and a WSC in Utah. This is a widespread species found from Colorado west to the Pacific Ocean and from British Columbia south to northwest Mexico (Terres 1980). Its distribution in Utah includes concentrations in the southwestern portion of the State. Its preferred habitat includes burned-over Douglas-fir, mixed conifer, pinyon-juniper woodlands, oak woodlands, the edges of pine and juniper stands, and riparian cottonwoods. Large diameter snags and stumps are required for excavating cavity nests. Its primary breeding habitat is in ponderosa pine and open riparian areas with winter habitat including open woodlands and riparian areas (UDWR 2006). Potential habitat for this species occurs immediately adjacent to the project area in juniper woodlands (MP 290 to MP 304). New disturbance to potential habitat would occur at MP 302 (0.4 acre) (CH2MHill 2008h).

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is considered by the Nevada BLM to be a sensitive species. A predatory songbird, it is found from southern Canada to Mexico and winters in the southern half of the United States and Mexico. This species is common in the west where it inhabits open habitats or thinly wooded shrubland with clearings (Farrand 1983). It could occur throughout the project area (CH2MHill 2008h).

Phainopepla and Lucy's Warbler

The phainopepla (*Phainopepla nitens*) and Lucy's warbler (*Vermivora luciae*) are listed as sensitive species by the BLM in Nevada. The preferred and principal breeding habitat of these species is dense, shrubby, mostly riparian vegetation, including mesquite woodland. The proposed pipeline alignment traverses riparian vegetation near the crossing location of Meadow Valley Wash (MP 370.5) and the Muddy River (MP 374) (FERC and CSLC 2002, CH2M HILL surveys 2006/2007). However, the riparian habitat at these locations is fairly disturbed due to the previous crossings of pipelines adjacent to the pipeline crossing. The closest known phainopepla observation in Utah is approximately 1.4 miles from MP 326 of the proposed alignment. This observation is over 10 years old (UDWR 2008). (CH2MHill 2008h)

Short-eared Owl

The short-eared owl (*Asio flammeus*) is listed as a BLM sensitive species and a WSC in Utah. This species is protected by BLM Utah raptor guidelines (see BLM-Sensitive raptors and **Appendix D**). This is a ground nesting owl found throughout North America including the state of Utah. It prefers open areas of sagebrush/sagebrush shrub and grasslands (UDWR 2006). They frequently choose new breeding sites each year in response to densities of rodent populations. Potential habitat for this species is scattered along the project alignment from MP 11 to MP 288 although the majority of the route would follow existing ROWs such as highways, railroads, and utilities. The nearest recorded short-eared owl observation (2003) is 1.1 miles from the proposed project alignment near MP 131 (UDWR 2008). (CH2MHill 2008h)

Fish

Desert Sucker

The desert sucker (*Catostomus clarki*) is listed as a BLM sensitive species in Utah and Nevada and WSC in Utah. The desert sucker grows up to 13 inches (33 cm) long and varies in color from green to silver or tan above and silver to yellow below. During the spawning season breeding males develop a striped pattern consisting of 1 or 2 light lateral stripes on a darker background. While the desert sucker is omnivorous, it prefers diatoms and algae that cover rocks. Spawning occurs in late winter to early spring over riffles. This common fish of the Lower Colorado River drainage downstream of the Grand Canyon also lives in the Virgin River Basin of Utah, Arizona, and Nevada, the Bill Williams River of Arizona, and the Gila River drainage of New Mexico, Arizona, and northern Sonora, Mexico. In Utah, this species is found only in the Virgin River Basin (UDWR 2006). This species occupies small to moderately large streams with pools and riffles; mainly over a bottom of gravel with sandy silt. Adults live more in swift water than in deep pools; however, during periods of low flow, deep runs and pools may be important to desert sucker. Young tend to stay in lower velocity water along banks. This species could occupy portions of four intermittent waterbodies crossed by the proposed project; Magotsu Creek (MP 295), Moody Wash (MP 298), Beaver Dam Wash (MP 327), and Meadow Valley Wash MP (MP 370.5). The nearest recorded observation (1995) of this species is within 106 feet of the proposed project alignment in Moody Wash (UDWR 2008).

Flannelmouth Sucker

The flannelmouth sucker, (*Catostomus latipinnis),* is native to the Colorado River system of the western United States and northern Mexico. It is considered a sensitive species by the U.S. Department of Agriculture (USDA) Forest Service (USFS), Rocky Mountain Region (Region 2), and by the BLM. Flannelmouth sucker are part of a range-wide conservation agreement between all state agencies within the Colorado River system, including Utah and Nevada. Historically, the flannelmouth sucker was abundant in most, if not all, medium to large, lower elevation rivers of the Upper Colorado River drainage, and similar habitats of the Lower Colorado River drainage (Joseph et al. 1977). While it is still found throughout most of its historical range in Colorado and Wyoming, it is less abundant if not absent from its historical range in Nevada, and Utah (Sigler and Sigler 1996). It still occupies the Virgin River drainage even though its distribution throughout the Lower Colorado River Basin in general has been restricted to localized areas of suitable habitat (Sublette et al. 1990). This is due in large part to the severe impacts of dams and diversions on flow regimes, habitat loss, water quality, and the introduction of nonnative fishes (CH2MHill 2008h).

Flannelmouth suckers can live up to 30 years. They are benthic feeders (bottom dwelling) that feed primarily on algae, although invertebrates and many other types of plant matter are also included in their diets. The species spawns in gravel substrate during the spring and early summer. In some systems, such as the Colorado River, flannelmouth suckers undertake long upstream spawning migrations; however, they have also been shown to be more resident in other systems, with only short upstream migrations. Flannelmouth suckers are typically found in slower, warmer rivers in plateau regions of the Colorado River drainage (Deacon and Mize 1997). They usually inhabit the main stems of moderate to large rivers but are occasionally found in small streams. This species frequents pools and deep runs but can also be found in the mouths of tributaries, riffles, and backwaters. Flannelmouth suckers are occasionally found in lakes and reservoirs, but are in general poorly adapted to impounded habitats (Chart and Bergersen 1992). Flannelmouth sucker are present within the Muddy River and could occupy portions of Meadow Valley Wash MP (MP 370.5). Although they may occur within lower portions of Beaver Dam Wash, Magotsu Creek, and Moody Wash, they are not expected to occur within the section impacted by the proposed pipeline route. The nearest recorded observation (1992) of this species is within 1.1 miles of the proposed project alignment near MP 301 in Moody Wash (UDWR 2008). (CH2MHill 2008h)

Virgin Spinedace

The Virgin spinedace (*Lepidomeda mollispinis mollispinis*) is listed as a sensitive species by the BLM, as a conservation agreement species by the State of Utah, and receives protection under the NRS 501 in Nevada. The Virgin spinedace is a small minnow that ranges in size between 2 and 4 inches. Its sides are silvery to brassy in color and often speckled. Virgin spinedace are most often associated with clear, cool, relatively swift streams. Research has demonstrated that they will migrate more than half a mile and typically frequent pools that provide some form of protection, such as overhangs, boulders, or debris. Virgin spinedace usually spawn over gravel and sand substrates from April through June and sexual dimorphism has only been documented during the breeding season. Like many other southwestern fish, Virgin spinedace feed mainly on aquatic insect larvae, but also eat algae when other foods are scarce. They feed benthically, as well as in the midwater column, and on the surface (Arizona Game and Fish Department 2007). (CH2MHill 2008h)

Although historic distribution is not well documented, Virgin spinedace are believed to have historically occupied most of the perennial streams and rivers within the Virgin River Basin. Today, they are found in portions of the Santa Clara and Virgin Rivers and several of their tributaries in Utah, Nevada, and Arizona. This includes three drainages that would be crossed by the pipeline: Magotsu Creek (MP 295), Moody Wash (MP 298), and Beaver Dam Wash (MP 327). The proposed crossing locations at Beaver Dam Wash do not support riparian vegetation and rarely have surface flows. However, the USFWS previously reported that the Virgin spinedace can expand into such ephemeral water bodies when water is present. At such times, the segments that are temporarily flowing are critical to population connectivity. The proposed crossing locations of Magotsu Creek and Moody Wash flow more regularly and provide suitable habitat (FERC and CSLC 2002; CH2M HILL surveys in 2006/2007). The nearest recorded observation in 1992 of this species is within 106 feet of the proposed project alignment in Moody Wash (UDWR 2008). (CH2MHill 2008h)

Mammals

Bat Species

There are several BLM sensitive bat species listed in Utah and Nevada and by the UDWR and NDOW. These species include the Allen's big-eared bat (*Idionycteris phyllotis*), big free-tailed bat (*Nyctinomops macrotis*), fringed myotis (*Myotis thysanodes*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*). The spotted bat and Townsend's big-eared bat are also USFS sensitive species. Species information summarized from Oliver (2000) in **Table 3.9-1**. All of these bats are insectivorous. Each species could occur in all habitat types throughout the project area while foraging or in conjunction with roost sites. Thus, potential habitat for BLM sensitive bats occurs throughout the alignment.

In recent years there has been heightened concern for all bats given their inherent vulnerability at communal roost sites. Deep caves or mine shafts and adits are frequently used by bats. A significant bat roost is easily identified by the accumulation of bat guano and odor at the site. However, no significant bat roosts or colonies (for example, caves or mine sites) were reported for the Kern River pipeline (FERC and CSLC 2002), nor were any observed within the project area during recent surveys by CH2M HILL in 2006 and 2007 (CH2MHill 2008h). The entire alignment is considered potential foraging habitat for BLM sensitive bat species.

Kit Fox

The kit fox (*Vulpes macrotis*) is a Utah WSC and a BLM sensitive species. Their range encompasses much of the Mojave Desert, Sonoran Desert, Chihuahuan Desert, and Great Basin. This range includes western Utah and southern Nevada; the entire UNEV project (Burt and Grossenheider 1980). The total available habitat for the species is approximately 147,268,282 acres throughout its range (NMSU 2008). Kit fox were observed within 1.3 miles of MP 65 of the proposed alignment in 2005. In 1986 kit fox were observed 110 feet from MP 217 (UDWR 2008). In the Mojave Desert, large kit fox den complexes are often found in association with desert tortoise and other habitat heat-tolerant reptile species found in creosote shrub. Large kit fox den complexes are often found in association with creosote, taking advantage of the substrate stability created by the creosote bush roots. Kit fox pups are born February through April and weaned in 4 to 5 months (CH2MHill 2008h).

Nelson’s Bighorn Sheep

The Nelson’s bighorn sheep (*Ovis canadensis nelsoni*) is listed as a sensitive species by the BLM. Nelson’s bighorn sheep typically occupy open, rocky mountain habitat with available water. Mountain habitat supporting Nelson’s bighorn sheep is not traversed by the proposed UNEV pipeline alignment; however, habitat is in close proximity in the East Mormon Mountains and Arrow Canyon Range in Nevada (McQuivey, 1978). (CH2MHill 2008h)

Preble’s Shrew

The Preble's shrew (*Sorex preblei*) is on the list of BLM sensitive species in Utah and Nevada as well as a WSC in Utah. This species is presumed to be among the rarest of Utah's eight shrew species. In fact, the known Utah range of the species includes only the southern shore of the Great Salt Lake. The overall range of the species, however, includes much of western North America. The Preble's shrew can be found in many types of habitat, but the species is thought to have an affinity for wetland areas. The Preble's shrew eats insects, worms, mollusks, centipedes, and other small invertebrates. The species is active throughout the year, primarily during evening and morning hours. Little is known about the reproductive characteristics of the Preble's shrew (UDWR 2006). The nearest observation of a Preble’s shrew is 20 miles from MP 29 of the proposed alignment recorded in 1983 (UDWR 2008) The project area crosses through potential habitat for less than 7 miles between MP 3 and MP 10 (approximately 63 acres) but does not actually directly impact any wetlands along the preferred route (CH2MHill 2008h).

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) is listed as a sensitive species by the BLM, USFS, and a WSC in Utah. Its historic range encompassed portions of Wyoming, Montana, Idaho, Utah, Nevada, California, Oregon, and Washington [USFWS 2006 (71 FR 52816-52818)]. Pygmy rabbits prefer the taller big sagebrush within sagebrush/sagebrush shrub habitat that grows on deeper soils. Their occurrence is governed more by the presence of deep soils for burrowing than by shrub height or character. Sagebrush range in good condition also supports a lush undergrowth of bunchgrasses and forbs that pygmy rabbits use as forage in mid-to late summer (Text modified from NDW 2006). . Sagebrush/sagebrush shrub habitat potentially supporting pygmy rabbits is present in or adjacent to the proposed ROW from MP 44 to MP 46, MP 50 to MP 54, MP 59 to MP 61, MP 74 to MP 86, MP

90 to MP 91, MP 97 to MP 98, and MP 102 to MP 104. The nearest observation of a pygmy rabbit is 1.5 miles from the proposed alignment recorded in 1986 (UDWR 2008). Approximately 142 acres of potential pygmy rabbit habitat (that is, sagebrush/sagebrush shrub) would be disturbed during construction (CH2MHill 2008h).

Mollusks

The following mollusks are sensitive in Utah, although none are known to occur within the project alignment (**Exhibit 3.9-3**). Knowledge of the life histories of sensitive mollusks in Utah is extremely limited. Five springs occur within 150 feet of the proposed pipeline alignment. These include two unnamed springs (within 18 feet, near MP 31; and within 7 feet, near MP 289), Rose or Bryan Spring (within 54 feet, near MP 31), South Bryan Spring (within 45 feet, near MP 31), and Canfield Spring (within 32 feet, near MP 285). Southern Bonneville springsnail (*Pyrgulopsis transversa*) could be present within springs near MP 31 but occurrence is unlikely. None of the other suitable habitats for sensitive mollusks in Utah (i.e., high eleveations near treeline, lakes and ponds, marshes, limestone outcrops, or caves) are present within the disturbance areas. Shrublands and forests in the disturbance areas are not at high enough elevation to be suitable for Eureka mountainsnail (Oliver and Bosworth 1999).

Exhibit 3.9-3 BLM Sensitive mollusks in Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties (Utah).

Species	Habitat	Distribution/Location
Bifid duct pyrg (Pyrgulopsis peculiaris)	Springs (obligate)	Six known populations/Millard County
Brian Head mountainsnail (Oreohelix parawanensis)	High elevations near treeline	One known population/Iron County
California floater (Anodonta californiensis)	Lakes and ponds	Bonneville Basin
Cloaked physa (Physa megalochlamys)	Marshland habitats and ponds	One known population /Snake Valley – northwestern Millard County
Desert springsnail (Pyrgulopsis deserta)	Springs (obligate)	Six known populations /Virgin River basin and Washington County
Desert valvata (Valvata utahensis)	Lakes	Utah Lake (historical)
Eureka mountainsnail (Oreohelix eurekensis)	Shrublands and forests	Four known populations /western Tooele and Juab counties and northern Grand County
Hamlin Valley pyrg (Pyrgulopsis hamlinensis)	Outflow of small springs	One known population /western Beaver County.
Longitudinal grand pyrg (Pyrgulopsis anguina)	Warm, flowing springs	Two known populations /northwestern Millard County
Lyrate mountainsnail (Oreohelix haydeni)	Limestone outcrops or other soils with high calcium concentration	21 known colonies /Cache, Rich, Weber, Morgan, Salt Lake, and Tooele counties
Northwest Bonneville pyrg (Pyrgulopsis variegata)	Springs	Eight known populations /western Box Elder County

Species	Habitat	Distribution/Location
Southern Bonneville springsnail (Pyrgulopsis transversa)	Springs	Six known populations /Tooele, Sanpete, and Utah counties
Southern tightcoil (Ogaridiscus subrupicola)	Small caves	Utah (locations unknown)
Sub-globose snake pyrg (Pyrgulopsis saxatilis)	Habitat produced by thermal springs in a single spring complex	One known population /Millard County
Utah physa (Physella utahensis)	Small pools associated with springs	Two known populations
Western pearlshell (Margaritifera falcata)	Fresh water streams with fast moving waters	Northern Utah

Sensitive Reptiles

Common Chuckwalla

The common chuckwalla (*Sauromalus obesus*) is listed as a BLM sensitive species in Utah and Nevada, WSC in Utah, and protected from collection or killing under Nevada law (NRS 501). The chuckwalla is found throughout the deserts of the southwestern United States and northern Mexico. Chuckwallas inhabit rock outcrops where cover is available between boulders or in rock crevices typically on slopes and open flats below 6,100 feet in elevation. Typical habitat includes rocky hillsides and talus slopes, boulder piles, lava beds, or other clusters of rocks (Stebbins 1985) within Mojave creosote-bursage, blackbush shrub, and Joshua tree forest. High value habitat occurs in the extreme southwestern Utah and Nevada portion of the project area. Hence, chuckwallas are likely to occupy rocky outcrops in or adjacent to the project area from approximately MP 316 south for 94 miles to the project terminus. UDWR (2008) reports the nearest known observations of chuckwalla at 7.7 miles from the proposed alignment in 2001 and one at 4.4 miles in 1953. All but approximately 3 miles of the proposed ROW is within the existing Kern River disturbance. Previous construction has altered this species' habitat by reducing the availability of their typical rock crevices cover sites (CH2MHill 2008h).

Gila Monster

The Gila monster (*Heloderma suspectum cinctum*) is listed as a BLM sensitive species in Utah and Nevada, WSC in Utah, and protected from collection or killing under Nevada law (NRS 501). The Gila monster is a stout-bodied lizard that occupies desert shrub and semi-arid shrub with gravelly and sandy soils. This species is common in mountainous areas or other areas of boulder strewn terrain throughout the Mojave Desert of extreme southwestern Utah and southern Nevada. As such it could be encountered in the extreme southern Utah portion of the project area and the entire Nevada portion. UDWR (2008) reports the nearest known observation of Gila monsters at 2.1 miles from MP 325 of the proposed alignment (2003). Gila monsters are most likely to occupy rocky outcrops in or adjacent to the project area in Mojave desert shrub (Stebbins 1985). This species spends about 95 percent of its active season (spring-summer) underground (CH2MHill 2008h).

Reptile Species with Limited Distributions in Utah

Eight other desert reptile species' ranges also extend into extreme southwestern Utah. These species are listed by the UDWR as WSC in Utah and are therefore also considered sensitive by the BLM. These species include the sidewinder (*Crotalus cerastes*), Mojave rattlesnake (*Crotalus scutulatus*), speckled rattlesnake (*Crotalus mitchellii*), desert iquana (*Dipsosaurus dorsalis*), desert night lizard (*Xantusia vigilis*), western banded gecko (*Coleonyx variegates*), western threadsnake (*Leptotyphlops humilis*), and zebra-tailed lizard (*Callisaurus draconoides*). The sidewinder, speckled rattlesnake, and Mojave rattlesnake are also listed as BLM sensitive in Nevada. All are found in Utah and Nevada.

The sidewinder, Mojave rattlesnake, speckled rattlesnake, western banded gecko western threadsnake, and zebra-tailed lizard habitats are encompassed within Mojave creosote-bursage, blackbush shrub, and Joshua tree forest (Stebbins 1985). Suitable habitat extends from MP 316 to the terminus of the project. Habitat characteristics vary among species based on substrate and density of vegetative cover. The desert night lizard is found primarily in Joshua tree forest (MP 315 to MP 356) and the desert iguana prefers creosote bush habitats such as those found from MP 330 south to the project terminus. UDWR (2008) reports observations of zebra-tailed lizard 0.8 mile from MP 325 (2004); western banded gecko 1.4 miles from MP 326 (2004), sidewinder 1.3 miles from MP 326 (1989), speckled rattlesnake 3.8 miles from MP 325 (no date), Mojave rattlesnake 1.4 miles from MP 325 (2004), desert iguana 3.9 miles from MP 330 (no date), and desert night lizard 217 feet from MP 325 (2005).

Plants

BLM sensitive species with the potential to occur in or near the project area are described below. Only those species with known occurrences and/or suitable habitat in the proposed pipeline ROW are described.

<u>Baird's camissonia</u>

This species is found in association with pinyon-juniper woodland, blackbush shrub, and their ecotone between 3900 and 4300 feet in Washington County, Utah. The nearest recorded observation of this species in Utah is 0.9 mile from the proposed project alignment near MP 307 (1987 observation) (UDWR 2008). The greatest potential for this species to occur would be from MP 289 to 313, although this portion was previously disturbed by the installation of the Kern River Pipeline (CH2MHill 2008h).

<u>Franklin's penstemon</u>

This species is found in association with Utah grassland, greasewood shrub, desert grassland, blackbush shrub, and desert saltbrush shrub. Specifically, it is typically associated with three-awn, needlegrass, ricegrass, matchweed, prickly phlox, and black sagebrush. This species is endemic to central Iron County, Utah, and known populations occur near the north end of Cedar Valley and west of Iron Spring. The greatest potential for this species to occur would be along the Cedar City Lateral to the proposed terminal (Dr. Tait, personal communication, 2007). (CH2MHill 2008h)

<u>Giant fourwing saltbrush</u>

This species occurs between 4,750 and 5,250 feet elevation on interdune valleys in the Lynndyl sand dunes in association with scurfpea, anomalous sunflower, and other sand-loving plants, where they are encroached upon by the following dune (UNPS 2007). Plants survive being buried as the dune advances by continued growth above the encroaching sand (Welsh 1987). The greatest potential for this species to occur would be along the Millard County Alternative alignment.

<u>Jones globemallow</u>

This species is found in association with mixed desert shrub, specifically shadscale, matchweed, rabbitbrush, and winterfat, and grass communities such as Indian ricegrass and galleta. The species occurs on the Sevy Dolomite Formation and on calcerous gravels between 4,500 and 6,400 feet elevation. Orange flowers open in May and June, and reopen in September (UNPS 2007). The greatest potential for this species to occur would be east of the Cricket Mountains in salt desert shrub communities (approximately between MP 170-200).

Las Vegas bearpoppy

This species grows in blackbush shrub, Mojave creosote-bursage, and saltbrush shrub. Las Vegas bearpoppy is described as "locally abundant on gypsiferous clays of the Muddy Creek Formation" (MBG 2007). Gypsiferous soils are widely distributed in the project area of southwestern Utah and southern Nevada. Significant numbers of Las Vegas bearpoppy were lost due to inundation by Lake Mead. Remaining populations, while sometimes locally abundant, are restricted to southern Nevada, extreme northwestern Arizona, and a single collection in southeast Utah. The proposed alignment does not cross any potential habitat for this species (C. Lund, BLM, personal communication, 2007). Las Vegas bearpoppy is a short-lived perennial evergreen cushion with showy yellow flowers that bloom in April and May (CH2MHill 2008h).

Neese's narrowleaf penstemon

This species is found in association with fourwing saltbrush, sagebrush-*Eriogonum*, and juniper communities in dune sands between 4,600 and 5,400 feet elevation. Pink to rose flowers open in May and June (UNPS 2007). The greatest potential for this species to occur would be along the Millard County Alternative alignment.

Nevada willowherb

This species is found in association with pinyon-juniper woodland on talus slopes, rocky limestone, and quartzite soils between 5100 and 8800 feet elevation. This species is known from Iron, Millard, and Washington counties, Utah. The greatest potential for this species to occur would be from MP 289 to 313, although this portion was previously disturbed by the installation of the Kern River Pipeline. The nearest recorded observation of this species in Utah is 5.1 miles from the proposed project alignment near MP 320 (1994 observation) (UDWR 2008). (CH2MHill 2008h)

Pinyon penstemon

This species is found in association with pinyon-juniper woodlands and in gravelly soils below these woodlands. This species is endemic to Iron and Washington counties, Utah. The nearest recorded observation of this species in Utah is 0.5 mile from the proposed project alignment near MP 281 (1990) (UDWR 2008). The greatest potential for this species to occur would be from MP 277 to 287 (Dr. Tait, personal communication, 2007).

Small spring parsley

This species is found in association with desert shrub, sagebrush steppe, and juniper woodlands. Small spring parsley is usually found on Aeolian sand between 4,600 and 5,200 feet elevation. Yellow flowers open in April and May (UNPS 2007). The greatest potential for this species to occur would be along the Millard County Alternative alignment.

Sticky buckwheat

This species is found in association with blackbush shrub, Joshua tree forest, and Mojave creosote-bursage. Sticky buckwheat prefers deep loose sandy soils in washes, flats, roadsides, steep aeolian slopes, and areas of stabilized dune. Sticky buckwheat is often found growing with threecorner milkvetch. This species can withstand moderate temporary disturbance. Its flowers bloom in April-June. It is known from Clark and Lincoln counties, Nevada. The greatest potential for this species to occur would be from MP 315 to 399, although this portion was previously disturbed by the installation of the Kern River Pipeline (CH2MHill 2008h).

Threecorner milkvetch

This species is found in association with backbush shrub, Joshua tree forest, and Mojave creosote-bursage. This species prefers open, deep sandy soils of dunes generally stabilized by vegetation and/or a gravel veneer. It is dependent on sand dunes or deep sand in Clark and Lincoln counties, Nevada. It is a fast-growing annual that flowers in April and May, which turn violet when dry.

Threecorner milkvetch is often found growing with sticky buckwheat. The greatest potential for this species to occur would be from MP 329 to 399, although this portion was previously disturbed by the installation of the Kern River Pipeline (CH2MHill 2008h).

3.9.4. Existing Condition for Alternatives

3.9.4.1. Airport Alternative Route

The Airport Alternative Route and the corresponding segment of the Proposed Action route (both of which are approximately 3.5 miles in length) both traverse mainly marshes/mudflats vegetation. One mile of grassland traversed by the Proposed route would be avoided entirely by the Airport Route, and one mile of mudflats would be crossed instead. Similar special status species could be present along both the Proposed route and the Airport Alternative Route.

Bald eagle, long-billed curlew, and possibly Preble's shew may be present along both the Airport and the Proposed Action routes. Prebles shrew is a rare animal of which little is known; the possibility of encountering this species along either route is low. Bald eagles may be present in the vicinity of the Great Salt Lake, most likely roosting in large trees. Long-billed curlews may also be present near the Great Salt Lake, nesting in grassy areas. The Proposed route passes slightly closer to the Great Salt Lake than the Airport Alternative.

3.9.4.2. Tooele County Alternative Route

The Tooele County Alternative Route (approximately 15.5 miles in length) and the corresponding segment of the Proposed Action route (approximately 13.5 miles in length) both traverse mainly grassland vegetation. More disturbed grasslands with noxious weeds present would be disturbed under the Tooele Alternative Route than the Proposed route, and fewer "undisturbed" acres of grassland would be lost under the Tooele Route. The Tooele Alternative Route would also disturb agricultural lands and less than ten acres of sagebrush, whereas the Proposed Action route would not disturb these vegetation types. The probability of encountering Ute Ladies' tresses along either route would be similar.

3.9.4.3. Rush Lake Alternative Route

All special status species habitat along the Rush Lake Alternative Route (approximately 3.6 miles in length) would be the same as that described for the Proposed Action (the corresponding segment of which is approximately 3.5 miles in length).

3.9.4.4. Millard County Alternative Route

The main differences between the Millard County Alternative Route (approximately 63.1 miles in length) and the corresponding segment of the Proposed Action route (approximately 51.1 miles in length) is that the Millard Route passes through mainly sagebrush/sagebrush shrub vegetation and some pinyon-juniper, whereas the Proposed route passes through mainly greasewood, disturbed grassland, and marshes/mudflats vegetation. In addition, the Proposed Route crosses the Sevier River south of Lynndyl, and the Millard County Route crosses the Sevier River at a section that is most likely dry for at least part of the year.

Species more likely to be present along the Millard Alternative Route (than the Proposed Action route) include sage grouse and pygmy rabbit in sagebrush habitat; western toad and Lewis's woodpecker in pinyon-juniper habitat; and sensitive plants that include Neese narrowleaf penstemon, small spring parsley, and giant four-wing saltbrush.

Species more likely to be present along the Proposed Action route than the Millard Alternative Route include burrowing owl and short-eared owl in disturbed grassland habitat.

3.10. Land Use and Transportation

3.10.1. Area of Analysis

The area of analysis for land use includes lands along the proposed pipeline route, the lateral line servicing the Salt Lake City Airport, the proposed Cedar City Lateral, and those authorities having jurisdiction over land uses within the proposed project area. The proposed pipeline route traverses portions of the States of Utah and Nevada. Authorities with jurisdiction would include Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington counties in Utah. In Nevada, it would include Lincoln and Clark counties. Federal agencies with jurisdiction within the area of analysis include the BLM and USFS.

3.10.2. Data and Methods

The following methods were used to gather data and develop the analysis of land use, land ownership, transportation, and related subjects:

- Conducting research on the county websites and contacting the following counties, as necessary, to obtain general plans, land use maps, and zoning maps and ordinances: Beaver County, Davis County, Iron County, Juab County, Millard County, Salt Lake County, Tooele County, and Washington County in Utah; and Clark County and Lincoln County, in Nevada.
- Conducting research on the BLM websites and contacting the following BLM field offices, as necessary, (1) to obtain RMPs addressing lands that the proposed project would cross: Salt Lake, Fillmore, Cedar City, St. George, Ely, and Las Vegas Field Offices; and (2) to obtain data regarding land use authorizations (including coal authorizations, geothermal agreements and leases, mining claims, oil and gas leases and agreements, range allotments, and rights-of-way).
- Conducting research on the USFS website and contacting the Dixie National Forest.
- Contacting the Bureau of Indian Affairs (BIA) (CH2MHill 2008i).

3.10.3. Existing Conditions for Proposed Action

3.10.3.1. Existing Land Ownership

The proposed pipeline would cross eight counties, one city, four BLM jurisdictions, and one Forest Service jurisdiction in Utah; and two counties and two BLM jurisdictions, and one Native American Tribal reservation in Nevada. The proposed Airport Lateral would cross private land. The Cedar City terminal site would be located on private land and the proposed lateral would cross mix of private and BLM land. The terminal at the Apex Industrial Park would also be located on private land.

Exhibit 3.10-1 lists the mileage of the proposed pipeline by land ownership category.

Exhibit 3.10-1 Mileage of the Proposed Pipeline by Land Ownership Category (Including the Main Pipeline, Airport Lateral and the Cedar City Lateral) under the Proposed Action

Owner	Mileage
BLM	208.35
Department of Defense (DoD)	2.35
U.S. Forest Service (USFS)	17.78

Owner	Mileage
Moapa Band of Paiute Indian Reservation	14.57
State	35.84
Private (including airport property)	133.76
Total	412.65

Source: CH2MHill 2008i

3.10.3.2. Regulatory Requirements by Jurisdiction

As indicated in **Section 3.10.3.1** above, the majority of lands within the proposed project area are administered by a combination of federal and state landowners. The sections below detail the regulatory requirements for land use by federal agency, county, and city.

Federal

Federal lands account for approximately 228 miles (55 percent) of the land ownership of the route, the vast majority of which are managed by the BLM and Forest Service. Pursuant to FLPMA, public lands managed by the BLM and Forest Service are managed on the basis of multiple use and sustained yield principles. Specifically, these lands are managed according to Resource Management Plans and Forest Plans, respectively.

BLM

The approximately 399-mile-long main pipeline alignment would cross four BLM jurisdictions in Utah and two BLM jurisdictions in Nevada. Planning area boundaries for each jurisdiction relative to the proposed project are discussed in the following text. A summary of land use goals/policies contained in the RMPs for each of the jurisdictions is provided below (CH2MHill 2008i).

Salt Lake Field Office. The Pony Express RMP provides direction for management of the public lands and resources in Tooele and Salt Lake counties. The Lands Program addresses land disposal, exchange, withdrawal, and acquisition (BLM 1990). The Proposed Action and action alternatives would not be in conformance with *Transportation and Utility Corridor Decision 1* of the RMP and would require that the plan be amended to provide a new utility corridor. Pony Express RMP would need to be amended to ensure that the utility corridor is established in accordance with 43 CFR 1600 regulations and BLM Handbook H-1601-1. The plan would be amended concurrent with this project-level EIS (**Section 1.6**) to establish a utility corridor containing the proposed pipeline and compliant with the West Wide Energy Corridor (WWEC) EIS. Plans for utility corridors through Utah are described in the recent Draft Programmatic EIS, Designation of Energy Corridors on Federal Lands in 11 Western States (DOE/BLM 2007). (CH2MHill 2008i)

Fillmore Field Office. The House Range Resource Area RMP presents the decisions for future resource management on over 2.2 million acres of public lands. The objectives of the lands program are to provide effective public land management and to improve land use, productivity, and utility through the following:

- Accommodation of community expansion and economic development needs.
- Improved land ownership patterns.
- Providing for the authorization of legitimate uses of public lands by processing use authorizations such as rights-of-way, leases, permits, and state land selections in response to demonstrated public needs.
- Assist in orderly resource management through special designations (CH2MHill 2008i).

The House Range Resource Area RMP states the following on rights-of-way corridors:

- Section 503 of the FLPMA states: "... Utilization of rights-of-way in common shall be required to the extent practical..." The utilization of existing corridors, whether designated or not, will be standard procedure.
- Rights-of-way will be processed on a case-by-case basis, generally in the order received.
- Existing major rights-of-way are designated as corridors. New rights-of-way will be restricted.

The RMP includes general management direction related to recreation and ACECs in its recreation discussion; however, none appears to be directly relevant to the proposed project. The proposed alignment would be routed through no lands that are designated as ACECs (BLM 1987a). (CH2MHill 2008i)

The Warm Springs Resource Area RMP also presents decisions for future resource management on over 2.2 million acres of public lands. No decisions or recommendations regarding wilderness designation of any of the five Wilderness Study Areas (WSAs) have been made in the RMP (CH2MHill 2008i).

The objectives of the Lands Program are as follows:

- Provide more effective public land management and to improve land use, productivity, and utility.
- Accommodate community expansion and economic development needs.
- Authorize legitimate uses of public lands (CH2MHill 2008i).

The Warm Springs RMP also cites FLPMA and states that:

- Rights-of-way will be processed on a case-by-case basis, generally in the order received.
- Existing major rights-of-way are designated as corridors. New rights-of-way will be restricted to these corridors wherever feasible.
- Special management designation areas and VRM Class II areas are right-of-way avoidance areas.

The RMP includes an ACEC discussion within its recreation discussion, but it does not appear to be regarding areas that are applicable to the proposed UNEV project (BLM 1987b). (CH2MHill 2008i)

Cedar City Field Office. The Cedar Beaver Garfield Antimony RMP contains the objectives and land use decisions on all public lands within the Beaver Garfield Antimony Planning Area (CH2MHill 2008i).

The major decisions in the lands program that are pertinent to the proposed project are regarding corridor designation for power transmission lines and use authorization, as follows:

- **Corridor Designation (2.2).** Encourage, to the maximum extent practicable, the location of new major rights-of-way within designated corridors.
- **Use Authorization (3.1).** Process applications for use authorizations such as rights-of-way, leases, and permits on a case-by-case basis (BLM 1986). (CH2MHill 2008i)

St. George Field Office. The St. George Field Office RMP sets forth a vision, objectives, and land use prescriptions for the management of public lands and associated natural resources in Washington County, Utah (CH2MHill 2008i).

The following Land and Realty objective is applicable to the proposed project:

- **LD-03**. Public lands will be managed in accordance with applicable city and county zoning restrictions and municipal ordinances to the extent such restrictions and ordinances are consistent with federal laws, regulations, and policies and with approved decisions of this Plan (CH2MHill 2008i).

The following rights-of-way objectives are applicable to the proposed project:

- **LD-12.** Applications for new rights-of-way on public lands will be considered and analyzed on a case-by-case basis. Proposals will be reviewed for consistency with planning decisions and evaluated under requirements of the National Environmental Policy Act and other applicable laws for resource protection. Mitigation needed to avoid adverse impacts will be integrated into project proposals and, where appropriate, alternatives identified to further reduce environmental impacts to lands, resources, or adjacent land uses. New utility lines and long-distance transmission lines will be designed and located so as to reduce visual impacts to travelers along I-15 and visually sensitive highways in the county.
- **LD-13.** All new rights-of-way will be subject to applicable standards for surface disturbing activities. Where needed, wildlife seasonal use restrictions will apply to right-of-way construction. Rights-of-way will generally remain open to other public uses that do not conflict with the purposes for which the rights-of-way are established.
- **LD-14.** Utility corridors have been designated to provide a preferred location for meeting utility transmission and distribution needs. Such corridors are generally one mile wide on public lands, but may vary in width according to topography, surrounding land use, and the need to protect adjacent resources. Designated utility corridors, where applicable, are designed to conform to the long range corridor needs established by the utility industry in the Western Regional Corridor Study. They also correlate to the extent possible with corridor designations on adjacent public lands in Arizona and Nevada and with corridors on the adjacent Dixie National Forest (CH2MHill 2008i).

The RMP includes wilderness management objectives, but none are considered to be applicable to the proposed project. In addition, the proposed pipeline would not be located within a Wilderness Area or WSA (CH2MHill 2008i).

The RMP includes ACEC objectives, but none are considered to be applicable to the proposed project. In addition, the proposed pipeline would not be located within such an area (BLM 1999). (CH2MHill 2008i)

Ely Field Office. The 2007 RMP and EIS provides direction and guidance for the management of approximately 11.4 million acres of public land located in Lincoln, Nye, and White Pine counties in Nevada that is administered by the BLM Ely Field Office . (CH2MHill 2008i)

The Lands and Realty goals are as follows:

- Manage public lands in a manner that allows the retention of public land with high resource values and consolidates public land patterns to ensure effective administration and improve resource management.
- Make available for disposal public lands that promote community development.
- Meet public needs for use authorizations such as rights-of-way, permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values.
- Utilize withdrawal actions with the least restrictive measures and minimum size necessary to accomplish the desired purpose (CH2MHill 2008i).

The recreation goal is to provide quality settings for developed and undeveloped recreation experiences and opportunities while protecting resources (CH2MHill 2008i).

The RMP includes no specific goal related to ACECs or WSAs that would be applicable to the project. The proposed project is not located within an ACEC or WSA (BLM 2005). (CH2MHill 2008i)

Las Vegas Field Office. The Las Vegas RMP provides a comprehensive framework for managing approximately 3.3 million acres of public lands administered by the Las Vegas Field Office of the BLM (CH2MHill 2008i).

The following Lands Management objective and management direction are applicable to the proposed project:

- **Land Use Authorizations Objective LD-2.** All public lands within the planning area, unless otherwise classified, segregated, or withdrawn, and with the exception of ACECs and WSAs, are available at the discretion of the agency, for land use leases and permits under Section 302 of Federal Land Policy and Management Act and for airport leases under the authority of the Act of May 24, 1928, as amended.
- **Management Direction LD-2a.** Land use lease or permit applications and airport lease applications will be addressed on a case-by-case basis, where consistent with other resource management objectives and local land uses. Special terms and conditions regarding use of the public lands involved will be developed as applicable (CH2MHill 2008i).

The following ROW Management objective and management direction are applicable to the proposed project:

Objective RW-1. Meet public demand and reduce impacts to sensitive resources by providing an orderly system of development for transportation, including legal access to private inholdings, communications, flood control, major utility transmission lines, and related facilities (CH2MHill 2008i).

Management Direction RW-1-c. When feasible, and where compatible, major pipeline rights-of-way will be placed within power line corridors (CH2MHill 2008i).

The following Wilderness Management objective is applicable to the proposed project:

- **Objective WS-1.** Ensure that characteristics on certain lands that caused them to be inventoried and designated as WSAs are maintained and not diminished or lessened in any way that might constrain or limit Congress' final wilderness designation decisions (CH2MHill 2008i).

The proposed project is located within a proposed utility corridor. It is not located within an ACEC (BLM 1998). (CH2MHill 2008i)

Department of Defense

Tooele Army Depot (TEAD) is located in Tooele County, Utah, 30 miles southwest of Salt Lake City. The installation currently covers 23,473 acres. Originally it included an additional 1,700 acres, which were transferred to the Redevelopment Agency of Tooele City in December 1998 under the Base Realignment and Closure Early Transfer Authority with contamination remaining in place. The proposed easement area is located within (1.99 miles) and adjacent to a portion of the eastern TEAD boundary. The property is bounded by undeveloped property on the south, east and west. The northern extent of the property runs through a privately owned salvage yard, which holds surplus material obtained from TEAD.

U.S. Forest Service

The Land and Resource Management Plan (LRMP) for the Dixie National Forest guides all natural resource management activities and establishes management standards and guidelines for the Dixie National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management (CH2MHill 2008i).

The Dixie National Forest is located in Utah in Washington, Iron, Garfield, Kane, Wayne, and Piute counties. It covers 1,967,187 acres, comprising 1,883,734 acres of National Forest land; 78,899 acres of privately owned land; and 4,554 acres of Utah State land (CH2MHill 2008i).

The LRMP includes multiple use goals and objectives that define the direction of Forest-wide management. The goals and objectives pertain to recreation, wilderness, wildlife and fish, range, timber, soil and water, minerals, lands, facilities, protection, and public information. Lands goals and objectives related to the Proposed Action include the following:

- **Goal No. 39.** Provide access to National Forest lands needed for public use, administration, and permittee activities.

  Objective. Acquire road and trail rights-of-way, as needed, to provide reasonable access in accordance with the Forest rights-of-way acquisition program (CH2MHill 2008i).

Range goals and objectives related to the Proposed Action include the following:

- **Goal No. 18.** Continue to improve management on all allotments.

  Objective. Manage all allotments to maintain suitable range presently in satisfactory condition, and improve suitable range that is less than satisfactory condition so that all suitable range is in at least the "Fair" condition class by 2030 (USFS 1986). (CH2MHill 2008i)

Moapa Band of Paiute Indian Reservation

No Land Management Plan exists for the Moapa Band of Paiute Indian Reservation (Youngbear 2007). (CH2MHill 2008i)

State

The Proposed ROW would cross 35.84 miles of state land in Utah. No Land Management Plan exists for state lands. No state lands are crossed in Nevada.

County

Exhibit 3.10-2 provides the county general plan land use designations and/or zoning designations by county for lands that the proposed pipeline would cross.

Exhibit 3.10-2 County Zoning Designations in the Project Vicinity

County	Zoning Designation	Allowable Uses
Utah		
Beaver	Tier I	Developed Area
	Tier II	Planned Developing Area
	Tier III	Future Developing Area
	Tier IV	Rural Area
	Agriculture-5	Agriculture 5-acre minimum

County	Zoning Designation	Allowable Uses
	Agriculture-10	Agriculture 10-acre minimum
	Agriculture-20	Agriculture 20-acre minimum
	Multiple Use	Multiple Use
Davis	A-5	Agriculture 5-acre minimum
	M-1	Not defined
Iron	Agricultural 20	Agriculture 20-acre minimum
Juab	Grazing, Mining, Recreation, & Forestry	Agriculture and buildings and structures related thereto; forest industries; grazing and pasturing of animals, and buildings and structures relating to the care and keeping of animals; hydroelectric dams, power plants, transmission lines and substations; water pumping plants; reservoirs; wells and facilities; pipelines; broadcasting plants; public utility buildings and structures
	Industrial District	Agricultural industry or business; auto wrecking and salvage; auto, truck RV and equipment sales and rental; automotive repair; automotive service, including self service; billboards; convenience goods sales and services; industrial or research park; industry; junk yard; laundry; public service; public utility station; wholesale, warehouse, storage
Millard	Agriculture	Traditional dispersed agricultural uses such as crops, animal husbandry, warehousing and farm storage, and grazing
	Agricultural Industrial	Industrial scale agricultural activities
	Residential	Residences
	Highway Commercial	Transient lodging, service stations, convenience stores, and many of the uses allowed in the Light Industrial zone
	Light Industrial	Motor freight facilities; auto, building material, and farm equipment retailing; hay, grain, and feeds; repair, rental, and leasing facilities; paint shops; tire retreading
	Heavy Industrial	Heavy industrial uses
	Range/Forest	Grazing, mineral development, dispersed recreation
Salt Lake	Open Space	Major recreation area, parks, golf course, open space
	Open Space	Agriculture, grazing, wetlands, watershed, forest land, reserve land
	Residential	Medium density residential related facilities
	Commercial	General commercial, office, support uses
	Industrial	Heavy manufacturing/distribution/mining and extractive industries
	Industrial	Heavy industry/manufacturing/sanitary landfill
Tooele	M-G	Manufacturing General (heavy industry)
	MU-40	Multiple Use – 40-acre minimum
	RR-5	Rural Residential – 5-acre minimum

County	Zoning Designation	Allowable Uses
	RR-1	Rural Residential – 1-acre minimum
	A-20	Agriculture – 20-acre minimum
	C-T	Commercial retail and services to accommodate tourism
Washington	AG-20	Agriculture – 20-acre minimum
	MH	Manufactured Housing Park and Recreational Vehicle Park Zone
	OSC-20	Open Space Conservation Zone – 20-acre minimum
	OST-20	Open Space Transition Zone – 20-acre minimum
Nevada		
Clark	Heavy Industrial	Heavy industry
	Industrial	Industry
	Open Lands	Open lands
	Tribal Lands	Tribal reservation
Lincoln	A-5	Agriculture – 5 acre minimum

Sources: Beaver County, 1999; Davis County, 2007; Iron County, 2006; Juab County, 2006 and Undated; Lincoln County, 2007; Millard County, Undated; Salt Lake County, 1998; Tooele County, 2003, 2005, 2006, 2007a, 2007b, 2007c, 2007d, No Date; Washington County, 2004, 2007a, all in CH2MHill 2008i.

Beaver County, Utah

The Beaver County General Plan is the formally adopted policy for Beaver County’s growth and development. The Plan includes goals and policies related to land use and growth management, but none are applicable to the proposed project. The proposed pipeline alignment would be routed through primarily federal and state land in Beaver County, with small pockets of private land that the County has designated into “Tiers,” designating levels of allowable development (Beaver County 1999). (CH2MHill 2008i)

Davis County, Utah

The Davis County General Plan defines the role of the county as a regional forum for discussion and policy making, and includes recommendations regarding land use. The Plan includes policies relative to agriculture, but nothing specifically applicable to the proposed project (Davis County 2006). (CH2MHill 2008i)

Iron County, Utah

The Iron County General Plan serves as a yardstick against which all planning decisions are measured. The County General Plan goals and policies that are applicable to the project include:

- **Goal LU3.** Protect and promote the continued use of prime and productive croplands.
- **Policy LU3.2.** Encourage the continued use of prime croplands for crop production and encourage that non-agricultural development be focused on marginal croplands.
- **Goal LU4.** Protect grazing land and promote the continuation of grazing permits.
- **Policy LU4.1.** Continue to allow opportunities for grazing livestock on federal, state, and private lands at levels consistent with proper range management.

- **Goal LU6.** Promote and facilitate public and private recreational, cultural, wilderness, and wildlife opportunities compatible with local custom and culture.
- **Policy LU6.2.** Through cooperative agreement, Iron County may designate land areas for recreational uses (Iron County 1995). (CH2MHill 2008i)

The General Plan includes Recreation goals and policies, but none are considered to be applicable to the proposed project (CH2MHill 2008i).

Juab County, Utah

The purposes of the Juab County General Plan, as applicable to the project, are as follows:

- Plan for growth and development of the land within Juab County
- Assess and address land development and management issues
- Evaluate existing and future infrastructure requirements (CH2MHill 2008i).

The County General Plan mission statement for federal and state lands that is applicable to the project is as follows:

- We believe the goals of land use planning and management should include the encouragement of an improved living environment, economic expansion and opportunity, and purposeful growth within Juab County. The overall goal will be to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations (Juab County 1999). (CH2MHill 2008i)

Millard County, Utah

The Millard County General Plan serves as a framework for the County as it considers future private, state, and federal land use decisions. The General Plan is also designed to provide a policy foundation for human and community services and economic development activities. The County General Plan objectives that would apply to the project include the following:

- Coordinate with all Federal and State agencies and all utility providers the County's preferred locations for all utility facilities and utility transmission corridors. Implementation strategies include:
    - Require the location of all new major and minor utility facilities and transmission corridors to be located in proximity to existing utility facilities and transmission corridors.
    - The location of utility facilities and transmission corridors with an interstate or federal purpose should be located so as to avoid impacts and locations on privately owned lands located within Millard County.
- Continue to ensure the utility needs of the County are met concurrent with County growth and development while mitigating any impacts to residents, businesses and property owners (Millard County 2008).

Salt Lake County, Utah

The Salt Lake County Planning Goals and Policies (Salt Lake County 2003) include a series of goals and policies intended to aid the County in achieving its vision for the future. The general policy that is applicable to the proposed project is as follows:

- Encourage the efficient and appropriate use of all land areas by promoting orderly physical development (CH2MHill 2008i).

Tooele County, Utah

The purpose of the Tooele County General Plan (n.d. a) is to provide a framework for the county to guide decisions about future development to support their goals. Their goals are grouped into four areas: Growth Management, Quality Environment, Infrastructure Management, and Resource Development. Relevant to the proposed project is the following Growth Management Goal:

- Preserve Open Space and Agricultural Lands: The preservation of open space is important to maintain important pristine mountain views, watershed systems, as well as important valley views and general rural character of the County. Open space includes agricultural lands as well as undeveloped hillsides and fields. Land use plans should result in decreased development pressure on threatened open space and agricultural areas (Tooele County n.d. b). (CH2MHill 2008i)

Washington County, Utah

The Washington County General Plan Land Use Map identifies areas within the County that are designated as agricultural, residential, or commercial land uses, and identifies the locations of land in the County that are within the jurisdictions of the National Park Service, U.S. Forest Service, the Shivwits Reservation, and State Parks. It also identifies Desert Reserves and WSAs (Washington County 2007b). (CH2MHill 2008i)

The Washington County General Plan (n.d.) indicates that industrial development should have good access to major highways and freeways for ease of circulation, and that industrial centers should not be developed where it is necessary for industrial vehicles to pass through residential areas to reach freeway interchanges.

Clark County, Nevada

The Clark County Comprehensive Plan is a long-term general policy plan for the physical development of unincorporated Clark County. The Plan includes policies for Community Growth Management/Design and Conservation (including air quality, flood control, land conservation, species protection, water quality, and water resources), none of which are directly applicable to the proposed project (Clark County n.d.). (CH2MHill 2008i)

The project would be located within the area that is subject to the Northeast Clark County Land Use and Development Guide (Clark County 1994). The Plan goal that is applicable to the proposed project is as follows:

- Promote development compatible with the natural environment (CH2MHill 2008i).

The Apex Heavy Industrial Use Park (the location of the proposed southern terminus of the UNEV project) is planned as a 21,000-acre industrial park that is intended to accommodate heavy industrial uses (Clark County 1994). (CH2MHill 2008i)

Lincoln County, Nevada

The Lincoln County Master Plan guides the County’s growth, management of natural resources, provision of public services and facilities, and the protection of the public’s health, safety, and welfare. The County General Plan goal and policies that are applicable to the project are as follows:

- **Goal LUD-4.** Preserve agricultural lands.
- **Policy LUD-4A.** Lincoln County should encourage the continuance of existing agricultural practices through appropriate zoning/incentives. Non-agricultural development should be located adjacent to, but not within, existing agricultural areas (CH2MHill 2008i).

City

City of North Salt Lake, Utah

The northernmost portion of the proposed pipeline alignment would be routed through the City of North Salt Lake. Part of the northernmost portion of the alignment would be aligned through the West Side Business Area of the city. During the planning of the West Side Business Area and the preparation of the city's Small Area Planning Report, the planning group identified several concerns including the following:

- Create a positive image for the city
- Establish a sense of community
- Develop the undeveloped areas and redevelop the existing areas in ways that are more attractive (City of North Salt Lake 1996). (CH2MHill 2008i)

The proposed pipeline alignment would cross land that is zoned Manufacturing-Distribution (M-D) and General Commercial (G-C) (City of North Salt Lake 2007). Allowable uses in the M-D district include light manufacturing, industrial processes, and warehousing not producing objectionable effects. Allowable uses in the G-C district include business, retail commerce, entertainment, and related activities, and light manufacturing and small wholesaling if they are conducive to the other land uses, subject to noise, traffic, odor, and other considerations (City of North Salt Lake 2005). (CH2MHill 2008i)

3.10.3.3. Existing Land Uses

The proposed main pipeline alignment would be routed through a variety of land uses. The proposed pipeline route would generally follow a proposed utility corridor that is being established by the BLM that extends between the Salt Lake City area and Las Vegas. Much of the corridor is developed with two Kern River Gas Transmission Company natural gas pipelines that are located within a right-of-way that is within the corridor. The proposed project would be located within that same ROW for approximately 149 miles (CH2MHill 2008i).

In Utah, the land uses the proposed project would pass through would range from undisturbed undeveloped open space with no signs of development in any direction; to relatively small parcel or larger parcel agricultural fields; through wetland areas; through grazing pastures; through or near rural residential areas; near suburban residential land uses; paralleling a high voltage transmission line or passing through areas that have several transmission lines crossing it; paralleling other linear man-made features such as interstate highways, railroad tracks, or other gas pipelines; crossing under interstate highways and roads; to areas that are near trailer parks and have large scale agriculture. In some areas of the route, the proposed alignment parallels rural roads; in other areas, the alignment is inaccessible by two-wheel-drive vehicles (CH2MHill 2008i).

Near the southern terminus of the proposed pipeline alignment in Nevada, the route would parallel several transmission line corridors that are located to the west of I-15, and north and east of US-93 near its intersection with I-15, and would cross US-93, a two-lane highway, to connect into the Apex Industrial Park, a 21,000-acre area northeast of Las Vegas that is planned to be developed into heavy industrial uses. Currently, three power plants are developed there; other land uses in the area include undeveloped open space (CH2MHill 2008i).

Approximate MP segments where agricultural lands are located include:

- From MP 0 to MP 2
- From MP 10 to MP 11
- From MP 57 to MP 58

- From MP 86 to MP 87
- From MP 118 to MP 122 (CH2MHill 2008i).

The proposed alignment would cross no lands having coal authorizations or geothermal agreements and leases. It would cross lands having mining claims, oil and gas leases and agreements, range allotments, and rights-of-way (BLM 2007a). (CH2MHill 2008i)

Most of the proposed pipeline route traverses soil types that are used for rangeland and wildlife habitat because of the shallow, sloping, poorly drained, or not developed character of the soils. Badland and rocky outcrops are common in the southern portion of the route in Utah. These badland and rocky outcrops extend into the northern portion of the route in Nevada; the southern portion is characterized by gravelly desert pavement into the terminus northeast of Las Vegas. Similar to the Utah portion of the route, these soils support rangeland due to their coarse texture and inability to retain moisture. As a result, livestock grazing is an important activity that occurs on the undeveloped open space lands (pastures) in the vicinity of the proposed pipeline alignment. In addition, the BLM's Land and Mineral Use Record Viewer identified the majority of the alignment in Utah as Range Allotments and considered all of the proposed alignment in Nevada to be Range Allotments (BLM 2007a). (CH2MHill 2008i)

The Cedar City Lateral would cross both public and private lands that are largely previously undisturbed. The Cedar City Terminal would be located in the vicinity of another terminal; therefore land use for the terminal would be consistent with surrounding land uses.

3.10.3.4. Grazing Allotments and Herd Management Areas (HMAs)

The BLM and Forest Service administer and manage the rangeland resources on public lands in the vicinity of the proposed pipeline alignment. The primary laws that govern grazing on public land are the Taylor Grazing Act of 1934, the FLPMA of 1976, and the Public Rangelands Improvement Act of 1978. The federal government authorizes grazing use through grazing permits or leases (CH2MHill 2008i).

A permit or lease authorizes a permittee or lessee to graze livestock on administrative units called allotments. An allotment generally consists of federal rangelands, but may also include intermingled parcels of private or state lands. The boundaries of these allotments may be fenced. There may also be fences, water pipelines, water troughs and storage tanks and stock watering reservoirs within these allotments.

The BLM and the Forest Service stipulate the number of livestock and season of use for each allotment. This use is quantified in Animal Unit Months (AUMs) and is adjusted based on amount of forage growth (BLM 2004). An AUM is typically defined as the forage needed to feed one cow or five sheep for 1 month (CH2MHill 2008i).

Exhibits 3.10-3 to **3.10-6** provide information on grazing allotments that would be impacted by the Proposed Action.

Exhibit 3.10-3 Grazing Allotments Crossed by the Proposed Alignment

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
Utah						
Oquirrh Mtn. – North	04083	Active	30.4	33.3	14,979.7	250
Rush Lake	05080	Active	45.8	51.6	30,537.8	1,049
			51.8	54.0	11,480.2	
Mercur Can - W. Ophir	04055	Active	51.6	51.8	1,205.3	1,122
			54.0	56.2	11,936.2	
			56.3	56.4	391.2	
South Clover	04064	Active	56.4	57.8	7,364.8	924
Ajax	04044	Active	59.1	59.4	1,797.1	160
Deseret – Rush Valley	04050	Active	59.6	64.4	25,366.5	3,100
Pony Express Trail	N/A	Trail	64.4	65.4	5,307.3	N/A
Toplift – Vernon Hill	04067	Active	65.4	70.3	26,040.3	4,133
Boulter Wash	04047	Active	70.3	82.5	64,083.5	2,509
Boulter	04501	Active	82.5	85.7	16,918.8	715
Jenny Lind	04507	Active	85.7	89.5	20,391.6	108
Tintic Pasture	N/A	Active	89.5	94.8	27,920.6	N/A
Rattlesnake Peak	04350	Active	94.8	95.5	3,488.3	257
Kimball Creek	04508	Active	95.5	98.2	14,353.5	3,083
Shearing	04519	Active	98.2	105.9	40,570.7	484
Gilson	04506	Active	105.9	114.2	43,695.5	1,212
Beryllium	04400	Active	123.2	129.1	31,197.3	738
Oak City	04406	Active	129.1	135.8	35,296.4	1,085
Teeples	05798	Active	139.5	140.0	2,505.8	5
McClintock	05793	Active	141.3	143.1	9,633.5	11
Deseret	04004	Active	143.1	147.4	22,670.5	3,100
			151.0	151.0	39.2	
			151.1	167.3	85,583.3	
Twin Peaks	04020	Active	167.3	189.1	114,968.0	279
Crickett	05779	Active	189.1	193.7	24,478.3	7,915
Red Rock	06211	Active	193.7	197.2	18,425.1	1,356
Beaver Lake	06215	Active	197.2	199.1	9,753.3	3,255
			207.1	208.2	5,786.1	
Smithson	06209	Active	199.1	207.1	42,372.7	602
Bagnall	06210	Active	208.2	214.6	33661.6	1,360
Milford Cattle	06208	Active	214.6	221.2	34,988.1	715
Cook	06201	Active	221.2	230.0	46,554.9	2,737

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
			234.4	235.2	4,061.0	
Minersville no. 6	06106	Active	230.0	234.4	23,248.6	1,356
			235.2	235.9	3,614.5	
Nada	15048	Active	235.9	242.4	34,738.8	731
Desert	15020	Active	242.4	249.5	37,085.5	898
Perkins	15055	Active	249.5	252.1	13,765.7	297
Leigh Livestock	15039	Active	252.1	256.5	23,639.0	1,425
Dick Palmer Wash	15021	Active	256.5	263.4	36,294.0	355
Butte	15018	Active	263.4	265.4	10,629.3	540
Antelope	05010	Active	265.4	265.8	1,893.5	46
			265.9	266.9	5,260.0	
Sand Spring	15064	Active	267.7	270.0	11,865.5	172
			270.8	271.9	5,596.9	
Silver Peak	15067	Active	272.4	274.9	12,993.2	240
Pinto Creek	15057	Active	276.4	278.3	10,011.7	210
Sevy East	15065	Active	278.3	279.1	4,042.7	18
South Deseret	04065	Unknown	300.7	300.7	286.4	166
Minera Wash	N/A	Active	300.7	303.2	6,352.2	N/A
Hill Spring	04054	Unknown	303.2	309.3	32,469.2	144
South Woodruff	04018	Unknown	309.3	311.8	13,055.7	325
Jackson Wash	14030	Unknown	311.8	317.6	30,411.5	1,519
Scarecrow Peak	14048	Unknown	317.6	335.5	94,682.4	4,582
Nevada						
Terry	N/A	Closed	329.6	335.5	31,383.2	N/A
Sand Hollow	N/A	Closed	335.5	337.3	9,231.7	N/A
Beacon	N/A	Closed	337.3	340.4	16,702.7	N/A
Gourd Spring	N/A	Closed	340.4	352.1	61,403.3	N/A
Toquop Sheep	N/A	Closed	352.1	354.7	13,736.5	N/A
Upper Mormon Mesa	N/A	Closed	354.7	364.9	53,844.4	N/A
Glendale	N/A	Closed	364.9	370.9	31,750.9	N/A
Acton-Farrier	N/A	Closed	370.9	372.7	9,734.9	N/A
Ute	N/A	Closed	372.7	375.5	14,418.6	N/A
Private	N/A	Closed	375.5	390.6	79,912.8	N/A
Dry Lake	N/A	Closed	390.6	398.6	42,001.4	N/A
Las Vegas Valley	N/A	Closed	398.6	400.0	7,624.0	N/A

N/A: Information Unavailable. In the case of the Pony Express Trail, the information is not applicable.

There is a livestock watering pipeline located within the project area between MP 305 and MP 307 (BLM 2008c).

Exhibit 3.10-4 Grazing Allotments crossed by the Proposed Cedar City Lateral Route

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
Utah						
Leigh Livestock	15039	Active	0.0	0.3	1,390.3	1,426
			0.3	3.8	1,8742.3	
			3.8	7.2	17,779.5	
Iron Springs	04032	Active	7.2	9.7	13,346.1	648

Exhibit 3.10-5 Grazing Allotments where Proposed Staging Areas and Terminals would be Located

State/Allotment Name	Allotment Number	Status	MP	Component
Deseret – Rush Valley	04050	Active	62.4	Staging Area
Oak City	04406	Active	134.2	Staging Area
Crickett	05779	Active	193	Staging Area
Perkins	15055	Active	251.7	Staging Area
Leigh Livestock	15039	Active	255.8	Cedar City Lateral Takeoff
Silver Peak	15067	Active	273.6	Staging Area
North Grassy	04030	Unknown	312.2	Staging Area
Upper Mormon Mesa	N/A	Closed	355.4	Staging Area

Exhibit 3.10-6 Grazing Allotments Crossed by the Proposed Action Segment Correlating with the Millard County Alternative Route

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
Utah						
Gilson	4506	Active	105.9	114.2	43695.5	1223
Beryllium	4400	Active	123.2	129.1	31197.3	738

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
Oak City	4406	Active	129.1	135.8	35296.4	1085
Teeples	5798	Active	139.5	140	2505.8	5
McClintock	5793	Active	141.3	143.1	9633.5	11
Deseret	4004	Active	143.1	147.4	22670.5	8894
			151.0	151.1	39.2	
			151.1	167.3	85583.3	

The Proposed Action would run along the west side of the Chloride Canyon Herd Management Area (HMA) from approximately MP 265 to 275. HMAs are designated by the BLM to allow for the effective management of wild horse and burro herds. Horse numbers are managed by Animal Management Levels, or AMLs, which is the number of horses an HMA can support over time without degrading the rangeland. The Chloride Canyon HMA consists of 42,560 acres of BLM land, with an AML of 30 (BLM 2007d).

3.10.3.5. Existing Transportation Uses

The majority of the proposed pipeline route would be in rural areas where existing traffic volumes are low. However, the proposed pipeline route would cross or be adjacent to several transportation and utility rights-of-way that have higher traffic volumes. Transportation facilities and utilities include other pipelines, powerlines, railroad tracks, interstate highways, and state roads. In addition to numerous rural roads, larger highways such as state routes or interstates would be crossed at 38 locations. Railroads, including the Union Pacific and USG, would be crossed at 18 locations. **Exhibit 3.10-7** lists the major highways or interstates and railroads that would be crossed by the pipeline route. County and local roads to be crossed are typically in rural areas, including federal and state lands, and are largely unpaved. Paved local and county roads are concentrated in the more developed areas around Salt Lake City, Utah; Delta, Utah; and Apex Industrial Park in Nevada (CH2MHill 2008i).

Exhibit 3.10-7 Major Highways, Interstates, and Railroads crossed by the Proposed Pipeline Route

Road/Rail Name	Milepost
Utah (MP 0 to 329)	
Railroad unknown	0.3
SH 68	0.7
I-215	1.1
SR 186	10.6
I-80	10.65
I-80 access ramp	11.7
Local 7200 (major road)	11.95
I-80 access ramp	12.1
SH 202	19

Road/Rail Name	Milepost
Union Pacific Railroad	21.5
Union Pacific Railroad	21.7
SH 201	21.8
Railroad unknown	22.3
Union Pacific Railroad	35.65
SR 36	36
SR 112	38.55
Union Pacific Railroad	38.65
USG Railroad	38.85
Union Pacific Railroad	39.1
Union Pacific Railroad	39.75
USG Railroad	40
USG Railroad	40.15
SR 199	53.8
SR 36	59.18
Union Pacific Railroad	59.37
Old Access Road (major road)	75.2
SH 36	87.25
SR 67	87.8
US HWY 6	102.5
RT 1812	103.7
Union Pacific Railroad	119.85
SR 132	119.9
SR 125	134.2
US HWY 50	135.6
Railroad unknown	138
Local 4500 (major road)	139.3
Union Pacific Railroad	150.8
SH 257	150.85
Crystal Peak Rd (major road)	193.2
SR 21	214.35
Local unknown (major road)	224.65
Local unknown (major road)	232.45
Union Pacific Railroad	234.88
Local unknown (major road)	234.9
Lund Highway	251.75
Union Pacific Railroad	256.25
Antelope Road (major road)	265.15

Road/Rail Name	Milepost
SR 56	274.6
Pinto Canyon Road (major road)	275.65
Pinto Road (major road)	286.4
SH 18	291.3
Enterprise Reservoir/Gunlock/Veyo Shoal Creek Rd (major road)	300.4
Nevada (MP 329 to 399)	
SH 168	371.9
SH 78	373.2
Union Pacific Railroad	375.65
US 93	398.95

Source: CH2MHill 2008i

The Cedar City Lateral route is in a remote area paralleling the Union Pacific Railroad. This route crosses a mix of BLM and private land. The route crossed the railroad to the terminal site, which is on private land.

3.10.4. Existing Conditions for Alternatives

3.10.4.1. Airport Alternative Route

Land Use

There would be no difference in land use between the airport alternative and the Proposed Action. The airport alternative route would cross 3.24 miles of private lands. No agricultural lands are present between MP 6.6 and MP 10 where the alternative route diverges.

Grazing Allotments and HMAs

No grazing allotments or HMAs would be crossed by the Airport Alternative Route.

Transportation

There would be no difference between the airport alternative and the proposed action in transportation effects during pipeline construction and operation. No roads would be impacted.

3.10.4.2. Tooele County Alternative Route

Land Use

Exhibit 3.10-8 details mileage by land ownership category under this alternative.

Exhibit 3.10-8 Mileage of the Tooele County Alternative and Corresponding Proposed Action Segment by Land Ownership Category

Owner	Tooele County Alternative Route Mileage	Corresponding Proposed Action Segment Mileage
BLM	0.05	1.32
State	0.27	0
Private (including airport	15.09	12.11

Owner	Tooele County Alternative Route Mileage	Corresponding Proposed Action Segment Mileage
property)		
Total	15.41	13.43

Source: CH2MHill 2008i

Grazing Allotments and Herd Management Areas

No grazing allotments or HMAs would be crossed by the Tooele County Alternative Route.

Transportation

This route parallels Sheep Lane north before crossing State Highway 138 and parallels the highway going east. It then parallels State Highway 36 north before crossing it to the east. The route also crosses some rural residential roads and the Union Pacific Railroad before joining the Proposed Action route.

3.10.4.3. Rush Lake Alternative Route

Land Use

Exhibit 3.10-9 details mileage by land ownership category under this alternative.

Exhibit 3.10-9 Mileage of the Rush Lake Alternative and Corresponding Proposed Action Segment by Land Ownership Category

Owner	Rush Lake Alternative Route Mileage	Corresponding Proposed Action Segment Mileage
BLM	2.02	1.75
Private (including airport property)	1.58	1.75
Total	3.60	3.50

All grazing allotments and transportation along the Rush Lake Alternative Route would be the same as that described for the Proposed Action.

3.10.4.4. Millard County Alternative Route

Land Use

Exhibit 3.10-10 details mileage by land ownership category under this alternative.

Exhibit 3.10-10 Mileage of the Millard County Alternative and Corresponding Proposed Action Segment by Land Ownership Category

Owner	Millard County Alternative Route Mileage	Corresponding Proposed Action Segment Mileage
BLM	55.67	15.66
State	3.98	8.33
Private (including airport property)	3.46	27.15

Owner	Millard County Alternative Route Mileage	Corresponding Proposed Action Segment Mileage
Total	63.11	51.14

Source: CH2MHill 2008i

Grazing Allotments and Herd Management Areas

Exhibit 3.10-11 details grazing allotments that would be crossed under the Millard County Alternative Route.

Exhibit 3.10-11 Grazing Allotments Crossed by the Millard County Alternative Route

State/Allotment Name	Allotment Number	Status	MP In	MP Out	Linear Feet	AUMs
Utah						
Gilson	4506	Active	0.0	1.8	9,580.7	1223
McIntyre	4511	Active	1.8	2.8	5,129.2	4545
Nelson	4512	Active	2.8	8.2	28,641.2	522
Lynndyl	4405	Active	8.2	12.4	21,986.4	1664
Sugarville	4409	Active	12.4	22.6	53,825.7	2180
Smelter Mountain	4408	Active	22.6	38.7	84,831.2	818
Chalk Knolls	4401	Active	38.7	45.7	37,001.1	1213
Deseret	5775	Active	45.7	63.2	92,355.1	8894

No HMAs would be crossed by the Millard County Alternative Route. It is assumed that staging areas would be located on the same grazing allotments and herd management areas as those described under the proposed action.

Transportation

This route would cross Highway 6, West 200 South Street, Highway 174, and Desert Mountain Road before crossing North Highway 6 to parallel northward along the eastern side.

3.11. Visual and Recreation Resources

3.11.1. Area of Analysis

The proposed pipeline route, including the main pipeline, the lateral line servicing the Salt Lake City Airport, and Cedar City Lateral, would traverse portions of the States of Utah and Nevada, covering approximately 208.35 miles of BLM-administered land, 17.78 miles of USFS-administered land, 14.57 miles of Moapa Band of Paiute Indian Reservation land, 2.35 miles of U.S. Department of Defense land, 35.84 miles of state land, 133.76 miles of private land. Two miles of the main pipeline route would be water. The area of analysis extends 3 miles to either side of the proposed alignment's centerline and focuses on representative Key Observation Points defined below. (CH2MHill 2008j)

3.11.2. Data and Methods

The majority of lands that would be crossed by the Proposed Action are federally-administered. RMPs for Cedar City, St. George, Fillmore, and Salt Lake Field Offices in Utah; and Ely and Las

Vegas Field Offices in Nevada were examined to determine Visual Resource Management (VRM) Classes of lands within the area of analysis. The USFS and Dixie National Forest was also contacted for information on their lands. General plans and ordinances were also examined for Beaver, Davis, Iron, Juab, Millard, Salt Lake, Tooele, and Washington counties in Utah; and Clark and Lincoln counties, in Nevada. The BIA was also consulted as to tribal lands that may have visual interest.

3.11.3. Existing Conditions for Proposed Action

3.11.3.1. Regulatory Requirements for Visual Resources

BLM

The BLM has developed the VRM system to maintain the scenic value of public lands that are within its jurisdiction. The VRM system is an analytical process that identifies, sets, and meets objectives for maintaining scenic values and visual quality. The VRM system is implemented through the RMP for each Field Office. The RMPs for the project area are discussed in the following sections (CH2MHill 2008j).

To assess the scenic values of land within its jurisdiction, the BLM typically conducts a visual resource inventory. Once inventoried and analyzed, lands are given relative VRM ratings (known as VRM Classes). The VRM Classes represent the relative value of the visual resources. Classes I and II have the highest values, Class III represents moderate values, and Class IV has the least visual value. The classes provide the basis for establishing visual values and do not establish management direction (CH2MHill 2008j).

The BLM has established different objectives for each VRM Classification, with differing degrees of modifications allowed to the basic elements of the landscape (the form, line, color, and texture). The VRM Management Classification Objectives are defined as follows:

- **Class I:** The objective of this class is to preserve the existing character of the landscape. 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.
- **Class II:** The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **Class III:** The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Class IV:** The objective of this class is to provide for management activities which require major modification to the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM 2005). (CH2MHill 2008j)

Salt Lake Field Office

The Pony Express RMP as amended provides direction for management of the public lands and resources in Tooele and Salt Lake counties. The RMP designates land within the resource area according to the VRM classes (BLM 1990). (CH2MHill 2008j)

Fillmore Field Office

The House Range Resource Area RMP includes general management direction related to VRM in its recreation discussion; however, none appears to be directly relevant to the proposed project (BLM 1987a). (CH2MHill 2008j)

The Warm Springs Resource Area RMP goals and objectives are to plan, modify, and implement resource management activities in a manner minimizing impacts to visual resources (BLM 1987b). (CH2MHill 2008j)

Cedar City Field Office

The Cedar Beaver Garfield Antimony RMP contains the objectives for implementing resource management activities in a manner that will minimize impacts to visual resources on all public lands within the Beaver Garfield Antimony Planning Area (BLM 1986).

St. George Field Office

The St. George Field Office RMP sets forth a vision, objectives, and land use prescriptions for the management of public lands and associated natural resources in Washington County, Utah. The BLM's VRM objective is to manage the public lands in such a way as to preserve those scenic vistas that are deemed to be most important in their impact on the quality of life for residents and communities in the area, in their contribution to the quality of recreational visitor experiences, and in supporting the regional tourism industry and segments of the local economy dependent on public land resources (CH2MHill 2008j).

The following rights-of-way objectives are applicable to the proposed project:

- **LD-12.** Applications for new rights-of-way on public lands will be considered and analyzed on a case-by-case basis. Proposals will be reviewed for consistency with planning decisions and evaluated under requirements of the National Environmental Policy Act and other applicable laws for resource protection. Mitigation needed to avoid adverse impacts will be integrated into project proposals and, where appropriate, alternatives identified to further reduce environmental impacts to lands, resources, or adjacent land uses. New utility lines and long-distance transmission lines will be designed and located so as to reduce visual impacts to travelers along I-15 and visually sensitive highways in the county.
- **LD-14**. Utility corridors have been designated to provide a preferred location for meeting utility transmission and distribution needs. Such corridors are generally 1 mile wide on public lands, but may vary in width according to topography, surrounding land use, and the need to protect adjacent resources. Utilities within designated corridors will be managed under VRM Class III guidelines regardless of the surrounding designation (CH2MHill 2008j).

The following VRM objectives are applicable to the proposed project:

- **VR-01.** BLM will apply VRM Class Objectives to public lands in the county. The class objectives will guide decision makers in evaluating potential impacts from land use proposals on the public lands and in designing alternatives or measures that will eliminate or reduce undesirable impacts on the quality of the visual resource.
- **VR-06.** Except in designated utility corridors, VRM Class I and II areas will be right-of-way avoidance areas to reduce the potential for scenic degradation.

- **VR-08.** BLM will apply VRM Class III objectives to vegetation treatment areas, communication sites, and utility corridors regardless of the VRM class assigned to the affected lands (BLM 1999). (CH2MHill 2008j)

Ely, Nevada Field Office

The Ely RMP and Final EIS (2007) provides direction and guidance for the management of approximately 11.4 million acres of public land located in Lincoln, Nye, and White Pine counties in Nevada that is administered by the BLM Ely Field Office. The goal for visual resources is to manage public land actions and activities consistent with District VRM class objectives. (CH2MHill 2008j)

Las Vegas Field Office

The Las Vegas RMP provides a comprehensive framework for managing approximately 3.3 million acres of public lands administered by the Las Vegas Field Office of the BLM. The following Wilderness Management objective is applicable to the proposed project:

- **Objective WS-2.** Provide management direction for new wilderness areas and Wilderness Study Areas not designated as wilderness by Congress and released from interim management.
- **Management Direction WS-2-a**. Manage released lands to generally maintain the existing aesthetic qualities through multiple use management of those areas and to provide for semi-primitive recreation opportunities. Adopt limited use Off-Highway Vehicle, Visual Resource Management and Recreation Opportunity Spectrum designations consistent with designations already in place on adjacent non-Wilderness Study Area lands (BLM 1998). (CH2MHill 2008j)

The BLM VRM Class designations that fall within a 6-mile corridor of proposed pipeline alignment (3 miles on both sides of the alignment) is depicted in the Visual Resources Technical Report prepared for this project by CH2M Hill (CH2MHill 2008j). The 3-mile distance was selected because the visual sphere of influence[1] is expected to extend no more than 3 miles from the project. This is because elements of a view that are 3 miles or more away are considered to be a part of the background (the landscape zone in which little color or texture is apparent), colors blur into values of blue or gray, and individual visual impacts become less apparent (USFS 1973). In addition, observations of other projects indicate that after approximately 2.5 miles, facility details become blurred and become a relatively small element in the overall landscape, with a very limited level of visual prominence. For this project, the 3-mile buffer is considered conservative because there would be very few permanent aboveground facilities associated with the proposed buried pipeline, and the construction activities and equipment that would be visible within the buffer would be short-term (CH2MHill 2008j).

The proposed pipeline would cross approximately 199.6 miles of BLM-administered land. **Exhibit 3.11-1** shows the number of miles of proposed pipeline that would cross BLM VRM Class I, II, III, and IV lands within the six BLM jurisdictions. It shows that the pipeline would cross no land designated as Class I, approximately 6 miles of Class II land, approximately 86 miles of Class III land, approximately 106 miles of Class IV land, and 1.6 miles of land that is not designated (CH2MHill 2008j).

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[1] The visual sphere of influence for the proposed project represents the area from which the project has the potential to be visible. It does not take into consideration the screening effects of minor variations in terrain, adjacent development, or vegetation, which could further limit views of the project.

Exhibit 3.11-1 Mileage of Proposed Pipeline* and Corresponding Proposed Action Segment by BLM VRM Class and BLM Jurisdiction

BLM Jurisdiction	VRM Class	Length of Pipeline within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Airport Alternative within VRM Class (miles)**	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Tooele County Alternative within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Rush Lake Alternative within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Millard County Alternative within VRM Class (miles)
Utah						
Salt Lake Field Office	II III IV	0.8 2.1 21.2	0 0 0	0 0.1 0	 1.75	N/A
Fillmore Field Office	III IV	11.5 47.3	N/A	N/A	N/A	7.8 47.9
Cedar City Field Office	IV	45.0	N/A	N/A	N/A	N/A
St. George Field Office	III	26.2	N/A	N/A	N/A	N/A
Total Class I Total Class II Total Class III Total Class IV Total Utah		0 0.8 39.8 113.5 154.1	0 0 0 0 0	0 0 0.1 0 0.1	 1.75 1.75	0 0 7.8 47.9 55.7
Nevada						
Ely Field Office	II III IV	0.1 0 22.5	N/A	N/A	N/A	N/A
Las Vegas Field Office	III IV	26.9 4.8	N/A	N/A	N/A	N/A

BLM Jurisdiction	VRM Class	Length of Pipeline within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Airport Alternative within VRM Class (miles)**	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Tooele County Alternative within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Rush Lake Alternative within VRM Class (miles)	Length of Pipeline within the Proposed Action Analysis Area Corresponding to the Millard County Alternative within VRM Class (miles)
Total Class I Total Class II Total Class III Total Class IV Total Nevada		0 0.1 26.9 27.3 54.3	N/A	N/A	N/A	N/A
Total for Utah and Nevada						
Total Class I Total Class II Total Class III Total Class IV Total Utah and Nevada		0 0.9 66.7 140.8 208.4	0 0 0 0 0	0 0 0.1 0 0.1	0 0 0 1.75 1.75	0 0 7.8 47.9 55.7

*Includes the main pipeline route, the Airport Lateral and the Cedar City Lateral.

**Miles of proposed action analysis area corresponding to the airport alternative all fall within private lands, therefore no BLM lands within the Salt Lake Field Office would be impacted.

Source: BLM 2007 in CH2MHill 2008j

Dixie National Forest

In 1995, the USFS implemented the Scenery Management System (SMS) using *Landscape Aesthetics: A Handbook of Scenery Management*. Building on the foundation of its previous Visual Management System (VMS) that was developed in 1974, the SMS provides a systematic approach for assigning scenery management objectives to the forest landscape and measuring impacts of forest management actions on the scenic resource (CH2MHill 2008j).

Scenic Integrity, as defined by the SMS, is a measure of the degree to which the valued landscape character is perceived as complete, whole, or intact. Scenic Integrity ratings can be used to describe a historic state of integrity, an existing condition, a short-term minimum integrity level in moving toward a long-term goal, or a long-term sustainable integrity goal. When intended as goals, they are called Scenic Integrity Objectives (SIOs), and are generally developed as part of the forest planning process using SMS methods. The existing scenic integrity, as well as the forest plan scenic integrity objectives, is developed based on the public's concern for the landscape, landscape visibility, and scenic attractiveness within the characteristic landscape, as provided in the SMS (CH2MHill 2008j).

The proposed alignment would cross lands within the Dixie National Forest. The Dixie National Forest LRMP (dated 1986) is the current land management plan for the forest. Lands within the Dixie National Forest have been classified as having SIOs of Low (Moderately Altered), Moderate (Slightly Altered), High (Appears Unaltered), or Very High (Unaltered). The proposed pipeline alignment would be routed through an area that has an SIO of Moderate (USFS n.d.). Moderate scenic integrity refers to landscape where the valued landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the landscape character being viewed (CH2MHill 2008j).

The 1986 LRMP for the Dixie National Forest guides all natural resource management activities and establishes management standards and guidelines for the Dixie National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management (CH2MHill 2008j).

The Dixie National Forest is located in Utah in Washington, Iron, Garfield, Kane, Wayne, and Piute counties. It covers 1,967,187 acres, comprised of 1,883,734 acres of National Forest land, 78,899 acres of privately owned land, and 4,554 acres of Utah State land (CH2MHill 2008j).

The LRMP includes multiple use goals and objectives that define the direction of Forest-wide management. The goals and objectives pertain to Recreation, Wilderness, Wildlife and Fish, Range, Timber, Soil and Water, Minerals, Lands, Facilities, Protection, and Public Information. Goals and objectives related to Visual Resources include the following:

Recreation Goal No. 8: Provide for a pleasing visual landscape.

- **Objective**: Rehabilitate or mitigate visually unacceptable conditions or facilities on the Forest by 2000. Inventory the unacceptable areas by 1990 (CH2MHill 2008j).

Recreation Goal No. 11: Coordinate recreation programs with local, county, state, and other federal recreation agencies.

- **Objective:** Nominate U-14 Highway and Boulder-Grover Road as scenic highways by 1990 (CH2MHill 2008j).

Timber Goal No. 25: Harvest timber in coordination with other resources.

- **Objective a:** Most Retention and Partial Retention Visual Quality areas will be harvested using shelterwood or selection methods. Some small clearcuts may be made to benefit other resources, or for pest management when visual objectives can be met.

- **Objective b:** Timber sale and timber stand improvement activities will provide for the eradication of dwarf mistletoe while meeting visual quality standards in most cases.
- **Objective d:** Some sawtimber may be harvested on slopes between 40 and 70 percent by cable or other overhead systems where it is economically feasible and can be accomplished without damaging the soils, visual quality, or other resource values (USFS 1986). (CH2MHill 2008j)

Counties

None of the counties in the project area (except Salt Lake) specifically address visual resource issues in their General Plans.

The Salt Lake County Planning Goals and Policies (Salt Lake County 2003) include a series of goals and policies intended to aid the county in achieving its vision for the future. The general goals that are applicable to the proposed project are to: “Promote development design that is in harmony with the surrounding built environments, preserves neighborhood character, and encourages community interaction” and to “Protect the natural beauty and resources of the Wasatch and Oquirrh Mountains by regulating development in hazardous or environmentally sensitive areas and encouraging public and private transfer of those areas to public ownership.” (CH2MHill 2008j)

3.11.3.2. Visual Character

The proposed 399-mile-long pipeline alignment and associated approximately 9-mile long Cedar City Lateral would be routed through a variety of landscapes. The landscapes the pipeline would pass through include the following:

- Undisturbed, undeveloped open space with no signs of development in any direction.
- Relatively small parcel agricultural fields, pastures, and large-scale agriculture.
- Wetland areas.
- Through or near rural residential areas and mobile home parks.
- Paralleling a high voltage transmission line or passing through areas that have several transmission lines crossing them, as well as crossing other linear man-made features such as interstate highways, railroad tracks, or other gas pipelines. (CH2MHill 2008j).

In some areas of the proposed route, the alignment parallels rural roads. In other areas, the alignment is inaccessible by two-wheel drive vehicles. A variety of terrain also exists along the route—the alignment would pass through mostly relatively flat terrain skirting past mountains in some locations, but in other locations, it would cross over mountains (CH2MHill 2008j).

Vegetation within the Dixie National Forest includes various tree species, shrubs, and grasses. Vegetation in the undeveloped open space areas outside of the Forest consists primarily of low-lying shrubs and grasses. The vegetation consists of many shades of green. The desert mountains of southern Utah and Nevada have little vegetation, and the rock formations exhibit shades of gray-brown, tan, beige, rust, red, and dark brown in the volcanic areas (CH2MHill 2008j).

Near the southern terminus, the route would parallel several transmission line corridors, and it would cross US-93, a two-lane highway, to connect into the Apex Industrial Park which hosts heavy industrial uses. Currently, there are three power plants developed there (CH2MHill 2008j).

A site visit of the proposed pipeline alignment was conducted May 21 to 23, 2007. Photos were taken along the alignment and three Key Observation Points (KOPs) were selected from these photo locations (**Exhibit 3.11-2**). These KOPs were selected as representative visual landscapes in the vicinity of the proposed pipeline and also represent each of the BLM VRM classes.

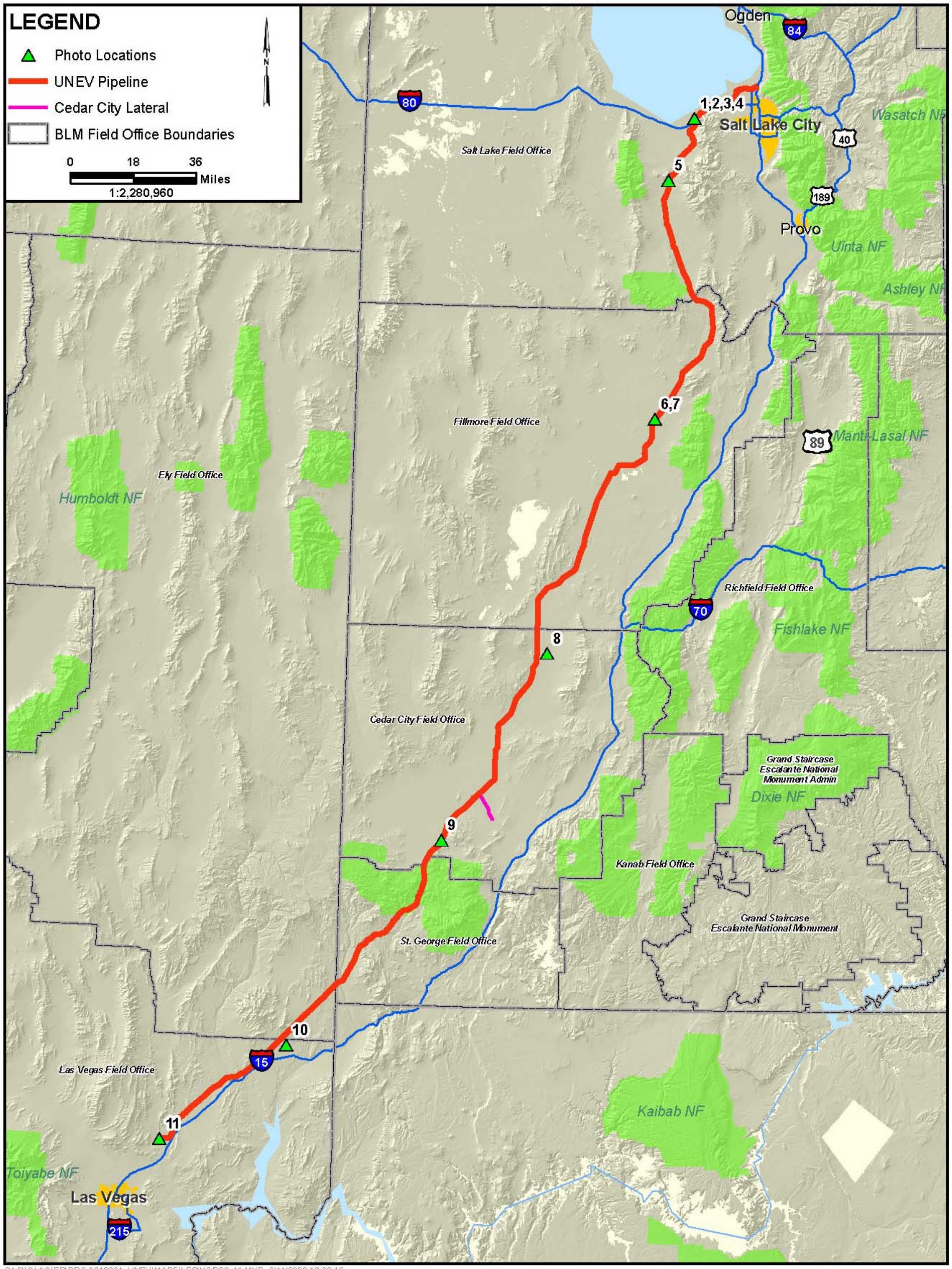

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Exhibit 3.11-2 Location of KOPs

BLM Form 8400-1 *Scenic Quality Field Inventory* was completed for each KOP. The BLM forms are included in **Appendix G**. As indicated on these forms, the scenic quality rating unit of the project area was determined to be VRM Class C (the lowest of the three classification levels in which the features shown are fairly common to the physiographic region) (CH2MHill 2008j) .

Exhibit 3.11-3 lists the KOP, representative photos taken from that KOP, and the BLM VRM designation for each KOP. The landscape at each photo location (see **Exhibit 3.11-2**) is described in the photo caption. The photos that characterize each KOP are shown below in **Exhibits 3.11-4 through 3.11-6**.

Exhibit 3.11-3 BLM VRM Designation at Each KOP

KOP	Representative Photos	BLM VRM Designation
1	1-4	Class II
2	9	Class IV
3	11	Class III

Photo 1

Photo 2

Photo 3

Photo 4

Exhibit 3.11-4 Photos 1-4 for KOP 1

KOP 1: The proposed alignment is located approximately 0.1 mile east of the location of these photos. Photo 1 is a view to the west of the few nearby rural residences, which are located approximately 0.15 mile west of the proposed alignment. Photo 2 is a view to the northwest, showing the proximity to I-80. Photos 3 and 4 show the view of the proposed alignment to be located to the east. The proposed alignment is located beyond the railroad tracks (shown as the horizontal line in the lower half of the photo).

Exhibit 3.11-5 Photo 9 for KOP 2

KOP 2: Photo 9 (upper and lower photos) was taken along the proposed pipeline alignment. This photo shows a 360º view of the landscape, looking southwest to west to northeast to east to southwest. As shown, irrigated agricultural fields are located approximately 0.6 mile to the northwest, west, and southwest, and two high-voltage electric transmission line corridors are located to the east. The town of Newcastle is located approximately 1.7 miles to the southwest of this photo location, and is not visible in this photo. At its closest point, the proposed pipeline alignment would be routed within 0.1 mile from a rural residence in Newcastle.

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Exhibit 3.11-6 Photo 11 for KOP 3

KOP 3: Photo 11 (upper and lower photos) was taken from U.S. 93, approximately 3.2 miles northwest of its intersection with I-15. The photo location is approximately 0.25 mile south of the proposed pipeline alignment. The proposed termination of the pipeline would be located approximately 0.25 mile northwest of this photo location. This photo shows a 360º view of the landscape, looking northwest to northeast to southeast to southwest to northwest. As shown, there is a high-voltage electric transmission line crossing U.S. 93. Many electric transmission lines are located to the east, northeast, and southeast of this photo location, and there are electric power plants located to the west and south of the pipeline terminus.

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The Airport, Tooele, and Millard County Alternatives all fall within the same VRM classes as the adjacent alignments.

3.11.3.3. Viewer Groups, Exposure, and Sensitivity

The quality of the visual experience depends on the visual resources and the viewer response to those resources. When characterizing viewers, the following must be considered: the type of viewer group; the viewer exposure (their location, number of people in group, and duration and frequency of their view); and viewer sensitivity (viewer activity, awareness, and values). The viewer groups can be classified as follows:

- Residents
- Recreationists

Because most the pipeline would be routed away from population centers, the exposure of the project to residents would be minimal. The pipeline would not be routed through high-use recreation areas; the exposure to recreationists would also be minimal (CH2MHill 2008j).

3.11.3.4. Regulatory Requirements for Recreation Resources

BLM

<u>Salt Lake Field Office</u>

The Pony Express RMP as amended provides direction for management of the public lands and resources in Tooele and Salt Lake counties. The proposed project is not located in a Recreation Management Area (BLM 1990). (CH2MHill 2008i)

<u>Fillmore Field Office</u>

The goals and objectives of the House Range Resource Area RMP recreation program are to:

- Provide recreation opportunities under BLM’s basic stewardship responsibilities for unstructured and structured recreational uses.
- Maximize visitor freedom of choice.
- Continue management of important recreational resources in federal ownership, to preserve those values, and make them available for appropriate recreation enjoyment by the public.

Of special note in the House Range Resource Area is the presence of the Little Sahara Recreation Area.

The Warm Springs Resource Area RMP also presents decisions for future resource management on over 2.2 million acres of public lands. No decisions or recommendations regarding wilderness designation of any of the five WSAs have been made in the RMP (CH2MHill 2008i).

The goals of the Recreation Program within the Warm Springs Resource Area RMP are as follows:

- Provide recreation opportunities under BLM’s basic stewardship responsibilities for unstructured extensive types of recreation uses.
- Maximize visitor freedom of choice.
- Continue management of important recreational resources in federal ownership to preserve those values and make them available for appropriate recreation enjoyment by the public.
- Protect the cultural and historic values from accidental or intentional destruction and give special protection to high value cultural and historic sites.

- The proposed UNEV project would not cross a special recreation area. (BLM 1987b). (CH2MHill 2008i)

St. George Field Office

The St. George Field Office RMP sets forth a vision, objectives, and land use prescriptions for the management of public lands and associated natural resources in Washington County, Utah. The RMP includes recreation objectives, but none are considered to be applicable to the proposed project (BLM 1999). (CH2MHill 2008i)

Ely Field Office

The 2007 RMP and EIS provides direction and guidance for the management of approximately 11.4 million acres of public land located in Lincoln, Nye, and White Pine counties in Nevada that is administered by the BLM Ely Field Office. The recreation goal is to provide quality settings for developed and undeveloped recreation experiences and opportunities while protecting resources (BLM 2007c). (CH2MHill 2008i)

Las Vegas Field Office

The Las Vegas RMP provides a comprehensive framework for managing approximately 3.3 million acres of public lands administered by the Las Vegas Field Office of the BLM. The proposed project is located within a proposed utility corridor. It is not located within a special recreation management area, nor is it located in an ACEC (BLM 1998). (CH2MHill 2008i)

Counties

Davis County, Utah

This portion of the project area is in a highly industrial area that does not have specific recreation resource management goals associated with it. (CH2MHill 2008i)

Salt Lake County, Utah

Fundamental principles of the Salt Lake County Parks and Recreation Master Plan (1993) that may relate to the project area are to:

- Promote the protection of natural resources with parkland acquisition and stewardship.
- Expand the recreation and parks system through adherence to the standards and guidelines set forth in the Salt Lake County Parks and Recreation Master Plan, with primary emphasis on acquisition and development of community and regional parks as described in the Master Plan.
- Link components of the community and local park systems to a regional network of greenways for hiking, biking and horseback riding, etc. (CH2MHill 2008i).

Tooele County, Utah

- The Tooele County General Plan (2007) indicates that recreational land use and access to those areas (especially to Forest Service and BLM areas) should be supported by county maintenance of dirt roads and creation of trails and trail systems. The creation, development and administration of recreation areas and a recreation corridor, extending from the northern shore of Stansbury Island south to the southern end of the County in the Rush Valley, Skull Valley, and West Desert planning districts, would support a wide variety of recreation uses and provide the County with tourism benefits (CH2MHill 2008i).

Juab County, Utah

The County General Plan mission statement for recreation and tourism that is applicable to the project is as follows:

- Juab County encompasses lands which are diverse in topography and recreational opportunities. Its residents value the variety of landscapes and recreational opportunities available to them. We will work to protect our natural environment while appropriately developing, improving, and maintaining our recreational resources in Juab County (Juab County 1999). (CH2MHill 2008i)

<u>Millard County, Utah</u>

The Millard County General Plan (1998) emphasizes that maintaining multiple-use management practices on federal and state land is a top priority. Recreation is considered one of many land uses. There are no specific policies governing recreation use outside of the multiple use of public lands (CH2MHill 2008i) .

<u>Beaver County, Utah</u>

The Beaver County General Plan (1998) focuses on the multiple use of public lands and acknowledges the outstanding hunting and fishing opportunities within the county. There are no specific policies governing recreation use outside of the multiple use of public lands (CH2MHill 2008i).

<u>Iron County, Utah</u>

The Iron County General Plan serves as a yardstick against which all planning decisions are measured. The County General Plan goals and policies that are applicable to the project include:

- Policy LU6.2. Through cooperative agreement, Iron County may designate land areas for recreational uses (Iron County 1995). (CH2MHill 2008i)

<u>Lincoln County, Nevada</u>

The Lincoln County Master Plan (2007) describes a lightly populated county dominated by federal land ownership. Low population density creates financial constraints on development of county-level public and private recreation opportunities. Through the plan, the County seeks to work with federal land managers to plan for development and expansion of recreation opportunities; to develop a recreational opportunities inventory; to seek outside sources of funding for improvement of recreational facilities; and to expand its website to promote tourism opportunities in the County. (CH2MHill 2008i)

<u>Clark County, Nevada</u>

The Clark County Comprehensive Plan has elements that discuss land use and recreation policies and standards (Clark County 2007). The proposed alignment would terminate at the Apex industrial area in the northeast portion of Las Vegas Valley. This area is designated as heavy industrial land use. Lands north of this area to the county line are designated as open space.

3.11.3.5. Recreation Resources

Most of the recreational opportunities along the proposed alignment and alternatives, and Cedar City Lateral consist of dispersed recreation activities, primarily on BLM lands. Dispersed recreation requires few, if any improvements and typically occurs in conjunction with roads or trails. Dispersed activities are often day-use oriented and involve many types of activities such as camping; fishing; hunting; shooting; mountain biking; nature study; off-highway vehicle (OHV) use; hiking; horseback riding; picnicking; vehicle touring; scenic photography; and viewing natural features, wildlife, and historic sites either on foot or from a vehicle.

There is one annual permitted organized event, the Tri-State ATV Jamboree that takes place within the area of analysis. The Jamboree is held in March and includes ATV trail rides in the vicinity of the proposed project ROW. Roads proposed for access to the proposed ROW are also used for the

Jamboree. The 2008 Categorical Exclusion Amendment relating to the Special Recreation Permit for the event limited the number of participants to 300 (BLM 2008b).

The proposed main pipeline would cross nearly 28 miles of National Forest lands. The National Forest Service inventories lands that provide settings appropriate for particular types of recreational activities and experiences. These lands are designated along a spectrum that extends from very primitive and undeveloped to very developed recreation sites. The Recreation Opportunity Spectrum classes are:

- Primitive
- Semi-primitive non-motorized (SPNM)
- Semi-primitive motorized (SPM)
- Roaded natural (RN)
- Rural
- Urban

The proposed alignment crosses the Pine Valley Ranger District of the Dixie National Forest. The centerline crosses 0.5 mile of SPNM, 12.7 miles of SPM, and 4.5 miles of RN designated lands.

Developed, community-based recreational facilities (e.g., parks, ballfields, golf courses) are avoided as the proposed alignment stays mostly in rural areas. Other recreational sites or areas that may have recreational interest that occur near the proposed alignment include (from north to south):

- Pony Express National Historic Trail, Special Recreation Management Area, and Scenic Backcountry Byway – The Faust Station was the first encountered when entering the county from Salt Lake City. Activities near this location include target shooting, small game hunting, OHV riding, camping, vehicle touring, photography, and viewing historic sites.
- Little Sahara Recreation Area (including the Black Mountain OHV Area) – 120 square miles of natural sand dunes managed by BLM primarily for OHV use. Camping, hiking, exploring, and photography are also popular activities.
- Salt Lake-Los Angeles Wagon Road – An historic wagon trail that stretches over 300 miles.
- Jefferson Hunt Monument
- Hamblin Historical Site
- Mountain Meadow Massacre Historic Monument – The site of the 1857 massacre. This area has keen regional historic significance.
- Lytle Ranch Preserve – The preserve is a premier birding and wildlife watching area on a section of the Beaver Dam Wash.

The Airport Alternative, and Tooele and Millard County Alternatives would add no additional recreation resources to the analysis.

3.11.4. Existing Conditions for Alternatives

3.11.4.1. Airport Alternative Route

The Airport Alternative Route would cross all private land. No BLM lands would be impacted.

3.11.4.2. Tooele County Alternative Route

The Tooele County Alternative Route would cross approximately 0.05 mile of BLM-administered land, all of which is designated Class III. (CH2MHill 2008j)

3.11.4.3. Rush Lake Alternative Route

The Rush Lake Alternative Route would cross approximately 2.0 miles of BLM-administered land, all of which would be Class IV.

3.11.4.4. Millard County Alternative Route

The Millard County Alternative Route would cross approximately 55.7 miles of BLM-administered land, all of which is designated Class III.

3.12. Cultural Resources

3.12.1. Area of Analysis

The area of analysis for cultural resources consists of a record search analysis area and a pedestrian survey analysis area. The record search analysis area consisted of a 2-mile-wide area (1 mile on either side of the pipeline) in Nevada and in Utah from Tooele County north to Woods Cross. In the rest of Utah the record search analysis area consisted of a 1-mile-wide area (0.5 mile on either side of the main pipeline, the lateral line servicing the Salt Lake City Airport, and Cedar City Lateral). The pedestrian survey analysis area consisted of the Area of Potential Effects (APE), as defined in the Programmatic Agreement (PA) and below under **Section 3.12.2** (Self et al. 2008).

The pedestrian survey analysis area for the Airport Alternative, Tooele Alternative and the Millard County Alternative routes consisted of a 250-foot-wide area and a 250-foot-wide area for the Cedar City Lateral/Terminal.

3.12.2. Data Sources and Methods

The PA has been prepared by the BLM and reviewed by affected agencies and Indian Tribes. Attachment B of the PA details methods to be used during historic property identification, assessment, mitigation, and reporting on the project. Primary signatories to the PA include the BLM, Dixie National Forest, Utah and Nevada SHPOs, Moapa Band of Paiutes, and the project Proponent. There are numerous concurring parties, including state land managers, Indian Tribes, and transportation departments (Self et al. 2008).

A record search was conducted to identify previously conducted cultural resource studies and previously recorded cultural resources within the project area (as defined in **Section 3.12.1**). Data were gathered from numerous repositories, including the following:

- Utah Division of State History in Salt Lake City
- Historic Site Files at the Utah SHPO
- State Offices of the BLM in Nevada and Utah
- All six Field Offices of the BLM in Utah and Nevada
- Harry Reid Center in Las Vegas
- Nevada Cultural Resource Information System (NVCRIS) database in Nevada
- SHPOs in Nevada and Utah
- Dixie National Forest

- State Office of the Utah Department of Transportation (Self et al. 2008).

The primary focus of the record search was to gather existing information on previously recorded sites. Previous archaeological surveys and studies, many for adjoining pipelines and power lines, were reviewed, especially those that included portions of the APE. Additional sources of information such as early topographic maps and General Land Office (GLO) maps from the 19th century were examined for potential historic sites and features (Self et al. 2008). Potential project impacts or effects include not only the physical disturbance of a historic property, but may also include the introduction, removal, or alteration of various visual or auditory elements that could alter the traditional setting or ambience of the property.

Based on the results of the record and literature search, it was known that the APE had the potential to contain both historic and prehistoric archaeological sites, including sites recorded during previous surveys and sites not yet discovered (Self et al. 2008).

UNEV's cultural resources consultant, William Self Associates, Inc., and their subcontractor, Sagebrush Consultants, LLC, have conducted an on-the-ground intensive pedestrian cultural resources survey of the proposed pipeline alignment, laterals, and alternatives in Nevada and Utah. This work was conducted under appropriate state permits from both Nevada and Utah, under state BLM permits in both states, under Project Authorizations from each BLM Field Office, under permit from the Dixie National Forest, and under permit from the Utah Department of Transportation. Field surveys were performed between 2006 and 2008, as the project design progressed and alternatives were determined (Self et al. 2008).

In compliance with the PA on the project, the project APE was defined as:

- **Utah.** From the beginning of the proposed pipeline route at Woods Cross in North Salt Lake to the Millard/Beaver county line, a 250-foot-wide analysis area was surveyed at an interval of 15 meters (50 feet). From the Millard/Beaver county line to the Nevada state line, a 150-foot-wide analysis area was surveyed at an interval of 15 meters (50 feet). The analysis area for the laterals and alternatives were determined using the same guidelines as above.

- **Nevada.** The entire Nevada portion of the proposed pipeline route was surveyed using a 250-foot-wide APE at a survey transect interval of 25 meters (83 feet) (Self et al. 2008).

3.12.3. Existing Conditions for Proposed Action

3.12.3.1. Regulatory Requirements for Cultural Resources

The BLM and other federal land management agencies are responsible for complying with Section 106 of the NHPA, which requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. The procedures for complying with Section 106 are outlined in the ACHP regulations (Title 36 CFR Part 800). The effects of the project on properties of traditional religious and cultural importance to Native Americans must also be considered in accordance with Section 101 (d)(6) of the NHPA and the American Indian Religious Freedom Act. In addition to these responsibilities, federal land management agencies must consider Native American religious and cultural concerns for the portion of the project crossing federal lands in accordance with the Archaeological Resource Protection Act, the Native American Graves Protection and Repatriation Act, and Sacred Sites Executive Order 13007 (Self et al. 2008).

In addition to Section 106, on public lands in Utah, the project needs to comply with the *State Protocol Agreement Between the Utah State Director of the Bureau of Land Management and the Utah State Historic Preservation Officer Regarding the Manner in Which the Bureau of Land Management will Meet its Responsibilities Under the National Historic Preservation Act* and the

National Programmatic Agreement Among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. On public lands in Nevada, the project needs to comply with the Nevada equivalent document (Self et al. 2008).

As the lead federal agency, the BLM is responsible for officially determining eligibility for the National Register of Historic Places (NRHP) and project effects in consultation with the consulting parties. If, after completing review, the agencies and the SHPOs agree that cultural resources found during surveys are ineligible for the NRHP, no further consideration of these resources would be required (Self et al. 2008). If a cultural resource is listed on or eligible for listing on the NRHP and would be subject to direct or indirect impacts, mitigation would be proposed. Mitigation may include one or more of the following measures: (1) avoidance through the use of realignment of the pipeline route; relocation of temporary extra workspaces, or changes in the construction and/or operational design; (2) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and (3) the use of screening with landscaping or other techniques that would reduce or eliminate effects on the historic setting of standing structures.

If UNEV adds to or revises any aspect of the project to include areas outside of the surveyed APE, additional surveys would need to be conducted. If additional cultural resources are identified in areas that have not been surveyed within the APE, the BLM and other agencies would need to assess the significance of these resources in accordance with the provisions of the PA (Self et al. 2008).

3.12.3.2. Narrative History

Utah

<u>Prehistoric Context</u>

In a regional prehistoric perspective, the project area in Utah falls within the eastern Great Basin. The recent extensive cultural resource management studies conducted for the initial Kern River Pipeline (Dames and Moore 1994) and the Kern River 2003 Expansion Pipeline (Reed et al. 2005) have produced a large body of relevant archaeological research for this portion of the eastern Great Basin. The proposed pipeline alignment coincides with the Kern River Pipeline alignments through Washington and much of Iron counties in southwestern Utah. The pipelines diverge for the remainder of the route through Utah, reconverging at the southern edge of the Great Salt Lake in Salt Lake County. Where the pipelines diverge, they run more or less parallel to one another and are never more than 25 miles apart. The regional chronology and cultural setting updated and presented in the Kern River 2003 Expansion Project report (Seddon and Reed 2005) reflects the synthesis of a large body of recent archaeological research, and is reiterated here as the most relevant prehistoric chronology for the UNEV Pipeline Project (Self et al. 2008).

<u>Great Basin Culture Area</u>

The Great Basin Culture Area consists of approximately 400,000 square miles of western North America bounded roughly between the Sierra Nevada Mountains on the west and the Wasatch Mountains on the east. This area is defined on the basis of historical and sociocultural relationships and similarities in general environment (D'Azevedo 1986). Throughout prehistory, occupants of the Great Basin followed a flexible and mobile subsistence and settlement strategy that allowed them to adapt to a variety of environmental conditions and climatic changes (Self et al. 2008).

<u>History of Eastern Great Basin Chronology</u>

The Eastern Great Basin chronology (Seddon and Reed 2005) is based on the most recent, complete, and systematic evaluation of the archaeological evidence from the eastern Great Basin and will serve as the working chronology for the pipeline archaeological work. It is important to keep in mind the limitations of this chronology. Although the work is built on evidence from thousands of sites and studies, the archaeological testing and refinement of the chronology and culture periods by Kern

River 2003 Expansion Pipeline archaeologists was limited to the project alignment. Evidence from some environmental zones and site types from various culture periods was not included in the alignment, and therefore is underrepresented in the analysis (Self et al. 2008). The seven major periods of the chronology are briefly summarized in **Exhibit 3.12-1**.

The chronology and culture periods presented here represent the working prehistoric framework, or context, for the UNEV Pipeline Project. The chronology was built on the basis of a systematic analysis of excavated sites in western Utah and refined with the results of substantive archaeological excavation and research directly related to the Kern River and Kern River 2003 Expansion pipelines in a more narrowly defined corridor through western Utah. The chronology is meant to be a framework of reference that may be updated, refined, and revised based on results generated by the UNEV Pipeline Project archaeological research (Self et al. 2008).

Ethnography

The Southern Paiute Tribe has been described by ethnographers as a people that once existed as mobile groups or bands with territories usually centered around major food and water sources. Kelly and Fowler (1986) identified sixteen Southern Paiute bands or economic clusters, but other researchers, most notably Martineau (1992), put the number of original Southern Paiute bands or groups much higher, at 29 bands, although many of these bands no longer exist. Tom and Holt (2000) note that there could have been as many as 35 small groups of Southern Paiute in Utah alone, but note that a lack of ethnographic data and the mobile lifestyle of the groups make it difficult to identify individual bands within the larger Southern Paiute groups. The 16 economic clusters identified by Kelly and Fowler are: the Antarianunts, the Beaver, the Cedar, the Chemehuevi, the Gunlock, the Kaibab, the Kaiparowits, the Las Vegas, the Moapa, the Pahranagat, the Panaca, the Panguitch, the St. George, the San Juan, the Shivwits, and the Uinkaret. Of these, the traditional territories of the Moapa, Las Vegas, St. George, Shivwits, Gunlock, Cedar, and Beaver groups are within the proposed project area. Prior to European contact, the Paiute traditional lands covered a 30 million acre region extending across southwestern Utah, southern Nevada, northwestern Arizona, and into California (Self et al. 2008).

Similar to the Southern Paiute, the Utes of present-day Utah identified themselves by band membership, which was fluid in nature. Bands names changed frequently and were taken from either a geographic location inhabited by a group of families or from a major food source. Band territories were recognized, but bands also split, regrouped, and changed locations for various reasons (Callaway et al. 1986; Conetah 1982; Steward 1939a, 1939b). Researchers have recorded various band names and disagree on the number of bands that were operating in Utah, Colorado, and northern New Mexico. In 1982, the Uintah and Ouray Ute Indian Tribe published a history of the northern Ute people (Conetah 1982) and provided a map of band names and territories as they are thought to have existed: Pah Vant, San Pitch, Tumpanawach, Cumumba, Uinta-ats, Sheberetch, Yamparika, Parianuche, Taviwach, Weeminuche, Moache, and Kapota. The tribe states that even though the Ute organized in bands, they were "*Noochee*" or "The People" with a common love for the land. There were also smaller bands of Utes that intermarried with neighboring tribes, such as the Fish Lake Band, that resided in southern Utah and with the Southern Paiutes (Conetah 1982). The first four bands listed (Pah Vant, San Pitch, Tumpanawach, and Cumumba) had traditional resource territories near the proposed project area. The traditional Ute land base was about 225,000 square miles within present-day Utah, Colorado, and northern New Mexico (Self et al. 2008).

Years B.P.	Years B.C./A.D.	General Climate (Madsen et al. 2001)	Revised Chronology	Schmitt and Madsen 2002	Aikens and Madsen 1986	Madsen 1982	Jennings 1978
150	1850	Warm, modern vegetation				Paiute/Shoshone (750 B.P. - Present)	
500	1500		Late Prehistoric Period (A.D. 1200 - Contact)	Late Prehistoric Period (550 - 150 B.P.)	Fremont Period (A.D. 500 - Contact)		Historic Peoples (A.D. 1200 - Contact)
1,000	1000			Fremont Period (2,400 - 550 B.P.)			
1,500	A.D. 500		Formative Period (A.D. 500 - 1200)			Sevier/Fremont (1,600 - 650 B.P.)	Fremont/Anasazi (A.D. 500 - 1200)
2,000	0		Terminal Archaic (0 - A.D. 500)		Late Black Rock Period (2,000 B.C. - A.D. 500)		Desert Archaic (5,500 B.C. - A.D. 500)
2,500	500 B.C.		Late Archaic Period (1,000 B.C. - 0)			Late Archaic Period (3,500 - 2,000 B.P)	
3,000	1,000	Major cooling		Terminal Archaic (2,400 - 2.950 B.P.)			
3,500	1,500	Return to cooler temperatures	Middle Archaic Period (3,000 - 1,000 B.C.)	Late Archaic Period (4,450 - 2,950 B.P.)			
4,000	2,000					Middle Archaic Period (5,500 - 3,500 B.P.)	
4,500	2,500	Similar			Early Black Rock Period (4,000 - 2,000 B.C.)		
5,000	3,000	Drier, lower species diversity, more shadscale		Middle Archaic Period (5,300 - 4,450 B.P.)			
5,500	3,500		Early Archaic Period (6,000 - 3,000 B.C.)				
6,000	4,000			Early Archaic Period (8,000 - 5,300 B.P.)		Early Archaic Period (8,500 - 5,500 B.P.)	
6,500	4,500				Wendover Period (7,500 - 4,000 B.C.)		
7,000	5,000	Onset of rapid warming/drying					
7,500	5,500						
8,000	6,000						Lithic Stage
8,500	6,500	Drier than before, but wetter than now	Paleoindian Period (>9,000 - 6,000 B.C.)	Paleoarchaic Period (11,000 - 8,000 B.P.)			
9,000	7,000					Paleoindian Period/ Big Game Hunters (12,000 - 8,500 B.P.)	
9,500	7,500						
10,000	8,000	Younger Dryas, volatile, cold			Bonneville Period (9,000 - 7,500 B.C.)		
10,500	8,500						
11,000	9,000	Cooler summers					
11,500	9,500						
12,000	10,000						

Exhibit 3.12-1 Prehistoric Chronology (Seddon and Reed 2005)

Early Utah

While the counties in Utah were settled and organized at different times throughout the state's history, much of Utah's early history consisted of the activities of fur trappers and government explorers that crisscrossed the state and its counties, beginning with the Spanish in New Mexico, and through expeditions led by men such as John C. Fremont and Gunnison. During the fur trapping period and the later settlement period, most historic activities were centered on northern Utah with some activities expanding into the southern part of the state. In the following text, these periods are presented separately as common themes from those of the individual histories of the counties through which the proposed pipeline route passes (Self et al. 2008).

Many of the early settlements were established along the two main transportation routes traveling east-west and north-south across Utah. The north-south route became known as the Mormon Corridor because of the many Mormon settlements along the way. These towns were established at suitable locations between Salt Lake City on the northern end and Los Angeles/San Pedro, California, on the southern end. Some of these communities and towns included, for example, Manti founded in 1849, Nephi in 1851, Mt. Pleasant in 1852, Holden in 1855, Richfield in 1864, Cedar City in 1851, and Saint George in 1861 (Hunter 1937, Jackson 1978, Hull and Avery 1980; Van Cott 1990). The town of Fillmore, which was settled in 1851, became the territorial capital of the State of Deseret shortly after its founding. It remained the territorial capital until 1858, when the state's central government was moved back to Salt Lake City (Roylance 1982). Some communities were established during the same time period in the western Utah desert, including Tooele in 1851 and Minersville in 1859, while others were not organized until much later, for example Delta in 1906 (Hunter 1937, Van Cott 1990). (Self et al. 2008)

Much of the early history of Utah is recorded in the journals and records of governmental and military expeditions, as well as those compiled by individuals and companies involved in the fur trade. These incursions by Euro-Americans traversed much of the territory, recording the natural resources and geography of the region (Self et al. 2008).

The first Euro-Americans to pass through the territories that would later become the states of Colorado, Arizona, and Utah were members of the Spanish Dominguez-Escalante Expedition in 1776. Specifically, this expedition, which was under the direction of the Spanish authorities in New Mexico, would pass through central Utah east to west before turning south toward Arizona (Self et al. 2008).

In the years immediately following the explorations of Dominguez and Escalante, the area was visited by other Spanish explorers and traders who left no primary record of their travels (Moffitt 1975). Trails also led north into Utah Valley, the Uinta Basin, and along the Sevier River, which allowed the Spanish and Mexicans to trade with the local Indians for furs, gold, horses, and Indian slaves (Malouf and Malouf 1945, Miller 1980). The trading expeditions appear to have been limited in scope and operation. Utah did not become the focus of widespread Euro-American interest until the expansion of the fur trade in the early nineteenth century (Self et al. 2008).

When members of the Lewis and Clark expedition returned to St. Louis in 1806 from their exploration of the Louisiana Purchase, they brought back reports of abundant beaver in the rivers and streams of the region. With beaver fur in demand as a material for making hats, entrepreneurs formed fur companies to exploit the vast, untapped beaver supply in the North American West (Bartlett and Goetzmann 1982). Trappers were the first Euro-Americans, other than the Spanish and Mexican explorers and traders, to enter Utah, frequenting the area from the 1820s into the early 1840s. In 1826, fifty years after the Spanish friars made their way through the area, fur trappers under the leadership of Jedediah Smith ventured south through central and into southwestern Utah (Bradley 1999, Morgan 1953). Three years later, in 1829 and 1830, Antonio Armijo led the first pack train from Santa Fe to Los Angeles via northern Arizona and southern Nevada (Hafen 1948). (Self et al. 2008)

The Cedar City-St. George-Hurricane area remained largely unexplored during the 1830s and early 1840s. The most intensive exploration was occurring in the northern part of the state. It was not until the government-sponsored expedition of Captain John C. Fremont in 1844 that a Euro-American once again ventured into southern Utah (Self et al. 2008).

In 1847, the first non-Native American settlers arrived in the Territory of Utah. In late July of that year, a small advance group of Mormon pioneers (members of the Church of Jesus Christ of Latter-day Saints [LDS]) led by Brigham Young, their President and Prophet, entered the Salt Lake Valley. Over the next several years, larger groups (companies) of LDS faithful arrived in the region and began to spread out into the surrounding valleys (Self et al. 2008).

Shortly after the occupation of the region by the new arrivals from the east, bands of Native Americans began to clash with the pioneers. Hostilities between Indians and whites steadily increased as the settlers took up more land. Indian raids on small, isolated settlements were common throughout the territory. Settlement of western and southern Utah increased during the Utah War of 1857 and 1858. This conflict between Mormon settlers and the U.S. Government was over the issues of polygamy and disregard of federal authority (MacKinnon 2003, Merrell 2006). (Self et al. 2008)

The economy of most communities established throughout the Utah Territory during this time centered on agriculture and ranching. However, mining was beginning to take hold as an industry and prompted the growth of several small towns in central and western Utah. In the early 1860s, an overland stage route was established from Salt Lake City to the mines near Milford (Thompson 1982), which allowed the transportation of supplies and passengers to towns between the mines and Salt Lake City (Self et al. 2008). The Pony Express Trail was established and operated from 1860 to 1861 through the counties of Salt Lake and Tooele, with many stations along the trail.

Five years after the completion of the first transcontinental telegraph line in 1861, Brigham Young organized the Deseret Telegraph Company to construct a separate telegraph line connecting Salt Lake City and St. George (Arrington 1951, May 1978a). By the end of 1866, over 500 miles of the telegraph line had been completed through Utah and into Idaho and Arizona. The Deseret Telegraph Company, which had solicited volunteer labor for the construction of the line, serviced the system until 1900 when it was sold to eastern interests (Arrington 1958). (Self et al. 2008)

Also important to the history of this region was the establishment of Cove Fort in 1867. The stronghold was built by Ira Hinckley under orders from Brigham Young during the Black Hawk Indian War (Van Cott 1990). For several decades after its construction, the fort served as a welcome rest stop for weary travelers over the route between Salt Lake City and Los Angeles (Roylance 1982). The fort, listed on the NRHP, remains one of the best preserved Mormon forts in the state (Self et al. 2008).

<u>Salt Lake County</u>

Salt Lake City was the economic center of the Utah Territory and agriculture was the base of this economy, which expanded rapidly during the period from 1860 to 1919. However, mining and other industries were beginning to develop during this period as well. The arrival of the Transcontinental Railroad in 1869 opened new markets for crops and livestock produced by local residents. Successful production of sugar beets was another significant agricultural development during this period (Self et al. 2008).

Towns in Utah experienced a period of rapid growth in both population and industry as mining also expanded throughout the territory. With so much ore being removed from nearby canyons and with the high cost of transporting it to distant smelters for processing, the demand for a local smelting facility intensified. The first smelter in the area was established in Murray by the Woodhull family in

1869 (Murray City Corporation 1976). The Transcontinental Railroad had been completed in 1869, the mainline and lay over 30 miles to the north in Ogden. The Utah Central Railroad Company completed a line from the Union Pacific Railroad to the north, as far south as downtown Salt Lake City by 1870. The following year it was extended southward to the Murray smelters and beyond (Salt Lake Telegram 1939; Murray City Corporation 1976). In 1881, the Denver and Rio Grande constructed a line through the area (Grey 1989). The arrival of these rail lines heralded an economic and residential boom in Murray and Midvale. With the completion of these rail lines, the smelters, brick companies, and other local industries had a fast and efficient means of shipping their products to wealthy outside markets. Soon after the brick company was opened, horseback mail delivery was introduced to the area (Self et al. 2008).

Economic conditions in Utah, including Salt Lake County, worsened during the 1920s as a post-World War I agricultural depression was felt across the state and prices for many agricultural products dropped precipitously. Railroad-related industries continued to provide steadily increasing employment and income for the area until the nationwide depression of the late 1920s and early 1930s (Self et al. 2008).

Tooele County

While Tooele County developed as an agricultural and later a mining center, the later history of Tooele County is dominated by the establishment of the Tooele Army Depot and the Deseret Chemical Depot. As with the other counties, Tooele's history begins with early government expeditions, fur trappers, and the establishment of the California emigrant trails. While the Gosiute, Shoshone, and their ancestors had inhabited the valley for centuries, no Euro-Americans ventured into the area until the 1820s (Self et al. 2008).

One early explorer, Lansford Hastings, attempted to establish a route across western Utah as a shortcut to California in 1846. Hastings promoted this route as part of an emigrant trail from Fort Bridger, Wyoming, to San Francisco, known as the Hastings Cutoff. Only four emigrant companies followed this trail in 1846, including the Donner-Reed Party (Beecher 1994a). This party took longer to cross the Salt Lake Desert than previous parties had because of soft ground in the Salt Lake Desert. After the emigrants hurried across Nevada, wagon teams were too fatigued to cross the Sierra Nevada Mountains before an early snowstorm closed off the mountain passes. As a result, members of the party were reduced to starvation and cannibalism, and forty people died (Beecher 1994b). After the tragic experiences of the Donner-Reed Party, the Hastings Cutoff was no longer used as an emigrant trail, and little interest was shown in the area because of its remote location and harsh environment (Self et al. 2008).

Both Tooele and Grantsville were based on ranching and farming but were also supported by mining in the nearby Oquirrh Mountains. The continued discovery of rich mineral deposits in the Oquirrhs and the Salt Flats during the late 1800s caused the economic base of the area to shift from primarily agriculture to mineral exploitation. In 1909, the Tooele Valley Railroad was constructed to serve the area's mines and smelters (Grady 1983). This rail line helped boost the valley's economy by providing a faster and more cost effective means of transporting ore from the mines to the smelters and then on to outside markets (Self et al. 2008).

Mining and ranching continued as primary activities in the area until the start of World War II. With the advent of hostilities overseas, the federal government established numerous military installations in the Tooele Valley for the purposes of bomber training, supply storage, equipment repair, and chemical and biological warfare testing (USHS 1988). By the end of the war, Wendover Air Force Base, Dugway Proving Ground, and the Tooele Army Depot were employing more than 22,000 military personnel and civilians. In the 1970s, a controversy arose regarding the effects of hazardous waste created by chemical testing at Dugway. The issue of this hazardous material is still being debated (Self et al. 2008).

Juab County

The history of Euro-American presence near the UNEV pipeline project area begins with the passage of the Dominguez-Escalante expedition in 1776. It was not until 1826, however, that white men, primarily fur trappers and explorers, once again ventured into the harsh west desert (Self et al. 2008).

In 1847, the Mormon pioneers arrived and settled in the Salt Lake Valley. They immediately began to explore the eastern portions of the county, around Nephi and Mona, for the purposes of expanding their settlements and connecting them economically to the larger commercial markets on the west coast. It would take more than a decade, however, before they would settle the west desert region near the pipeline project area (Self et al. 2008).

In 1851, George Chorpenning began a cross-country mail route from Utah to California through Tooele and northwestern Juab counties. This route, later known as the Overland Stage Route, ran west to Fish Springs and then south, skirting around the southern edge of the Deep Creek Mountains. The Overland Stage operated along this route until 1869 when the transcontinental railroad was completed farther north.

In 1860, Chorpenning sold his interests to Russell, Majors, and Waddell who began the Pony Express (Zier 1984). The Pony Express utilized many of the way stations along the Overland Stage Route. However, rather than following the trail south out of Fish Springs, it continued west to new stations constructed at Boyd's Station and Willow Springs (Callao) and north to Round and Burnt stations. This new route and its stations, which operated between 1860 and 1861, represent the first permanent occupations of the area by non-Indians (Self et al. 2008).

The first settlers to enter the west desert after the stage and Pony Express days were miners looking for gold, silver, and copper (Bluth 1978). In 1917, a narrow gauge railroad was completed from Gold Hill to Wendover. This, in turn, joined the Western Pacific line, which ran to the Salt Lake City smelters, providing a market for the Gold Hill ore (Bluth 1978). During the 1920s, the Gold Hill mines produced a number of different ores including arsenic, tungsten, and limited amounts of lead (Self et al. 2008).

The next major event in the history of the west desert area was the creation of the Dugway Proving Ground following the Japanese bombing of Pearl Harbor in 1942 (Zier 1984). The facility was created for chemical weapons testing and was expanded to include biological warfare research in 1943. Today, sheep-herders and stockmen once again make up the bulk of the county's population. The BLM created a grazing district allowing herders to run their stock on government lands at low yearly rates (Self et al. 2008).

Beaver and Millard Counties

Beaver and Millard counties share much in common, geographically, economically, and historically. Due to the physiological similarities in the counties, the eastern halves have developed along the so-called "Mormon Corridor," which was the main north-south route between southern California and Salt Lake City. While this area along the western slope of the mountains was semi-arid, enough water was available to make farming and ranching viable for settlement. Except for the fertile flood plain along the Sevier River, as well as isolated springs and streams in the western sections of Millard and Beaver counties, the arid regions of the counties were dominated by mining rather than farming (Self et al. 2008).

The history of Euro-American presence near the pipeline project area begins with the passage of the Dominguez-Escalante expedition in 1776. Permanent settlement of Beaver and Millard counties occurred nearly a decade after the arrival of the Mormon pioneers to the Salt Lake Valley. In the following years, Brigham Young set about organizing and directing the colonization of the valleys and areas along the Mormon Corridor. This system of towns would allow the Mormons to bring immigrants to Utah along a more convenient and less harsh route (Self et al. 2008).

Beaver County was established in 1856. Early commercial efforts in the county were dominated by enterprises that supported the pioneer communities. Farming and livestock raising were foremost in importance and conducted primarily by families and extended family groups. Issues, such as irrigation and the construction and operation of sawmills for lumber, required larger scale cooperative efforts and the formulation of organized companies (Self et al. 2008).

Perhaps one of the most significant events in the history of Utah occurred near Cedar City during the period of settlement. This event, the Mountain Meadows Massacre, led to the exodus of many of the area's original settlers. In 1857 tensions were high between the U.S. government and the Latter-Day Saints. The resulting Utah War began in May (Merrell 2006). After leaving Cedar City, a group of approximately 140 emigrants stopped at Mountain Meadows (42WS2504) on the Spanish Trail, 35 miles southwest of the town. Just before dawn on Monday, September 7, 1857 a Mormon militia company primarily composed of men from Cedar City, perhaps with the band of Paiute, attacked the emigrants (Novak and Kopp 2002). In the end, all but 17 young children were killed, and they were spared because they were judged to be too young to talk (Novak and Kopp 2003). (Self et al. 2008)

While agriculture has and continues to play an important part in the economic base and history of the region of Millard and Beaver counties, it was the development of the mining industry in the region that contributed to its economic growth, as did the arrival of the railroad into southern Utah (May 1978b). Advancements, as well as market prices, in these two industries lead to cyclic periods of growth and decline. The settlement and expansion of many of the communities is directly related to developments in mining and railways. These towns would not have existed if it were not for the establishment of mines in the mountains to the west. While the Utah Southern Railroad line was constructed to facilitate the movement of valuable ore from the various mines, the railroad also transported livestock and other agricultural commodities to outside markets. The prosperity of these communities within the region aided in ending the isolation of the area and broadened the economic base of the entire region of the two counties (Self et al. 2008).

The boom and bust cycles of the mines greatly impacted the local communities along the rail lines. Located along the route to the San Francisco Mountains and at the site of a stamp mill on the Beaver River, Milford began as a tent city for miner's seeking their fortunes in the nearby hills (Bradley 1999). Many of these prospectors stayed only temporarily, giving the community a transient nature. The first permanent settlers arrived in 1880 (Powell 1994b, Bradley 1999). By the early 1890s, businesses in Utah again suffered under a nationwide depression that slowed the economy (Alexander and Allen 1984). Hardest hit was the mining production in all forms. But by the end of the century, the economy bounced back (Self et al. 2008).

The last major railroad route to be built in the American West was the line from Salt Lake City to Los Angeles, commonly referred to as the Salt Lake Route. Recognizing a need and the potential advantages of constructing a more direct, all-weather route between Salt Lake City and Los Angeles, businessman and U.S. Congressman William A. Clark from Montana proposed and promoted the connection in the 1890s (Hill et al. 1991). In addition to connecting the two major population and trade centers, the envisioned route would be instrumental in bringing an end to the relative isolation of a vast, empty desert landscape, including portions of the Great Basin and Mojave Desert (Self et al. 2008).

Iron and Washington Counties

The history of Euro-American presence near the pipeline project area begins with the passage of the Dominguez-Escalante expedition in 1776. In 1829 and 1830, Antonio Armijo established a trade route through southwestern Utah to California (Cline 1963). Armijo did not follow the entire length of what was to become known as the Old Spanish Trail because he headed west across northern New Mexico and Arizona, instead of circling northwestward to cross the Colorado and Green Rivers in eastern Utah. By 1831, the trail saw regular use, and trade between Santa Fe and Los Angeles continued on a large scale during the 1840s. For example, one trading party that left Los Angeles in April 1842 consisted of 194 New Mexicans driving over four thousand head of stock (Hafen 1948).

John C. Fremont led an expedition of the U.S. Corps of Topographical Engineers that entered southern Utah in mid-May, 1844. The Topographical Engineers were charged with scientifically mapping the West, and Congress printed 20,000 copies of its route map. This map was widely available to the public before maps showing the more northerly emigration routes to California were produced, and it depicted the Spanish Trail, giving Frémont credit for naming the route, and popularizing the trail (Mitchell 1845; McBride 2002). The last large trading caravan to travel the Spanish Trail set out from Santa Fe in the fall of 1847 (Self et al. 2008).

Most emigrants travelling to California in the 1840s and 1850s followed the California Trail (which went through Idaho and then headed south into northern Nevada to go along the Humboldt River), but during the harsh winter months some chose the Old Spanish Trail. The misfortune of the Donner Party in 1846-1847 gave the more southerly Spanish Trail greater appeal (Caughey 1937). Prior to 1848 only one wagon train had used the Spanish Trail to Los Angeles (Self et al. 2008).

In 1847 newly-arrived Mormons were advised how to travel safely to California via the southern route (Blair et al. 2001). The Old Spanish Trail became known the "Mormon Road" (Hunter 1939). (Self et al. 2008)

In March 1852, due to harsh weather on more its usual, more northerly route, the United States mail used the road for the San Francisco to Salt Lake mail (Hafen 1926). This was then adopted as the regular winter route for the mail until 1854. From 1854 to mid-1858 the Mormon Road became the year-round route for the mail (Self et al. 2008).

As with the other areas of the state, permanent settlement of southwestern Utah occurred shortly after the arrival of the Mormon pioneers in the Salt Lake Valley. The massive influx of white settlers into the region created unrest among the resident Southern Paiute Indians. Two years after the cessation of the raids the residents of Fort Cedar ventured outside the protective walls of the fort and relocated their community to an area above the flood plain of Coal Creek. The settlement at Cedar City was the second permanent community established in what later became Iron County. Parowan was the first (Self et al. 2008).

By 1854, LDS missions had been established at New Harmony and Santa Clara for the purpose of protecting travel along the Old Spanish Trail and for converting the local Indians to Christianity (Woodbury 1933, Brooks n.d.). New Harmony became the first county seat after Washington County was created by the Territorial Legislature (Larson 1950). At that time, only a handful of settlers were residing in the vicinity of the missions. The iron works had begun to decline as the ore veins were being exhausted. The economy of Cedar City was slowly shifting from an industrial to an agricultural base. Three years of crop experimentation in the southern Utah desert proved that with substantial irrigation and dry farming techniques, viable crops could be grown in the area (Self et al. 2008).

With the outbreak of the Civil War in 1861, Young sent 309 families to establish a settlement in the St. George Valley (Anderson 1994). He believed it would be necessary to create a new cotton producing center as the southern states were embroiled in the war and could not export the product. Between 1861 and 1890, several other towns were established in the area to help increase cotton production and to reap the benefits of trade along the Old Spanish Trail (Davis 1992). Among these towns were Duncan's Retreat, Rockville, Harrisburg, and Leeds (Larson 1950). (Self et al. 2008)

By the early 1890s, incoming settlers to extreme southwestern Utah occupied most of the available land along the banks of the Virgin River. Periodic and unpredictable flooding had devastated much of the agricultural land along the river banks and destroyed dams on the river six times between 1857 and 1859 (Larson 1950). The uncertainty of the river and the limited amount of new land available for agriculture prompted residents of the area to look elsewhere for land to cultivate. The Hurricane Bench north of St. George appeared to be a promising area, with dry but fertile soil. In 1893 a group of residents from towns along the Virgin River formed the Hurricane Canal Company to deliver river water from upstream to the Hurricane Bench. The prospect of a viable water system increased activity on the Hurricane Bench. In 1896, the town site of Hurricane was surveyed and divided into the typical pioneer Utah pattern of five-acre square blocks (Self et al. 2008).

The late 1890s and early 1900s were also a time of renewed development for other communities in southern Utah. Although much of the state was struggling amidst another economic depression, Cedar City and St. George were faring relatively well. Other developments during this time period include the creation of the Dixie National Forest and the establishment of various Indian reservations in the area (Self et al. 2008).

In the early years of the twentieth century, businessmen in southern Utah worked hard to develop tourism through the area to the North Rim of the Grand Canyon. Lund, in Iron County, was the closest railroad stop on the San Pedro, Los Angeles, and Salt Lake Railroad, and from there visitors had to travel by road through Cedar City to Toquerville (in Washington County), and south into Arizona. By 1914 automobiles could get as far south as Toquerville, after which it was still a wagon road (Swanson 2005). By 1923 the Union Pacific had set up the Utah Parks Company to take tourists from the rail station at Lund to a new hotel at Cedar City, where a bus tour company took tourists to Zion Canyon, North Rim, and Bryce Canyon. In 1928, the Grand Canyon Lodge at the North Rim was completed and the once remote area became a comfortable tourist destination. The UPRR also established a large and elaborate passenger depot in Cedar City as well as lodges and cabins within the parks. Rail service along the line continued to be operated by the UPRR as late as 1971. By that time, the trucking and automobile industries had taken over much of the line's tourist business (Self et al. 2008).

Nevada

Prehistoric Context

Many archaeological surveys and studies have been conducted in southeastern Nevada as a result of federal legislation beginning in the late 1960s. Many of these previous studies have been synthesized and presented in the Kern River 2003 Expansion Project Class I and Class III Investigations prepared by the Harry Reid Center for Environmental Studies (Blair et al. 2001). The proposed pipeline route parallels the existing Kern River 2003 Expansion Project in southeastern Nevada, and the following prehistoric context reflects both the primary sources as well as the recent synthesis prepared for the Kern River project. For more complete discussions of southern Nevada's prehistory and history, the reader is referred to the research of Fowler et al. (1973), Shutler (1961, 1967), E. Warren (1974), Warren and Crabtree (1986), Lyneis (1982b; 1995), Myhrer et al. (1990), and Seymour (1997). These works present varying chronologies for the region that offer differing interpretations of the diversity of regional cultures. A more general perspective of the cultural chronologies suggested by Blair et al. (1999), Jennings (1986, fig. 2), Warren and Crabtree (1986), and Winslow (1996; 2003) will be used for the purposes of this discussion (Self et al. 2008).

Regional Definition and Chronological Context

In traversing the southeastern corner of Nevada, the proposed pipeline alignment passes through the Mojave Desert and approaches the southern boundary of the Great Basin, passing near the Colorado Plateau and the Lower Colorado River. Cultural adaptations were not uniform across this region because geographic features, micro-climates, elevations, ecologies, and histories varied. As a result of this variation, scholars have developed several distinct cultural boundary definitions and archaeological chronologies which are applicable to the cultural setting discussions presented in this report. Several of these and their relevance to the current study are discussed below (Self et al. 2008).

Lyneis (1982b) considers the project area part of the Mojave Desert, lying just outside of the Great Basin, although she notes people and cultural influences undoubtedly moved between these two areas. Jennings (1986) includes the project area in his consideration of the culture history of the Great Basin, dividing the Great Basin into six archaeological subareas on the basis of research concentrations, artifact inventories, and variable adaptations made to local environments. The pipeline alignment passes through an area of overlap between the somewhat arbitrary Southeast and the Southwest Archaeological Areas identified by Jennings (1986). As Jennings points out, there is no currently accepted chronological framework that integrates the diversity of prehistoric evidence across the Great Basin. On a much smaller scale, archaeological work in southeastern Nevada has resulted in contrasting chronologies and interpretations of the diversity of life ways present (for example, Fowler et al. 1973; Lyneis 1982b, 1992, 1995; Myhrer et al. 1990; Rogers 1945; Seymour 1997; Shutler 1961, 1967; E. Warren 1974; and Warren and Crabtree 1986). The Southeastern Archaeological Area discussed by Fowler and Madsen (1986) is most relevant to the UNEV project, while the chronology for Southern Nevada developed by Lyneis (1982b, 1995) and the Southwestern Archaeological Area presented by Warren and Crabtree (1986) also have some relevance to the current discussion (Self et al. 2008).

Exhibit 3.12-2 presents a selection of chronologic sequences that are useful for interpreting the archaeological record within the project area.

Exhibit 3.12-2 Chronologic Sequences Used for the Nevada Portion of the UNEV Pipeline Project

<table>
<tr><th>Timeline</th><th>Southeastern Area
Fowler & Crabtree (1986)</th><th>Southern Nevada
Lyneis (1982, 1995)</th><th>Southwestern Area
Warren & Crabtree (1986)</th></tr>
<tr><td>1500 A.D.</td><td rowspan="4">Shoshonean Tradition
(from ca. A.D. 1000)</td><td rowspan="3">Southern Paiute - Mojave
(from ca. A.D. 1100)</td><td rowspan="4">Shoshonean/Protohistoric
(A.D. 1200-contact)</td></tr>
<tr><td>1400</td></tr>
<tr><td>1300</td></tr>
<tr><td>1200</td><td>Early Pueblo III (A.D. 1150-1225)</td></tr>
<tr><td>1100</td><td rowspan="7">Horticultural
(A.D. 500-1200)</td><td>Late Pueblo II (A.D. 1050-1150)</td><td rowspan="7">Saratoga Springs
(A.D. 500-1200)
(includes Basketmaker III-Pueblo)</td></tr>
<tr><td>1000</td><td>Early Pueblo II (A.D. 1000-1050)</td></tr>
<tr><td>900</td><td rowspan="2">Pueblo I (A.D. 800-1000)</td></tr>
<tr><td>800</td></tr>
<tr><td>700</td><td rowspan="4">Basketmaker III
(A.D. 400-800)</td></tr>
<tr><td>600</td></tr>
<tr><td>500</td></tr>
<tr><td>400</td><td rowspan="7">Archaic
(8000 B.C. - A.D. 500)</td><td rowspan="7">Gypsum
(2000 B.C. - A.D. 500)
(includes Basketmaker II-III)</td></tr>
<tr><td>300</td><td rowspan="4">Basketmaker II
(ca. 300 B.C. - A.D. 400)</td></tr>
<tr><td>200</td></tr>
<tr><td>100</td></tr>
<tr><td>0</td></tr>
<tr><td>1000</td><td rowspan="2">Archaic
(ca. 6000 B.C. - A.D. 500)</td></tr>
<tr><td>2000</td></tr>
</table>

<table>
<tr><th>Timeline</th><th>Southeastern Area
Fowler & Crabtree (1986)</th><th>Southern Nevada
Lyneis (1982, 1995)</th><th>Southwestern Area
Warren & Crabtree (1986)</th></tr>
<tr><td>3000</td><td rowspan="6"></td><td rowspan="4"></td><td rowspan="3">Pinto
(5000-2000 B.C.)</td></tr>
<tr><td>4000</td></tr>
<tr><td>5000</td></tr>
<tr><td>6000</td><td rowspan="5">Lake Mojave
(10,000-5000 B.C.)</td></tr>
<tr><td>7000</td><td rowspan="6">Late Pleistocene occupation
(no clear dates)</td></tr>
<tr><td>8000</td></tr>
<tr><td>9000</td><td rowspan="4">pre-Archaic
(ca. ? - 8000 B.C.)</td></tr>
<tr><td>10000</td></tr>
<tr><td>11000</td><td></td></tr>
<tr><td>12000 B.C.</td><td></td></tr>
</table>

Note: The chronological divisions between cultural units are approximate and there is some degree of chronological overlap between adjacent cultural units. Source: Self et al. 2008

Ethnography

At the time of Euro-American contact, the southern Nevada portion of the pipeline project area was inhabited by members of the Southern Paiute peoples. Neighboring peoples included the Mojaves, who occupied the southernmost portion of the state outside the project area (Lyneis n.d.), and the Western Shoshone, who inhabited lands to the north and west of the Southern Paiute. The summary of Southern Paiute ethnography was presented above in the Utah section. A summary of Shoshone ethnography is presented below (Self et al. 2008).

Steward (1937) divided the Shoshone into three groups: the Western Shoshone (including the Goshute), the Northern Shoshone and Bannock, and the Eastern Shoshone. This distinction between Shoshone groups was primarily based on territorial occupations, which, like other Numic groups, were fluid (Steward 1997). Northern Shoshone occasionally traveled from the Snake River into Nevada and Utah for pine nuts, and northern Utah and Nevada people sometimes traveled to the Snake River for salmon fishing (Murphy and Murphy 1986). The proposed pipeline alignment ROW goes through traditional Western Shoshone territory, specifically Goshute territory. The Northern Shoshone and Bannock, now known as the Shoshone-Bannock Tribes of Fort Hall, Idaho, and the Northwestern Band of Shoshone (Northwestern Band) of present-day Brigham City, Utah are also included here because these groups had traditional food source locations within the project area (Self et al. 2008).

According to Steward (1997), Western Shoshone territory abutted the "Ute in the Sevier Desert of Utah, at Utah Lake, and, in northeastern Utah...separated from them by the Uintah Mountains, which run east and west." The larger Western Shoshone territory extended from Death Valley, California through central Nevada into northwestern Utah. Two groups of Western Shoshone, the Goshute, that inhabited the Tooele and Skull valleys and Deep Creek, and the Weber Ute, actually a Shoshone band (also known as Cumumba), that inhabited the Salt Lake Valley have traditional territories within the project area. There is very little information about the Weber Ute as a distinct group, other than they lived along the Weber River. Steward (1997) believed that Shoshone bands completely encircled the Great Salt Lake, but early records were confusing as to who these people were, especially those groups living east of the lake in the Salt Lake Valley (Self et al. 2008).

Historic Context

The territory that is now the State of Nevada was once part of the area claimed by the Spanish empire. The first known Spanish expedition to enter the area was that of Father Francisco Garcés in 1776, who left from Sonora to Los Angeles in order to establish a route from Santa Fe, New Mexico, to Monterey, California. Using Mohave guides, he followed portions of the ancient trading route known as the Old Mohave Trail. The expedition travelled near or inside the southernmost part of Nevada. This trail, which follows the course of the Mojave River, became the western portion of the Old Spanish Trail that eventually linked Santa Fe to Los Angeles (McBride 2002). Another expedition in 1776 was led by Fathers Francisco Dominguez and Francisco Escalante from Santa Fe, who also hoped to find a route to Monterey. They wandered though large portions of Utah and then returned east to Santa Fe. Parts of their route were later incorporated into the Spanish Trail (Malouf and Malouf 1945; McBride 2002). (Self et al. 2008)

New Mexican traders were operating in Ute territory before 1776, and the impacts of the slave trade were experienced by the Southern Paiute (Malouf and Malouf 1945). The Southern Paiute were raided directly by New Mexicans once they opened the Spanish Trail to California in 1829-1830, eliminating any middlemen in the trade. Indian slave trade along the Old Spanish Trail can be documented up through the 1850s (Malouf and Malouf 1945). (Self et al. 2008)

In 1829 and 1830, Antonio Armijo led the first pack train from Santa Fe to Los Angeles via the Las Vegas Valley. Armijo, who was a mule trader from Mexico, is credited with establishing the route through southwestern Utah to California across southern Nevada, which became the Old Spanish Trail. Armijo's route entered Utah southeast of St. George then traveled northwesterly through the small community before heading west to Santa Clara. From there, the route turned south and left Utah at a point near Beaver Dam Wash. From Beaver Dam Wash, the route turned southwesterly, passing through the Las Vegas Valley and then on to California (Hafen 1948). (Self et al. 2008)

The U.S. Corps of Topographical Engineers, led by John C. Fremont, produced a map in 1844 that depicted the Spanish Trail and was responsible for popularizing the trail (Mitchell 1845; McBride 2002 in Self et al. 2008).

The Old Spanish Trail was a pack trail that linked northern New Mexico with Los Angeles by way of northern Utah and southern Nevada or northern Arizona, depending on the route selected. The last large trading caravan to travel the Spanish Trail set out from Santa Fe in the fall of 1847 (Self et al. 2008).

Most emigrants travelling to California in the 1840s and 1850s followed the California Trail, which went along the Humboldt River in northern Nevada, but during the harsh winter months some chose the Old Spanish Trail. The first party of emigrants to use it was the Workman-Rowland party in 1841 (Hafen 1948). The misfortune of the Donner Party in 1846-1847 gave the more southerly Spanish Trail greater appeal (Caughey 1937). Prior to 1848 only one wagon train had used the Spanish Trail to Los Angeles, that being in 1838 (McBride 2002). In 1847, when Brigham Young ordered a party to go to California to purchase seeds and cattle, Jefferson Hunt and 18 men formerly of the Mormon Battalion travelled to Los Angeles by way of Las Vegas, following the Old Spanish Trail a portion of the way (Hunter 1939). Following the trail made by Hunt’s livestock, came another group of Mormon Battalion men mustered out of service at Los Angeles. They brought with them 135 mules and one wagon, the first Mormon wagon to use the “Mormon Road” (Hunter 1939). Hunt made another trip to California in early October 1849, guiding a company heading for the gold fields. It was really this trip that established the route as a suitable wagon road (Self et al. 2008).

In Mid-November 1849 another Mormon party led by Howard Egan left Provo (Fort Utah) following Hunt’s trail. With a detailed account of distances, watering places, feed and suitable campgrounds, Egan’s journal was published and became a guide for future travelers. Hereafter, the Mormon Road became established as a safe route to California for emigrants for later season travelers (Caughey

1937). The trail was also employed repeatedly for sheep drives to California and for the next twenty years was the only year-round road from Salt Lake City to the coast. As a result, it became an important route for freighters and hundreds of wagons a year were making the long trek between San Pedro/Los Angeles and Salt Lake City in the 1850s (Caughey 1937). (Self et al. 2008)

In March 1852, due to harsh weather on its usual, more northerly route, the United States mail used the road for the San Francisco to Salt Lake mail (Hafen 1926). This was then adopted as the regular winter route for the mail until 1854. From 1854 to mid-1858 the Mormon Road became the year-round route for the mail. However, by the 1860s the United States' acquisition of southern Arizona provided a shorter route to southern California from the east, while the completion of the transcontinental railroad through northern Nevada to California in 1869, made the freight road to the south virtually obsolete (Self et al. 2008).

The road from Salt Lake City to Los Angeles, which had its heyday as the Old Spanish Trail between 1830 and 1840, and became a significant freight route as the Mormon Road in the 1850s, became virtually obsolete with the completion of the transcontinental railroad in 1869. The completion of the Southern Pacific's southern transcontinental line through Tucson in 1880 completed the demise of the road for large-scale freighting. The last major railroad route to be built in the American West was the line from Salt Lake City to Los Angeles, commonly referred to as the Salt Lake Route. In 1880, the Union Pacific applied for a right-of-way across Nevada so that its Nevada Pacific subsidiary could continue construction of the railroad from Salt Lake City to Barstow, California. The Utah Southern Railroad Extension, another UP subsidiary, had built the line as far as Milford, Utah by 1880, and by 1881 the grade had been completed as far as Uvada on the Utah-Nevada state line; however, at this time work stopped due to lack of money. In Nevada, the grade between Uvada and Caliente (called Culverwell at the time) had been partially completed and six tunnels had been built. In 1883, the UP was put into receivership and the grade was abandoned. In 1894, Lincoln County, Nevada repossessed the Uvada to Caliente portion and placed it on sale for back taxes (Hill et al. 1991). (Self et al. 2008)

Recognizing a need and the potential advantages of constructing a more direct, all-weather route between Salt Lake City and Los Angeles, businessman and U.S. Congressman William A. Clark from Montana proposed and promoted the connection in the 1890s (Hill et al. 1991). In addition to connecting the two major population and trade centers, the envisioned route would be instrumental in the establishment of Las Vegas and bringing an end to the relative isolation of a vast, empty desert landscape, including portions of the Great Basin and Mojave Desert. In 1899, a revitalized UP under E.H. Harriman chartered the Utah, Nevada and California railroad to construct lines across Nevada from Uvada to the California state line, claiming the grade abandoned 18 years earlier. However, the rival Southern Pacific then threatened to build its own line if the UP went ahead, and stalemate ensued (Hill et al. 1991). (Self et al. 2008)

Senator Clark purchased the Los Angeles Terminal Railway in 1900 and began surveys for an independent railroad to Salt Lake City. On March 20, 1901, Clark formed the San Pedro, Los Angeles, and Salt Lake Railroad Company (SP, LA, & SL RR), folding his other company into it. Construction on the line began in the San Pedro and Los Angeles areas. Construction on the Utah end of the line could not begin, however, because of disputes over the ownership of rights-of-way between E. Harriman of the Union Pacific and Clark. In July 1902, Clarke agreed to sell a half-interest in the SP, LA, & SL in return for all Union Pacific properties south of Salt Lake City (Hill et al. 1991). (Self et al. 2008)

When the railroad construction reached the Las Vegas Valley in 1900, the area supported only 30 residents. The railroad company planned to develop railroad shops, a depot, and railroad worker housing in the area. In summer 1902, Helen Stewart, widow of Archibald Stewart, sold 1,836 acres of the former Las Vegas Ranch to the SP, LA, & SL Railroad for $55,000. Walter Bracken, the railroad representative lived and worked at the ranch while a substantial portion was surveyed, subdivided and sold at auction on May 15, 1905. The auction is considered the official founding of the City of Las Vegas. The ranch house was used as housing for railroad employees, but in 1905, Harry R. Beale began the conversion of the house and it surroundings into a restaurant and resort – its use for the next 50 years (Schoenwetter and Hohmann 1997). (Self et al. 2008)

A large workforce was needed to construct the railroad. It was reported that "all desiring employment can obtain it from the contractors. There are [is] work for a large number of men and teams" (Blair et al 2001). The construction force was ethnically diverse. "Several carloads of Spaniards were shipped from the north during the week to work for the U. C. Co. [Utah Construction Company]" (Blair et al. 2001). Mexicans were hired in California to build the railroad from Daggett toward Nevada. The UCC completed the first 85 miles of grade construction to the south before the contracted completion date of July 1, 1904, and so it was awarded the contract for the next 85 miles beyond Moapa. In March, 1904, work was progressing from four locations: from Caliente south; from Daggett north; and north and south from (modern) Ivanpah, near the California/Nevada state line. Trains were running nightly between Caliente and Moapa with construction related passengers and freight. Most of the grading to Las Vegas was completed in May and the rails reached there in mid-October, as construction continued south toward California (Blair et al. 2001). (Self et al. 2008)

In 1905, the SP, LA, & SL RR began running its train(s) between Salt Lake City and Los Angeles (Robertson 1998). The railroad route across southern Nevada included stops at Crestline, Pioche, Caliente, Moapa, Las Vegas, and Jean (Robertson 1998). Originally an independent railroad, by 1911 it had become a subsidiary of the UP in the Interstate Commerce Commission Statistics (Robertson 1998). During the line’s early operations, it was realized that constructing the tracks in the flood zone of Meadow Valley Wash south of Caliente was a costly mistake, as several floods washed away significant parts of the line. Between 1911 and 1912, 68 miles of track in Clover Creek Canyon and Meadow Valley Wash were reconstructed on a higher alignment (Hill et al. 1991). On August 25, 1916, the company changed names to the Los Angeles & Salt Lake Railroad Company, due to the annexation of San Pedro by the growing city of Los Angeles, which seized San Pedro to be its port (Robertson 1998). In 1921 the UP acquired Clark’s half interest in the LA &SL RR and became an integral part of the UP system, even though the LA & SL continued to exist on paper until 1987 (Hill et al. 1991, Utah Rails 2007). (Self et al. 2008)

3.12.3.3. Results of Record Search

More than 700 sites have been previously recorded, and 507 previous surveys have been conducted in the project area. Information gathered from previous cultural resource surveys undertaken in the area provide data regarding expected site types and densities. Further, this information identifies those areas not subject to previous study, for which recorded site information was lacking, and provides a solid research base from which to assess site significance and research issues within a region. (Self et al. 2008).

3.12.3.4. Results of Field Surveys

Pedestrian archaeological surveys were conducted according to the provisions agreed to in the PA. Inventories began in November 2006 and will continue as new areas/reroutes are identified. As described above, the APE consisted of either a 150- or 250-foot-wide analysis area. All previously recorded sites or site locales within the APE were revisited, and sites re-recorded in the event their integrity had changed since the time they were last documented. All new sites were recorded. A total of 323 sites were located within the project APE, of which 192 were previously recorded and 131 are newly recorded (Self et al. 2008).

Surveys in Utah and Nevada also resulted in the discovery of many isolated artifacts or ‘isolates’. Isolated artifacts were noted as required by the protocol in each state. Generally, isolates are not considered eligible for NRHP listing; therefore, they are not considered further in the NHPA Section 106 process beyond their initial recording. Surveys resulted in the recording of 380 isolates along the UNEV survey analysis area; 121 are historic isolates, 244 are prehistoric isolates, and 15 consist of both historic and prehistoric isolates (Self et al. 2008). None of these meet the requirements to be considered eligible to the NRHP.

A total of 282 cultural sites have been recorded within the surveyed areas of the UNEV pipeline project area in Utah. Final determinations of eligibility by the BLM and Utah SHPO have not yet been made on these sites. The professional recommendation of UNEV's cultural resources consultant on site eligibility, which could differ from that of the BLM and SHPO, is as follows: 147 sites are recommended to be eligible for NRHP listing, 135 sites are recommended ineligible. (Self et al. 2008)

A total of 64 cultural resource sites have been recorded within the surveyed areas of the UNEV pipeline project area in Nevada. Final determinations of eligibility by the BLM and Nevada SHPO have not yet been made on these sites. The professional recommendation of UNEV's cultural resources consultant on site eligibility, which could differ from that of the BLM and SHPO, is as follows: 10 sites are recommended to be eligible for NRHP listing, and 54 sites are recommended ineligible. (Self et al. 2008)

The following is a summary of the 157 cultural resource sites encountered within the APE that are recommended or previously determined eligible for listing in the NRHP.

Utah

<u>Davis County</u>

No cultural resource sites were encountered along the project APE within Davis County.

<u>Salt Lake County</u>

- **Historic.** 12 **-** 1 habitation site; 3 railroads; 5 canals; 5 drains and 1 artifact/refuse scatter.
- **Airport Lateral.** No cultural resources were identified along the Airport Lateral.

<u>Tooele County</u>

- **Prehistoric.** 4 – 4 flaked stone artifact scatters.
- **Prehistoric/Historic.** 3 **-** 3 prehistoric/historic artifact scatters.
- **Historic.** 16 **-** 4 railroads; the Pony Express Route/Overland Stage; 1 canals; 2 military surplus yards; 1 transmission line; 1 telegraph line; 1 foundation/refuse scatter; 2 stations; 1 tramway; and 2 historic roads.

<u>Juab County</u>

- **Prehistoric.** 1 **-** flaked stone artifact scatter.
- **Prehistoric/Historic.** 1 **-** historic camp artifact scatter /prehistoric lithic scatter.
- **Historic.** 2 **-** Jericho CCC Camp; and 1 railroad grade spur and 1 historic road.

<u>Millard County</u>

- **Prehistoric.** 20 **-** 19 artifact scatters; and 1 petroglyph site.
- **Prehistoric/Historic.** 3 – 3 flaked stone/historic refuse.
- **Historic. 8 -** Goss Station; 3 railroads; Clear Lake townsite; 1 ranch site; 1 highway; and 1 foundation with associated historic refuse.

<u>Beaver County</u>

- **Prehistoric.** 8 - 8 artifact scatters.
- **Prehistoric/Historic.** 2 - 2 flaked stone and historic refuse artifact scatter.
- **Historic.** 4 - 1 foundation with associated historic refuse; 1 railroad; 1 homestead; and 1 habitation site.

<u>Iron County</u>

- **Prehistoric.** 10 - 10 artifact scatters.
- **Prehistoric/Historic.** 1 - 1 flaked stone and historic refuse artifact scatter.
- **Historic.** 4 - 1 foundation with associated historic refuse; 2 artifact/refuse scatters; and Newcastle dump.
- Cedar City Lateral - The results of the record search for the Cedar City Lateral identified no previously recorded sites. The subsequent field survey recorded 1 historic property recommended eligible for listing in the NRHP.

<u>Washington County</u>

- **Prehistoric.** 41 - 34 artifacts scatters; 1 rock ring feature site; 4 thermal feature sites; 1 quarry and rockshelter.
- **Prehistoric/Historic.** 1 – 1 flaked stone and historic refuse artifact scatter.
- **Historic.** 5 - Hamblin cemetery; Mountain Meadows Massacre site; the Old Spanish Trail/Mormon Road; Hamblin townsite; and 1 historic road.

Nevada

<u>Lincoln County</u>

- Prehistoric. 1 – 1 artifact scatter.

<u>Clark County</u>

- **Prehistoric.** 5 - 2 artifact scatters; 2 lithic reduction stations; and the Black Dog Mesa Archaeological Complex.
- **Historic.** 4 – 2 railroads; the Old Spanish Trail/Mormon Road; 1 historic road with associated refuse.

3.12.4. Existing Conditions for Alternatives

3.12.4.1. Airport Alternative Route

The results of the record search for the Airport Alternative Route identified 13 previously recorded sites. The subsequent field survey recorded 3 cultural resource sites; of those 2 sites are recommended or previously determined eligible for listing in the NRHP and 1 site appears ineligible.

3.12.4.2. Tooele County Alternative Route

The results of the record search for the Tooele County Alternative Route identified 8 previously recorded sites. The subsequent field survey recorded 14 cultural resource sites, all of which are recommended or previously determined eligible for listing in the NRHP.

3.12.4.3. Rush Lake Alternative Route

The results of the record search for the Rush Lake Alternative Route identified 1 previously recorded site. The subsequent field survey recorded 1cultural resource sites, which is recommended as eligible for listing in the NRHP.

3.12.4.4. Millard County Alternative Route

The results of the record search for the Millard County Alternative Route identified 32 previously recorded sites. The subsequent field survey recorded 18 cultural resource sites; of those 11 sites are recommended or previously determined eligible for listing in the NRHP and 7 sites appear ineligible.

3.13. Native American Concerns

3.13.1. Area of Analysis

The following 12 Tribal governments and associated cultural resource departments were identified for consultation with Tribes having cultural and religious ties to the proposed project area lands:

- Hopi Tribal Council and Hopi Cultural Preservation Office
- Kaibab Paiute Tribe
- San Juan Southern Paiute Council
- Pahrump Paiute Tribe
- Las Vegas Paiute Tribe
- Moapa Band of Paiutes
- Shoshone-Bannock Tribes
- Confederated Tribes of Goshute Reservation
- Northwestern Band of Shoshone Nation
- Paiute Indian Tribe of Utah
- Skull Valley Band of Goshute Indians
- Uintah and Ouray Tribal Business Committee and Uintah and Ouray Cultural Rights and Protection Department (CH2MHill 2008k).

3.13.2. Data Sources and Methods

On June 15, 2007, the BLM Utah State Office mailed certified notification letters, a project summary, and a project location map to the 12 Tribal governments and associated cultural resource departments (CH2MHill 2008k).

The goals of Tribal contact for the proposed project were to notify Tribal authorities of the BLM's intent to prepare an EIS for the ROW application and to identify and document traditional values associated with these types of properties in accordance with various federal environmental laws (CH2MHill 2008k).

3.13.3. Existing Conditions

Native American Consultation

Ethnographic literature and Tribal consultation reports for past projects on federal lands were reviewed to determine the presence of these types of properties within a 2-mile analysis area, known as the APE. The literature review and direct communication with BLM field office archaeologists did not result in the identification of existing sacred sites or traditional cultural properties within the APE. However, various site types, such as large mountain ranges, valleys, waterways, and archaeological sites within the APE, were identified in past reports as ethnographic localities that may potentially have cultural significance to Tribal populations today (CH2MHill 2008k).

As the BLM proceeds with Tribal consultation, field visits, and meetings with interested Tribal representatives, currently unknown sacred sites and traditional cultural properties within the proposed project analysis area could be identified (CH2MHill 2008k).

3.14. Socioeconomics and Environmental Justice

3.14.1. Area of Analysis

The pipeline would originate in Davis County, Utah and cross Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington counties in Utah. In Nevada, it would cross Lincoln County and terminate in Clark County (CH2MHill 2008l). Because of the linear nature of the project it is anticipated that workers, both local and non-local, will be commuting some distance to the work site. Therefore the economic analysis is based on county and state conditions.

3.14.2. Data and Methods

Data for this section came from three primary sources: the U.S. Department of Commerce, Census Bureau, the State of Utah web site and the State of Nevada web site. Wherever possible the data were put into tables to allow for easy comparison among the jurisdictions that would be crossed by the pipeline. With few exceptions data was for state and county levels; this was because the linear nature of the project would spread the impacts over the total length of the 409-mile long analysis area in which construction workers would move with the project. Thus impacts would not be concentrated in any one location for very long.

3.14.3. Existing Conditions

3.14.3.1. Population, Economy, and Employment

The pipeline route goes through both rapidly growing urban counties and stagnant rural counties in Utah and Nevada. In Utah, Davis, Salt Lake, and Tooele counties are influenced by the rapid growth of Salt Lake City, while Iron and Washington counties are growing with Cedar City and St. George, respectively. Juab County’s growth is due to Nephi’s growing use as a bedroom community for Provo and Orem by way of I- 15. Beaver and Millard counties remain rural and relatively stagnant, with population densities of 2.4 and 1.8 people per square mile (**Exhibit 3.14-1**); Salt Lake County, by comparison, has 1,211.6 people per square mile for the same period. The two counties the pipeline will cross in Nevada are opposite ends of the population and economic spectrum, with Lincoln County experiencing moderately rapid growth based primarily on its proximity to Las Vegas, but still having on 0.4 people per square mile, while Clark County grew 29.2 percent between 2000 and 2006, with a population density of 219.7 people per square mile (**Exhibit 3.14-1**).

Exhibit 3.14-1 Population

State/County	Population 2000 (Census 2000)	Population 2006 (Census Bureau Estimate)	Percentage Change	Population Density 2006 (People per sq. mi)
Utah	2,233,169	2,550,063	14.2	30.0

State/County	Population 2000 (Census 2000)	Population 2006 (Census Bureau Estimate)	Percentage Change	Population Density 2006 (People per sq. mi)
Beaver	6,005	6,294	4.8	2.4
Davis	238,994	276,259	15.6	435.9
Iron	33,779	40,544	20.0	12.3
Juab	8,238	9,420	14.3	2.8
Millard	12,405	12,390	-0.1	1.8
Salt Lake	898,387	978,701	8.9	1,211.6
Tooele	40,735	53,552	31.5	7.3
Washington	90,354	126,312	39.8	52.0
Nevada	1,998,257	2,495,529	24.9	22.6
Clark	1,375,765	1,777,539	29.2	219.7
Lincoln	4,165	4,738	13.8	0.4

Source: U.S. Department of Commerce, Bureau of Census 2000

Exhibit 3.14-2 shows employment and income statistics for the two states and ten counties through which the pipeline would be routed. The data reflect the relatively low unemployment rates in 2006 for Utah, generally less than three percent, and moderate unemployment rates for Nevada for the same period. Per capita income through the analysis area varies from $20,789 in Iron County to $31,990 in Salt Lake County.

Exhibit 3.14-2 Employment and Income

State/County	2005 Per Capita Income ($)	2006 Labor Force	2006 Employed	2006 Unemployment Rate
Utah	27,321	1,311,073	1,272,801	2.9
Beaver	28,362	3,095	3,002	3.0
Davis	28,776	138,773	134,783	2.9
Iron	20,789	20,754	20,170	2.8
Juab	20,957	4,052	3,907	3.6
Millard	23,066	6,179	5,997	2.9
Salt Lake	31,990	532,282	517,060	2.9
Tooele	22,215	25,888	25,055	3.2
Washington	22,565	61,128	59,369	2.9
Nevada	35,744	1,295,085	1,240,868	4.2
Clark*	21,785	682,073	637,339	6.6
Lincoln	22,150	1,618	1,544	4.6

* U.S. Department of Commerce, Bureau of Census, 2000 Census

3.14.3.2. Housing

Exhibit 3.14-3 presents housing statistics for counties that would be crossed by the proposed pipeline. Lincoln and Clark counties in Nevada have lower median values for owner-occupied housing than the State of Nevada average. The median rents for these two Nevada counties vary compared to the state average. Except for Davis and Salt Lake counties, the median values for owner-occupied housing and median rents for counties in Utah are lower than the State of Utah average (CH2MHill 2008l).

Temporary housing availability varies seasonally and geographically within the counties and the communities that would be crossed by the pipeline. Temporary housing is available in the form of daily, weekly, and monthly rentals in motels, hotels, campgrounds, and rooming houses. Along the southern portion of the route, temporary housing is least available during the winter when residents of northern states come to take advantage of the warmer weather. Demand for temporary housing is less during the hot summer months (CH2MHill 2008l).

Exhibit 3.14-3 2000 Housing Characteristics in Affected Counties

State/County	Owner Occupied (percent)	Renter Occupied (percent)	Housing Units	Median Gross Monthly Rent	Owner Vacancy Rate (percent)	Rental Vacancy Rate (percent)
Utah	71.5	28.5	768,594	$597	2.1	6.5
Beaver	79.0	21	2,660	$490	4.8	19.5
Davis	77.5	22.5	74,114	$637	2.0	5.6
Iron	66.2	33.8	13,618	$468	4.1	7.0
Juab	79.8	20.2	2,810	$501	2.3	3.3
Millard	79.7	20.3	4,522	$388	2.8	7.7
Salt Lake	69.0	31	310,988	$638	1.6	6.4
Tooele	78.4	21.6	13,812	$532	2.9	13.2
Washington	73.9	26.1	36,478	$594	3.8	7.3
Nevada	60.9	39.1	827,457	$699	2.6	9.7
Clark	59.1	40.9	559,799	$716	2.6	9.7
Lincoln	75.1	24.9	2,178	$328	4.0	9.2

Source: U.S. Department of Commerce, Bureau of the Census, 2000 Census of Population and Housing, STF3A Files (www.census.gov) in CH2MHill 2008l.

3.14.3.3. Tourism

In 2006 19,300,000 people visited Utah and spent $5,908,000,000. This resulted in the following revenues (State of Utah 2008):

- Total state and local tax revenues from traveler spending of $568,000,000
- $24,400,000 from the transient room tax
- $29,000,000 from the restaurant tax
- $15,300,000 from the car rental tax, and

- $44,747,000,000 in gross taxable retail sales

Utah Office of Tourism statistics show that the average visitor stays 3.16 nights and spends $83/per person per day (Williams 2008).

Exhibit 3.14-4 shows RV spaces within 25 miles of each of the seven construction spreads. The table was taken from American Automobile club (AAA) camping directories, and may not show all available spaces. The RV spaces include both public and private sites; public sites (e.g., state and federal parks) typically limit the number of nights people can stay.

Exhibit 3.14-4 RV Spaces Within 25 Miles of Construction Spreads

Within 25 Miles of: Town	Spread One	Spread Two	Spread Three	Spread Four	Spread Five	Spread Six	Spread Seven
Salt Lake City	610						
Tooele	14	14					
Vernon		14					
Nephi		129	129				
Levan		26	26				
Oak City		8	8				
Delta			96	96			
Fillmore				104			
Beaver				214	214		
Parowan					36		
Cedar City					282	282	
Kanarraville					14	14	
Enterprise					21	21	
Leeds						10	
Hurricane						170	
Saint George						333	
Santa Clara						30	
Mesquite						234	234
Overton							51
Las Vegas							1,312

Source: AAA 2008 Edition Southwestern Campbook (2008a) & AAA 2008 Edition California & Nevada Campbook (2008b)

Exhibit 3.14-5 shows hotel/motel occupancy rates for Utah and for Las Vegas, Nevada. The State of Nevada has approximately 180,000 hotel and motel rooms, of which 133,186 were in Las Vegas and 2,682 were in Mesquite (Nevada Commission on Tourism 2008a). The table gives a general idea of seasonality in vacancy rates highest during winter.

Exhibit 3.14-5 Hotel and Motel Occupancy Rates

Month	Percent Occupancy, Utah, 2006	Percent Occupancy, Las Vegas, Nevada, 2005
January	61.1	83.2
February	69.1	89.7
March	77.9	94.5
April	66.1	93.3
May	62.5	91.3
June	75.9	91.2
July	73.2	91.9
August	79.6	88.7
September	72.4	88.3
October	68.5	89.5
November	57.4	86.3
December	55.3	82.5
Annual	68.3	89.2

Sources: Utah Travel Commission 2008
Nevada Commission on Tourism 2008b

3.14.3.4. Public Services

A wide range of public services and facilities is offered at intervals along or near the proposed pipeline route, with concentrations of services in Salt Lake City, Stockton, Delta, Milford, Beaver, Cedar City, and St. George, Utah; and in Mesquite and North Las Vegas, Nevada. Where services are not available at the local level, they are available from the county. Services and facilities include law enforcement agencies, fire departments, hospitals, emergency response services, and public works/water treatment/waste disposal departments. Each county that would be crossed by the pipeline provides law enforcement officers and fire service stations. All counties that would be crossed by the pipeline have hospitals (CH2MHill 2008l).

3.14.3.5. Property Values

Exhibit 3.14-6 shows assessed property values for the states and counties through which the pipeline would be located, as well as assessed value for pipelines and gas utilities and tax receipts for those property tax classes. For the State of Utah, pipelines and gas utilities account for approximately 1.2 percent of the total assessed value of the State (less vehicles), and tax receipts for pipelines and gas utilities for 2006 were approximately 1.1 percent of their assessed value or $19,978,191. This represents approximately 1.1 percent of property tax receipts for the State for 2006. For Clark County, Nevada, pipeline represented 0.13 percent of total valuation.

Exhibit 3.14-6 Total Assessed Property Value and Receipts 2006

State/County	Total Assessed Value (less vehicles) ($)	Total Receipts, Property Tax ($)	Assessed Value Pipeline & Gas Utilities ($)	Total Receipts, Pipeline and Gas Utility Property Tax ($)
Utah	154,663,248,988	1,846,094,671	1,859,630,460	19,978,191
Beaver	477,173,092	5,451,264	63,352,176	714,335
Davis	12,009,355,126	145,863,740	77,659,739	924,493
Iron	3,406,222,582	33,170,540	102,729,089	840,231
Juab	632,041,801	7,882,646	63,596,322	740,468
Millard	1,811,539,993	18,910,078	151,717,237	1,525,302
Salt Lake	62,686,175,028	834,038,865	359,312,409	4,870,712
Tooele	2,809,083,747	27,047,407	10,635,230	128,790
Washington	10,142,977,812	91,196,482	154,979,716	1,214,494
Nevada[1]			331,392,900	
Clark	248,966,163,803	2,644,578,002	191,760,741	
Lincoln	NA	NA	NA	

[1] Fiscal Year Ending June 2007; taxable value, which, in Nevada, is based on market value – the opposite of Utah.

3.14.3.6. Tax Revenue

Exhibit 3.14-7 shows total tax revenues for jurisdictions through which the pipeline would traverse. Different levels of jurisdiction fund government through different sources, as provided by the state legislatures. Nevada, for example, has no income tax, and Utah's income tax funds state government but is not shared with local governments. The complexities of taxation schemes from state to state and between states and their counties defy simple comparisons. However, the taxes that are most likely to be paid by construction workers on a relatively short-term project would be sales taxes, resort taxes, and transient room taxes. Estimates of proceeds from these taxes were not readily available.

Exhibit 3.14-7 Tax receipts by Jurisdiction in 2006

State/County	Sales and Use Tax ($)	Total Receipts ($)	Income Tax ($)	Local Option Sales Tax3 ($)
Utah[1]	1,806,264,423	5,129,572,489	2,286,705,518	415,904,148
Beaver				729,507
Davis				37,638,468
Iron				5,989,921
Juab				1,213,528
Millard				1,694,049
Salt Lake				171,843,710
Tooele				6,486,740

State/County	Sales and Use Tax ($)	Total Receipts ($)	Income Tax ($)	Local Option Sales Tax3 ($)
Washington				21,514,449
Nevada[2]	985,035,972	4,706,110,824		
Clark	726,592,254	12,228,463,533		
Lincoln	595,875	30,243,364		

[1] State sales tax

[2] Fiscal Year Ending June 2006

[3] Includes county, and cities and towns within the county

3.14.3.7. Environmental Justice

This section was prepared in compliance with Presidential Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898), dated February 11, 1994, and Title VI of the Civil Rights Act of 1964. The purpose of this section is to provide baseline information for determining if the proposed project would have disproportionately high and adverse human health or environmental effects on minority and/or low-income populations. This analysis focuses on the populations located within the area potentially affected by the proposed project. In accordance with EO 12898, this analysis documents minority and low-income populations within Utah and Nevada counties that would be crossed by the proposed pipeline (CH2MHill 2008l).

EO 12898, issued by President Clinton in 1994, requires that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…" Title VI of the Civil Rights Act of 1964 states that "No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." (CH2MHill 2008l)

Both EO 12898 and Title VI address persons belonging to the following target populations:

- **Minority.** All people of the following origins: Black, Asian, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander, and Hispanic
- **Low income.** Persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines (CH2MHill 2008l).

Exhibit 3.14-8 presents information on low-income and minority distributions in the Utah and Nevada counties that would be crossed by the proposed pipeline. Most of the affected counties in Utah have lower Native American populations than the state average with the exception of Tooele, Iron, and Washington counties; the percentage of Native Americans in Iron County is 1.7 times the statewide percentage, and the percentage of Native Hawaiians or other Pacific Islanders in Salt Lake County is 1.7 times the statewide percentage. Salt Lake and Tooele counties are the only counties with a higher percentage of Hispanics than the state average. Half of the eight Utah counties that would be crossed by the pipeline have higher percentages of households receiving public assistance than the state average. In Juab County, the percentage of families with public assistance income is more than double the statewide percentage of 3.1 percent. Iron County has 19.2 percent of its population living below the poverty level, which is almost double the statewide percentage of 9.4. Davis and Salt Lake counties are the only counties that would be crossed in Utah with higher median family incomes than the state average (CH2MHill 2008l).

Nevada's Lincoln County has a higher percentage of Native Americans than the state average, while Clark County has a lower percentage than the state average. Lincoln County has a much lower percentage of Hispanics than the state average, and Clark County has a higher percentage of Hispanics than the state average (CH2MHill 2008l). An analysis of the data in **Exhibit 3.14-8** reveals that Lincoln County has more than twice the percentage of households with public assistance income as the statewide percentage of 2.3, and 1.6 times the statewide percentage (10.5 percent) of people living below the poverty level.

Exhibit 3.14-8 Environmental Justice Statistics for Counties that Would be Crossed by the Proposed Pipeline Project

State/County	Racial/Ethnic Group, 2000 (percent)							Persons of Hispanic or Latino Origin*	Households with Public Assistance Income (2000)	Median Family Income (1999)	Persons Below Poverty (1999)
	White	Black	Native American and Alaskan Native Persons	Asian	Native Hawaiian and Other Pacific Islander	Persons Reporting Some Other Race	Persons Reporting Two or More Races				
Utah	89.2	0.8	1.3	1.7	0.7	4.2	2.1	9.0	3.1%	51,022	9.4%
Beaver	93.2	0.3	0.9	0.6	0.1	3.1	1.8	5.5	4.0%	39,253	8.3%
Davis	92.3	1.1	0.6	1.5	0.3	2.3	2.0	5.4	2.9%	58,329	5.1%
Iron	93.0	0.4	2.2	0.7	0.3	1.8	1.7	4.1	3.9%	37,171	19.2%
Juab	96.6	0.1	1.0	0.3	0.0	0.9	1.0	2.6	6.6%	42,655	10.4%
Millard	93.9	0.1	1.3	0.5	0.2	2.8	1.2	7.2	5.1%	41,797	13.1%
Salt Lake	86.3	1.1	0.9	2.6	1.2	5.4	2.6	11.9	3.0%	54,470	8.0%
Tooele	89.2	1.3	1.7	0.6	0.2	4.5	2.6	10.3	3.0%	50,438	6.7%
Washington	93.6	0.2	1.5	0.4	0.4	2.2	1.6	5.2	3.0%	41,845	11.2%
Nevada	75.2	6.8	1.3	4.5	0.4	8.0	3.8	19.7	2.3%	50,849	10.5%
Clark	71.6	9.1	0.8	5.3	0.5	8.6	4.2	22.0	2.4%	50,485	10.8%
Lincoln	91.5	1.8	1.8	0.3	0.0	2.7	1.9	5.3	5.0%	45,588	16.5%

* People who identify their origin as Spanish, Hispanic, or Latino may be of any race. Thus, the percent Hispanic should not be added to percentages for racial categories.

Source: U.S. Department of Commerce, Bureau of the Census, 2000 Census of Population and Housing (www.census.gov accessed June 26, 2007) in CH2MHill 2008l.

3.15. Hazardous and Solid Waste

3.15.1. Area of Analysis

Potential or existing environmental liabilities or concerns were identified near the proposed pipeline route traversing portions of the States of Utah and Nevada. The pipeline would originate near an existing refinery complex in Davis County, Utah and cross Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington counties in Utah. In Salt Lake County a 10-inch lateral pipeline would service the Salt Lake City Airport. In Iron County an 8-inch lateral pipeline would run to the proposed Cedar City Terminal. In Nevada, the proposed route would cross Lincoln County and terminate in Clark County. The search radii for hazardous and solid waste varied from 0.25 to 1.0 mile from the proposed pipeline route (see **Exhibit 3.15-1**).

3.15.2. Data and Methods

To evaluate potential sources of hazardous and solid waste in proximity to the proposed pipeline route, InfoMap Technologies, Inc. conducted a search of available federal and state databases along the mainline route and lateral using a variety of databases (see **Exhibit 3.15-1** below). The proposed pipeline route was provided to InfoMap Technologies, Inc. in a GIS shape file (Revision K, May 5, 2007). InfoMap Technologies divided the 399-mile-long proposed pipeline route into 11 sections ranging in length from 13 to 93 miles in order to create 11 smaller report files (CH2MHill 2008m).

The American Society for Testing and Materials (ASTM) standard *E1527-05 Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process* was applied to the search. The federal and state databases, search radii, and date of updates are included in **Table 3.15-1**. This technical report summarizes results of the 11 Environmental FirstSearch™ Reports (CH2MHill 2008m).

Exhibit 3.15-1 Database, Search Radii, and Updates for Selected Databases

Database	Search Radius (mile)	Updated
National Priorities List (NPL)	1.00	03/08/2007
NPL Delisted	0.50	03/08/2007
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	0.50	03/08/2007
No Further Remedial Action Planned (NFRAP)	0.50	03/08/2007
Resource Conservation and Recovery Act Information System Sites (RCRA COR ACT)	1.00	06/062006
Resource Conservation and Recovery Act Treatment, Storage, and Disposal Facilities (RCRA TSD)	0.50	06/06/2006
Resource Conservation and Recovery Act Generator (RCRA GEN)	0.25	06/06/2006
Brownfield Management System (Federal IC/EC)	0.25	05/02/2007
Emergency Response Notification System (ERNS)	0.25	12/31/2006
Tribal Lands	1.0	12/01/2005
State/Tribal Sites	1.0	06/15/2006

Database	Search Radius (mile)	Updated
State Spills 90	0.25	Not Applicable
State/Tribal Solid Waste Facility Inventory (SWL)	0.50	05/01/2003
State/Tribal Leaking Underground Storage Tank (LUST)	0.50	01/02/2007
State/Tribal Registered Underground Storage Tanks/Aboveground Storage Tanks (UST/AST)	0.25	01/02/2007
State/Tribal EC/IC	0.25	Not Applicable
State/Tribal Voluntary Cleanup Program (VCP)	0.50	06/15/2006
State/Tribal Brownfields	0.50	06/15/2006

Source: CH2MHill 2008m

In addition to the database search, aerial photographs of the proposed pipeline route were visually inspected by InfoMap Technologies to identify facilities along the route, especially in the more rural and undeveloped areas of the route. The type of facility was determined where possible, and the potential for the presence of hazardous or solid waste sites was assessed. The proximity of the northernmost portion of the currently proposed pipeline route (Revision L, October 10, 2007) to the Bauer Dump and Tailings site in Tooele County, the site of most significant concern identified in the project area, is noted (CH2MHill 2008m).

3.15.3. Existing Conditions for Proposed Action

3.15.3.1. Federal and State Database Searches

Sixteen potential sources of hazardous and solid waste were identified near the proposed pipeline facilities using federal and state databases. The locations and distances of these sites from the pipeline route are listed in **Exhibit 3.15-2**, where data are available. All of these sites are in Utah. No sites were identified in Nevada. The identified sites occur at distances of zero to 0.34 mile from the proposed pipeline route. The pipeline route crosses into the boundaries of two National Priorities List (NPL) sites. Soil and groundwater contamination may be present. The site of most significant concern is the Bauer Dump and Tailings site. This is a CERCLIS site that was determined to be a human health hazard in 2006. The proposed pipeline alignment (Revision L, October 10, 2007) is located near the eastern boundary of the Bauer Dump and Tailings site. Details for each identified site are discussed below (CH2MHill 2008m).

Several sites of concern are located in relatively close proximity the proposed pipeline route in Lakepoint, Magna, North Salt Lake, Salt Lake City, in Tooele and Stockton, Utah (CH2MHill 2008m).

AMCOR Masonry Products is a Resource Conservation and Recovery Act (RCRA) small quantity generator located approximately 0.09 mile northwest of the proposed pipeline route before MP 1. Underground storage tanks (UST) have been present at the site and one tank was reported as leaking (LUST) (CH2MHill 2008m).

Exhibit 3.15-2 Hazardous and Solid Waste Sites Identified Near the Proposed Pipeline Route

State/Facility	County	Approximate Milepost	Site Identification	Approximate Distance from Pipeline Route (miles)	Findings
333 South Redwood Road, North Salt Lake, Utah 84057	Salt Lake	1	AMCOR Masonry Products	0.09 mile NW	RCRA Small Quantity Generator. Leaking underground storage tanks were present. Evaluate for potential hazardous waste impact.
620 North John Glenn Road Salt Lake City, Utah 84116	Salt Lake	12	COMPEQ International, Inc.	0.13 mile SE	RCRA Large Quantity Generator. Evaluate for potential hazardous waste impact.
7200W N. Temple Salt Lake City, Utah 84116	Salt Lake	13	North Temple Landfill	0.19 mile NW	CERCLIS Site. Solid waste site. Uncertain what contamination is present at site and potential impact on pipeline construction.
7100 West South Temple, Salt Lake City, Utah 84116	Salt Lake	13	Maple Oil Products, Inc.	0.17 mile NW	RCRA Small Quantity Generator. Evaluate for potential hazardous waste impact
23rd South Street Magna, Utah 84004	Salt Lake	14 to 21	Kennecott (North Zone)	0	NPL Site. Metals contaminated soil and groundwater. Appears that pipeline is north of tailings. Need to evaluate proximity of pipeline to
Junction of I-80 and HWY 201 Lake Point, Utah 84074	Salt Lake	21	Old Cobalt Tailings Pond	0.01 mile NE	CERCLIS Site. Uncertain what contamination is present at site. Appears that pipeline may cross ponds in area.
6527 North Highway 36 Tooele, Utah 84074	Tooele	30	Maverik 234 Stansbury	0.34 mile SE	Leaking underground storage. No closure date provided. Evaluate for potential soil or groundwater impact.
1685 North Progress Way Tooele, Utah 84074	Tooele	35	Bob's Garage and Diesel	0.06 mile NW	RCRA Small Quantity Generator. Evaluate for potential hazardous waste impact.
1665 North Progress Way Tooele, Utah 84074	Tooele	35	Russell Welding Fabricators	0.06 mile NW	RCRA Small Quantity Generator. Evaluate for potential hazardous waste impact.

State/Facility	County	Approximate Milepost	Site Identification	Approximate Distance from Pipeline Route (miles)	Findings
3 Miles South of Tooele on Highway 36 Tooele, Utah 84074	Tooele	38 to 40	Tooele Army Depot (North Area)	0	NPL Site. Pipeline is adjacent to the eastern boundary. Groundwater monitoring wells are close to pipeline; possible groundwater contamination. Underground storage tanks present.
U.S. HWY 36 Stockton, Utah 84071	Tooele	42 to 43	Bauer Dump and Tailings and Black Hawk Resin Company	0.04 mile NW	CERCLIS Site. Pipeline route appears to bisect a portion of this site. Serious potential to encounter metals-contaminated soil during pipeline installation.
South of Tooele Army Depot, near Stockton, Utah	Tooele	45 to 47	Jacobs Smelter	0	Superfund Site. The Proposed Action would involve construction within the western edge of the Operable Unit 2 boundary. The Rush Lake Alternative Route would involve minimal construction in the northern portion of the site, and along the western site boundary.
Highway 36 Vernon, Utah 84080	Tooele	Unknown	Silver Sage	Unknown	Leaking underground storage tank. Evaluation of site location relative to pipeline location needed.
3 Miles South of Eureka on Highway 6 Eureka, Utah 84628	Juab	Unknown	North Lilly Mining PCB	Unknown	CERCLIS Site. Location not provided. Removal only site. Evaluation of site location relative to pipeline location needed.
2.5 Miles Southwest of Eureka Eureka, Utah 84628	Juab	Unknown	Silver City Mills	Unknown	CERCLIS Site. Location not provided. Preliminary assessment start needed. Evaluation of site location relative to pipeline location needed.
Various Locations Milford, Utah, 84751	Beaver	Unknown	Beaver County Tailings/Waste Rock	Unknown	CERCLIS Site. Location not provided. Evaluation of site location relative to pipeline location needed.
Milford, Utah	Beaver	Unknown	Milford Mill and Smelter	Unknown	CERCLIS Site. Location not provided. Evaluation of site location relative to pipeline location needed.

Source: CH2MHill 2008m

COMPEQ International, Inc. is a RCRA large quantity generator of hazardous waste located approximately 0.13 mile southeast of the proposed pipeline route near MP 12 (CH2MHill 2008m).

The North Temple Landfill is a CERCLIS site located approximately 0.19 mile northwest of the proposed pipeline near MP 13. The North Temple Landfill has not been proposed to the NPL. The North Temple Landfill has been separated into two sites. The western area remains the North Temple Landfill while the eastern area is the Bonneville Center. The North Temple Landfill entered into an agreement with the Utah Department of Environmental Quality (UDEQ) on March 3, 2006. The Bonneville Center was given the disposition of no further remedial action planned (NFRAP) (CH2MHill 2008m).

Maple Oil Products is a RCRA small quantity generator located approximately 0.17 mile northwest of the proposed pipeline route near MP 13 (CH2MHill 2008m).

The Kennecott North Zone NPL site intersects the proposed pipeline route at MP 14 to MP 21. The pipeline route falls within the boundaries of the NPL site at some locations. Contamination includes a 5,700-acre tailings pond, a slag pile, contaminated residential soil in the town of Magna, and a refinery evaporation pond. Contaminants include arsenic, chromium, copper, lead, selenium, and zinc. The pipeline route does not appear to cross the contaminated site features described but additional information is needed to ensure that contaminated soil would not be encountered during pipeline construction activities. Contaminated groundwater occurs at depths ranging from 75 to 650 feet bgs and would not likely impact pipeline construction or operation (CH2MHill 2008m).

The Old Cobalt Tailings Pond is a CERCLIS site located approximately 0.01 mile northeast of the proposed pipeline route near MP 21. The Old Cobalt Tailings Pond has not been proposed to the NPL. A unilateral administrative order was issued for the site on August 15, 1996, and CERCLIS lists the site as NFRAP (CH2MHill 2008m).

Maverik 234 Stansbury (Maverik Country Stores) is located approximately 0.34 mile northwest of the proposed pipeline route near MP 30. A LUST is reported at this location (CH2MHill 2008m).

Bob's Garage and Diesel and **Russell Welding Fabricators** are RCRA small quantity generators located approximately 0.06 mile northwest of the proposed pipeline route near MP 35 (CH2MHill 2008m).

The Toole Army Depot is a NPL site located along the proposed pipeline route from MP 38 to MP 40. The proposed pipeline route is immediately adjacent to the eastern side of the NPL site. Several groundwater monitoring wells are located near the pipeline route and indicate potential groundwater contamination in the area. USTs, closed solid waste landfills, and the Deseret Chemical Depot are located at the Tooele Army Depot. Contamination at the Tooele Army Depot includes groundwater contaminated with trichloroethane and soil contaminated with trinitrotulene (TNT) and cyclomethylenetriamine (RDX). The site is currently undergoing active remediation at a number of operable units (CH2MHill 2008m).

A Phase 1 Environmental Survey is being prepared for the portion of the proposed pipeline route that crosses through and near the Tooele Army Depot NPL site. The Phase 1 Environmental Survey included a visual site inspection of the pipeline route on October 1, 2007. No damaged vegetation or stained soils were observed that might indicate the presence of hazardous substances or environmentally degraded conditions. In general, the area appeared to be clean and free of significant debris and no concerns relating to the health and safety of individuals or local fauna were observed. The Phase 1 Environmental Survey found that the proposed pipeline route traverses Solid Waste Management Unit 25 included as part of Operable Unit (OU) 9. The Phase 1 Environmental Survey recommends that the property located within and near the Tooele Army Depot NPL site is suitable for construction of the proposed pipeline (CH2MHill 2008m).

The Bauer Dump and Tailings and Black Hawk Resin Company is a CERCLIS site located approximately 0.25 mile northwest of the proposed pipeline route near MP 43. The Bauer site was an active dumping site for silver and lead ore smelting from the 1920s to 1979. During the 1960s, the Black Hawk Resin Company discharged coal fine residue and organic solvents into diked sediment ponds in the Bauer vicinity. These operations resulted in contamination of onsite soil and water. In July 2006, a public health assessment was prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) that resulted in the site being classified as a public health hazard because of concentrations of lead in the soil and physical hazards located on site (ATSDR, 2006). (CH2MHill 2008m)

Several potential sites are located within the area of the proposed pipeline in Juab, Tooele, and Beaver counties, Utah (CH2MHill 2008m).

The Jacobs Smelter Site is included on the EPA's National Priorities List of Superfund sites. The site is located in Tooele County, Utah. The Site is approximately 8 square miles and encompasses the town of Stockton and Rush Lake. The entire Site is referred to as "Jacobs Smelter" after a former smelter that was located in Stockton. The Stockton area was the center of a silver and base-metal mining, milling and smelting district from the 1860s until 1970. By 1886, several smelters had been built within the Stockton area. Jacobs Smelter was located on the northeast end of Stockton within Operable Unit (OU) 1 and operated in the 1870s. Three other smelters operated for a few years and then shut down. The exact locations of these smelters are unknown, but several sites within the boundaries of OU 2 are suspected due to the presence of elevated concentrations of heavy metals detected during site sampling.

The site was separated into three OUs for investigation and remediation purposes. The primary contaminants of concern appear to be lead and arsenic in surface and subsurface soils across the site.

- OU 1 includes the residential properties within the town limits of Stockton, which were cleaned up in 1999. The remedy consisted of excavation of contaminated soils and backfill with clean soil cover.
- OU 2 is primarily undeveloped land outside of the general town limits, as well as plants and animals that are impacted by site contaminants. The proposed remedial action identified consists of (1) excavation and off-site disposal of all surface soils with lead concentrations greater than 500 ppm and subsurface soils with lead concentrations greater than 800 ppm as the preferred remedy for residential properties within OU 2; and (2) excavation and off-site disposal of soils with lead concentrations over 10,000 ppm to a maximum depth of 18 inches and soil cover over lead concentrations between 3,000 and 10,000 ppm lead as the preferred remedy for non-residential areas. A Record of Decision has not been developed for OU2.
- OU 3 is comprised only of soils within the Union Pacific railroad right-of-way within the Town of Stockton. These soils were cleaned up by Union Pacific in 1999. The remedy consisted of a soil cover system within the railroad right-of way generally within the Stockton city limits.

The route proposed by the BLM would likely go through the western portion of the OU 2 boundary. A final determination has not been made on the OU 2 boundary as of October 2008. According to the Final Remedial Investigation (UDEQ 2003) the proposed pipeline route would avoid areas recommended for remediation. (CH2MHill 2008m)

The North Lilly Mining Site is a CERCLIS site located near Eureka, Utah. The site is noted for having illegal polychlorinated biphenyls (PCB) transformers disposed at the mine (CH2MHill 2008m).

The Silver City Mills is a CERCLIS site located near Eureka, Utah. The site is noted for having abandoned concrete foundations and piles of mill tailings.

The Silver Sage is a LUST located along Highway 36 in Stockton, Utah (CH2MHill 2008m).

The Beaver County Tailings and Waste Rock is a CERCLIS site located near Milford, Utah. This site is the result of tailings and waste rock from the Essex Copper Processing Plant used as fill or road base material on private and public properties in Beaver County, Utah (CH2MHill 2008m).

The Milford Mill and Smelter is a CERCLIS site located in Milford, Utah. The mill processed ores from the Hickory Mine (CH2MHill 2008m).

3.15.3.2. Potential Sites of Concern

Aerial photographs of the proposed pipeline route were visually inspected to identify facilities along the route, especially in the more rural and undeveloped areas along the route. Facilities of unknown types were identified at the following pipeline mileposts:

- MP 124 to MP 125
- MP 137
- MP 170
- MP 208
- MP 226 to MP 228
- MP 301
- MP 327
- End of the Cedar City Lateral (no milepost given) (CH2MHill 2008m).

These facilities would need to be evaluated to determine what type of facility they are (such as farm, ranch, power station, etc.) and if they have hazardous or solid waste that could potentially impact pipeline construction or operation (CH2MHill 2008m).

3.15.3.3. Public Health and Safety

The Mineral Leasing Act (30 USC § 181-263) authorizes the BLM to grant pipeline ROWs and permits through federal land. Section 185 of the Mineral Leasing Act also requires the BLM to protect public safety and environmental resources. The key federal regulation ensuring the safe operation of petroleum product pipelines through design, construction, and operation standards is the U.S. Department of Transportation 49 CFR Part 195 – Transportation of Hazardous Liquids by Pipeline. Federal regulations governing pipeline operation and maintenance specify the pipeline’s acceptable operating pressure, require personnel training, and require operators to perform inspection, monitoring, and testing to ensure that the pipeline operates in a safe manner and to minimize the chance of spills. Other regulations are included under 49 CFR Part 194 (federal requirements for emergency response plans for onshore oil pipelines) and 40 CFR Parts 109, 110, 112, 113, and 114 (federal requirements for Spill Prevention, Control, and Countermeasures Plans). The Oil Pollution Act (OPA) and the Oil Pollution Liability and Compensation Act of 1989 are additional laws providing cleanup authority, penalties, and liability for oil spills (CH2MHill 2007a).

Recent legislation has been enacted that substantially broadens the OPA regulatory authority to ensure hazardous liquid pipelines are maintained and operated in a safe manner, particularly in high consequence areas (high-density population areas, water where commercial navigation currently exists, and areas unusually sensitive to environmental damage). The Office of Pipeline Safety (OPS) is responsible for enforcement (65 FR 75378). (CH2MHill 2007a)

As a result of these regulations and others, the Proponent is required to develop and implement a variety of plans, including an Emergency Response Plan, Stormwater Pollution Prevention Plan, and

Spill Prevention and Control Plan to minimize the potential for threats to public safety and impacts to environmental resources. Personnel are required to take part in ongoing training in hazards and safety issues related to the job, normal and abnormal situations, emergency procedures, facility malfunctions and appropriate corrective actions, and instruction in controlling any discharge to minimize the potential for fire, explosion, toxicity or environmental damage. Reporting procedures for any accident, spill, and facility failure are clearly defined.

3.15.4. Existing Conditions for Alternatives

3.15.4.1. Airport Alternative Route

There are no hazardous or solid waste issues along this alternative route in addition to the Proposed Action.

3.15.4.2. Tooele County Alternative Route

There are no hazardous or solid waste issues along this alternative route in addition to the Proposed Action.

3.15.4.3. Rush Lake Alternative Route

Approximately 0.5 miles of the Rush Lake Alternative Route falls within the Jacobs Smelter Site OU 2 boundary (described under **Section 3.15.3.1** above).

3.15.4.4. Millard County Alternative Route

There are no hazardous or solid waste issues along this alternative route in addition to the Proposed Action.

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CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1. IMPACT ASSESSMENT

The Proposed Action and Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects to decision-makers and the public. This process of disclosure is one of the fundamental aims of NEPA.

The following sections define and clarify the concepts and terms used in this EIS when discussing impacts assessment.

4.1.1. Impacts/Effects

The terms “effect” and “impact” are synonymous under NEPA. Effects may refer to ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Alternatives. Effects may be direct, indirect, or cumulative in nature.

4.1.2. Direct Effects

A direct effect occurs at the same time and place as the action. Direct and indirect effects are discussed in combination under each affected resource.

4.1.3. Indirect Effects

Indirect effects are reasonable foreseeable effects that occur later in time or are removed in distance from the action. Direct and indirect effects are discussed in combination under each affected resource.

4.1.4. Cumulative Effects

Effects to a resource are cumulative when the effects from the proposed project are added to the effects (or anticipated effects) from other past, present, or future projects in the cumulative effects area for the project. The cumulative effects area may be larger than the direct effects area. Cumulative effects are discussed in detail in **Section 4.18** below.

4.1.5. Significance

The word “significant” has a very particular meaning when used in a NEPA document.

Significance is defined by CEQ (Sec. 1508.27) as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. This EIS will primarily use the terms Major, Moderate, Minor, or Negligible in describing the intensity of effects.

Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

4.1.6. Impact Indicators

Use of the term “significant” when referring to effects indicates the exceedance of some threshold for a particular impact indicator. Impact indicators are the consistent currency used to determine quality, intensity, and duration of change in a resource. Working from an established existing condition (i.e., the baseline conditions described in **Chapter 3**) this indicator would be used to predict or detect change in a resource related to causal effects of Proposed Actions.

4.1.7. Environmental Effect Categories

The following environmental effect categories (**Exhibit 4.1-1**) are presented to define relative levels of effect intensity and context for each resource that is analyzed in this chapter and to provide a common language when describing effects.

Exhibit 4.1-1 Summary of Terms used to Describe Effects in the EIS

Attribute of Effect		Description
Magnitude (Intensity)	Negligible	No measurable change in current conditions
	Minor	A small, but measurable change in current conditions
	Moderate	A moderate, measurable change in current conditions
	Major	A big, easily measurable change in current conditions
Duration	Transient/Temporary	Short-lived (i.e., during construction)
	Short-term	3 years or less
	Long-term	More than 3 years

4.2. AIR QUALITY AND NOISE

This chapter assesses potential impacts of air pollutant emissions from the proposed UNEV Pipeline Project on ambient air quality and to recommend onsite and offsite mitigation measures, if needed. The proposed project would involve two distinct phases that have the potential for impacting ambient air quality. The first phase is the construction of the pumping stations, pipeline, and terminals. The second phase is the operation of the pipeline and associated facilities.

The emissions assessment and air quality impact assessment are based on design data for each of the terminals. The emissions assessment was conducted using emission factors from document AP-42, published by the EPA. Emissions of fugitive volatile organic compounds (VOCs) from the proposed bulk storage tanks were estimated using EPA software TANKS 4.09d.

4.2.1. Indicators

4.2.1.1. Air Quality

Ambient air quality in the United States is regulated by the CAA and its amendments, as well as by other federal, state, and local regulations. The EPA has developed National Ambient Air Quality Standards (NAAQS) for certain criteria pollutants. These criteria pollutants are: nitrogen dioxide (NO_2), particulate matter (PM_{10}), sulfur dioxides (SO_x), carbon monoxide (CO), ozone (O_3), and lead (Pb). The primary pollutants emitted during the storage, transmission, and dispensing of petroleum products are VOCs. In addition, diesel-fired engine pumps that help move the pipeline oil emit measurable amounts of $NO_{x,}$ $PM_{10,}$ SO_x, CO_2, CO and aldehydes. The NAAQS for these criteria pollutants are shown in **Table 3.2-2**. Levels at or above the NAAQS have been deemed unhealthy by the EPA.

In the presence of sunlight, NOx and VOCs react to form ozone. Suspended particulates and secondary products from SO_2 emissions can deteriorate visibility. Regional haze and visibility have become indicators on how much human activity has impacted pristine and protected lands, such as Class I areas .

Indicators for air polluting sources can also be classified by how much an activity or an industrial process pollutes in a given timeframe. Most industries have federally mandated limits on their emissions rates based on pound per hour, ton per year or grains per dry standard cubic foot emissions. Opacity of the plume or opacity at the property lines are also indicators on whether an activity is operating within regulatory limits. Based on an annual rate of emissions, a facility would be required to obtain certain type of permits. Minor source permits are required for operations that emit less than 100 tons per year of any criteria pollutant and/or less than 25 tons/ per year of total designated hazardous air pollutants. Industry or operations would have to obtain a Part 70, Title V permit if they were above these threshold levels. Certain industries, as identified in 40 CFR 52.21(b) and Section 169(1) identify 28 specific industries, that if they emit over 100 tons per year or more a Prevention of Significant Deterioration (PSD) permit is required. These operations do not fall under the 28 selected industries, but would require a PSD permit if emissions exceed 250 tons per year of criteria pollutants. There are regulatory acceptations to this 250 rule, but are not relevant to this discussion.

The third type of indicator is based on the current state of the existing airshed. Chapter 3 discusses the attainment and nonattainment status of the several airsheds the Proposed Action would traverse. The proposed pipeline would extend for about 400 miles from Salt Lake City, Utah, to near Las Vegas, Nevada. Both cities are in nonattainment status for one or more criteria pollutant. The project would also include construction of two bulk petroleum product terminals. The bulk petroleum product terminals would be located near Las Vegas, Nevada and Cedar City, Utah. The main emission units at the terminals would be product storage tanks and loading racks. The terminal at the Apex Industrial Park northeast of Las Vegas would be located in a nonattainment area for ozone and an attainment area for all other pollutants. Cedar City is in attainment for all criteria pollutants, but is also the closest to Class I areas. **Exhibit 4.2-1** lists emission units, locations, and the air regulating authority for the two terminals. **Exhibit 4.2-2** lists the attainment status for each pollutant in each county where the pipeline project would be constructed. Maps showing nonattainment areas in Utah and Clark counties are provided in **Exhibits 3.2-4** and **3.2-5**. A detailed map of Clark County and the location of the terminal at the Apex Industrial Park are shown in **Exhibit 4.2-3**.

Exhibit 4.2-1 Summary of Facility, Equipment, Capacity, Location, and Air Quality Regulatory Authority

State/Facility	Equipment	Capacity	Milepost	County	Air Quality Regulatory Authority
Utah					
Origin Pumping Station	Electric-driven shipping pumps	1,750 bhp 1,250 bhp	0	Davis	UDEQ, Air Quality Division
Cedar City Terminal	Tank 551	55,000 bbl	255	Iron	UDEQ, Air Quality Division
	Tank 301	30,000 bbl		Iron	UDEQ, Air Quality Division
	Tank 302	30,000 bbl		Iron	UDEQ, Air Quality Division
	Tank 303	30,000 bbl		Iron	UDEQ, Air Quality Division

State/Facility	Equipment	Capacity	Milepost	County	Air Quality Regulatory Authority
	Tank 304	30,000 bbl		Iron	UDEQ, Air Quality Division
	Tank 151	5,000 bbl		Iron	UDEQ, Air Quality Division
	Loading rack	21,300 bpd		Iron	UDEQ, Air Quality Division
Nevada					
Apex Terminal	Tank 551	55,000 bbl	400	Clark	Clark County Health District
	Tank 552	55,000 bbl		Clark	Clark County Health District
	Tank 553	55,000 bbl		Clark	Clark County Health District
	Tank 301	30,000 bbl		Clark	Clark County Health District
	Tank 302	30,000 bbl		Clark	Clark County Health District
	Tank 303	30,000 bbl		Clark	Clark County Health District
	Tank 304	30,000 bbl		Clark	Clark County Health District
	Tank 150	15,000 bbl		Clark	Clark County Health District
	Loading rack	42,889 bpd		Clark	Clark County Health District

a In addition to the main emission units listed above, each of the terminals would include other emission units such as diesel-fired fire-water pumps, oil-water separators, sumps, and contact water storage tanks. Small amounts of fugitive emissions are also expected to occur from seals, flanges, and valves.

b Emissions from the loading racks would be controlled by thermal oxidizers.

UDEQ = Utah Department of Environmental Quality
bhp = brake horsepower
bbl = barrel
bpd = barrel per day

Exhibit 4.2-2 Ambient Air Quality Classifications by County*

County	State	PM_{10}	$PM_{2.5}$	SO_2	NO_2	CO	O_3 8-hour	Lead
Davis	Utah	A	A	A	A	A	M	A
Salt Lake	Utah	NA-Mod.	A	NA	A	M	M	A
Tooele	Utah	A	A	NA	A	M	A	A
Juab	Utah	A	A	A	A	A	A	A
Millard	Utah	A	A	A	A	A	A	A
Beaver	Utah	A	A	A	A	A	A	A
Iron	Utah	A	A	A	A	A	A	A
Washington	Utah	A	A	A	A	A	A	A
Lincoln	Nevada	A	A	A	A	A	A	A
Clark[1]	Nevada	NA-Ser.	A	A	A	NA-Ser.	NA	A

* Only Las Vegas Valley (Hydrographic Area 212) is a designated Serious Nonattainment Area for PM10 and CO. Eldorado Valley (Hydrographic Area 167) is a designated Management Area for PM10 and CO. Las Vegas Valley, Eldorado Valley, and North Ivanpah Valley are designated Management Areas for VOC and NOx. North Ivanpah Valley (Hydrographic Area 164A), South Ivanpah Valley (Hydrographic Area164B), Jean Lake Valley (Hydrographic Area 165), South Hidden Valley (Hydrographic Area166), Eldorado Valley (Hydrographic Area167), Las Vegas Valley (Hydrographic Area 212), Colorado River Valley (Hydrographic Area 213), Paiute Valley (Hydrographic Area 214), Garnet Valley (Hydrographic Area 216), North Hidden Valley (Hydrographic Area 217), and California Wash (Hydrographic Area 218) are designated Nonattainment Areas for 8-hour Ozone Standard.

A = Attainment

M = Maintenance

NA = Nonattainment

NA-Mod. = Moderate Nonattainment

NA-Ser. = Serious Nonattainment

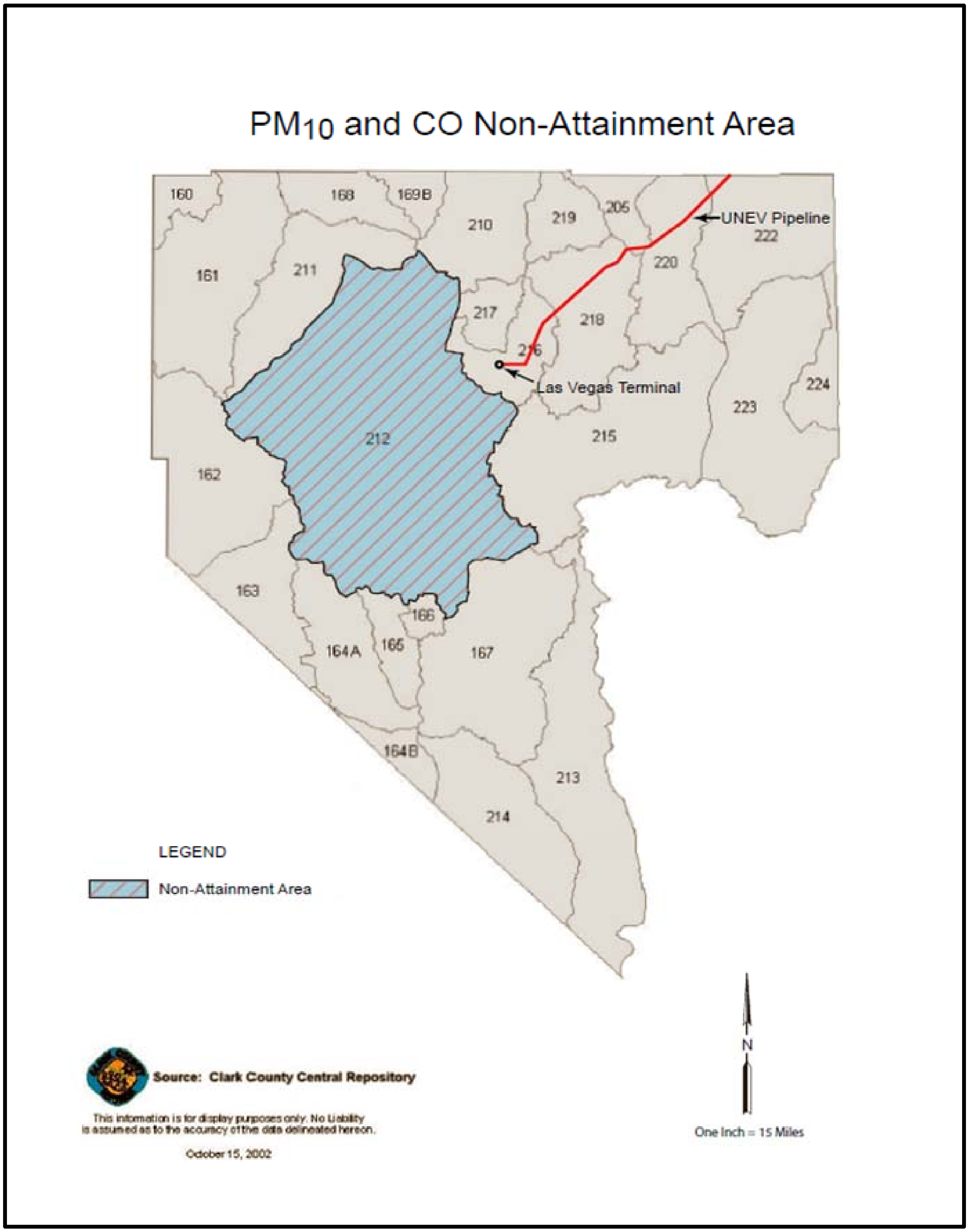

Exhibit 4.2-3 Clark County and the Apex Terminal

Impacts on air quality would be considered significant and would require additional mitigation if equipment emissions or fugitive dust from project construction or operation would violate or interfere with the attainment of federal or state/local air quality standards.

4.2.1.2. Noise

Indicators for project-related construction noise levels would vary during the construction period, depending on the construction phase and number and location of operating construction equipment. Individual noise levels of equipment typically used on similar heavy construction projects are presented in **Exhibit 4.2-4.** It is anticipated that the nearest sensitive receptors would be at least 1,000 feet away from the construction site. **Exhibit 4.2-4** includes the calculated range in noise level at 50, 1,000, 2,000, and 4,000 feet away from the construction site. Blasting and HDD would have noise levels of approximately 55 dB(A), ranging on the higher end (e.g., jackhammers and impact drivers).

Exhibit 4.2-4 Equipment Noise Levels on Heavy Construction Projects (dB(A))

Equipment Type	Range in Noise Level at 50 feet	Range in Noise Level at 1,000 feet	Range in Noise Level at 2,000 feet	Range in Noise Level at 4,000 feet
Equipment Powered by Internal Combustion Engines				
Earth Moving				
Front Loaders	72-84	46-58	40-52	34-46
Backhoes	72-93	46-67	40-61	34-55
Tractors	77-96	51-70	45-64	39-58
Scrapers	80-93	54-67	48-61	42-55
Graders	80-93	54-67	48-61	42-55
Pavers	86-89	60-63	54-57	48-51
Trucks	82-94	56-68	50-62	44-56
Materials Handling				
Concrete Mixers	75-88	49-62	43-56	37-50
Concrete Pumps	81-84	55-58	49-52	43-46
Cranes, Movable	75-88	49-62	43-56	37-50
Stationary				
Pumps	68-72	42-46	36-40	30-34
Generators	71-82	45-56	39-50	33-44
Compressors	74-87	48-61	42-55	36-49
Impact Equipment				
Mounted Breakers	76-94	50-68	44-62	38-56
Pneumatic Wrenches	82-89	56-63	50-57	44-51
Jackhammers & Rock Drills	81-98	55-72	49-66	43-60
Impact Drivers (Peak)	95-106	69-80	63-74	57-68

Equipment Type	Range in Noise Level at 50 feet	Range in Noise Level at 1,000 feet	Range in Noise Level at 2,000 feet	Range in Noise Level at 4,000 feet
Other				
Vibrator	69-81	43-55	37-49	31-43
Saws	72-82	46-56	40-50	34-44
HDD activities	55			

Source: Oregon Department of Transportation Noise Manual.

4.2.2. Direct and Indirect Effects

4.2.2.1. Proposed Action

Construction

Air Quality

Construction emissions would occur during mobilization and de-mobilization, the construction of the pipeline, pumping stations, and terminals.

During groundbreaking activities for pipe installation, an increase in vehicular traffic and fugitive dust would be expected. An increase in emissions from construction equipment and vehicles transporting employees would also occur during the construction phase. However, emission levels of VOCs, NOx, SO_2, CO, and other emissions from internal combustion engines and PM_{10} from vehicular travel on unpaved surfaces would not be expected to exceed any predetermined standards for air quality. Exceeding the NAAQS thresholds are unlikely, are not usually associated with construction operations, and usually are only regulated under a fugitive dust control plan.

Construction activities associated with the Proposed Action would likely result in localized minor impacts of PM_{10} and nuisance dust. Emissions from blasting would result in additional PM_{10} and ammonia emissions. Localized opacity (fugitive dust) violations from windblown particulates as a result of construction activities are more likely to occur. More regulatory controls for construction activities located within nonattainment zones, such as Salt Lake County and Clark County, should be anticipated.

Noise

Blasting and HDD have noise level ranges in the higher ranges represented in **Exhibit 4.2-4**. Blasting would occur in locations specified in **Exhibit 4.3-1**. HDD would be anticipated to occur in the locations specified in **Exhibit 4.2-5**.

Exhibit 4.2-5 Potential Locations for HDD

Proposed Project Milepost	
Begin	**End**
1.46	1.52
1.87	2.10

Proposed Project Milepost	
Begin	**End**
5.73	5.80
7.31	7.46
7.56	7.75
8.04	8.21
10.43	10.58
11.79	11.98
26.06	26.17
26.29	26.46
387.79	387.86

The project would have minimal short-term impacts on noise as a result of construction. Onsite noise levels are anticipated to be in the 70- to 85-dB(A) range. Noise generated from construction equipment, drilling, and blasting would all contribute, temporarily, to unwanted noise in the general vicinity. An increase in local traffic noise would result from construction workers and equipment traveling to and from the site. Blasting would likely be the most prominent source of unwanted noise.

The short-term additional noise produced during construction could disturb nesting birds and temporarily cause a potential adverse effect. Noise from construction activities for near-by residence would be considered "nuisance" noise and would not likely exceed local noise ordinances or OSHA standards.

Operations, Maintenance, and Abandonment

Air Quality

Operation emissions would be limited to the sites of terminals and pumping stations. The inlet pump station at the pipeline origin would use an electric motor to pump the petroleum products. No significant air emissions are expected from the inlet pump station. Potential air quality impacts during project operation would be limited to the Cedar City Terminal in Utah and the Apex Terminal in Clark County, Nevada. Each facility has different long-term impacts which are based on the on-site equipment, existing air quality, and the types and amounts of pollutants generated.

Cedar City Terminal. The proposed project includes installation of a terminal tank farm to store and deliver gasoline and diesel fuels near Cedar City, Utah. The air pollutant emitting equipment at the Cedar City Terminal would consist of the following:

- Tank truck loading racks.
- Six petroleum product storage tanks.
- A thermal oxidizer unit.

The Cedar City Terminal would be located in the attainment area for all of the criteria pollutants. The potential to emit for all criteria pollutants from the Cedar City Terminal would be less than 250 tpy for each pollutant. Estimated emission summaries of the facility are provided in **Exhibits 4.2-6** and **4.2-7**. The facility is not subject to PSD requirements.

The total HAP emissions from the facility would be less than 25 tpy. Therefore, the terminal would not be a major source of HAP emissions and, thus, would not be subject to NESHAP. The emissions would also be less than 100 tpy and the facility would, therefore, not require a Part 70 operating permit.

Petroleum Product Storage Tanks. The Cedar City Terminal would receive petroleum fuels from an underground pipeline and store these fuels in bulk petroleum product storage tanks. Out of the six petroleum product storage tanks, three tanks would be used for gasoline, two would be used for diesel fuel, and one would be used for storage of transmix.

The petroleum products would be dispensed using truck loading racks to tanker trucks. The loading racks would consist of one or more “bays” with each bay able to accommodate one tanker truck. Each storage tank would be connected via underground pipelines to one or more loading racks. Petroleum fuels would be conveyed to a given loading rack and pumped into a customer tanker truck via one or more bottom-loading arms.

All of the tanks at the terminal would have internal floating roofs to allow flexibility in storage of any product in any tank.

Transmix is a mixture of different petroleum fuel products that forms at the interface between products conveyed together in a pipeline. This mixture would be stored in a 5,000 barrel tank and transferred at the loading racks to trucks for offsite processing. Separation of the transmix constituents would not be conducted at the Cedar City Terminal.

Truck Loading Racks. The truck loading racks would have bottom-loading arms with provisions to capture displaced vapor from the truck tank. The captured vapor would be routed to the thermal oxidizer for destruction.

The thermal oxidizer would burn the incoming hydrocarbon vapors so that nearly all of these vapors are converted to carbon dioxide and water. The residual, unburned hydrocarbons and products of incomplete combustion would be discharged to the atmosphere from the open top of the combustion chamber. The combustion of hydrocarbons in the thermal oxidizer would also generate emissions of criteria pollutants including CO, NO_X, and minimal amounts of SO_2 and PM_{10}. In addition, certain Hazardous Air Pollutants (HAPs) present in the vapors collected from the loading racks and breakout tanks would also be emitted from the thermal oxidizer. Emissions from truck loading racks at the Cedar City Terminal are detailed in **Exhibit 4.2-6**.

Exhibit 4.2-6 Truck Loading Racks Emissions, Cedar City Terminal

Emission source	Pollutant	Maximum Throughput (barrel [bbl/]day)	Maximum Throughput (gal./yr)	Emission Factor (lb/1000 gal.)	Emissions (lb/year)	Emissions (tons per year [tpy])
Thermal Oxidizer[a]	VOC	21,300	326,529,000	0.0835	27,265	13.63
	CO	21,300	326,529,000	0.0835	27,265	13.63
	NOx	21,300	326,529,000	0.0334	10,906	5.45
Truck Rack Fugitives[b]	VOC				35	0.02

[a] Captured emissions calculated on the basis of emissions factors provided by the manufacturer of the thermal oxidizer.

[b] Fugitive emissions from the loading rack calculated using 99.2 vapor capture efficiency.

Storage Tank and Piping Fugitive Emissions

Fugitive VOC emissions at bulk petroleum product terminals would occur as storage tanks are filled and emptied during daily temperature cycles while the liquid is stored. Fugitive emissions from bulk storage tanks at the Cedar City Terminal are detailed in **Exhibit 4.2-7**.

Internal floating roof tanks offer better control of evaporative emissions than fixed roof tanks. Since the floating roof would remain suspended on the liquid contents, a vapor space does not form in the heel space. However, vapors may escape in small amounts as fugitive emissions through rim seals, deck fittings, or deck seals.

Fugitive emissions of VOC would also be released in small amounts from the numerous pipe fittings, pumps, and other piping components.

Exhibit 4.2-7 Fugitive Emissions from Bulk Storage Tanks, Cedar City Terminal

Tanks ID	Tank Capacity (bbls)	Tank Type	Tank Contents[a]	VOC Emissions[b] lb/year	VOC Emissions (tpy)
Tank 151	5,000	Internal floating roof	Gasoline, diesel, ethanol	2,503	1.25
Tank 301	30,000	Internal floating roof	Gasoline, diesel, ethanol	4,427	2.21
Tank 302	30,000	Internal floating roof	Gasoline, diesel, ethanol	4,427	2.21
Tank 303	30,000	Internal floating roof	Gasoline, diesel, ethanol	4,427	2.21
Tank 304	30,000	Internal floating roof	Gasoline, diesel, ethanol	4,427	2.21
Tank 551	55,000	Internal floating roof	Gasoline, diesel, ethanol	5,636	2.82
				Total	21.52

[a]Each bulk storage tank is designed to store gasoline, diesel fuel, or ethanol.

[b]Emissions estimates based on storage of gasoline of RVP 10 using USEPA Tanks 4.09d software and Milford, Utah meteorological data.

Las Vegas Terminal. The proposed project includes installation of a terminal tank farm to store and deliver gasoline, diesel, denatured ethanol, and jet fuel near Las Vegas, Nevada. The air pollutant emitting equipment at the Apex Terminal would consist of the following:

- Tank truck loading racks
- Nine petroleum product storage tanks
- One denatured ethanol storage tank
- A thermal oxidizer unit.

The Apex Terminal would be located in Garnet Valley (Hydrographic Area 216). The Garnet Valley Area is a designated attainment area of the NAAQS for all pollutants except ozone. The potential to emit for all attainment pollutants from the Apex Terminal would be less than 250 tpy for each pollutant. Estimated emission summaries of the facility are listed in **Exhibits 4.2-8** and **4.2-9**. The facility would not be required to obtain a PSD permit.

Garnet Valley is a designated 8-hour ozone nonattainment area. The major source threshold for VOC and NOx in this area is 100 tpy. Pursuant to Clark County Air Quality Regulations Section 55, new major and non-major sources in Garnet Valley are required to meet Best Available Control Technology (BACT) emission control requirements for NOx and VOC. A major stationary source is also required to meet the offset requirements contained in Clark County Air Quality Regulations Section 59. The offset requirements would not apply to the Apex Terminal because the total VOC emissions from the Apex Terminal are not expected to exceed 100 tpy.

The total HAP emissions from the facility would be less than 25 tpy. Therefore, the terminal would not be a major source of HAP emissions and, thus, would not be subject to NESHAP. The emissions would also be less than 100 tpy and the facility would, therefore, not require a Part 70 operating permit.

Petroleum Product Storage Tanks. The Apex Terminal would receive petroleum fuels from underground pipelines and store these fuels in bulk petroleum product storage tanks. Out of the eight petroleum product storage tanks, four tanks would be used for gasoline, two for diesel fuel, one for ethanol, and one would be used for storage of transmix.

The petroleum product would be dispensed using truck loading racks to tanker trucks. The loading racks would consist of one or more “bays” with each bay able to accommodate one tanker truck. Each storage tank would be connected via underground pipelines to one or more loading racks. Petroleum fuels would be conveyed to a given loading rack, and pumped into a customer tanker truck via one or more bottom-loading arms.

All of the tanks at the terminal would have internal floating roofs to allow flexibility in storage of any product in any tank.

Transmix would be stored in the 15,000 bbl tank and transferred at the loading racks to trucks for offsite processing. Separation of the transmix constituents would not be conducted at the Las Vegas terminal.

Truck Loading Racks. The truck loading racks would have bottom-loading arms, with provisions to capture displaced vapor from the truck tank. The captured vapor would be routed to the thermal oxidizer for destruction.

Exhibit 4.2-8 Truck Loading Emissions, Apex Terminal

Emission source	Pollutant	Maximum Throughput (bbl/day)	Maximum Throughput (gal./yr)	Emission Factor (lb/1000 gal.)	Emissions (lb/year)	Emissions (tpy)
Thermal Oxidizer[a]	VOC	42,889	657,488,370	0.0835	54,900	27.45
	CO	42,889	657,488,370	0.0835	54,900	27.45
	NOx	42,889	657,488,370	0.0334	21,960	10.98
Truck Rack Fugitives[b]	VOC				70	0.03

a Captured emissions calculated on the basis of emissions factor provided by the manufacturer of thermal oxidizer.

[b] Fugitive emissions from the loading rack calculated using 99.2 vapor capture efficiency.

Storage Tank and Piping Fugitive Emissions. Fugitive VOC emissions would occur from the bulk storage tanks as they are filled and emptied during daily temperature cycles while the liquid is stored. In addition, small amounts of fugitive emissions would also occur through rim seals, deck fittings, or deck seals. Fugitive emissions of VOC would also be released in small amounts from the numerous pipe fittings, pumps, and other piping components. **Exhibit 4.2-9** details fugitive emissions from bulk storage tanks at the Apex Terminal.

Exhibit 4.2-9 Fugitive Emissions from Bulk Storage Tanks, Apex Terminal

Tanks ID	Tank Capacity (bbls)	Tank Type	Tank Contents[a]	VOC Emissions[b] (lb/yr)	VOC Emissions (tpy)
Tank 150	15,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	4,141	2.07
Tank 301	30,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	4,996	2.50
Tank 302	30,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	4,996	2.50
Tank 303	30,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	4,996	2.50
Tank 304	30,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	4,996	2.50
Tank 551	55,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	7,603	3.80
Tank 552	55,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	7,603	3.80
Tank 553	55,000	Internal floating roof	Gasoline, jet fuel, diesel, ethanol	7,603	3.80

Notes:

[a]Each bulk storage tank at the terminal would be designed to store gasoline, jet fuel, diesel fuel, or ethanol.

[b]Emissions estimates based on storage of gasoline of RVP 10 using USEPA Tanks 4.09d software and Las Vegas, Nevada meteorological data.

Noise

The Proposed Action would have minimal indirect effects on noise levels as a result of continuous operation. There would be a minor increase in local traffic noise resulting from maintenance workers traveling episodically to and from the site. Noise sources associated with the operation of the proposed project primarily include electrically and diesel driven pumps and valves. All pumps and valves are anticipated to comply with an 85 dB(A) at 3 feet specification. The inlet pump station at the pipeline origin would be located in an area that currently contains multiple petroleum products pipelines and is adjacent to refineries. The noise level associated with this pump station is anticipated to be similar to existing levels. The station would be designed to ensure that the noise level from this new facility would comply with the threshold of day-night sound level (L_{dn}) of 55 dB(A).

4.2.2.2. Airport Alternative Route

Construction

Air Quality

Construction impacts would be similar to the Proposed Action under **Section 4.2.2.1**. Impacts would be slightly less than the Proposed Action as the Airport Alternative Route would disturb approximately 17 fewer acres than the Proposed Action.

Noise

Noise intensity, equivalent noise level and duration would not change; however the intrusive noise levels resulting from construction activities may affect the quality of duck club's environment.

Operations, Maintenance, and Abandonment

Air Quality

Operations impacts would be similar to the Proposed Action under **Section 4.2.2.1**.

Noise

Noise associated with the operations of this alternative would be similar to the Proposed Action (**Section 4.2.2.1**).

4.2.2.3. Tooele County Alternative Route

Construction

Air Quality

Construction impacts would be similar to but less than the Proposed Action under **Section 4.2.2.1**, as the Tooele County Alternative Route would disturb approximately 78 fewer acres than the Proposed Action.

Noise

Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

Air Quality

Operations impacts would be similar to the Proposed Action under **Section 4.2.2.1**.

Noise

Noise associated with the operations of this alternative would be similar to the Proposed Action (**Section 4.2.2.1**).

4.2.2.4. Rush Lake Alternative Route

Construction

Air Quality

Construction impacts would be similar to but more than the Proposed Action under **Section 4.2.2.1**, as the Rush Lake Alternative Route would disturb approximately the same number of miles as the Proposed Action.

Noise

Noise intensity, equivalent noise level, and duration would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

Air Quality

Operations impacts would be similar to the Proposed Action under **Section 4.2.2.1**.

Noise

Noise associated with the operations of this alternative would be similar to the Proposed Action (**Section 4.2.2.1**).

4.2.2.5. Millard County Alternative Route

Construction

Air Quality

Construction impacts would be similar to but more than the Proposed Action under **Section 4.2.2.1**, as the Millard County Alternative Route would disturb approximately 135 more acres than the Proposed Action.

Noise

Noise intensity, equivalent noise level and duration would not change. Generation of noise from the Proposed Action would shift away from the populated areas of Lynndyl, Delta, Fillmore and surrounding communities, but impacts would be similar to the Proposed Action.

Operations, Maintenance, and Abandonment

Air Quality

Operations impacts would be similar to the Proposed Action under **Section 4.2.2.1**.

Noise

Noise associated with the operations of this alternative would be similar to the Proposed Action (**Section 4.2.2.1**).

4.2.2.6. No Action

Under the No Action Alternative, no pipeline installation would occur, no pump, pressure-reducing, or terminal stations would be constructed or operated, and there would be no project-related noise impacts. The St. George/Las Vegas region would continue to receive a large portion of their petroleum products via tanker truck. Air quality impacts and noise associated with hauling petroleum products by tanker truck would remain.

No permitting or mitigative measures would be required if the No Action alternative was selected.

4.2.3. Mitigation Measures

The authority to regulate air pollution from industry and commercial activities was promulgated into law in the 1970s. The laws, regulations and programs established in this country have been designed to mitigate air pollution impacts, while still allowing for the production of goods and services. Prior to discussing long- and short-term mitigative measures, a review of the likely permitting efforts required for the Proposed Action is described below.

Best management practices (BMPs) and standard operating procedures would be used to minimize dust. Open burning of brush and vegetation along the proposed route is assumed not to occur. VOC emissions during project operation would be minimized by using BACT at the terminals.

Areas above 85 dB(A) would be posted as high noise level areas and hearing protection would be required.

4.2.3.1. Air Quality

To reduce construction emissions, the project proponent would need to implement emission control measures developed in consultation with either the state regulatory authority or the local Air Quality Management Districts (AQMD). These measures would include the following:

- Properly maintaining and tuning equipment to manufacturers' specifications
- Limiting opacity of fugitive dust off-site to less than 20 percent
- Applying water and/or a nontoxic organic tackifier as a dust suppressant on unpaved roads and construction work areas, including topsoil piles, to limit excessive airborne particulates as a result of construction activities
- Cleaning equipment traveling from an unpaved road to a paved road
- Installing construction entrances to prevent tracking of soil onto paved roads
- Using tarps or other means to enclose material on haul trucks
- Limiting blast footprints to a size that can be stabilized after the blast
- Requiring the contractor to obtain approval from Holly before blasting if wind speeds are 20 miles per hour or greater.

Existing air permitting regulations, associated NSPS, and airshed designations that would apply to these operations have mitigative measures based on emission standards. Loading racks, large petroleum fill tanks, diesel-fired pumps, and thermal oxidizers have performance-based emission standards in place in order to protect the environment. BACT evaluations would be required in permit applications. Properly maintaining and tuning equipment to manufacturers' specifications and regular inspections and emission testing of equipment are usually stated in the applicable NSPS or issued permit.

Nonattainment zones usually have emission credit system that requires the owners of the Proposed Action to purchase emission credits prior to permitting their facilities. The emission credit system helps prevents new facilities from further impact on a nonattainment airshed. Either BACT or Lowest Achievable Emissions Rate (LAER) is applied to new sources located in nonattainment zones.

4.2.3.2. Noise

Construction activities would occur during daylight hours, with the exception of HDD, where required. HDD must be conducted continuously (24 hours per day) until completed. The following measures would be adopted to minimize impact during daytime (7:00 a.m. to 10:00 p.m.) hours:

- All engine-powered equipment would be equipped with adequate mufflers; preventative maintenance program of construction equipment should be implemented.
- Haul trucks would be operated in accordance with posted speed limits; truck engine exhaust brake use would be limited to emergencies;
- Loud stationary construction equipment would be located as far away from residential receptor areas as feasible;
- Proper blasting techniques, including proper cover of charges should be followed;
- Construction equipment back-up indicators noise levels should be monitored, and
- Notification of blasting activities would be provided to nearby residents; a blasting mitigation plan should be prepared.

Long-term mitigations, after the Proposed Action has been constructed, should include:

- Preventative maintenance program for diesel engines, maintenance vehicles, and pumping equipment should be implemented.
- Fencing surrounding the Cedar City and Las Vegas facilities can be constructed from materials that could mitigate the propagation of intrusive noise.

4.2.4. Unavoidable Adverse Effects

4.2.4.1. Air Quality

Airsheds located in nonattainment zones would likely have to buy emission credits to offset slightly increased pollutants, causing a net decrease in emissions. There would be no unavoidable adverse effects.

4.2.4.2. Noise

There would be no unavoidable adverse effects to noise.

4.3. GEOLOGY AND MINERALS

4.3.1. Indicators

Adverse impacts of the proposed project on geologic or mineral resources or the adverse impact of geologic hazards on project features are considered significant and would require additional mitigation if any of the following apply:

- Construction activities or the siting of facilities would worsen existing unfavorable geologic conditions.
- Project construction or operation would preclude or disrupt the development of mineral resources.
- Geologic hazards could cause a rupture or failure of the pipeline or cause damage to related facilities that would present a significant threat to public safety.

4.3.2. Direct and Indirect Effects

4.3.2.1. Proposed Action

Construction

The pipeline would cross a variety of physiographic and geologic terrains that would require a wide range of construction techniques. The depth of the trench necessary to install the pipeline would be approximately 5 feet. At this depth, soft bedrock typically can be excavated with conventional construction equipment. Where hard bedrock is encountered, blasting would be required to complete the excavation. The pipeline route crosses multiple areas of shallow bedrock where bedrock is likely to be encountered during trenching and grading. Blasting for grade or trench excavation would only take place after all other reasonable means of excavation have been tried and are unsuccessful in achieving the required results. Some identified areas where blasting may be required are detailed in **Exhibit 4.3-1**.

Exhibit 4.3-1 Potential Locations for Blasting and Associated Rock Types

Proposed Project Milepost		Length of Estimated Rock Excavation (mi)				General Rock and Rock-Like Material
Begin	End	Localized Possible	Possible	Localized Probable	Probable	
21.5	24.5			3.0		Limestone
27.8	29.2		1.4			Tufa
30.0	30.3			0.3		Limestone
42.0	43.0			1.0		Tufa
43.5	44.0			0.5		Limestone
96.0	96.5		0.5			Lava
108.1	108.6			0.5		Limestone
110.5	110.6		0.1			Limestone
111.5	111.6		0.1			Limestone
152.1	152.4		0.3			Lava
185.0	185.7		0.7			Limestone
193.0	193.2			0.2		Quartzite
214.7	216.2	1.5				Granitic
218.0	218.1	0.1				Granitic
221.2	221.6	0.4				Limestone
237.0	237.2	0.2				Lava
282.0	283.0	1.0				Lava
286.7	287.0	0.3				Lava
287.6	291.7			4.1		Lava
292.7	294.0	1.3				Sandstone
294.8	297.0	2.2				Sandstone; Lava
297.5	298.5			1.0		Lava
302.8	305.2		2.4			Sandstone; Lava
309.7	311.7			2.0		Sandstone
326.0	330.5		4.5			Calcrete
330.5	364.0				33.5	Calcrete
365.5	367.0		1.5			Calcrete
368.5	370.5		2.0			Calcrete
371.5	387.3				15.8	Calcrete
387.3	397.0	9.7				Calcrete
Subtotal Length (mi)		**16.7**	**13.5**	**12.6**	**49.3**	

Earthquakes/Ground Shaking and Liquefaction

Salt Lake County requires an engineering geologist to perform fault rupture and liquefaction analysis on any construction conducted in a fault rupture special study zone. Based on web-based maps, the northernmost portions of the alignment lie near several fault-rupture special study zones. Therefore, prior to initiating construction, an engineering geologist should evaluate whether the alignment requires a Surface Fault Rupture Hazard Study, as required by Salt Lake County's Geologic Hazards Ordinance. If necessary, a Surface Fault Rupture Hazard Study should be prepared by a qualified professional as described in the minimum standards for Surface Fault Rupture Hazard Studies. Project facilities would be constructed and tested to meet federal standards outlined in the Department of Transportation (DOT) regulations in Title 49 CFR Part 190-199, as applicable.

At certain points (see **Exhibit 4.3-1**) the pipeline would pass through materials that may be more difficult to excavate, including shales, limestones, and sandstones. Shallow bedrock or caliche may be encountered. From MP 281 to the Utah-Nevada border (MP 329.4) the pipeline would pass through sandstones, limestones, volcanics, and shales. Blasting may be necessary in these areas. Some areas with materials that are potentially more difficult to excavate could possibly be avoided by shifting the alignment by less than 50 feet. Field reconnaissance should be performed in areas near bedrock outcrops to assess whether shifting the pipeline could eliminate the need for blasting.

In Nevada, although the pipeline route terminates within the Las Vegas Shear Zone, this is not considered a threat to public safety because there are few homes and businesses in the area.

<u>Landslides</u>

Although the implementation of proposed mitigation would not eliminate the possibility of landslides at every landslide-prone area that would be crossed by the pipeline, slope instability has not been associated with the existing facilities. The potential for and impacts of landslides during or resulting from construction would be minimal.

<u>Volcanism</u>

One area of volcanic activity was identified near the proposed pipeline route. Black Rock Volcano at MP 156.7 is not an active volcano and, consequently, would not be expected to have any effect on pipeline construction.

<u>Subsidence</u>

Ground failure assessments have not been conducted from MP 0 to MP 249.5. However, the Kern River alignment was previously evaluated and it was determined that the maximum potential settlement because of collapsing soils along the pipeline route is not expected to be greater than 6 feet (vertical) with stresses spread over hundreds of feet (horizontal). The types of material and topography evaluated for the Kern River alignment are similar to those encountered along the UNEV pipeline route from MP 0 to MP 249.5. Consequently, subsidence from hydrocompaction is not anticipated to adversely affect the UNEV pipeline. Mitigation to avoid adverse impacts is discussed in **Section 4.3.3** below. Potential impacts of hydrocompaction on the pipeline facilities would be insignificant following mitigation. Subsidence from hydrocompaction would not be likely to adversely affect or be affected by the proposed pipeline construction.

<u>Mineral Resources</u>

Although mineral resource areas occur within 0.5-mile of the proposed route, the disturbance as a result of pipeline installation would be temporary and would not hinder access or exploitation of the mineral resources.

Operations, Maintenance, and Abandonment

<u>Earthquakes/Ground Shaking and Liquefaction</u>

The risk of damage resulting from seismic hazards would be lessened by compliance with DOT regulations and by designing the pipeline and aboveground structures to withstand the predicted levels of ground shaking and ground deformation. The potential impact of any fault on the pipeline would depend on the fault activity, expected magnitude of displacement, geometry of the fault crossing, and proximity to population. The potential for large differential ground movements leading to surface rupture would require special design considerations, which would minimize environmental effects.

Landslides

The route for the proposed pipeline avoids areas of slope instability and landslide prone areas where possible. Although the implementation of proposed mitigation to reduce erosion potential would not eliminate the possibility of landslides at every landslide-prone area that would be crossed by the pipeline, slope instability has not been associated with the existing facilities and the landslide-prone areas are typically remote. Consequently, a failure of the pipeline would not present a significant threat to public safety. Therefore, the potential impact of slope instability hazards on the pipeline facilities would be insignificant.

Volcanism

Black Rock Volcano is not an active volcano and, consequently, the potential impact of volcanic hazards on the pipeline facilities operation and maintenance would be insignificant or non-existent for the expected duration of this project.

Subsidence

Potential impacts of hydrocompaction on the pipeline facilities would be insignificant following mitigation.

Mineral Resources

Following mitigation, impacts from pipeline operations and maintenance on future mineral development would be negligible and would not constitute a significant loss of a mineral resource or mineral availability because of the narrow nature of the ROW relative to the expanse of areas with mineral resource potential. Mineral deposits occurring below the pipeline could be accessed from surrounding areas and mining would not be anticipated to be prevented by presence of the pipeline.

4.3.2.2. Airport Alternative Route

Construction

The Airport Alternative Route would be located in easily excavated soils. Because no geologic or mineral resources or potential geologic hazards are present, and no blasting would be required, adverse impacts are not anticipated. Salt Lake County requires that an engineering geologist perform fault rupture and liquefaction analysis on any construction conducted in a fault rupture special study zone. Fault and fault zones include the West Valley Fault Zone between MP 0 and MP 10 and encompass the alternative alignment. Therefore, prior to construction, an engineering geologist should evaluate whether the alignment requires a Surface Fault Rupture Hazard Study, as required by Salt Lake County’s Geologic Hazards Ordinance. If necessary, a Surface Fault Rupture Hazard Study should be prepared by a qualified professional as described in the Minimum Standards for Surface Fault Rupture Hazard Studies.

Operations, Maintenance, and Abandonment

Impacts to geologic and mineral resources from maintenance and operation of the proposed pipeline under the Airport Alternative Route would be the same as those described for the Proposed Action above.

4.3.2.3. Tooele County Alternative Route

Construction

Impacts to geologic and mineral resources from construction of the proposed pipeline under the Tooele County Alternative Route would be similar to those described for the Proposed Action between MP 25 and MP 38.5.

Operations, Maintenance, and Abandonment

Impacts to geologic and mineral resources from maintenance and operation of the proposed pipeline under the Tooele County Alternative Route would be similar to those described for the Proposed Action between MP 25 and MP 38.5.

4.3.2.4. Rush Lake Alternative Route

Construction

Impacts to geologic and mineral resources from construction of the proposed pipeline under the Rush Lake Alternative Route would be similar to those described for the Proposed Action.

Operations, Maintenance, and Abandonment

Impacts to geologic and mineral resources from construction of the proposed pipeline under the Rush Lake Alternative Route would be similar to those described for the Proposed Action.

4.3.2.5. Millard County Alternative Route

Construction

Because no geologic or mineral resources or potential geologic hazards are present on the Millard County Alternative Route, and no blasting would be required, there would be no impacts.

Operations, Maintenance, and Abandonment

Because no geologic or mineral resources are known or being utilized, and no potential geologic hazards are present on the Millard County Alternative Route, there would be no impacts.

4.3.2.6. No Action

Under the No Action Alternative, no project related, ground-disturbing activities would occur in the pipeline project area. The No Action Alternative would have no project-related effect on geology and mineral resources or be affected by geologic hazards. No mitigation would be required.

4.3.3. Mitigation Measures

4.3.3.1. Blasting

Prior to construction, the pipeline route would be evaluated by a Utah/Nevada registered engineering geologist and registered civil engineer to assess what mitigation measures should be taken during construction to protect the pipeline's integrity during an event. This evaluation would include at a minimum, modeling of the pipeline stresses, comparison against DOT regulations and recommendations for modified construction materials, and techniques protective of the pipeline in areas subject to geologic hazards. Additional tasks to be conducted by a Utah/Nevada registered engineering geologist and registered civil engineer are discussed in following sections.

Improperly controlled blasting can damage existing structures and pipelines, wells, and springs. The temporary effects of blasting can include hazards posed by uncontrolled fly-rock and nuisances caused by noise, increased dust, and venting of gases following blasts.

A blasting plan would minimize the effects of blasting and ensure safety during blasting operations. The plan would provide guidelines, requirements, and specifications for the use and storage of blasting materials and for the safety of personnel and nearby facilities. All blasting-related operations would comply with federal, state, and local regulations and permit conditions and would be conducted by, or under the direct supervision of, experienced personnel legally licensed and certified to perform such activity in the jurisdiction where blasting occurs.

To avoid injury to personnel and damage to structures or other features like water wells and any existing pipelines, the blasting plan would stipulate that the blasting contractor must prepare site-specific blasting plans. Among other requirements, these plans would identify the distance and orientation to the nearest structure (both aboveground and underground) and the procedures to be used for storing, handling, transporting, loading, and firing explosives. The site-specific blasting plans would be reviewed by the company engineer and BLM, and the company inspector's approval would be received before each blast.

The blasting plan for the proposed would also stipulate the following:

- Explosives would not be stored on federal land without prior written permission from the land management agency. Copies of this permission would be posted on each magazine.
- Seventy-two hours advance notice of blasting activities would be given to the land management agency, railroads, highway departments, and local communities; occupants of nearby residences, buildings, and businesses; and local farmers.
- Warning signs would be erected and maintained at all approaches to the blast areas and flaggers would be stationed on all roadways passing within 1,000 feet of blasting activities.
- Explosives would not be primed or fused until just before use.
- Blasting would take place during daylight hours only and would be monitored with three-axis seismographs to ensure that safe vibration levels are not exceeded. Vibration measured as peak particle velocity would not exceed 4 inches per second adjacent to an underground pipeline and two inches per second for any aboveground structure (including water wells).

Before commencement of any blasting, the following would be submitted to the BLM (or appropriate land management agency) for approval:

- A copy of the license of the person(s) conducting or supervising the blasting operations and evidence that the person is certified to perform such activity in the jurisdiction where blasting occurs; and
- A copy of the contractor-prepared site-specific blasting plans. The site-specific plans shall include a contingency plan that includes safe methods and procedures to identify any misfired detonations and to proceed with further work after misfires.

The blasting plan and the above recommendations would provide adequate measures and procedures to reduce the potential impacts associated with blasting to negligible levels. If an aboveground structure or water well were inadvertently damaged by blasting, the facility would be repaired and/or replaced or the owner would be adequately compensated.

The proposed pipeline route crosses various linear transmission facilities or shares parallel ROW with oil and gas distribution facilities areas located throughout its length. Construction of the project could damage or disrupt these other lines. To avoid damage or disruption to any other lines crossed by the proposed pipeline, the following actions would be taken:

- Contact and provide the necessary advance notice (no less than 72 hours) to one-call utility location programs before construction.

- Continually probe the depth of cover over foreign line(s) during trench excavation and hand excavate the final 2 feet.
- Install the pipeline with a normal 2-foot vertical separation from other pipelines. In no case would the pipeline be installed with less than 1 foot of separation from another pipeline.

4.3.3.2. Seismicity, Faults, and Earthquakes

If the need for specific design treatment for fault crossings along the proposed pipeline route is established, an engineering geologist would evaluate each fault crossing and prepare a fault study to accompany the Final EIS for this project. Criteria for the engineering geologist to consider include the age of most recent fault activity, the recurrence interval of faulting, and the nearby population density.

4.3.3.3. Liquefaction

Mitigation measures for soil liquefaction hazards would be similar to those discussed above for use at active fault crossings; however, the nature of the ground-surface displacements in liquefaction tends to be of smaller magnitude and dispersed over a wider area. Consequently, acceptable strain in pipe material can generally be sustained without actually implementing the full complement of special mitigation measures that are available. This would be the case for liquefaction-prone areas along the proposed pipeline route. Therefore, the potential for liquefaction induced ground failure along the proposed pipeline route would not be considered a significant hazard requiring mitigation.

However, because of the risk of soil liquefaction in the Salt Lake City area, an engineering geologist should evaluate the soil types and prepare a liquefaction report prior to initiating construction. A qualified engineering geologist should also evaluate the area near the Muddy River, Nevada prior to construction, because limited information is available on liquefaction in Nevada.

4.3.3.4. Landslides

The proposed pipeline route has been sited to avoid landslide-prone areas wherever possible and has avoided areas of slope instability for the vast majority of the pipeline route. In areas that cannot be avoided, the potential for slope instability would be mitigated by implementation of temporary and permanent erosion control and restoration practices and site-specific recommendations. These include the following:

- Installation of slope breakers and sediment barriers across the ROW.
- Installation of ditch plugs (trench breakers) at vertical intervals of 100 feet or less for slope gradients of 20 percent or more.

4.3.3.5. Subsidence

To reduce the potential for hydrocompaction-induced subsidence, the following mitigation measures would be implemented:

- Restore natural drainage patterns that intersect the ROW to prevent ponding over the trench line
- Conduct post-construction surveillance and monitoring of areas susceptible to collapse-induced settlement to identify areas where pipeline maintenance would be necessary to relieve stresses on the pipe.

4.3.3.6. Mineral Resources

In the event any conflicts between the pipeline and other mineral resource operations are identified, the owners of these resources would be compensated for potential losses.

4.3.4. Unavoidable Adverse Effects

Due to the permanence of the pipeline structure, the ROW would limit future surface mining activities immediately on or near the pipeline ROW that may destabilize the structural integrity of the pipeline itself. If a mineable commodity trends from an existing mine, under the proposed pipeline ROW, and then continues on the other side; mining of the commodity would have to cease and then continue on the other side. This would render the material under the pipeline ROW un-mineable and constitute an unavoidable adverse effect.

4.4. PALEONTOLOGICAL RESOURCES

4.4.1. Indicators

The analysis of impacts to paleontological resources is based on a project-specific paleontological resources assessment that included a literature review of known resources, field survey, and assignment of paleontological sensitivity based on sediments. The following indicators were considered when analyzing potential impacts to paleontological resources:

- Known paleontological resources
- Proximity to formations with potential to contain paleontological resources
- Depth of excavations associated with project components

4.4.2. Direct and Indirect Effects

Specific impacts to paleontological resources are not presented, as paleontological resources are generally located by active discovery during surveys, by chance during man-made disturbances, by exposure due to erosion, or other means.

4.4.2.1. Proposed Action

Construction

The majority of construction disturbance within the ROW would be surficial. The pipeline excavation would typically be to a depth of 5 to 6 feet, although special conditions could require additional depth. A typical trench would be 24 to 36 inches wide.

<u>Milepost 0 to 248, Airport Lateral and Cedar City Lateral</u>

The majority of this area of the project is PFYC Class 1, very low. Nine areas were identified as Class 3, moderate or unknown, for a total of 31.9 miles. Class 3 areas are fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

Implementation of mitigation measures would reduce the potential impact from project-related ground disturbance on paleontological resources to an insignificant level by allowing for the recovery of fossil remains, and associated specimen data and corresponding geologic and paleoenvironmental site data, that otherwise might be lost to earth-moving and to unauthorized fossil collecting. These scientific and associated educational values constitute the chief significance of the resource, and their recovery, therefore, mitigates the impacts to that resource.

With a well designed and implemented PRMMP, project construction could potentially result in beneficial impacts to paleontological resources through the recovery of fossil remains that would otherwise not have been exposed and available for study. Crossing of Quaternary alluvial features such as the Stockton Bar may require special plans due to the possibility of excavating Quaternary aged mammal remains. The recovery of fossil remains as part of project construction could help answer important questions regarding the geographic distribution, stratigraphic position, and age of fossiliferous sediments in the area.

Milepost 248 to 400

During the second KRGT project, monitoring for paleontological resources along this stretch was done only in Nevada along that project's "Veyo Loop" and "Dry Lake Loop." These resources were chiefly packrat middens, and assessment by this project finds them to be not scientifically significant.

Operations, Maintenance, and Abandonment

No additional direct impacts to paleontological resources would occur during operations, maintenance, and abandonment. Indirect impacts could potentially occur from increased public access into areas with high paleontological sensitivities and subsequent fossil hunting and collection.

4.4.2.2. Airport Alternative Route

Construction

Impacts to paleontological resources under the Airport Alternative Route would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

No additional direct impacts to paleontological resources would occur during operations, maintenance, and abandonment. Indirect impacts could potentially occur from increased public access into areas with high paleontological sensitivities and subsequent fossil hunting and collection.

4.4.2.3. Tooele County Alternative Route

Construction

Impacts to paleontological resources under the Tooele County Alternative Route would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

No additional direct impacts to paleontological resources would occur during operations, maintenance, and abandonment. Indirect impacts could potentially occur from increased public access into areas with high paleontological sensitivities and subsequent fossil hunting and collection.

4.4.2.4. Rush Lake Alternative Route

Construction

Impacts to paleontological resources under the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

No additional direct impacts to paleontological resources would occur during operations, maintenance, and abandonment. Indirect impacts could potentially occur from increased public access into areas with high paleontological sensitivities and subsequent fossil hunting and collection.

4.4.2.5. Millard County Alternative Route

Construction

The Millard County Alternative Route would impact some areas of high paleontological resource potential. Prior to implementation, were this alternative selected; there would be a further paleontological evaluation of the potential for these resources to be impacted.

Operations, Maintenance, and Abandonment

No additional direct impacts to paleontological resources would occur during operations, maintenance, and abandonment. Indirect impacts could potentially occur from increased public access into areas with high paleontological sensitivities and subsequent fossil hunting and collection.

4.4.2.6. No Action

Under the No Action Alternative, there would be no project-related impacts to paleontological resources.

4.4.3. Mitigation Measures

Based on the information gained from the two KRGT projects along this ROW, and the assessment provided therein, no further monitoring or other paleontological resources mitigation activities are recommended for the stretch of proposed pipeline ROW between mileposts 248 to 399.

Mitigation measures would be implemented to reduce potential adverse impacts to significant paleontological resources resulting from project construction. The mitigation measures proposed below are in compliance with Society of Vertebrate Paleontology (SVP) standard guidelines for mitigating adverse construction-related impacts on paleontological resources (SVP 1991, 1995, 1996). In addition to the mitigation measures listed below, crossing of Quaternary alluvial features such as the Stockton Bar may require special plans due to the possibility of excavating Quaternary aged mammal remains. Implementation of mitigation measures would reduce direct, indirect, and cumulative adverse environmental impacts to a negligible level.

PALEO-1. Further paleontological assessment is to be done in conjunction with pre-construction geotechnical surveys to better define the subsurface geological features of the first stretch of the proposed pipeline ROW. Data from drill logs could help define the vertical and horizontal distribution of paleontologically sensitive subsurface units to provide additional data to better anticipate monitoring needs.

PALEO-2. Paleontological Monitoring. Prior to construction, a BLM-approved paleontologist would be retained to design and implement a monitoring program during project-related earth-moving activities. Prior to construction, the paleontologist would review excavation plans and geotechnical data to determine where paleontologically sensitive stratigraphic units would be disturbed by project-related earth-movement. Excavations would be monitored where these activities would potentially disturb previously undisturbed paleontologically sensitive sediment. Monitoring would not be conducted in stretches that have not been identified as possessing high paleontological sensitivity.

PALEO-3. Paleontological Resources Monitoring and Mitigation Plan. PRMMP would be developed for review and BLM approval prior to construction. The PRMMP would include plans and describe procedures for: construction monitoring and coordination; emergency discovery procedures; sampling and data recovery, if needed; museum storage coordination for any specimen and data recovered; preconstruction coordination; and reporting. Reporting requirements would include monthly monitoring reports as well as a final report.

PALEO-4. Construction Personnel Education. Prior to working on the site for the first time, all personnel involved in earth-moving activities would be provided with Paleontological Resources Awareness Training as a module in their worker environmental awareness training. They would be informed that fossils may be encountered, provided with information on the appearance of fossils, the role of paleontological monitors, and on proper notification procedures. This worker training would be prepared and presented by a BLM-approved paleontologist.

Implementation of these mitigation measures would reduce the potential impact from project-related ground disturbance on paleontological resources to an insignificant level by allowing for the recovery of fossil remains, and associated specimen data and corresponding geologic and paleoenvironmental site data, that otherwise might be lost to earth-moving and to unauthorized fossil collecting. These scientific and associated educational values constitute the chief significance of the resource, and their recovery, therefore, mitigates the impacts to that resource.

With a well designed and implemented PRMMP, project construction could potentially result in beneficial impacts to paleontological resources through the recovery of fossil remains that would otherwise not have been exposed and available for study. The recovery of fossil remains as part of project construction could help answer important questions regarding the geographic distribution, stratigraphic position, and age of fossiliferous sediments in the area.

4.4.4. Unavoidable Adverse Effects

There would be no unavoidable adverse effects to paleontological resources.

4.5. SOILS

4.5.1. Indicators

An adverse impact on soils would be considered significant if project construction or operation caused the following to occur:

- Increased erosion rates or reduce soil productivity by compaction or soil mixing to a level that would prevent successful rehabilitation and eventual reestablishment of vegetative cover to the recommended or preconstruction composition and density.
- Reduced agricultural or rangeland productivity for longer than 3 years because of soil mixing, structural damage, or compaction.
- Increased exposure of human or ecological receptors to potentially hazardous levels of chemicals or explosives due to the disturbance of contaminated soils or to the discharge or disposal into soils of hazardous materials.

4.5.2. Direct and Indirect Effects

4.5.2.1. Proposed Action

Construction

Construction activities associated with project features could potentially result in a number of different soil or soil-related impacts including increased erosion, compaction, reduced fertility, poor revegetation, and the introduction of noxious weeds. Potential impacts would be minimized by implementing mitigation measures described in **Section 4.5.3** below and by adhering to a site-specific Reclamation Plan and Noxious Weed Plan contained in the Plan of Development.

Many of the activities associated with constructing and installing a pipeline, such as gaining access, clearing, grading, trench excavation, backfilling, and the movement of construction equipment on the ROW, can impact soil resources through erosion. Bare or sparsely vegetated, non-cohesive, and fine-textured soils located on moderate to steep slopes are the most erosion-prone. Conversely, erosion-resistant soils tend to be located on flat to nearly level terrain and are well vegetated, with well-structured textures, and high percolation rates.

Construction activities such as clearing, grading, and equipment movement on the ROW would remove the protective vegetative cover, which exposes soil to the erosive effects of wind, rain, and runoff. Without adequate protection, removal of the soil's protective cover would result in the dislodgement and movement of soil particles (sediment) into wetlands and water bodies. Loss of the topsoil through erosion also removes nutrients and lowers soil fertility. Soil, landscape, and climatic factors that influence the rate of erosion include soil texture and structure, the length and percent of slope, vegetative cover, and rainfall or wind intensity.

Soil compaction destroys soil structure, reduces pore space and the moisture holding capacity of the soil, and increases runoff potential. Construction equipment operating and traveling on the construction ROW, especially during wet periods and on poorly drained soils, can compact the soil. The degree of compaction depends on the moisture content and texture of the soil. Wet soils with fine clay textures are the most susceptible to compaction. Storage of heavy spoil piles on certain types of soil for extended periods of time can also cause compaction. Compaction results in soils having a reduced revegetation potential and an increased erosion hazard.

The main pipeline route, Airport Lateral, and Cedar City Lateral disturbance was based on a 75-foot-wide construction ROW. Under the Proposed Action, vegetation would be damaged or removed, increasing susceptibility to erosion on the proposed project area that is approximately 411 miles long (including the Cedar City and Airport laterals), for a total disturbance area of approximately 3,740 acres. This area would also be adversely affected by compaction from heavy equipment operation.

Affected acreage is further subdivided into areas with previous ground disturbance and areas with no previous ground disturbance, because portions of the route follow previously disturbed pipeline ROWs.

Mixing of topsoil with subsoil, leaves less productive soil in the root zone, which lowers soil fertility and the ability of disturbed areas to revegetate successfully. Construction activities such as grading, trenching, and backfilling can cause this mixing of soil horizons, which is often detrimental to establish and highly evolved mycorrhizal communities. Mycorrhizae in the topsoil have a symbiotic relationship with native flora that has evolved over time and is fundamental in the transfer of minerals and nutrients. The protection of these mycorrhizal communities is therefore crucial to successful revegetation of disturbed areas. This can be particularly harmful to site productivity where subsoils have saline or sodic conditions. The appearance of the surface of disturbed soils, when viewed in comparison with adjacent undisturbed soils, can also change following soil mixing. The visual contrast would be especially evident in areas where a desert varnish is present on rock/desert pavement.

Trenching, ripping, or blasting of stony or shallow bedrock soils can bring stones or rock fragments to the surface, which could interfere with agricultural practices and hinder restoration of the ROW.

Construction can facilitate the establishment of noxious or invasive weeds where none or few existed previously. The clearing of existing perennial vegetation provides an opportunity for weed species to invade the ROW, and the movement of equipment on the ROW could transport weed seed and plant parts from one location to another. The seriousness of these effects would depend on the prevalence of weeds in the area of the pipeline route, the type of weed and its method of reproduction and dispersal, the loss of potential natural barriers such as a diversity of vegetation, and the weed's effect on current or future land use.

Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could also have an impact on soils. This potential impact is expected to be minor, however, because of the typically low frequency, volume, and extent of spills or leaks on pipeline construction projects. Oil pipeline spills amount to about 1 gallon per million barrel-miles (PHMSA 2008). One barrel, transported one mile, equals one barrel-mile, and there are 42 gallons in a barrel. In household terms, this would equate to less than one teaspoon of oil spilled per thousand barrel-miles.

Construction would impact biological soil crusts by breaking up the crust through equipment operation and human trampling. The proposed project would result in a long-term impact on these soil crusts on the pipeline ROW, with recovery spanning many decades in the absence of other ground-disturbing activities.

Exhibit 4.5-1 summarizes the total impacts to soils from all project components associated with the Proposed Action.

Improvement of existing primitive roads, in conjunction with the proposed project could result in indirect effects to soils from route proliferation, as the public uses these improved roads to access previously inaccessible public lands. Impacts to soils could include compaction and erosion, however the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Main Pipeline Route Construction Impacts to Soils

Erosion Potential. Based on the soil limitations analysis, pipeline construction would impact approximately 929 acres of soils that are designated as highly susceptible to water erosion, and 1,053 acres of soils that are designated as highly susceptible to wind erosion. These numbers are deceiving in the sense that a large majority of the soils that are recognized as wind erodible are also recognized as water erodible. The categories are not mutually exclusive. In total, the proposed pipeline route would impact approximately 1,276 acres of soil recognized as susceptible to erosion (in general). This consists of 606 acres of previously disturbed soils and 669 acres of undisturbed soils. Soils on the route that are prone to erosion occur in Nevada on about 473 acres (representing 37 percent), with a greater amount in Utah of about 802 acres (representing 63 percent).

Soil Compaction. Approximately 315 acres of soils that are highly susceptible to compaction would be impacted along the pipeline route (approximately 8.7 percent of the route). These consist of approximately 314 acres of previously disturbed soils and 1 acre of undisturbed soils. Nearly all of these soils (about 99 percent) occur in Utah.

Stoney Soil. Only SSURGO data were available for the large stone information (73 percent of the line). Approximately 962 acres of soils that contain stones would be impacted long the pipeline route. Approximately 67 percent of stony soils are found in Utah, and approximately 70 percent of this disturbance would be new.

Shallow Soils. Pipeline construction would impact approximately 1,100 acres of soils designated as shallow soils. Of this total, approximately 429 acres occur on undisturbed soils and the remaining 671 acre occur on previously disturbed soils. These soils are mostly in Utah (56 percent) with 44 percent in Nevada.

Droughty Soils. Only SSURGO data were available for this information (73 percent of the line). Pipeline construction would disturb approximately 1,026 acres of droughty soils (422 acres previously disturbed and 604 acres undisturbed). Approximately 34 percent of these soils are in Nevada and 66 percent are in Utah.

Saline Soils. Saline soil conditions that may affect plant establishment are found on approximately 910 acres of the pipeline route (16 acres previously disturbed and 894 acres of new disturbance). Over 99 percent of these soils are in Utah, with the remaining less than 1 percent in Nevada.

Poor Revegetation Potential. Only SSURGO data were available for this information (73 percent of the line). Poor revegetation potential is the most prevalent soil limitation on the pipeline route.

Approximately 2,020 acres of soils with poor revegetation potential would be affected (428 acres of previously disturbed soils and 1,592 acres undisturbed). Approximately 17 percent of these soils are in Nevada and 83 percent are in Utah.

Prime Farmland and Farmland of Statewide Importance Soils. Only SSURGO data were available for prime farmland and farmland of statewide important soils (73 percent of the line). Pipeline construction would temporarily disturb about 184 acres of Prime Farmland soils and 521 acre of Farmland of Statewide Importance soils, all of which occur in Utah. No permanent loss of productivity is proposed to occur on these soils on the pipeline route.

Airport Lateral Construction Impacts to Soils

Erosion Potential. Construction of the Airport Lateral would impact approximately 9 acres of soils that are susceptible to water erosion and 12 acres susceptible to wind erosion.

Soil Compaction. Approximately 19 acres of soils that are highly susceptible to compaction would be impacted along the Airport Lateral route.

Droughty Soils. Only SSURGO data were available for this information (73 percent of the line). Construction along the Airport Later would disturb approximately 9 acres of droughty soils.

Saline Soils. Saline soil conditions that may affect plant establishment are found on approximately 20 acres of the Airport Lateral route.

Poor Revegetation Potential. The entire Airport Lateral route, over 21 acre, contains soils with poor revegetation potential.

Cedar City Lateral Construction Impacts to Soils

Erosion Potential. Construction of the Cedar City Lateral would impact approximately 30 acres of soils that are susceptible to wind erosion.

Droughty Soils. Construction of the Cedar City Lateral would impact approximately 18 acres of soils that may have droughty conditions.

Saline Soils. Construction of the Cedar City Lateral would impact approximately 17 acres of soils that may have saline soil conditions above 8 mmhos/cm.

Poor Revegetation Potential. Construction of the Cedar City Lateral would impact approximately 34 acres of soils that may have poor revegetation potential.

Prime Farmland and Farmland of Statewide Importance Soils. Construction of the Cedar City Lateral would temporarily disturb approximately 8 acres of Farmland of Statewide Importance. No permanent impacts would occur on these lands.

Aboveground Facilities Construction Impacts to Soils

Impacts and mitigation associated with the new aboveground facilities would be similar to those described for construction of the pipeline facilities, Cedar City Lateral, and access roads; however, a portion of impacts at these locations would be permanent. Areas covered with permanent structures would become impermeable. Areas disturbed during construction but not covered with structures would return lands to their natural contours and revegetated. Mitigation measures implemented in these locations would be limited to erosion control measures as described in the POD and summarized above. Soil impacts associated with aboveground facilities, although not fully mitigated, would not be considered significant because of the relatively small amount of soils affected.

Erosion Potential. Aboveground facilities construction would disturb nearly 40 acres of soils in Nevada susceptible to water erosion, and approximately 48 acres susceptible to wind erosion, the majority of which would be in Nevada.

Soil Compaction. Aboveground facilities construction would disturb approximately 2 acres of soils in Utah susceptible to soil compaction.

Stony Soils. Aboveground facilities construction would disturb approximately 40 acres of soils in Nevada that are stony.

Shallow Soils. Aboveground facilities construction would disturb approximately 40 acres of soils in Nevada designated as shallow soils.

Droughty Soils. Aboveground facilities construction would disturb approximately 2 acres of soils in Utah designated as having droughty conditions.

Saline Soils. Construction of aboveground facilities would impact approximately 3 acres of soils in Utah that may have saline soil conditions exceeding 8 mmhos/cm.

Poor Revegetation Potential. Disturbance of the 3 acres of soils in Utah exhibiting saline may contribute to poor revegetation potential on these acres.

Prime Farmland and Farmland of Statewide Importance Soils. Approximately 8 acres of Farmland of Statewide Importance and 2 acres of Prime Farmland would be disturbed during aboveground facility construction in Utah. Permanent impacts would occur on a portion of these lands.

Access Roads Construction Impacts to Soils

Erosion Potential. Access road construction would disturb approximately 0.5 acre of soils in Utah susceptible to water erosion.

Soil Compaction. Access road construction would disturb approximately 0.2 acre of soils in Utah susceptible to soil compaction.

Stoney Soil. Access road construction would disturb approximately 0.5 acre of soils in Utah a designated as stony.

Shallow Soils. Access road construction would disturb approximately 1.5 acres of soils in Utah designated as shallow soils.

Droughty Soils. Access road construction would disturb approximately 0.1 acre of soils in Utah designated as having droughty conditions.

S*aline Soils.* Approximately 1 acre of undisturbed soils in Utah along the access roads may have saline soil conditions exceeding 8 mmhos/cm.

Poor Revegetation Potential. Revegetation could be difficult on 1.5 acres in Utah after disturbance from activities within proposed staging areas.

Prime Farmland and Farmland of Statewide Importance Soils. Approximately 0.5 acre of Farmland of Statewide Importance and 0.1 acre of prime Farmland would be disturbed during construction of access roads. All of these occur in Utah. No permanent impacts would occur on these lands.

Staging Areas Construction Impacts to Soils

Erosion Potential. Activities within staging areas would disturb approximately 6 acres of soils susceptible to water erosion and approximately 7 acres susceptible to wind erosion.

Soil Compaction. Activities within staging areas would disturb approximately 5 acres of soils susceptible to soil compaction, all of which are found in Utah.

Stoney Soil. Activities within staging areas would disturb approximately 2 acres of soils designated as stony, all of which are found in Utah.

Shallow Soils. Activities within staging areas would disturb approximately 7 acres of soils designated as shallow soils, the majority of which are found in Utah.

Droughty Soils. Activities within staging areas would disturb approximately 4 acres of soils in Utah designated as having droughty conditions.

Saline Soils. Approximately 3 acres of undisturbed soils in Utah within proposed staging areas may have saline soil conditions exceeding 8 mmhos/cm.

Poor Revegetation Potential. Revegetation could be difficult on 9 acres of staging areas in Utah have soils with poor revegetation potential.

Prime Farmland and Farmland of Statewide Importance Soils. Approximately 4 acres of Farmland of Statewide Importance and 1 acre of prime Farmland would be disturbed by activities within staging areas. All of these occur in Utah. No permanent impacts would occur on these lands.

Summary

Implementation of the mitigation measures described below to protect soils from adverse effects from erosion, compaction, excess rock, weeds, and soil contamination from spills or leaks, along with the institution of soil segregation practices would reduce impacts to less than significant levels. In areas where top soils are segregated, mixing of soil horizons would be minimized, however some mixing of soil horizons (particularly the lower horizons) would be inevitable throughout the project area.

Exhibit 4.5-1 Summary of Soil Characteristics and Limitations for the Proposed Action*

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
SSURGO Data										
Utah										
New Disturbance	142.8	508.8	257.6	575.9	525.7	302.2	910.2	1529.7	170.5	507.2
Existing Disturbance	195.2	143.1	204.2	66.7	173.6	0.0	16.1	189.7	17.4	35.5
Utah Total Disturbance	338.0	651.9	461.7	642.6	699.2	302.2	926.3	1719.4	187.9	542.7
Nevada										
New Disturbance	188.1	188.1	186.4	137.2	102.8	2.3	6.9	110.1	0.0	0.0
Existing Disturbance	328.1	328.1	335.5	224.5	248.3	1.2	0.3	238.0	0.0	0.0
Nevada Total Disturbance	516.2	516.2	521.9	361.6	351.1	3.4	7.2	348.0	0.0	0.0
Total Disturbance	854.2	1168.1	983.6	1004.3	1050.3	305.7	933.5	2067.4	187.9	542.7

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
% Utah	39.6%	55.8%	46.9%	64.0%	66.6%	98.9%	99.2%	83.2%	100.0%	100.0%
% Nevada	60.4%	44.2%	53.1%	36.0%	33.4%	1.1%	0.8%	16.8%	0.0%	0.0%
STATSGO Data										
Utah										
New Disturbance	41.1	0.0	31.9	0.0	0.0	17.0	0.0	17.0	0.0	0.0
Existing Disturbance	79.9	0.0	132.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	121.0	0.0	164.7	0.0	0.0	17.0	0.0	17.0	0.0	0.0
Grand Total										
Grand Total	975.2	1168.1	1148.3	1004.3	1050.3	322.7	933.5	2084.4	187.9	542.7

*Includes the main pipeline route, Airport Lateral, Cedar City Lateral, aboveground facilities, access roads and staging areas.

Operations, Maintenance, and Abandonment

Pipeline Facilities, Cedar City Lateral, and Access Roads

Operation and maintenance of the proposed project would involve little additional soils disturbance. Pipelines would be monitored and maintained over the life of the project utilizing existing roadways to access the pipeline. Soils disturbance would be required for any future pipeline repairs, although those are anticipated to be rare with the area disturbed minimal. Any disturbance would be reclaimed and appropriately revegetated to prevent erosion. Upon abandonment, the pipeline would be capped and left in place, requiring no ground disturbance.

Aboveground Facilities

Operation and maintenance of the proposed project would involve little additional soils disturbance. Aboveground facilities would be accessed via established roads and would require no additional ground disturbance. Some maintenance of aboveground facilities may be required over the life of the project, which may require ground disturbance. This disturbance would be rare and of minimal extent. Any disturbance would be reclaimed and appropriately revegetated to prevent erosion.

4.5.2.2. Airport Alternative Route

Construction

Exhibit 4.5-2 summarizes the differences in soils impacts between the Airport Alternative Route and the segment of the Proposed Action route that correlates to the Airport Alternative Route. Soils within the Airport Alternative Route are perennially inundated and would require dewatering prior to construction. Future restoration of the soils to their existing condition, and associated effects, would depend on whether the soils are to be maintained in a dewatered condition. Overall the Airport Alternative Route would disturb approximately 0.5 acre more soils than the corresponding Proposed

Action route. The Airport Alternative Route would disturb over 9 more acres of soils susceptible to erosion and approximately 4 more acres of soils susceptible to compaction, but nearly 5.5 fewer acres with shallow soils. However, the alternative route would disturb approximately 7 more acres of farmlands of statewide importance.

Operations, Maintenance, and Abandonment

Effects of operations, maintenance and abandonment would be the same as those described for the pipeline under the Proposed Action.

4.5.2.3. Tooele County Alternative Route

Construction

Exhibit 4.5-3 summarizes the differences in soils impacts between the Tooele County Alternative Route and the segment of the Proposed Action route that correlates to the Tooele County Alternative Route. Overall the Tooele County Alternative Route would disturb nearly 17.5 acres more soils than the corresponding Proposed Action segment. Construction of the pipeline via the Tooele County Alternative Route would disturb approximately 4 fewer acres of shallow soils, approximately 37 fewer acres of stony soils, approximately 36 more acres of droughty soil, approximately 42 more acres subject to compaction, approximately 77 more acres with poor revegetation potential, and approximately 7 more acres of farmland of statewide importance.

Operations, Maintenance, and Abandonment

Effects of operations, maintenance and abandonment would be the same as those described for the pipeline under the Proposed Action.

Exhibit 4.5-2 Comparison of Impacts to Soils between the Airport Alternative Route and the Proposed Action

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Airport Alt Route	29.35	29.35	0	0	0	29.35	3.42	29.64	0	11.6
Proposed Action Segment	19.83	19.83	5.47	0	0	25.3	3.81	29.11	0	4.32
Difference	9.52	9.52	-5.47	0	0	4.05	-0.39	0.53	0	7.28

Exhibit 4.5-3 Comparison of Impacts to Soils between the Tooele County Alternative Route and the Proposed Action

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Tooele County Alt	0	0	3.39	60.73	35.75	42.06	0	77.8	0	78.36
Proposed Action Segment	0	0	7.76	97.89	0	0	0	0	0	71.74
Difference	0	0	-4.37	-37.16	35.75	42.06	0	77.8	0	6.62

Exhibit 4.5-4 Comparison of Impacts to Soils between the Millard County Alternative Route and the Proposed Action

State	Water Erosion Potential	Wind Erosion Potential	Shallow Soil	Stony Soil	Droughty Soil	Compaction	Saline	Poor Revegetation	Prime if Irrigated	Statewide Importance
Millard County Alt	0	230.5	1.4	21.86	121.57	38.19	397.19	503.2	10.13	14.81
Proposed Action Segment	18.95	18.95	0	13.11	161.21	106.19	260.1	421.32	27.56	30.1
Difference	-18.95	211.55	1.4	8.75	-39.64	-68	137.09	81.88	-17.43	-15.29

4.5.2.4. Rush Lake Alternative Route

Construction

Effects of construction would be the same as those described for the pipeline under the Proposed Action.

Operations, Maintenance, and Abandonment

Effects of operations, maintenance and abandonment would be the same as those described for the pipeline under the Proposed Action.

4.5.2.5. Millard County Alternative Route

Construction

Exhibit 4.5-4 summarizes the differences in soils impacts between the Millard County Alternative Route and the segment of the Proposed Action route that correlates to the Millard County Alternative Route.

The Millard County Alternative Route would disturb approximately 109 more acres of soils than the corresponding Proposed Action segment. Construction of the pipeline via the Millard County Alternative Route would disturb approximately 212 more acres of soils with wind erosion potential, approximately 137 more acres of saline soils and approximately 89 more acres of soils with poor revegetation potential. However, the alternative route would disturb approximately 17 fewer acres of soils that would be prime farmland if they were irrigated, and approximately 15 fewer acres of farmland of statewide importance.

Operations, Maintenance, and Abandonment

Effects of operations, maintenance and abandonment would be the same as those described for the pipeline under the Proposed Action.

4.5.2.6. No Action

Under the No Action Alternative, no project related, ground-disturbing activities would occur in the pipeline project area. The No Action Alternative would have no project-related effect on soils. No mitigation would be required.

4.5.3. Mitigation Measures

Potential impacts and measures that would be employed to minimize adverse soil effects are discussed in the following text.

Erosion control measures proposed for the pipeline are detailed in the POD. To summarize, during construction various erosion control measures would be installed and maintained. These include temporary water bars on slopes and temporary sediment barriers such as straw bales or silt fences across the ROW during construction at the base of slopes, adjacent to water bodies, wetlands, and roadways, and along the edge of the ROW as necessary to prevent sediment from flowing off the ROW. Erosion control netting would be installed on waterbody banks, on very steep slopes, and in drainages that may be susceptible to erosion. To protect topsoil from wind erosion, water and/or a water-based non-toxic, organic tackifier would be applied to the topsoil piles in all areas identified as highly susceptible to wind erosion and in other areas where soil conditions warrant.

Reclamation efforts to enhance revegetation and address soils with poor revegetation potential would be undertaken. These efforts would include topsoil segregation on all public lands and in selected locations on private lands; re-contouring, applying erosion control mulch on slopes, re-spreading cut vegetation or preserved rock mulch, imprinting the surface of the ROW, installing permanent water bars, and seeding with endemic species adaptable to the climate and consistent with established mycorrhizal communities. These measures would reduce soil loss through wind erosion, as well as preserve the integrity and long standing symbiotic relationships of floral-mycorrhizal systems.

The POD addresses ways to minimize and avoid compaction. Compaction would be minimized by adjusting construction schedules to avoid compaction-prone areas during short-term weather events or when those areas are wet for extended periods of time. Rutting and compaction would be avoided or minimized by operating heavy construction equipment on timber mats across minor tributaries, adjacent wetlands, and other areas as deemed necessary during construction. The project proponent, in conjunction with the agencies' compliance monitoring staff, would be responsible for assessing the potential for compaction given the soil type, hydrologic conditions, and current and predicted weather events. After construction, disturbed soils would be tested for compaction using a cone penetrometer or other appropriate device and compared to adjacent undisturbed soils. If compaction occurs, soils would be plowed with a paratill, paraplow, or other deep tillage device to alleviate compaction. In situations where saline subsoils occur, it may be necessary to implement special mitigation measures to avoid mixing of subsoil/surface during tillage operations.

Topsoil segregation helps preserve the superior chemical and physical properties of the topsoil and protects the native seed source. Topsoil would be segregated on all disturbed public lands, and in selected areas on private lands to reduce the occurrence of mixing soil horizons within the pipeline trenching area. Topsoil would be segregated in all cultivated or rotated agricultural lands, hay fields, and residential areas, in addition to those areas where the landowner requests that it occur. Letters would be sent to all landowners requesting that they notify the project proponent of their desire to have topsoil segregation performed on their land.

In general, topsoil segregation is accomplished by separating the topsoil from the subsoil during trenching operations and replacing the soil in the proper order during backfilling and final grading. The entire topsoil layer would be segregated, to the extent possible, with at least 12 inches of topsoil segregated where present. Topsoil would be segregated from the trench and subsoil storage area only (trench plus spoilside method). The determination of where topsoil segregation would occur on private lands would be finalized before construction in accordance with the request of each landowner and as negotiated in the ROW easement.

It would be the responsibility of project inspectors to ensure contractor compliance with the topsoil segregation requirements of all permits and approvals. Other controls would include oversight by the BLM, the USFS, other regulatory agencies, and third-party compliance monitors representing the agencies.

On all public lands, all excavated rock would be left in place on the ROW to discourage motorized use of the ROW after construction. In all actively cultivated or rotated cropland and improved pastures, surface rock rubble impacts would be minimized by segregating topsoil and removing (picking) excess rock from the top 12 inches of soil so that the size, density, and distribution of rock on the ROW is similar to adjacent undisturbed areas. On rangelands, rocks would be disposed of on the ROW by scattering them in a natural pattern, as permitted by the landowner or land management agency. If caliche is found in the subsoil, small pieces would be buried in the ROW with at least 24 inches of cover while larger pieces of caliche may be disposed of in an appropriate landfill.

To minimize and control the spread of noxious weeds, a Noxious Weed Plan and site-specific Reclamation Plan would be implemented as part of the POD.

A project-specific Spill Plan would be followed to minimize the potential impact of a hazardous spill or release if such an event occurred.

4.5.4. Unavoidable Adverse Effects

Disturbance of soils as a result of implementation of the Proposed Action or any of the action alternatives is unavoidable. Although mixing of soil horizons would be an unavoidable result of the project, no appreciable adverse effects are anticipated. Despite implementation of mitigation measures, some degree of short-term adverse effects to soils from compaction and erosion resulting from construction would be unavoidable. Impermeable surfaces resulting from construction of aboveground facilities would result in long-term unavoidable adverse effects to soils. These unavoidable adverse impacts would be anticipated to be minimal.

4.6. WATER RESOURCES

4.6.1. Indicators

Adverse impacts on groundwater resources would be considered significant and would require additional mitigation if any of the following occur during project construction and/or operation:

- Alter the flow of groundwater to local springs.
- Interrupt or degrade groundwater used for private or municipal purposes.
- Contaminate aquifers underlying the pipeline.
- Result in either short- or long-term violation of federal, tribal, or state agency numerical water quality standards or water quality objectives.

Adverse impacts on surface waters would be considered significant and would require additional mitigation if any of the following would occur during project construction or operation:

- Alter channel bed composition and bank armoring so it results in short- or long-term erosion.
- Cause the re-suspension of contaminated bottom sediments that would degrade the quality of water downstream.
- Result in sedimentation that adversely affects the operation of irrigation water control structures, gates, or valves or the quality of municipal water supply reservoirs, or adversely affects aquatic biological resources and habitat.
- Reduce stream flow quantity where such a flow change would significantly damage beneficial uses or degrade habitat.
- Alter any hydrologic characteristics of perennial, intermittent, or other water bodies crossed by the pipeline or access roads from conditions existing prior to construction.
- Contaminate surface waters crossed by the pipeline.
- Result in either short- or long-term violation of federal, tribal, or state agency numerical water quality standards or water quality objectives.

A wide variety of hydrogeologic conditions may be found along the UNEV pipeline alignment through Tooele and Rush Valleys. In some areas, such as northern Tooele Valley and northern Rush Valley, the possibility of a petroleum product release reaching the drinking water aquifer is remote because of the presence of abundant clays. In other areas, such as southern Tooele Valley, the possibility of a release reaching the drinking water aquifer is greater. Complex layers of sands, gravels, and some clays would slow but would not stop the movement of a release to the drinking water aquifer. In these areas rapid deployment of spill response personnel and equipment would be emphasized. To increase the margin of safety, thicker walled pipe may be considered, particularly within primary recharge areas.

4.6.2. Direct and Indirect Effects

4.6.2.1. Proposed Action

The following sections describe construction, operational and maintenance impacts associated with the Proposed Action for the categories of groundwater resources (general, water supply wells and springs) and surface water resources (general and perennial, intermittent, open, other water bodies, and wetlands).

Construction

Groundwater - General

Construction of the pipeline and associated aboveground facilities could affect groundwater in several ways. Clearing, grading, trenching, and soil stockpiling activities would temporarily alter overland flow and could temporarily impact localized groundwater recharge patterns. Near-surface soil compaction caused by heavy construction equipment/vehicles could reduce the soil's ability to absorb water. These impacts would be temporary and minor.

Trenching could cause temporary fluctuations in the elevation of the water table where the water table is within 6 to 8 feet of the ground surface. Trench dewatering would only be required in areas with a high water table, and the duration of these operations should be short, typically several days or less. Discharge water from the trenches would be directed toward well-vegetated upland areas if present or properly constructed dewatering structures or filter bags, which would allow the water to infiltrate back into the soil and return to the underlying aquifer. Trench dewatering would be conducted in compliance with applicable permits. Impacts on groundwater associated with trench dewatering would be temporary and minor to negligible.

The alteration of the natural soil strata by trenching and other earthwork could eliminate some existing groundwater pathways or result in new migration pathways for groundwater. However, for the majority of the pipeline route it is assumed that the depth to groundwater would be greater than 8 feet bgs (**Section 3.6.3.2**) and therefore this impact would be negligible.

Accidental spills or leaks of hazardous materials associated with construction equipment failures, the refueling or maintenance of vehicles, or the storage of fuel, oil, and other fluids during construction pose the greatest risk to groundwater resources. Spills or leaks of hazardous liquids could contaminate shallow groundwater aquifers and then migrate toward nearby water supply wells. If not cleaned up, contaminated soils could continue to leach and add pollutants to the groundwater long after a spill has occurred and continue to adversely affect groundwater aquifers. These impacts would be long-term and minor to major.

Water needed for construction would be acquired from one or more of the following sources: municipal water supply, wells, or surface water. Construction water usage would not be more than the allocated water right and would be acquired under agreement with the respective water right holder, therefore construction water supply impacts would be negligible.

Water Supply Wells and Springs

Utah. The direct effects of construction activities on the majority of water supply wells and springs would be limited to the pipeline ROW and are not anticipated to result in long-term impacts to water supply wells. However, four water supply wells have been identified as being within less than 10 feet of the proposed path of the pipeline (**Exhibit 3.6-1**). These water supply wells require field checking prior to final construction plans to determine whether they are in fact within less than 10 feet of the pipeline. If well structures were to be affected by pipeline construction, the pipeline alignment may be altered. Springs within 10 feet of the pipeline would be addressed similarly.

A total of 4 miles of SWP Zone 2, 9 miles of Zone 3, and 30 miles of Zone 4 is crossed by the pipeline. Based on a 75-foot wide construction ROW, a total of 36 acres of Zone 2, 82 acres of Zone 3, and 273 acres of Zone 4 would be affected by the pipeline construction. Impacts to these zones, based on the construction activities described below, would be temporary to short-term and minor.

Construction activities, such as blasting of bedrock, could potentially change groundwater flow intersecting water supply wells and springs. The blasting could also potentially increase turbidity within nearby water supply wells and springs. The degree of impact would be directly related to how close the water supply well or spring is located to the pipeline, as well as to what depth the water supply was screened (e.g. the deeper the screen interval, the less potential for impact). Changes in groundwater flow and turbidity would be temporary and minor. Groundwater flow and turbidity should return to normal following the conclusion of construction.

Nevada. Construction impacts are not anticipated because no wells or springs were identified within 200 feet (from the centerline) of the pipeline route in Nevada.

Surface Water - General

Direct in-stream effects associated with open-cut crossings would result in the greatest general impact on water resources. The construction process would temporarily alter surface contours causing minor changes to surface water runoff paths. The construction process would also create sediment sources that could potentially be entrained by surface waters and carried off-site. These impacts would likely be temporary and minor to negligible. **Exhibit 4.6-1** provides a summary of the approximate acreage of impacts to potentially jurisdictional wetlands and other waters of the U.S. as a result of the Proposed Action within a 75-foot wide construction ROW. **Exhibit 4.6-2** provides a summary of the approximately acreage of impacts to potentially non-jurisdictional wetlands and other waters of the U.S. as a result of the Proposed Action.

Exhibit 4.6-1 Summary of Potentially Jurisdictional Impacts as a Result of the Proposed Action

Jurisdictional Wetlands	**Acres**
Emergent Wetlands	20.61
Seasonal Wetlands	18.31
Salt Flat Wetlands	13.92
Total Jurisdictional Wetlands	52.84
Other Jurisdictional Waters	
Jordan River	0.09
Rush Lake	11.46
DMAD Reservoir	1.47
Ponds	0.87
Intermittent Creeks	0.89
Canals	0.75
Excavated Drainages	0.11
Ephemeral Washes	0.30
Total Other Jurisdictional Waters	15.94
Total Potential Jurisdictional Impacts	68.78

Exhibit 4.6-2 Summary of Potentially Non-Jurisdictional Impacts as a Result of the Proposed Action

Other Waters	Acres
Kennecott Mine Retention Ponds	2.0
Catchment Basin	0.77
Erosional Channels	2.88
Playas	34.03
Total Potential Non-Jurisdictional Impacts	39.73

<u>Floodplains</u>

Although floodplain areas have not been mapped by the Federal Emergency management Agency (FEMA) within the pipeline corridor, the pipeline and access roads would be designed to transport the 100-year flood event for large crossings, such as the Sevier River, or other drainages where floodplains occur, in locations specified by the BLM. Design criteria would include properly sizing culverts with enough capacity to safely pass the peak discharge from the 100-year food event, as well as preventing any expansion of the existing floodplain area due to the placement of new embankment.

<u>Perennial Water bodies (Jordan River, Rush Lake, and DMAD Reservoir)</u>

Perennial water bodies (streams and/or rivers that flow year-round, and reservoirs) along the proposed pipeline route would be crossed by horizontal directional drilling (**Section 2.1.2.2**). River banks could be susceptible to higher rates of erosion following construction of the pipeline if not properly revegetated and compacted with materials similar to those lining the bank on either side of the crossing. These impacts would be short-term and minor to moderate. Impacts to water quality would likely be negligible, because all river-crossing construction would occur below the bed surface of the water body.

<u>Intermittent Water bodies (Intermittent Creeks, Excavated Drainages, Ephemeral Washes, Erosional Channels, Playas, Upland Swales, and Other Areas)</u>

Construction of the pipeline where open-cut crossings are used (**Section 2.1.2.2**) would result in the greatest impact on intermittent water bodies. The construction process would generally create increased amounts of sediment available to enter intermittent water bodies, should water be present. Following the installation of the pipeline, scouring could occur in some intermittent water bodies if the bed surfaces are not compacted properly. Following construction of the pipeline, banks of intermittent water bodies could be susceptible to higher rates of erosion if not properly re-vegetated and compacted with materials similar to those lining the bank on either side of the crossing. These impacts would be short-term to long-term and minor to moderate, depending on the size and morphology of the water body crossed.

<u>Open Water bodies (Ponds and Open Water)</u>

Construction of the pipeline across open water bodies such as lakes and ponds would have a impact on water quality. The construction process would generally create increased amounts of sediment available to enter the water. Following construction, the banks of the open water bodies could be susceptible to higher rates of erosion if not properly re-vegetated and compacted with materials similar to those lining the bank on either side of the crossing. These impacts would be temporary and minor to moderate, depending on the degree of sedimentation and erosion.

Other Water bodies (Canals)

Construction of the pipeline where open-cut crossings are used would result in the greatest impact on other water bodies (canals, irrigation ditches). The construction process would generally create increased amounts of sediment available to enter the water. Following construction of the pipeline, canal and irrigation ditch banks could be susceptible to higher rates of erosion if not properly re-vegetated and compacted with materials similar to those lining the bank on either side of the crossing. These impacts would likely be short-term and minor.

Wetlands and Waters of the U.S.

Based on a 75-foot wide construction ROW, **Exhibits 4.6-1** and **4.6-2** provide the approximate acreage of impact to wetlands and other waters of the U.S. as a result of construction of the Proposed Action. An acreage of impact to jurisdictional features exceeding a cumulative 0.5 acre for the project would require an Individual Permit from the USACE, in accordance with Section 404 of the Clean Water Act.

The proponent would minimize indirect impacts to wetlands by complying with the USACE Section 404 permit conditions and state-issued Section 401 water quality certifications or waivers, and by implementing wetland construction and restoration measures. These measures would be an integral part of the Proposed Action and would be included in the final Plan of Development and Record of Decision. The proponent's proposed wetland mitigation (described in **Section 4.6.3** below) is designed to minimize the area and duration of wetland disturbance, reduce the disturbance of wetland soils, and enhance wetland restoration following construction.

Kennecott Mine Retention Ponds/Wetlands

Although not considered jurisdictional, emergent wetlands and open water ponds occur on land owned Kennecott Utah Copper Corporation (KUCC) adjacent to Interstate 80 near the Salt Lake/Tooele County border (referred to as the "North Zone wetlands"). The proposed UNEV pipeline alignment crosses the North Zone wetlands between approximately MP19.5 and MP21.

The KUCC North and South Zones were proposed for the EPA's National Priorities List in January 1994, although final listing was deferred in September 1995 in accordance with the terms of a three-party Memorandum of Understanding (MOU) between EPA, the UDEQ, and KUCC. A total of four Records of Decision (ROD) were issued between 1998 and 2002, regarding cleanup activities on the KUCC properties. Cleanups have been supervised by a variety of federal and state agencies using a variety of environmental statutes including Emergency Response and Remedial Studies provisions of the Comprehensive Environmental, Response, and Liability Act (CERCLA), the RCRA corrective action, Utah Pollutant Discharge Elimination System (UPDES) permit provisions, and CWA Section 404 permit provisions. The fourth ROD (EPA 2002) governs cleanup activities on the north end of the associated with the ponds and wetlands, as well as contaminated groundwater, located within and in the vicinity of the construction corridor, referred to in the ROD as Operable Unit Nos. 22 (Great Salt Lake and associated wetlands) and 23 (North End groundwater).

Contamination within the North Zone wetlands exists as elevated levels of selenium as a result of leaching from mining facilities since the early 1900's. Elevated selenium levels are present in both the soil and groundwater, and selenium enters the wetlands via spring and artesian groundwater expression. Ongoing efforts are in place to remediate contaminated areas of the KUCC North Zone, as detailed in the Kennecott North Zone ROD (EPA 2002). Additional sources of contamination include arsenic, lead, and other heavy metals, although selenium remediation has been the primary focus of cleanup efforts.

Because of the presence of contaminated soil and groundwater, special consideration would be made for construction, erosion control, and containment practices in this area. These are described in detail in the POD.

Operations, Maintenance, and Abandonment

In the event of an accidental pipeline release, water resources in the vicinity of the release, including water supply wells and/or springs, could potentially be impacted if the release migrated far enough offsite. These impacts would be long-term and minor to major, depending on the degree of the release.

Groundwater - General

Operational and maintenance impacts would be limited to accidental spills and possible future excavation activities. Accidental spills or leaks of hazardous materials associated with equipment failures, chemical vegetation treatments, and the refueling or maintenance of vehicles could possibly occur during normal operations of the pipeline. Spills or leaks of hazardous liquids could contaminate groundwater and affect aquifers. These impacts would be temporary to long-term and negligible to major, depending on the degree, severity, and containment of the spill.

Excavation activities could occur if repairs to the pipeline were required at some point in the future. These impacts would be similar in type to the construction impacts, although maintenance impacts would be temporary and negligible.

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to groundwater resources.

Water Supply Wells and Springs

Utah. Operational and maintenance impacts to water supply wells and springs are not anticipated under normal conditions, as these activities would be restricted to the pipeline ROW. *Nevada.* Operation, maintenance, and abandonment impacts to water supply wells and springs are not anticipated because none were identified within 200 feet of the pipeline route in Nevada.

Surface Water - General

The general impact of operational and maintenance programs along the pipeline would be limited to truck traffic on the access road parallel to the pipeline, associated repair work along the pipeline. These impacts would be temporary and negligible.

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to surface water resources. Perennial Water bodies (Jordan River, Rush Lake and DMAD Reservoir)

Operational and maintenance impacts to perennial water bodies would include traffic along the pipeline, repairs, and/or the potential for accidental spills/releases. The traffic would potentially cause the release of sediment into the water and damage the banks on either side of the waterbody. Repair work to the pipeline could entail excavation, which would create river bank conditions similar to initial construction for a limited period of time over an area limited by the extent of the repair. These impacts would likely be temporary to short-term and negligible.

Accidental spills from maintenance equipment and/or releases from the pipeline could potentially occur during pipeline operation. Both spills and releases could become incorporated into perennial water bodies and adversely affect water quality. However, the materials compacted around the pipeline would hopefully prevent such a release from reaching the ground surface and entering perennial water bodies.

Intermittent Water bodies (Intermittent Creeks, Excavated Drainages, Ephemeral Washes, Erosional Channels, Playas, Upland Swales, and Other Areas)

Operational and maintenance impacts to intermittent water bodies would include traffic along the pipeline, repairs, and/or accidental spills/releases. Assuming culverts are not constructed in conjunction with the open-cut construction sites, truck traffic inspecting the pipeline would be required to cross intermittent water bodies. The traffic would potentially release sediment into the water, if present, and damage the banks on either side. Repair work to the pipeline could involve excavation, which would create conditions similar to initial construction for a limited period of time over an area limited by the extent of the repair. These operational and maintenance impacts would be temporary and negligible to minor.

Spills from maintenance equipment and/or releases from the pipeline could potentially occur during pipeline operation. Spills and releases could become incorporated into intermittent water bodies and adversely affect water quality. These impacts could be short-term to long-term and minor to major, depending on the degree of the spill/release.

Open Water bodies (Ponds and Open Water)

Operational and maintenance impacts would be limited to repairs and/or accidental releases from the pipeline. Pipeline repair could create conditions similar to initial construction for a limited period of time over an area limited by the extent of the repair. During pipeline operation accidental releases could potentially occur. Releases could become incorporated into the water and adversely affect water quality. These impacts could be short-term to long-term and minor to major, depending on the degree of the release.

Other Water bodies (Canals)

Operational and maintenance impacts to other water bodies would include traffic along the pipeline, repairs, and/or accidental spills/releases. Repair work to the pipeline could involve excavation, which would create conditions similar to initial construction for a limited period of time over an area limited by the extent of the repair. These impacts would be temporary and negligible.

Spills from maintenance equipment and/or accidental releases from the pipeline could potentially occur during pipeline operation. Both spills and releases could become incorporated into intermittent water bodies and adversely affect water quality. These impacts could be short-term to long-term and minor to major, depending on the degree of the release.

Wetlands and Waters of the U.S.

Operational and maintenance impacts to wetlands and waters of the U.S. would result from periodic upkeep of the pipeline, similar to the activities discussed above. These temporary impacts, if occurring in jurisdictional areas, may require the proponent to acquire a Nationwide Permit No. 3 authorization for maintenance activities. These impacts are likely to be temporary and minor.

4.6.2.2. Airport Alternative Route

Construction

Groundwater - General

The Airport Alternative Route would have the same types and degrees of general groundwater impact as the Proposed Action. Trenching, dewatering, and localized groundwater recharge alteration would present temporary and negligible to minor impacts.

Water Supply Wells and Springs

Water supply wells and springs are not present in the vicinity of the Airport Alternative Route.

Surface Water - General

Surface water impacts for the Airport Alternative Route would be similar in type to the Proposed Action. **Exhibit 4.6-3** provides a summary of the approximate acreage of impacts to potentially jurisdictional wetlands and other waters of the U.S. as a result of the Airport Alternative Route.

Exhibit 4.6-3 Summary of Potentially Jurisdictional Impacts as a Result of the Airport Alternative Route

Jurisdictional Wetlands	**Acres**
Seasonal Wetlands	13.71
Salt Flat Wetlands	5.06
Total Jurisdictional Wetlands	18.77
Other Jurisdictional Waters	
Ponds	0.87
Open Water	0
Canals	0.35
Excavated Drainages	0.02

There would be no potentially non-jurisdictional impacts as a result of the Airport Alternative Route.

Perennial Water bodies

Perennial water bodies are not present along the Airport Alternative Route, and therefore they would not be affected.

Intermittent Water bodies (Intermittent Creeks, Excavated Drainages, Ephemeral Washes, Erosional Channels, Playas, Upland Swales, and Other Areas)

Intermittent water bodies are not present along the Airport Alternative Route, and therefore they would not be affected.

Open Water bodies (Ponds and Open Water)

The types of impacts to open water bodies along the Airport Alternative Route would be the same as for the Proposed Action.

Other Water bodies (Canals)

The types of impacts to canals along the Airport Alternative Route would be the same as for the Proposed Action.

Wetlands and Waters of the U.S.

The types of impacts to wetlands and waters of the U.S. under the Airport Alternative Route would be the same as for the Proposed Action.

Operations, Maintenance, and Abandonment

The operation, maintenance, and abandonment impacts for the Airport Alternative Route would be the same as for the Proposed Action.

4.6.2.3. Tooele County Alternative Route

Construction

Construction impacts for the Tooele County Alternative Route would be the same as for the Proposed Action with regards to groundwater. As indicated in **Exhibit 4.6-4**, surface water resources along the Tooele County Alternative Route include ephemeral washes and upland swales, less than 1 acre of which would be impacted by the alternative route.

Exhibit 4.6-4 Summary of Potential Jurisdictional and Non-Jurisdictional Impacts as a Result of the Tooele County Alternative Route

Jurisdictional Waters	Acres
Ephemeral Washes	0.079
Total Potential Jurisdictional	**0.079**
Non-Jurisdictional Waters	**Acres**
Upland Swales	0.048
Total Potential Non-Jurisdictional	**0.048**

Operations, Maintenance, and Abandonment

The operation, maintenance, and abandonment impacts for the Tooele County Alternative Route would be the same as for the Proposed Action with regards to groundwater and surface water.

4.6.2.4. Rush Lake Alternative Route

Construction

Impacts to water resources from the Rush Lake Alternative Route would be similar to, but slightly less than those described under the Proposed Action. The Rush Lake Alternative Route would be located approximately 0.25 mile west of the Proposed Action route, upgradient of existing wetlands and therefore reducing impacts to wetland resources. In addition, springs from the east feed the middle area of Rush Lake keeping the area wet year-round. Moving the proposed pipeline ROW to the west would also reduce any impacts to this perennially wet area.

Operations, Maintenance, and Abandonment

Impacts to water resources from operations, maintenance, and abandonment of the proposed pipeline under the Rush Lake Alternative Route would be similar to those described for the Proposed Action.

4.6.2.5. Millard County Alternative Route

Construction

Construction impacts for the Millard County Alternative Route would be the same as for the Proposed Action with regards to groundwater. As indicated in **Exhibit 4.6-5**, surface water resources along the Millard County Alternative Route include the Sevier River, ephemeral washes, and upland swales, of which less than 1 acre would be impacted.

Exhibit 4.6-5 Summary of Potential Jurisdictional and Non-Jurisdictional Impacts as a Result of the Millard County Alternative Route

Jurisdictional Waters	Acres
Sevier River	0.10
Ephemeral Wash	0.02
Total Potential Jurisdictional	**0.12**
Non-Jurisdictional Waters	**Acres**
Upland Swales (2)	0.18
Total Potential Non-Jurisdictional	**0.18**

Operations, Maintenance, and Abandonment

The operation, maintenance, and abandonment impacts for the Tooele County Alternative Route would be the same as for the Proposed Action with regards to groundwater and surface water.

4.6.2.6. No Action

Under the No Action Alternative, no project related, ground-disturbing activities would occur in the project area. The No Action Alternative would have no project-related effect on groundwater or surface water resources. No mitigation would be required.

4.6.3. Mitigation Measures

4.6.3.1. General

General mitigation measures would be contained in the Upland Erosion Control, Revegetation, and Maintenance Plan, the Groundwater Monitoring Plan, and the Wetland and Waterbody Construction and Mitigation Procedures, all of which are appendices to the POD. Site-specific Reclamation Plans would be developed in consultation with the BLM, United States Forest Service, other government agencies, and land owners where appropriate and made an integral part of the Proposed Action, final POD, and Record of Decision.

Construction in any one area (on the order of several thousand linear feet) would be completed in a matter of days in order to minimize exposure of open trenches and stockpiled soils to wind and water erosion. Upon completion of construction in a given area, surface contours would be restored to ensure the original surface water paths are returned to preconstruction conditions and recharge patterns are reestablished. By following construction mitigation measures, sediment transport off-site by surface water would be negligible.

Impacts associated with spills or leaks of hazardous liquids would be avoided or minimized by restricting the location of refueling and storage facilities and by requiring immediate cleanup in the event of a spill or leak. The pipeline project would follow a project-specific Spill Plan to address prevention and mitigation measures that would be used to minimize the potential impact of a hazardous spill or leak during construction and/or operation of project facilities.

In order to minimize the potential for impacts to water supply wells and springs within 200 feet of the pipeline, construction practices would follow BMPs and mitigation measures and groundwater sources would be monitored.

The Groundwater Monitoring Plan would be used as determined by a project hydrologist or upon the request by any owner of a water supply well(s) or spring(s) within 200 feet of the pipeline. Owners of water supply wells or springs along the pipeline would be contacted several months prior to commencing construction activities and given the option of having monitoring performed prior to and after completion of the pipeline.

In the event that, after field-checking the four water supply wells identified as being within 10 feet of the proposed path of the pipeline in Utah, they actually exist where their coordinates suggest, special measures would need to be taken to ensure the continued viability of the water supply well. Mitigation measures may include constructing a barrier around the wellhead casing and surrounding the wellhead casing with barricades and flagging. The Groundwater Monitoring Plan would be followed to monitor conditions of the water supply well before and after pipeline construction.

Owners of water wells found to be in close proximity to the proposed pipeline would need to exercise caution should future maintenance be required on the wells. Each state has a “One Call” center established to receive calls dialed to 811 to inquire about digging and potential impacts to buried utilities. Water well owners would be provided information on the One Call system and required to place a One Call prior to any initiating any ground disturbance in the vicinity of the proposed pipeline. The utility would be responsible for responding to inquiries, marking the underground pipeline and coordinating efforts with well owners to prevent damage to the pipeline from excavation associated with well repairs and maintenance.

The pipeline would follow a Spill Plan to address BMPs and prevention and mitigation measures that would be used to minimize the potential impact of a hazardous spill during the construction and/or operation of pipeline facilities.

UNEV would use the BLM's publication *Hydraulic Considerations for Pipelines Crossing Stream Channels* (Technical Note 423, April 2008) to ensure that all crossings comply with BLM guidance. The open-cut crossings would be performed following the BLM guidance publication, all construction mitigation measures and, when feasible, when the amount of surface water present would potentially be limited. The amount of surface water present would potentially be limited during those periods when water bodies would be flowing at base levels and intermittent water bodies should be dry. Perennial water bodies would be crossed using horizontal directional drilling.

River bank areas at horizontal directional drilling crossings of perennial water bodies would be returned to preconstruction conditions to minimize erosion concerns to topography and water quality. When feasible, construction activities near perennial water bodies would be performed when the amount of surface water present would potentially be limited. The amount of surface water present would potentially be limited during those periods when water bodies are flowing at base levels and less water is present.

Traffic along the pipeline alignment would be limited to mandatory operational and maintenance visits. Visits to pipeline facilities would be scheduled for periods, if possible, so that the least amount of flowing water is present in any perennial or intermittent water bodies.

As noted previously, UNEV would use the BLM's publication *Hydraulic Considerations for Pipelines Crossing Stream Channels* (Technical Note 423, April 2008) to ensure that all open-cut crossings comply with BLM guidance. Initial construction of the pipeline and all subsequent construction activities along the alignment would closely follow mitigation measures to minimize impacts. Specifically, any open-cut crossings of intermittent or open water bodies, canals and irrigation ditches would be returned to preconstruction conditions to minimize erosion concerns to topography and water quality. When feasible, construction activities near water bodies would be performed when intermittent water bodies are presumably dry, and open water bodies are close to their lowest water level for the hydrologic year.

Culverts should be installed at each of the canal/irrigation ditch crossings to minimize the impact of traffic along the pipeline alignment and to decrease the chance of erosion to the pipeline ROW from the other water bodies.

4.6.3.2. Wetland Mitigation

Wetlands and waters of the U.S. avoidance, minimization, and mitigation measures include, but are not limited to, the following:

- Limiting the width of the construction ROW in non-cultivated wetlands to 75 feet unless a wider ROW is expressly permitted.
- Limiting the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration activities.
- Limiting grading activities to directly over the trench line, except where additional grading is necessary to ensure safety.

- Using low ground weight construction equipment or operating equipment off of timber riprap, prefabricated timber mats, or geotextile fabric overlain with gravel in saturated or standing water wetlands.
- Installing trench breakers or sealing the trench bottom as needed to prevent draining of a wetland and to maintain original wetland hydrology.
- Prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland boundary.
- Consulting with the appropriate land management or state agencies to develop plans for revegetating wetlands and, where necessary, preventing the invasion or spread of undesirable exotic vegetation.
- Limiting post-construction maintenance of vegetation within wetlands to removal of trees that are greater than 15 feet in height and are within 15 feet of the pipeline centerline, and maintenance of a 10-foot-wide strip of vegetation centered over the pipeline in herbaceous vegetation.
- Disturbed wetland areas would be revegetated with species most likely to become established based on area characteristics, using plugs.
- Monitoring the success of wetland revegetation annually for a period of 3 to 5 years after construction, and developing and implementing remedial revegetation plans for wetlands that are not successfully revegetated.

A detailed mitigation plan for impacts to jurisdictional wetlands and waters of the U.S. would be completed during the Section 404 Individual Permit process and would be subject to approval by the USACE.

4.6.3.3. KUCC North Zone Ponds/Wetlands

Due to selenium-contaminated soil and groundwater in the vicinity of KUCC's North Zone wetlands (MP 19.5 to MP 21), special construction, erosion control, and containment operations would be employed. The goal of these measures is to prevent offsite movement of selenium contamination as a result of ditch dewatering, spoil disposal, etc. Soil and groundwater would be monitored during construction to insure that material containing levels of selenium in excess of those described in the KUCC North Zone ROD (EPA 2002), as well as any subsequent monitoring/management plans that govern this area, are not transported offsite other than to an approved waste disposal location. Additional details on construction methods particular to this area are provided in the POD.

4.6.4. Unavoidable Adverse Effects

Construction of the pipeline should not result in unavoidable adverse impacts to groundwater, water supply wells, springs, surface water; intermittent, open or other water bodies. Construction activities along the pipeline would not alter the existing surface water flow through perennial water bodies because they would be crossed using horizontal directional drilling.

Operation of the pipeline could pose a potential unavoidable adverse risk in the form of a major accidental release from the pipeline, although the potential appears to be low. According to the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (2008), the probability of an oil pipeline spill amount to about 1 gallon per million barrel-miles. One barrel, transported one mile, equals one barrel-mile, and there are 42 gallons in a barrel. In household terms, the probability of an accidental release is less than one teaspoon of oil spilled per thousand barrel-miles. A project-specific Spill Plan would be followed to minimize the potential impact of a hazardous spill or release should such an event occur.

4.7. VEGETATION

4.7.1. Indicators

Indicators for vegetation resources impacts focus on acreage of vegetation community disturbance, as well as the biological importance, uniqueness, or rarity of that community. For noxious weeds, indicators focus on the acreage of disturbed areas and the proximity of existing noxious weeds to proposed disturbance areas.

An adverse impact on vegetation resources would be considered significant and would require additional mitigation if project construction or operation would result in any of the following:

- Change the diversity or substantially alter the numbers of a local population of any plant, or interfere with the survival, growth, or reproduction of affected plant populations.
- Result in a substantial long-term loss of existing habitat.
- Introduce new noxious weeds to an area, or increase existing populations of noxious weeds.
- Create a potential health hazard or involve the use, production, or disposal of materials that pose a hazard to plant populations in the project area.

4.7.2. Direct and Indirect Effects

4.7.2.1. Proposed Action

Construction

Under the Proposed Action, all vegetation within the 75-foot-wide temporary construction ROW would be removed for underground placement of the pipe. This would be the primary impact of the project on vegetation communities. Where widening outside currently disturbed areas is required, loss of additional native vegetation would primarily affect long-lived plant species that take years to reach maturity. Native plants in the project area are representative of regionally common vegetation communities (e.g., sagebrush/sagebrush scrub and Mojave creosote-bursage). Also, as described in **Section 3.7.3.1**, much of the area between MP 248 and MP 398 has been previously disturbed. However, even with restoration of native plant species following construction, impacted vegetation would take many years to fully recover. Impacted vegetation, such as plants in desert areas, may take more than 10 years to revegetate following construction. This impact would be long-term and minor. **Exhibit 4.7-1** shows the approximate acreage, by vegetation community, of impacts associated with the Proposed Action and alternative segments. **Exhibit 4.7-2** shows the approximate the acreage, by vegetation community, of impacts from proposed above ground facilities and staging areas. The likelihood for noxious weeds to invade disturbed areas and potentially become established, as well as spread into areas of undisturbed native vegetation adjacent to the pipeline ROW, would increase. Noxious weeds are known to exist in disturbed areas throughout the study area (**Section 3.7.3.4**), and those species readily spread as a result of disturbance. Additionally, the pipeline construction would potentially open up new, previously uninhabited areas to infestations of noxious weeds. This impact is anticipated to be long-term and minor to moderate.

In addition to the pipeline ROW, approximately 3 miles of existing roads would be improved to access the ROW. It is assumed that all road improvements would be permanent as future access to the proposed pipeline would occur via these roads. **Exhibit 4.7-3** shows the approximate acreage, by vegetation community, of impacts from the proposed access road improvements. Impacts to vegetation resources adjacent to these roads may occur as a result of increased fugitive dust and/or grading requirements from road improvement. The impacts to vegetation communities resulting from improvements to access roads are anticipated to be long-term and negligible.

Improvement of existing primitive roads in conjunction with the proposed project could result in indirect effects to vegetation from route proliferation, as the public uses these new roads to access previously inaccessible public lands. Impacts to vegetation could include destruction of existing vegetative cover and compaction of soils preventing rejuvenation of vegetative cover, however the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Operations, Maintenance, and Abandonment

Types of impacts from ground-disturbing activities associated with pipeline operation and maintenance would be similar to those described for construction. However, the extent and degree of impact would be considerably less than from pipeline construction because of minimal ground disturbance anticipated during project operation and maintenance. Occasional airplane over flights, routine electronic pressure monitoring, use of smart pigs, and other techniques that do not cause ground disturbance would be used to check and ensure pipeline integrity. Generally, on-ground activities during pipeline operation and maintenance would only occur in the event of a pipeline anomaly. Impacts associated with operations and maintenance are likely to be short-term and negligible.

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to vegetation.

Exhibit 4.7-1 Approximate Acreage of Impact for Vegetation Communities Within the Proposed Pipeline Route and Laterals[1,2]

Vegetation Community	Approximate Northernmost 250 Miles Route (New Alignment)[3]	Approximate Southernmost 150 Miles (adjacent to the Kern River Pipeline)	Airport Lateral	Cedar City Lateral
Agricultural Lands	82	0	0	0
Blackbrush Scrub/ Joshua Tree Forest	0	82	0	0
Blackbrush Scrub/ Juniper Woodland and Pinyon-Juniper Woodland	0	91	0	0
Desert Saltbrush Scrub	227	36	0	0
Disturbed Grasslands (>50 percent weeds/exotic species)	400	0	1	0
Greasewood Scrub	268	0	0	0
Industrial Gravel/Asphalt	0	0	10	
Joshua Tree Forest/Grassland	0	45	0	0

Vegetation Community	Approximate Northernmost 250 Miles Route (New Alignment)[3]	Approximate Southernmost 150 Miles (adjacent to the Kern River Pipeline)	Airport Lateral	Cedar City Lateral
Juniper Woodland and Pinyon-Juniper Woodland	9	109	0	0
Juniper Woodland and Pinyon-Juniper Woodland/ Sagebrush Scrub	0	18	0	0
Marsh/Mudflats	173	0	1	0
Mojave Creosote-Bursage Scrub	0	372	0	0
Mojave Creosote-Bursage Scrub/ Joshua Tree Forest	0	236	0	0
Riparian Woodland	5	0	0	0
Sagebrush Scrub/ Grassland	9	91	0	64
Sagebrush Scrub/ Grassland/ Juniper Woodland and Pinyon-Juniper Woodland	0	18	0	0
Sagebrush/Sagebru sh Shrub	527	127	0	0
Urban Lands	18	0	0	0
Utah Grassland/Desert Grassland	555	127	9	27
Utah Grassland/Desert Grassland/ Blackbush Scrub	0	9	0	0
Playa	0	0	0	0
Total	2,273	1,361	21	91

[1] Assumes construction disturbance width of 75 ft. and linear mileage of vegetation communities as shown in Table 3.7-1 in Section 3.7.3.
[2] All values rounded to the nearest acre.

Exhibit 4.7-2 Vegetation Disturbance from Above Ground Facilities and Staging Areas

Vegetation Community		Above Ground Facilities	Staging Areas
Agricultural Lands	Acres	Origin Pumping Station – 2.3	4.3
	MPs	MP 0	MP 0, MP 10.6, MP 10.8
Blackbrush Shrub/ Juniper Woodland and Pinyon-Juniper Woodland	Acres	0	1.4
	MPs		MP 312.3
Desert Saltbrush Shrub	Acres		1.4
	MPs		MP 62.4
Disturbed Grasslands (>50 percent weeds/exotic species)	Acres	0	0.5
	MPs		MP 21.8
Greasewood Shrub	Acres	0	1.4
	MPs		MP 134.2
Joshua Tree Forest/Grass-land	Acres	0	0
	MPs		
Juniper Woodland and Pinyon-Juniper Woodland	Acres	Pressure Limiting Station – 0.4	0
	MPs	MP 302	
Mojave Creosote-Bursage Shrub	Acres	Apex Terminal – 39.7	1.4
	MPs	MP 399.4	MP 399.4
Mojave Creosote-Bursage Shrub/ Joshua Tree Forest	Acres	Pressure Reducing Station – 0.4	1.4
	MPs	MP 355.5	MP 355.4

Vegetation Community		Above Ground Facilities	Staging Areas
Sagebrush Shrub/ Grassland	Acres	Cedar City Lateral Take Off - 0.5	0
	MPs	MP 255.8	
Sagebrush/ Sagebrush Shrub	Acres	0	2.9
	MPs		MP 103.6, MP 251.7
Utah Grassland/ Desert Grassland	Acres	Cedar City Lateral Terminal - 27.4	2.9
	MPs	CCL MP 9	MP 193, MP 273.6
Total		70.7	17.6

Exhibit 4.7-3 Vegetation Disturbance from Access Road Improvements

Vegetation Community	MPs Where Road Would Access the Proposed Action ROW / Above Ground Facility	Existing Road Improvement Disturbance Acreage
Desert Saltbrush Shrub	MP 73, MP 162	0.65
Disturbed Grasslands (>50 percent weeds/exotic species)	MP 21, MP 187	0.41
Greasewood Shrub	MP 68	0.35
Sagebrush/ Sagebrush Shrub	MP 77, MP 81, MP 289	0.95
Utah Grassland/ Desert Grassland	MP 24, MP 25, MP 270	0.28
Total		2.64

4.7.2.2. Airport Alternative Route

Construction

Construction impacts associated with the Airport Alternative Route would be similar to the Proposed Action, disturbing approximately the same acreage. **Exhibit 4.7-4** details vegetation types impacted under the Proposed Action and the Airport Alternative Route. Pipeline construction under the alternative would disturb 9 more acres of marsh mudflat and 9 fewer acres of Utah grassland/desert grassland. The Airport Alternative Route would also require the improvement of one additional access road disturbing 0.11 acre of marsh/mudflat vegetation near MP 2. Overall impacts to vegetation under the Airport Alternative Route would be long-term and minor.

Operations, Maintenance, and Abandonment

Operations, maintenance, and abandonment impacts for the Airport Alternative Route would be the same as for the Proposed Action.

4.7.2.3. Tooele County Alternative Route

Construction

Construction impacts associated with the Tooele County Alternative Route would disturb vegetation type acreages as shown in **Exhibit 4.7-4**. The alternative would disturb 18.5 more acres than the Proposed Action. Pipeline construction under the alternative would disturb approximately 32 acres of agricultural lands whereas the Proposed Action disturbs none. However the alternative would impact disturbed grasslands rather than Utah grasslands/desert grasslands, reducing the overall grassland effect. The Tooele County Alternative Route would also require the improvement of one additional access road disturbing 0.41 acre of agricultural land. Overall impacts to vegetation under the Millard these impacts would long-term and minor.

Operations, Maintenance, and Abandonment

Operations, maintenance, and abandonment impacts for the Tooele County Alternative Route would be the same as for the Proposed Action.

4.7.2.4. Rush Lake Alternative Route

Construction

Construction impacts for the Rush Lake Alternative Route would be the same as for the Proposed Action.

Construction, Operations, Maintenance, and Abandonment

Operations, maintenance, and abandonment impacts for the Rush Lake Alternative Route would be the same as for the Proposed Action.

4.7.2.5. Millard County Alternative Route

Construction

Construction impacts associated with the Millard County Alternative would be the same as for the Proposed Action, with the exception of differing acreages as shown in **Exhibit 4.7-4**. The alternative would disturb 113.5 more acres than the Proposed Action. Pipeline construction under the alternative would disturb approximately 36 fewer acres of agricultural lands than the Proposed Action and would impact fewer or no acres of disturbed grassland, greasewood scrub and marsh mudflat, but instead would disturb sagebrush/sagebrush scrub. The Millard County Alternative Route would also require the improvement of one additional access road disturbing 0.13 acres of disturbed grassland. Overall impacts to vegetation under the Millard these impacts would long-term and minor.

Operations, Maintenance, and Abandonment

Operations, maintenance, and abandonment impacts for the Millard County Alternative would be the same as for the Proposed Action.

Exhibit 4.7-4 Approximate Acreage of Impact for Vegetation Communities Within the Alternative Segments[1,2]

Vegetation Community	Airport Alternative Route		Tooele County Alternative Route		Millard County Alternative Route	
	Proposed Action	Alternative Route	Proposed Action	Alternative Route	Propose d Action	Alternative Route
Agricultural Lands	0	0	0	31.8	36	0
Blackbrush Scrub/ Joshua Tree Forest	0	0	0	0	0	0
Blackbrush Scrub/ Juniper Woodland and Pinyon-Juniper Woodland	0	0	0	0	0	0
Desert Saltbrush Scrub	0	0	0	0	18	23
Disturbed Grasslands (>50 percent weeds/exotic species)	0	0	0	62.7	155	36
Greasewood Scrub	0	0	0	0	155	0
Joshua Tree Forest/Grassla nd	0	0	0	0	0	0
Juniper Woodland and Pinyon-Juniper Woodland	0	0	0	0	0	32
Juniper Woodland and Pinyon-Juniper Woodland/ Sagebrush Scrub	0	0	0	0	0	0
Marsh/Mudflats	22	31	0	0	90	13
Mojave Creosote-Bursage Scrub	0	0	0	0	0	0
Mojave Creosote-Bursage Scrub/ Joshua Tree Forest	0	0	0	0	0	0

Vegetation Community	Airport Alternative Route		Tooele County Alternative Route		Millard County Alternative Route	
	Proposed Action	Alternative Route	Proposed Action	Alternative Route	Propose d Action	Alternative Route
Riparian Woodland	0	0	0	0	5	4.5
Sagebrush Scrub/ Grassland	0	0	0	0	0	0
Sagebrush Scrub/ Grassland/ Juniper Woodland and Pinyon-Juniper Woodland	0	0	0	0	0	0
Sagebrush/Sagebrush Scrub	0	0	0	9	0	464
Urban Lands	0	0	6	0	0	0
Utah Grassland/Desert Grassland	9	0	115	36	0	0
Utah Grassland/Desert Grassland/ Blackbush Scrub	0	0	0		0	0
Playa	0		0	0	0	
Total	31	31	121	139.5	459	572.5

[1] Assumes construction disturbance width of 75 ft. and linear mileage of vegetation communities as shown in Table 3.7-1 in Section 3.7.3.
[2] All values rounded to the nearest acre.

4.7.2.6. No Action

Under the No Action Alternative, no project-related ground-disturbing activities would occur within the pipeline project area and there would be no direct or indirect project-related effects on vegetation resources. However, there would also be no opportunity to mitigate and improve conditions in some previously disturbed areas where restoration activities have been less successful than anticipated.

4.7.3. Mitigation Measures

During initial excavation, existing native vegetation (except in areas infested with weeds) would be segregated with the topsoil. After pipeline construction activities have been completed, disturbed areas would be re-contoured to their original grade, redistributing salvaged topsoil and vegetation. Vegetation would be allowed to grow to its natural state or be subject to reclamation activities stipulated by the land owner or government agency. In some areas, potential impacts followed by site reclamation on previously disturbed areas within the proposed pipeline ROW could ultimately result in improved vegetation conditions where previous revegetation efforts were unsuccessful. General mitigation measures would be contained in the Upland Erosion Control, Revegetation, and

Maintenance Plan, an appendix to the POD. Site-specific Reclamation Plans would be developed in consultation with the BLM, United States Forest Service, other government agencies, and land owners where appropriate and made an integral part of the Proposed Action, final POD, and Record of Decision.

In order to prevent the transportation of noxious weeds into the disturbed area, all construction equipment would be cleaned prior to entering and exiting the construction zone (and each time they re-enter the construction zone after leaving). All hay and straw products used in conjunction with construction would be certified weed-free. Additional specific mitigation measures related to noxious weed control would be determined in consultation with regulatory agencies and would benefit the restoration of native vegetation and protection of existing vegetation. All mitigation measures would be quantified in a Noxious Weed management and Rehabilitation Plan, an appendix to the POD.

4.7.4. Unavoidable Adverse Effects

Unavoidable adverse impacts would be evaluated further after mitigation measures are developed and agreed to in consultation with the regulatory agencies.

4.8. WILDLIFE

4.8.1. Indicators

An adverse impact on terrestrial or aquatic wildlife resources would be considered significant and would require additional mitigation if project construction, operation, or maintenance resulted in any of the following:

- Change the diversity or substantially alter the numbers of a local population of any wildlife species, or interfere with the survival, growth, or reproduction of affected wildlife populations; substantially interfere with the seasonal or daily movement or range of migratory birds and other wildlife
- Result in a substantial long-term loss of existing wildlife habitat
- Create a potential health hazard or involve the use, production, or disposal of materials that pose a hazard to wildlife populations in the project area.

4.8.2. Direct and Indirect Effects

4.8.2.1. Proposed Action

Construction

Construction of the proposed pipeline has the potential to impact wildlife both directly and indirectly. In general, direct impacts would consist of direct mortality or injury (primarily for smaller, less mobile wildlife), habitat loss, habitat fragmentation, and displacement into adjacent habitat and impacts from noise and human presence associated with construction activities. Indirect impacts would include increased access/predation facilitated by project roads, habitat losses from the invasion of invasive plant species, or other habitat changes that impact species at a later time (after project completion) and that can be attributed to the proposed pipeline disturbances. The potential direct and indirect effects are discussed in additional detail below by wildlife type.

<u>General Wildlife</u>

Within the project area, direct impacts to wildlife would primarily occur as a result of the clearing and grading of the ROW, staging areas, and access roads, as well as the excavation of trenches. Clearing and grading of the ROW and staging areas would include the cutting, clearing, and/or removal of existing vegetation and the grading (leveling) of the land surface. The locations of each of the major habitat types along the proposed pipeline are identified in **Chapter 3** and acreages of impacts within each vegetation type are summarized in **Exhibit 4.7-1**.

Clearing and grading of the ROW and staging areas would include the use of heavy equipment, such as dozers, and there is the potential for the direct mortality or injury to wildlife. Most wildlife would be expected to disperse prior to coming into contact with heavy equipment; however, smaller, less mobile wildlife, such as small mammals and reptiles, could be crushed by construction equipment or entrapped in trenches. The impacts to local populations would likely be negligible for species with large populations as the narrow width of the ROW to be disturbed should prevent the loss of large numbers of individuals from any one population. However, if local populations are small, the loss of even a small number of individuals could substantially alter the numbers of individuals in the local population leading to effects that may be moderate to major depending on the original population size. This would also be a significant effect as defined by the measurement indicators. The impacts would be short-term for large populations where natural reproduction should allow population numbers to recover; however, they could be long-term for small populations where reproductive potential would be reduced by the loss of a large percentage of individuals. The potential for mortality from entrapment in trenches would be reduced by use of earthen trench plugs to provide a means for wildlife to escape and inspection of the trenches to identify entrapped animals (see BMPs, **Appendix D**).

Clearing and grading of the ROW and staging areas would also result in the direct loss of wildlife habitat. The degree of impact would depend on the type of habitat affected and the rate at which the vegetation would regenerate after construction. In previously disturbed portions of the proposed pipeline route, many of which contain noxious weeds and have not recovered from previous disturbances, the impacts to wildlife would likely be minor due to the low value and suitability of these areas for most wildlife. In undisturbed portions of the ROW, the impacts to wildlife from a loss of habitat could range from moderate to major because undisturbed areas are more likely to be suitable for wildlife and these areas would no longer be available. However, given that the types of habitat to be impacted are relatively abundant in the general area surrounding the proposed route, the loss of common habitat types would not result in significant effects to most wildlife populations as defined by the measurement indicators. The exception would be small, localized populations that could lose a large portion of their habitat. Impacts may be long-term as virtually the entire length of the project would be constructed within arid habitats including grasslands, shrub-dominated habitats, and pinyon/juniper. Due to the arid nature of these habitats, regeneration of vegetation following construction may be slow. For example, sagebrush and salt desert scrub may take from 10 to 50 years or more to revegetate following construction, and if subjected to grazing and drought, may not recover to preconstruction conditions for many additional decades. Some shrub/steppe obligate species may be impacted significantly by a substantial loss of this habitat. Further, the removal of woody shrubs and woodlands (juniper and pinyon juniper) would also generally result in a long-term impact as these woodlands are slow growing and would be slow to recover. The presence of exotic annual grasses and forbs further impedes the process of restoration and the spread of these species would result in indirect impacts to wildlife. Any substantial amount of suitable and essential habitat lost for the long term that is not abundant in the vicinity would be a significant impact.

Although habitats similar to those occurring within the proposed construction ROW are relatively abundant in the general area surrounding the proposed route, undisturbed larger blocks of these habitats are becoming much less common, hence their designations as habitat conservation areas or habitat focus areas by the states of Utah or Nevada. If the route passes through larger blocks of undisturbed habitats, permanent loss of individuals of species requiring larger habitat blocks would result because of habitat fragmentation. This would contribute to further declines of already declining species. It is difficult to judge the magnitude of this impact as the amount of fragmentation in habitat outside the project area is not described. However, in areas where the proposed pipeline would be located within or adjacent to existing cleared ROWs, the majority of habitat that would be crossed would already by open and sparsely forested and the resulting increase in fragmentation would be minor. In any areas where habitat is less disturbed, habitat fragmentation impacts to migratory species or those that habitually move long distances (e.g., between seasonal ranges) would be moderate. Fragmentation impacts would be significant if a population or the reproductive rate of migratory species was affected.

In addition to the loss of wildlife habitat, clearing the construction ROW would result in the displacement of wildlife from areas on or adjacent to the ROW. Noise levels would be greatest during pipeline construction. These activities may result in any of a number of individual and population level impacts on wildlife (Trombulak and Frissell 2000, Wisdom et al. 2000). These include stress, disruption of normal foraging and reproductive habits, abandonment of unique habitat features, and increased energy expenditure. These factors contribute to reduced over-winter survival for individuals, poor condition entering the breeding season, reduced reproductive success and recruitment, and eventually population declines (Trombulak and Frissell 2000, Wisdom et al. 2000). For sensitive species such as sagebrush obligates, displacement from important habitat features is effectively equal to loss of habitat and the individuals that occupied that habitat. There are numerous studies documenting wildlife avoidance of roads and facilities and wildlife disturbance at distances of 1,650 feet (Madsen 1985), 6,600 feet (Van der Zande et al. 1980), and as far as 2 miles or more for greater sage grouse (summarized in Connelly et al. 2000) and raptors (Fyfe and Olendorff 1976). Pre-construction surveys for migratory birds, including raptors, would enable avoidance measures to be implemented for nesting birds (**Appendix D**).

Most wildlife, such as birds and larger mammals that leave the vicinity of the ROW due to construction activities may relocate into similar habitats nearby. However, individuals may not by able to find suitable unoccupied habitat nearby or, the crowding of additional individuals into adjacent habitat may temporarily affect reproduction and survival for both the displaced animals and for those occupying areas into which animals disperse. Furthermore, the lack of adequate territorial space could force some animals into suboptimal habitats, which could further increase inter- and intra-specific competition and lower reproductive success and survival. As the impacts of construction could be long-term in many of the arid areas and in pinyon-juniper, the effects described above could also be long-term. Given the large amount of habitat that is assumed to be present adjacent to the proposed route and the relatively small width of the ROW to be disturbed, it is likely that the number of individuals dispersing into adjacent habitat would be relatively small and not likely to affect the local population viability of most species. As a result, these effects would be mostly minor and not significant. However, if a wildfire (or other large, unforeseen disturbance) were to be inadvertently started by construction equipment or personnel, the increased loss of habitat could cause the impacts of dispersal into adjacent habitat to be more pronounced and possible significant in terms of population viability.

Improvement of existing primitive roads in conjunction with the proposed project could result in indirect effects to wildlife from route proliferation, as the public uses these new roads to access previously inaccessible public lands. Impacts to wildlife could include fragmentation and destruction of habitat, however the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Invasive plants that may be introduced or spread by construction vehicles not properly cleaned of seed (see BMPs, Appendix D) would remove habitat for wildlife species in the proposed disturbance areas. When invasive plants replace native species, functional habitat components for wildlife are lost. Fish species can also lose habitat because invasive species are not as effective as natives in stabilizing and shading stream banks.

Big Game Ranges

Construction would not occur in suitable big game (i.e., mule deer, elk, and pronghorn) winter range habitat between 15 November and 15 April, and in suitable fawning or calving habitat between 1 May and 1 July (**Appendix D**). Construction outside of these periods would temporarily disturb and may displace big game animals onto adjacent habitat. Winter range and fawning/calving areas would be lost, over the timeframes described above for general habitat losses, when these areas are disturbed outside of the sensitive periods. Losses of big game habitat would generally be minor and insignificant because these areas are abundant outside the proposed disturbance areas.

Migratory Birds

Pre-construction surveys and habitat grubbing (see **Appendix D**) for migratory birds would enable most impacts related to migratory bird nest disturbances to be avoided. EO 13186 and Instructional memorandum 2008-050 requires federal agencies to avoid or minimize negative impacts to migratory bird populations and avoid impacts (unintentional "take") to migratory birds of concern (PIF and BCC species; listed in **Chapter 3**). The executive order requires the federal agency to identify where unintentional "take" is likely to have a measurable negative effect on migratory bird populations. Effects to ground-nesting birds not included on the birds of concern list (which do not have significantly reduced populations) are not expected to be of a magnitude sufficient to result in long-term or significant population-level effects for the following reasons: 1) the presumed stability of local populations (other than sensitive species) and the abundance of available habitat outside of the proposed ROW, and; 2) the linear nature of the project over a large geographic range. Further, most of the pipeline would cross relatively open habitat types (for example, grassland, agriculture, and shrubland) rather than fragmenting dense woodland habitat and effects to migratory birds and their habitats from habitat fragmentation resulting from the proposed project would be low. Impacts to migratory birds of concern would be avoided through pre-construction surveys and avoidance measures (see **Appendix D**). As a result, population-level impacts to migratory bird species would not be anticipated from the construction of the proposed project.

Aquatic Resources

Open-cut river crossings have the greatest potential to impact aquatic resources through the direct disturbance of the streambed. This can disrupt habitat features and transport sediment to downstream reaches of the stream. Fish may be directly disturbed by increased turbidity caused by the crossing and this may disrupt normal behaviors or movements up or downstream. Fish in the immediate vicinity of the crossings would be forced to disperse into upstream or downstream reaches. Increases in turbidity may also cause temporary gill irritation to fish. If crossings were constructed during the spawning season for any of the fish present and were constructed near spawning sites, the destruction of spawning substrates or the increase in sediment may destroy eggs or cause a decrease in egg and larval fish survival. Increased sedimentation can also adversely affect benthic organisms that many fish species depend on for food. The distance that sediment would be transmitted downstream would depend upon stream flow at the time. If crossings are constructed during periods of low flow sediment should only be transmitted a short distance downstream. If constructed during high flow, the effects may be felt much further downstream. In addition, if crossings are constructed during periods of high flow, there is the potential for increased bed erosion downstream of the crossing, even after the crossing is complete. BMPs that would be implemented for all aquatic habitat crossings (**Appendix D**) include measures to minimize the impacts from sediment introduction into streams during and after construction. These measures include working only when streams are dry. With the implementation of BMPs, impacts would be mostly minor to moderate and not likely to affect the population viability of most fish species. If construction occurs at a time of the year when more water and habitat is present in intermittent drainages then these impacts may be moderate. All perennial streams would be undisturbed and crossed using HDD. Impacts to sensitive fishes are described in **Section 3.9, Special Status Species.**

In addition to the impacts from open-cut crossings, the general pipeline construction process would temporarily alter land surface contours adjacent to streams (including those crossed using horizontal drilling), potentially causing minor changes to surface water runoff paths. The construction process would also create sediment sources that could potentially be entrained by surface waters and carried off-site. Impacts from turbidity and sedimentation would be as described above. Increases in sediment run-off from construction should be primarily short-term, generally restricted to the period of active construction and the time needed for reclamation of stream bank vegetation. Further, sediment transport would be limited by following construction mitigation measures and BMPs as described above.

No aquatic resources would be affected by the construction of aboveground facilities.

Operations, Maintenance, and Abandonment

General Wildlife

Noise impacts may occur during operations, maintenance, and abandonment activities. Noise levels during operations would be lower than those during construction. However, noise levels near pump station facilities would continue for the life of the project thus operations and maintenance noise impacts would be of longer duration. The area of disturbance would vary by species but would likely extend several hundred feet around pump station sites. Any species sensitive to noise, such as migratory birds or sage grouse, may be displaced permanently from the vicinity of pump stations and wildlife may be temporarily displaced during maintenance activities anywhere along the pipeline, facilities, or access roads, due to increased human presence (and noise). For the majority of wildlife, noise would result in displacement into other habitat. As described in the previous section, however, wildlife may not be able to move to unoccupied habitat in response to disturbance and survive there because other suitable habitat is already occupied by other individuals of the same species or by similar species using the available resources. As for construction, the impacts of forced dispersal during operations, maintenance, or abandonment activities are expected to be mostly minor due to the small number of species that would be expected to relocate (due to the small amount and linear nature of disturbance) and not of a sufficient magnitude to result in significant effects.

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to wildlife. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations.

Sensitive or Managed Wildlife and Big Game Ranges

Impacts would generally be the same as described above. Sensitive species are discussed in **Section 4.9**.

Migratory Birds

Extended noise disturbances around pump stations would adversely affect songbirds. Male neotropical migrant birds that breed in grassland and desert shrub communities use songs to establish and defend breeding territories and attract females. Noise interferes with this ability, with the level of interference related to the volume and frequency of the noise (Luckenbach 1975, Luckenbach 1978, Memphis State University 1971, Weinstein 1978). Other noise-related problems for birds around pump stations include interference with the ability to recognize warning calls and calls by juveniles, both of which can result in higher predation rates. These impacts should be mostly minor, but short-term, as migratory birds would avoid the pump stations once they are in operation.

Aquatic Resources

By following construction mitigation measures and BMPs (**Appendix D**), sediment transport off-site by surface water should be less than significant during pipeline operation and not cause adverse impacts on aquatic resources or their habitat. No fishery resources would be affected by the operation of aboveground facilities.

4.8.2.2. Airport Alternative Route

Construction

General Wildlife

Exhibit 4.8-1 shows the amount of disturbance that would occur to major habitat types under the Airport Alternative Route compared to the corresponding segment of the Proposed Action.

Exhibit 4.8-1 Approximate Acreage of Impact for Primary Wildlife Habitat Types within the Airport Alternative Route[1]

Vegetation Community	Proposed Action	Alternative Route
Utah Grassland/Desert[2] Grassland	9	0
Marsh/Mudflats[2]	22	31
Jurisdictional Wetlands		19

[1] All values rounded to the nearest acre.
[2] Assumes construction disturbance width of 75 ft. and linear mileage of vegetation communities as shown in Table 3.7-1

The Airport Alternative Route would not disturb Utah grassland/desert grassland habitat and there would be no impacts to species using these habitats (listed in **Exhibit 3.8-1**) under this Alternative. However, the Airport Alternative Route would impact a larger area of marsh/mudflat habitat, including wetland areas. The type of impacts to those species dependent upon these habitats would generally be the same as described for the Proposed Action; however, the impacts would be more pronounced under this Alternative due to the larger amount of disturbance.

Sensitive or Managed Wildlife and Big Game Ranges

Impacts to sensitive or managed wildlife areas or big game ranges would be similar to those described for the proposed action.

Migratory Birds

Impacts to migratory birds would be the same as those described above for the Proposed Action.

Aquatic Resources

There would be no impact to aquatic resources, as no fish-bearing streams would be crossed by the alternative route.

Operations, Maintenance, and Abandonment

Impacts to all wildlife would generally be the same as those described under the Proposed Action; however, as described above for construction, the impacts would be greater for species dependent upon wetland habitat and lesser for those dependent upon grassland habitat.

4.8.2.3. Tooele County Alternative Route

Construction

General Wildlife

Exhibit 4.8-2 shows the amount of disturbance that would occur to major habitat types under the Tooele County Alternative Route compared to the corresponding segment of the Proposed Action.

Exhibit 4.8-2 Approximate Acreage of Impact for Primary Wildlife Habitat Types within the Tooele County Alternative Route[1,2]

Vegetation Community	Proposed Action	Alternative Route
Disturbed Grasslands	0	62.7
Utah Grassland/Desert Grassland	115	36
Sagebrush/Sagebrush Shrub	0	9
Marsh and mudflat	0	1.5

[1] All values rounded to the nearest acre.
[2] Assumes construction disturbance width of 75 ft. and linear mileage of vegetation communities as shown in Table 3.7-1

Impacts to wildlife under the Tooele County Alternative Route would be similar to those described under the Proposed Action with the exception of sagebrush-dependent species. Approximately 4 miles of sagebrush habitat would be disturbed under the Tooele County Alternative Route, whereas the corresponding section of the Proposed Action alignment would not cross sagebrush habitat. Thus, more sagebrush would be lost under the Tooele County Alternative Route and sagebrush-dependent species may be displaced by the installation of the pipeline in this area. The types of impacts to these species would be as described in the sections above. Sagebrush-dependent species would not be affected by the Proposed Action alignment (in this area). The majority of grasslands impacted by the Tooele County Alternative Route would be disturbed grasslands, while the Proposed Action route would disturb Utah Grassland/Desert Grassland. While impacts would be similar between the two different grassland types, the degree of adverse impact under the alternative route would be less than under the Proposed Action because the grasslands are already disturbed, and therefore would be assumed to be degraded habitat.

Sensitive or Managed Wildlife and Big Game Ranges

Impacts to sensitive or managed wildlife areas or big game ranges would be similar to those described for the proposed action. The segment of the Proposed Action route corresponding to the Tooele County Alternative Route would impact 1.1 miles of crucial elk winter range and 0.6 mile of mule deer crucial winter range, however no big game ranges were identified within the alternative route. Therefore, the Tooele County Alternative Route would have less impact on big game ranges than the Proposed Action route.

Migratory Birds

Impacts to migratory birds would be the same as those described above for the Proposed Action.

Aquatic Resources

There would be no impact to aquatic resources, as no fish bearing streams would be crossed by the alternative route.

Operations, Maintenance, and Abandonment

Impacts to all wildlife from operations, maintenance, and abandonment of the proposed pipeline under the Tooele County Alternative Route would be the same as those described for the Proposed Action.

4.8.2.4. Rush Lake Alternative Route

Construction

Construction impacts to wildlife would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

Operations, maintenance, and abandonment impacts to wildlife would be the same as those described for the Proposed Action.

4.8.2.5. Millard County Alternative Route

Construction

General Wildlife

Exhibit 4.8-3 shows the amount of disturbance that would occur to major habitat types under the Millard County Alternative Route compared to the corresponding segment of the Proposed Action.

Exhibit 4.8-3 Approximate Acreage of Impact for Primary Wildlife Habitat Types within the Millard County Alternative Route[1,2]

Vegetation Community	Proposed Action	Alternative Route
Desert Saltbrush Shrub	18	23
Greasewood Shrub	155	0
Juniper Woodland and Pinyon-Juniper Woodland	0	32
Marsh/Mudflats	90	13.
Riparian Woodland	5	5
Sagebrush/Sagebrush Shrub	0	464

[1] All values rounded to the nearest acre.
[2] Assumes construction disturbance width of 75 ft. and linear mileage of vegetation communities as shown in Table 3.7-1

Relative to the Proposed Action, impacts to sagebrush and sagebrush shrub dependent species under the Millard County Alternative Route may be more adverse as there is a large amount of sagebrush habitat that would be crossed by the Millard County alignment. The same would be true for species dependent upon juniper woodland and pinyon-juniper woodland habitat. Furthermore, the Proposed Action alignment would occur closer to Highways 6 and 257, as well as pass closer to the town of Delta, whereas the Millard County alignment would be 0.5-2 miles from the existing road and town of Delta and generally would occur across more remote country. As a result, population densities of most wildlife species would be expected to be higher due to the distance from human disturbances and noise (i.e., roads and inhabited areas).

In contrast, fewer impacts to wetland and greasewood shrub dependent species would occur under the Millard County Alternative, as these habitat types would not be impacted.

Sensitive or Managed Wildlife and Big Game Ranges

Impacts to sensitive or managed wildlife areas or big game ranges would be similar to those described for the proposed action.

Migratory Birds

Impacts to migratory birds would be the same as those described above for the Proposed Action.

Aquatic Resources

The Millard County alignment would cross the Sevier River at a reach that may be dry and contains less marsh/mudflat habitat and slightly less riparian habitat. As a result, the impacts to fish populations would be less than for the Proposed Action. The Proposed Action alignment would cross the Sevier River northeast of Delta through the DMAD Reservoir, where there is more flow.

Operations, Maintenance, and Abandonment

Impacts to wildlife from operations, maintenance and abandonment of the proposed pipeline under the Millard County Alternative Route would be the same as those described for the Proposed Action.

4.8.2.6. No Action

None of the impacts to wildlife and aquatic resources associated with pipeline construction, operation, and maintenance would occur under the No Action Alternative.

4.8.3. Best Management Practices and Mitigation

A complete list of BMPs and mitigation measures are in **Appendix D**. Measures that pertain to wildlife are summarized below.

Earthen trench plugs, with ramps on either side, would be placed at maximum of 0.5-mile intervals along the trench and at well-defined livestock and wildlife trails intersected by the trench to provide a means for wildlife to escape if wildlife or livestock fall into the trench and also provide a bridge for other wildlife to cross the open trench. Pipeline inspectors, in conjunction with the agencies' compliance monitors, would reduce trench plug spacing (that is, add more plugs) if the proposed spacing is determined to be insufficient to facilitate animal escape from the trench. In addition, the length of open trench and length of time the trench sections are open would be limited (approximately 3 miles and 10 days, respectively; see **Appendix D**).

The pipeline trench would be inspected by an agency-approved biological monitor on a regular basis during construction and immediately before backfilling to identify entrapped animals. Wildlife found in trenches during construction would be coaxed to the nearest ramp and either encouraged to exit the trench, removed by net, or trapped (if other methods are unsuccessful). These measures would reduce the number of wildlife individuals killed during construction.

An obligatory environmental training program would be implemented for all construction personnel prior to construction. This program would raise awareness of wildlife present (species recognition) and measures to avoid take (harm, harassment, etc) during construction. Wildlife species that would be specifically covered during the program include all special status species (see Section 4.9) and migratory bird species of concern.

The pipeline project would follow a spill plan that includes use of prevention and mitigation measures that would minimize the potential impact of a hazardous spill or leak during the construction of pipeline project facilities.

Migratory birds would be the focus of preconstruction surveys by an agency-approved Biological Monitor. Any migratory bird nest found in the proposed disturbance area would be avoided until after birds have fledged, after which construction could continue. Pre-construction surveys for migratory birds would be required during the general nesting season, 15 May and 15 July, following BLM Instructional Memorandum 2008-050, and may be adjusted for species that nest outside the general nesting season. If the Biological Monitor does not find migratory bird nests in the disturbance area during the nesting season, construction may proceed. Specific permission would be required from the agency before construction could proceed in each section of the pipeline based on results of the pre-construction survey. Migratory bird species of concern (PIF, BCC; listed in **Chapter 3**) would be the focus of pre-construction surveys.

Aerial pre-construction surveys would be conducted for raptors. Any raptor nests found during pre-construction surveys within the USFWS-determined impact distance pertaining to each species (listed Romin and Muck 2002) would be avoided by similar measures as described for migratory birds, in that construction would be delayed until birds have fledged from the nest. Normal dates of incubation and nesting seasons for each species are listed in Romin and Muck (2002). Most raptors (with the exception of some Sensitive species; **Section 4.9**) require a 0.5 mile buffer from nests, within which construction may not occur without a specific exception from the BLM. Buffers may be reduced if natural screening or other factors reduce the likelihood of noise impacts.

Construction restriction in mule deer, elk, pronghorn winter range (crucial or substantial) would be restricted between Nov 15 – Apr15; construction in mule deer and pronghorn fawning and elk calving habitat would be restricted between May 1 – July 1.

Open-cut crossings over wetlands and dry washes and intermittent or ephemeral streams would be performed following all construction mitigation measures and BMPs and, when feasible, when the amount of surface water present would be limited. Perennial streams would be crossed using HDD so that disturbance to live waters would be minimized. Magotsu Creek would also be crossed with HDD. Construction on Beaver Dam Wash and Moody Wash would only take place during 1) periods of the year when these streams are dry. In order to minimize the potential for introducing sediment to the aquatic system, a temporary sediment basin, or filter would be used to reduce sediment from in channel construction from being transported downstream or entering live water. In addition, sediment fences would be installed between other areas of disturbance outside the channel and the active channel. Sediment fences would be cleaned and inspected regularly to maintain function. Further, ground disturbance outside of the river channel would not occur during wet conditions (i.e., during or immediately following rain events).

The re-establishment of preconstruction contours and vegetation following construction would allow surface water paths to return to preconstruction conditions.

During pipeline operation and maintenance, occasional airplane over flights, routine electronic pressure monitoring, use of smart pigs, and other techniques that do not cause ground disturbance would be used to check and ensure pipeline integrity. Generally, on-ground activities during pipeline operation and maintenance would only occur in the event of a pipeline anomaly.

4.8.4. Unavoidable Adverse Effects

Unavoidable adverse impacts would be evaluated after BMPs and mitigation measures are approved by the regulatory agencies.

4.9. SPECIAL STATUS SPECIES

4.9.1. Indicators

An adverse impact on special status species and their habitat would be considered significant and would require mitigation if project construction, operation, or maintenance result in any of the following:

- Result in direct or indirect impacts on candidate or special status species populations, or habitat, that would contribute to or result in the federal or state listing of the species (e.g., substantially reducing species numbers, or by resulting in the permanent loss of habitat essential for the continued existence of a species).

- Introduce new, invasive weeds to an area; or create a potential health hazard; or involve the use, production, or disposal of materials that pose a hazard to special status species populations in the project area.

4.9.2. Direct and Indirect Effects

4.9.2.1. Proposed Action

General impacts to special status species (Threatened, Endangered, Candidate, or Sensitive [TECS])would be similar to those described for wildlife and fisheries (**Section 4.8**). Specifically, habitat losses would be temporary or short-term, unless forested areas or late-succession shrubs (i.e., sagebrush) were disturbed. Disturbance would consist of a 75-foot width along the entire length of the pipeline. Staging areas would disturb a wider area for approximately 500 feet. Staging area disturbances would be of longer duration, relative to the pipeline, because they would last for the duration of construction. Road improvements may increase the potential for fragmentation of TECS species populations. Noise impacts from blasting, construction equipment, and associated traffic would be temporary. Where impacts from operations are not specified below, no impacts from operations would be expected.

Construction

<u>Federally Listed, Candidate, or Proposed Species for Listing under the Endangered Species Act</u>

A Biological Assessment would be completed in association with this EIS that would disclose all potential impacts to Threatened or Endangered species in the project area and compliance with the Endangered Species Act. A Biological Opinion would be submitted by the USFWS in association with the decision document for this project that would contain the official determinations of impacts to these species. The Biological Opinion would also contain mitigation measures to be implemented for each species.

<u>Birds</u>

California Condor. In the unlikely event California condor were to occur in the project area during the timeframe of construction it would likely be as a transient visitor passing through or foraging in the area. No suitable nesting habitat for this species would be lost. The potential effects to the California condor from the proposed project would not be significant. A determination of ‘No Effect’ is appropriate for this species.

Southwestern Willow Flycatcher. No suitable nesting habitat for this species would be impacted. It is extremely unlikely that individuals would be foraging in the project area during the construction period considering the lack of foraging habitat within and adjacent to the ROW. For these reasons, potential effects to the southwestern willow flycatcher from the proposed project would not be significant. A determination of ‘No Effect’ is appropriate for this species.

Western Yellow-Billed Cuckoo. Five acres of potentially suitable habitat for this species would be impacted along the Sevier River. The species is not expected in this area but occurrence is possible, and if the species is present, direct impacts could occur via displacement and habitat loss. A determination of ‘May Affect, Not Likely to Adversely Affect’ is appropriate for this species.

<u>Fish</u>

Virgin River Chub. The Muddy River, where Virgin River chub is most likely to occur, would be crossed using HDD (**Section 4.2.1.2, Appendix C**). Sedimentation impacts are unlikely in Meadow Valley Wash because this area would be bored; macroinvertebrate communities, water quality, and other associative biotic and/or abiotic components that affect the larger trophic system on which Virgin River chub populations depend would not be affected. A determination of ‘May Affect, Not Likely to Adversely Affect’ is appropriate for this species.

Mammals

Utah Prairie Dog. Project construction would result in a loss of potential habitat for Utah prairie dogs in the project area. Prairie dogs that may be present in Iron, Beaver, and possibly southern Millard Counties would be disturbed temporarily by noise during construction. Any temporary noise impacts from blasting would not affect prairie dog reproduction or populations, thus impacts are not likely to be significant. Implementation of BMPs and mitigation (below and in **Appendix D**) would minimize the potential for adversely affecting Utah prairie dogs during and after construction. A determination of ‘may affect, but not likely to adversely affect’ is appropriate for this species.

Reptiles

Desert Tortoise. Direct impacts on desert tortoise habitat would result from ground-disturbing construction activities. The resultant short- and long-term loss of vegetation would reduce the amount of forage available to tortoises. The maximum ground disturbance in tortoise habitat that would result from project features and the construction ROW is an estimated 663.5 acres. Typically, construction would disturb a 75-foot-wide construction area. Of the 75 feet, 32 feet, on average, comprise previously disturbed land that was affected by construction of the Kern River existing pipelines. Impacts to tortoise habitat would be off-set by reclamation measures and compensation payments for affected habitat. As previously noted, 20 miles of habitat has reduced value as tortoise habitat due to loss of perennial vegetation from fire.

Activities associated with project construction could potentially injure or kill tortoises. Vehicles and heavy construction equipment pose the greatest hazard to tortoises and their burrows. For the second Kern River pipeline, the USFWS, BLM, and state agencies in Utah and Nevada did not require an estimate of the numbers of desert tortoises in the project area. Instead, potential impacts on desert tortoises were assessed using historical data and data that were collected in 1990 for the original Kern River Project (USFWS 2002). During construction of the original Kern River Project in 1991, take limits for deaths and harassment of tortoises were exceeded with new limits set at 35 deaths or injuries and an unlimited number of tortoises harassed. It is anticipated that the USFWS, BLM, and state agencies would review the effectiveness of mitigation measures for the previous Kern River Projects and use this information to establish take limits and revise recommended mitigation measures for the proposed pipeline project. Recommended mitigation measures for avoiding or reducing injury or mortality to tortoises would be effective during construction-related activities. Blasting within the Nevada portion of the alignment would result in harassment of an unknown number of individual tortoises in the vicinity or within the alignment. These impacts would be significant.

Indirect impacts on tortoises would result if public access to, and use of, the project area increased following construction. However, increases in public access and OHV use are not anticipated as a result of project implementation. No new access would be created. A determination of ‘may affect, likely to adversely affect’ is appropriate for this species.

Plants

Shivwitz milkvetch. Although not known to occur within the ROW, if Shivwitz milkvetch is found within the disturbance area in Washington County, further consultation with USFWS and mitigation measures may be necessary to compensate for a loss of habitat and possibly individuals. Since Shivwitz milkvetch is not expected in the disturbance area, a determination of ‘may affect, but not likely to adversely affect’ is appropriate for this species.

Ute ladies’-tresses. Appropriate habitat for Ute ladies'-tresses was not observed during field habitat surveys of the proposed pipeline route in 2008. However, the species may occur in wetland habitat at the northern end of the alignment and if present in the disturbance area, would require further consultation with USFWS and possibly mitigation measures for loss of habitat and possibly individual plants. Because Ute ladies' tresses is not expected in the disturbance area, a determination of 'may affect, but not likely to adversely affect' is appropriate for this species.

Sensitive Species

Amphibians

Arizona Toad. The Muddy River would be crossed with HDD thus no impacts would occur downstream of this crossing in Arizona toad habitat. Moody Wash would be crossed by open cut and when dry (following BMPs, **Appendix D**), thus sedimentation impacts downstream of this area would be minimal and impacts to Arizona toad habitat would not be significant. Blasts between MP 287 and MP 315 would disturb individuals in the vicinity of the proposed pipeline, but impacts would be temporary and would not have an effect on population dynamics or reproduction. Potential noise impacts to Arizona toad would not be significant.

Western Toad. Pre-construction surveys would target western toads within pinyon juniper habitat (MP 290-315) and particularly near potentially wet areas in the vicinity of pinyon juniper (Moody Wash at MP 298 and Magotsu Creek at MP 295) that may serve as breeding areas, summer range, or hibernacula sites. Moody Wash would be crossed when dry (following BMPs, **Appendix D**) thus impacts to western toads while in wet habitats would not occur. Magotsu Creek would be crossed using HDD thus no impacts within this potential breeding habitat would occur. Impacts from habitat losses would not be significant. Blasts between MP 287 and MP 315 could disturb individual toads, but would be temporary and would not have an effect on population dynamics or reproduction. Noise impacts to western toads would not be significant. If western toads were found during surveys a site evaluation by the appropriate agency would be necessary to determine the best way to conserve migration corridors for western toad around project disturbances.

Birds

BLM-Sensitive Raptors and Owls. Project construction noise could potentially affect raptors that were hunting or roosting in the project area at the time of construction. These impacts would be temporary and displacement impacts on hunting/roosting raptors would not be significant. Some habitat for raptors would also be lost due to permanent and temporary disturbances (see general wildlife discussion); however, most habitats used by raptors are common in the area, thus impacts from habitat losses also would not be significant.

Pre-construction aerial surveys for raptors would be conducted in the project area. All areas would be surveyed; however, the following areas would receive special attention due to proximity to blasting activities: Oquirrh Mountains (MP 31-33 and 41-44); Gilson Mountains (MP 108-114); Cricket Mountains (MP 183–196); Star Range (MP 215–223); Black Mountains (MP 238-240); the Antelope Range, Bull Valley Mountains, and Pine Valley Mountains on the Dixie National Forest (MP 280–310); the Red Mountains (MP 303-308), and the Mormon Mountains (MP 323- 342) and Arrow Canyon Range (MP 385-400) in Nevada. Ground surveys would be conducted for burrowing owls in conjunction with migratory bird species of concern surveys. If raptor/owl nests are found, the following buffer distances, within which construction may not occur, would apply until birds have fledged from the nest. Exceptions to these restrictions (i.e., reduction of the buffer distance) may be obtained from the BLM if natural screening (i.e., topography or vegetation) is present to reduce potential noise impacts.

Exhibit 4.9-1 Sensitive Raptor Species and USFWS-Recommended Maximum Buffers and Seasonal Restrictions (i.e., Nesting Periods). For complete list of raptors see Appendix D (Exhibit D-1).

Species	Maximum buffer (miles)	Maximum seasonal restriction
Bald eagle	1.0	1 Jan – 31 Aug
Golden eagle	0.5	1 Jan – 31 Aug
Northern goshawk	0.5	1 Mar – 15 Aug
Ferruginous hawk	0.5	1 Mar – 1 Aug
Swainson's hawk	0.5	1 Mar – 31 Aug
California condor*	1.0	NONE
Peregrine falcon	1.0	1 Feb – 31 Aug
Prairie falcon	0.25	1 Apr – 31 Aug
Burrowing owl	0.25	1 Mar – 31 Aug
Flammulated owl	0.25	1 Apr – 30 Sept
Short-eared owl	0.25	1 Mar – 1 Aug
Mexican spotted owl*	0.5	1 Mar – 31 Aug

*Presence would require further consultation with USFWS and possibly additional mitigation.

Source = Romin and Muck 2002

Incidental impacts to nesting raptors (not found during surveys) would not be significant because it is likely that only a few nesting individuals would be affected. Populations and reproductive rates of species would not be affected by incidental impacts. With pre-construction surveys and appropriate buffers and timing restrictions implemented, impacts to sensitive raptors and owls would not be significant.

Other sensitive migratory birds. Pre-construction surveys would be conducted for migratory bird species of concern, which would include all sensitive migratory birds that may occur in the disturbance area (i.e., LeConte's thrasher, loggerhead shrike, phainopepla, Lucy's Warbler, and Lewis's woodpecker). If nests of migratory birds are found in the proposed disturbance area, construction would be delayed from 15 May to 15 July or until birds have fledged, unless a specific exception is granted by the BLM due to natural screening or other factors that may reduce noise impacts (see **Appendix D**). Direct mortality of birds and destruction of nests would not occur. Incidental take may occur to bird nests that are not found during surveys. These impacts would not be significant because populations of species would not be affected, nor would reproductive rates of any population be affected by low levels of incidental take that may occur. The BLM and USFWS would be compliant with the MBTA if pre-construction surveys for species of concern are conducted and an effort is made to conserve migratory bird habitats. Some habitat for sensitive migratory birds would be lost; however, most habitats are abundant in the vicinity of disturbances and no significant losses of key migratory bird habitats would occur. The most adverse affect regarding migratory bird habitat losses from the proposed pipeline and associated disturbances would be 69 acres of disturbed wetlands (**Section 4.6**); impacts to wetlands would be minimized by adherence to USACE Section 404 Permit conditions (refer to **Appendix D**). Meadow Valley Wash would be bored and some riparian vegetation may be impact, although little was found at this crossing. Any birds that were not nesting but present in the disturbance area would be displaced by construction activities. Blasting would disturb non-nesting birds temporarily. All impacts to migratory birds would not be significant considering pre-construction surveys and avoidance measures that would greatly reduce the likelihood of effects to nesting migratory birds. Incidental take and other impacts that may occur would not lead to federal listing of any sensitive migratory bird species. A complete list of construction BMPs for migratory birds is in **Appendix D**.

Greater Sage-grouse. The main impact of construction on greater sage-grouse would be the loss of suitable habitat. Disruption of breeding activities or brood rearing would be avoided be implementing buffers in occupied brood rearing habitat. Pre-construction surveys for sage grouse would be conducted in the spring (April - May) of 2008 between MP 45.5 and MP 78.5 and between MP 85.5 and MP 118 in brood-rearing habitat mapped by UDWR. The area surrounding leks would also be surveyed. All construction would be restricted within brood habitat and surrounding leks until after the appropriate season and noise impacts would be restricted at leks from March 1 to May 15 (see **Appendix D**). Regarding suitable habitat (sagebrush steppe) losses, the Faust Creek, State Highway 148, and Red Rock Knoll staging areas would remove sagebrush habitat over a larger area and for a slightly longer period relative to most of the route (i.e., >75-foot construction width). Although the proposed project would likely not result in a permanent loss of habitat along the pipeline ROW, based on the condition of the existing ROW, the regeneration of sagebrush would be slow and could take up to several decades. Habitat losses outside of critical periods would not likely contribute to a trend towards federal listing. There would not be significant impacts to sage grouse.

Fish

Without the recommended BMPs in place (**Appendix D**), riparian vegetation could be destroyed and previously stable banks compromised during pipeline installation. This could result in increased water temperatures, sediment being released into the rivers and streams, and temporary changes in water quality, which may affect the ability of the sensitive to forage and reproduce both proximately and downstream (FERC and CSLC 2002). BMP implementation (described in **Appendix D**) would avoid all significant impacts to sensitive fish. Blasting activities may temporarily disturb individual fish but these impacts would be minor and not significant. BMPs include installing the pipeline in intermittent and ephemeral streams only when streams are dry, following conditions in the USACE Section 404 Permit in all intermittent and ephemeral streams, and using HDD at all perennial waters. Impacts to each species considering the implementation of BMPs are described below.

Desert Sucker. Although desert sucker are likely to be present in Beaver Dam Wash, Magotsu Creek, and Moody Wash when water is present, and may be present in Meadow Valley Wash when water is present, construction would only take place during periods of the year when these washes are dry. As result, no fish would be present during construction. However, construction would disturb the stream bank and could compromise previously stable banks. Construction would also remove riparian vegetation, and disturb instream habitat. Once streamflow returns, this could result in increased water temperatures, sediment being released into Moody Wash, and temporary changes in water quality thereby impacting desert sucker. Adherence to the construction procedures the mitigation measures (described under mitigation measures for the Virgin spinedace below), and compliance with conditions included in the USACE Section 404 permit and state water quality certifications or waivers reduce the level of these impacts and overall impacts to desert sucker to less than significant levels.

Flannelmouth Sucker.

Flannelmouth suckers evolved in turbid systems although the threshold level at which excessive sediment loading (due in part to anthropogenic effects) may become deleterious has yet to be determined. The species is known to occur in the Muddy River. Potentially negative effects of excessive sediment in the system may have a larger impact on algal growth, macroinvertebrate communities, and water quality, on which flannelmouth sucker populations depend. To avoid potential sedimentation impacts, HDD would be employed at the Muddy River. HDD was described in detail in **Section 4.2.1.2**. By implementing this crossing method the proposed project would not likely adversely riparian vegetation or stream bank stability. As a result, impacts to flannelmouth sucker or the ecological processes on which this species depends would be reduced to less than significant levels.

Virgin Spinedace. The USFWS previously expressed concern about impacts to the Virgin spinedace from construction of the Kern River pipeline at the Moody Wash and Magotsu Creek crossings. This concern related primarily to the loss of habitat and potential for increased erosion of the stream bank following construction, as well as riparian and instream habitat disturbances that would occur during construction if water is present at the time of construction. Although Virgin spinedace may be present in Beaver Dam Wash, Magotsu Creek, and Moody Wash when water is present, construction would only take place during periods of the year when these washes are dry. As result, no fish would be present during construction. However, construction would disturb the stream bank and could compromise previously stable banks. Construction would also remove riparian vegetation, and disturb instream habitat. Once streamflow returns, this could result in increased water temperatures, sediment being released into Moody Wash, and temporary changes in water quality thereby impacting the Virgin spinedace. Adherence to the BMPs, including the removal of minimal riparian vegetation, sediment control measures, and streambank stabilization, would decrease the level of these impacts and overall impacts to less than significant levels. Further, potential blasting throughout this area (MP 292-298) may disturb individual fish in upstream or downstream areas, but would not affect reproductive rates or populations thus impacts would not be significant.

Mammals

Bat Species. No construction impacts to bats are anticipated because there would be no disturbance to caves or mine shafts/adits. These species' insect prey base would also be unaffected by project implementation.

Kit Fox. In addition to disturbing habitat, clearing the construction ROW would result in the displacement of kit foxes from areas on or adjacent to the ROW. This relatively mobile wildlife species should be able to avoid being crushed by construction equipment, with the exception of newly born pups. However, even in this case, kit foxes routinely move pups to alternative den sites when disturbed. Blasting activities proposed largely in the Nevada portion of the alignment (MP 324-399) may disturb individual kit foxes, but would not affect reproductive rates or populations thus impacts would not be significant. This project is not likely to contribute to a trend towards federal listing.

Nelson's Bighorn Sheep. Construction could temporarily disrupt sheep using non-typical habitat (for example, away from rocky, mountainous areas). However, given the location of the project area such disruption is unlikely. Blasting in the vicinity of the Mormon Mountains and the Arrow Canyon Range in Nevada may temporarily disturb individual sheep, but these impacts would not be significant.

Preble's Shrew. Suitable wetland habitat for this species would be lost. In addition to the loss of habitat, clearing the construction ROW would result in the displacement of the Preble's shrew from areas on or adjacent to the ROW if this species is present in wetland habitat. Because Preble's shrew is not expected to occur in the disturbance area, this project is not likely to contribute to a trend towards federal listing for this species. Any incidental impacts (i.e., mortality) to this species that do occur would not result in significant impacts because only a few individuals would likely be affected.

Pygmy Rabbit. A substantial amount of sagebrush and other habitat for pygmy rabbit would be lost during construction. The regeneration of sagebrush in temporarily disturbed areas after reclamation would be slow and could take up to several decades. The Faust Creek and State Highway 148 staging areas would remove sagebrush habitat over a larger area and for a slightly longer period relative to most of the route (i.e., less than 75-foot construction width). Habitat loss and fragmentation would be the most adverse impacts to this species. In addition to the loss of habitat, clearing the construction ROW would result in the displacement of pygmy rabbits from areas on or adjacent to the ROW. BMPs would minimize these impacts (see **Appendix D**)Any displaced rabbits would be subject to higher rates of predation by mammalian and avian predators. This relatively mobile wildlife species is not expected to be killed by construction equipment; considering escape ramps would be installed and construction personnel would be educated as to how to avoid impacts to this species. This project is not likely to contribute to a trend towards federal listing.

Sensitive Mollusks

Any springs that are impacted or removed could have an adverse effect on sensitive mollusks, if present. Surveys may have to be conducted for sensitive mollusks in affected springs; the need for and possible time frame and method of surveys is currently being determined by the BLM and UDWR. A general lack of knowledge regarding the life histories of sensitive mollusks and incomplete information on possible presence of sensitive species in affected springs currently precludes impact determinations.

Sensitive Reptiles

Sensitive reptiles would largely be avoided because most (all but 3 miles, or 98 acres) of the disturbance in suitable reptile habitat would occur in previously disturbed areas (along Kern River pipeline) that are now of relatively marginal quality for theses species, and BMPs and mitigation measures specific to desert tortoise would also cover sensitive reptiles. These BMPs include pre-construction surveys and environmental education programs to instruct construction personnel in the identification of sensitive reptiles and how to avoid impacts to these species. Habitat losses would be minor as much of the habitat is previously disturbed.

Construction of the proposed project would result in temporary displacement of individuals, as well as the long long-term alteration of habitat in areas of new disturbance. Proposed blasting in Nevada would disturb individuals in the vicinity of the alignment; however, populations would not be affected and impacts would not be significant. This project is not likely to contribute to a trend towards federal listing for any sensitive reptile.

Plants

Pre-construction surveys for sensitive plants species that may occur in the disturbance area would be conducted during the appropriate flowering seasons and immediately prior to construction. Surveys would be conducted between March and June, depending on species' phenology. BLM mitigation guidelines would be followed if these species are found in the disturbance area (see **Appendix D**). Species are listed in the following table.

Exhibit 4.9-2 Sensitive Plants Species that may Occur in the Disturbance Areas and Corresponding Areas along the Alignment that would be Surveyed between March and June (Depending on Phenology).

Species	Survey area
Baird's Camissonia	Washington County (MP 289 – MP 313)
Franklin's penstemon	Cedar City spur alignment, near proposed Cedar City Terminal
Giant fourwing saltbrush	Millard County Alternative

Species	Survey area
Jones globemallow	Millard County Alternative and Proposed Action route, in salt desert shrub east of Cricket Mountains (MP 170 – MP 200)
Las Vegas bear poppy	MP 289 – MP 400
Neese narrowleaf penstemon	Millard County Alternative
Nevada willowherb	Washington County (MP 289 – MP 313)
Pinyon penstemon	MP 277 – MP 287
Small spring parsley	Millard County Alternative
Sticky buckwheat	MP 315 – MP 399
Threecorner milkvetch	MP 329 – MP 399

This project is not likely to contribute to a trend towards federal listing for any sensitive plant species. Impacts, considering pre-construction surveys and avoidance/mitigation measures, would not be significant.

Operations, Maintenance, and Abandonment

TEC Species

Impacts during operations, maintenance, and abandonment activities would be of lower intensity than those described for construction. Impact determinations would be similar or less adverse and mitigation measures described in the Biological Assessment would mitigate the impacts to species from all aspects of the project. In general, noise from operations, maintenance, and abandonment would not affect any TEC species that may occur in the vicinity of the pipeline, facilities, or roads. The most adverse impacts would involve temporary human presence during maintenance and long term noise impacts around pump stations. Abandonment activities could result in adverse impacts similar to those described under construction but would most likely be less adverse.

Greater Sage-grouse

An additional amount of habitat surrounding pumping stations would be unsuitable for sage-grouse during operations. Greater sage-grouse lek attendance has been shown to be lower at sites exposed to noise (compressor stations in Wyoming; Braun et al. 2003). If the Cedar City Lateral Take-Off station, located in sagebrush/grassland habitat (0.5 acre), is within 1 mile of an active sage-grouse lek, additional mitigation may be necessary and would be determined by BLM and UDWR.

Other migratory birds, including raptors

Noise from pump stations would not have significant effects on migratory birds because these species would likely avoid areas surrounding the stations when choosing a nest site. Surveys would be conducted during the nesting season if heavy equipment was needed that could possibly involve take of birds, similar to surveys conducted before construction activities. As described above, direct impacts to nesting birds would be avoided because buffers would be implemented until birds have fledged from the nest.

All other sensitive species

Noise impacts from operation, maintenance, or abandonment activities may displace sensitive species. Impacts would be less adverse than described for construction activities and no direct impacts (mortality) are expected from these activities, thus impacts would not be significant. Some abandonment activities may involve similar activities to construction; in these cases impacts to sensitive species would be as described above.

4.9.2.2. Alternatives

Impacts resulting from alternatives to the Proposed Action are described in **Exhibit 4.9-3** and below.

Exhibit 4.9-3 Comparison of the Proposed Action and Alternatives, Considering Special Status Species that may occur within or in the vicinity of the Proposed Pipeline Alignments

Species	Proposed Action Impacts	Impacts under the Alternatives				
		No Action	Airport Alt Route	Tooele County Alt Route	Rush Lake Alt Route	Millard County Alt Route
Endangered, Threatened, or Candidate species	Confirmation needed (USFWS): **NE**[1]: California condor, Southwestern willow flycatcher **MA-NLAA**[2]: Western yellow-billed cuckoo, Virgin River chub, Utah prairie dog, Shivwitz milkvetch, Ute ladies' tresses **MA-LAA**[3]: desert tortoise	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Sensitive plants	Some habitat losses would occur; losses of individual plants would be mitigated by collecting seed.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Impacts possible to giant fourwing saltbrush, Neese narrowleaf penstemon, and small spring parsley
Sensitive amphibians and fishes	Some habitat losses would occur (riparian and woodland habitat for amphibians); habitat degradation impacts would be	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

Species	Proposed Action Impacts	Impacts under the Alternatives				
		No Action	Airport Alt Route	Tooele County Alt Route	Rush Lake Alt Route	Millard County Alt Route
	avoided by implementing BMPs					
Sensitive reptiles	Some habitat losses possible in Nevada portion of alignment	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Sensitive raptors	Habitat losses would occur; no impacts to nesting raptors are expected.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	More impacts may occur to raptors because operations would be closer to the Cricket Mountains where some species may be nesting.
Other sensitive migratory birds and songbirds	Impacts to riparian and wetland habitats are possible but would be avoided as much as possible by implementing BMPs.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Sage grouse	Loss of sagebrush habitat outside of sensitive periods. No impacts to leks or nesting sage grouse.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	More impacts would occur to sage grouse because more sagebrush habitat would be disturbed relative to the Proposed Action

Species	Proposed Action Impacts	Impacts under the Alternatives				
		No Action	Airport Alt Route	Tooele County Alt Route	Rush Lake Alt Route	Millard County Alt Route
Bighorn sheep	Temporary noise impacts possible in Nevada portion of alignment.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Kit fox	Impacts possible due to displacement and loss of desert habitat, mainly in Nevada portion of the alignment.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Preble's shrew	Impacts possible from loss of wetland habitat at the northern end of the alignment.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Pygmy rabbit	Substantial loss of habitat.	No impacts	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	More sagebrush habitat would be disturbed relative to the Proposed Action.

[1]NE – No Effect

[2]MA-NLAA – May Affect – Not Likely to Adversely Affect

[3]MA-LAA – May Affect – Likely to Adversely Affect

Airport Alternative Route

Impacts to special status species from the Airport Alternative Route would be the same as under the Proposed Action (see **Exhibit 4.9-1**) because similar habitats would be disturbed. The exact locations of special status species are not known in this area, thus it is not known whether any of the alignments would directly impact a known population of any special status species. Surveys for special status species that may occur in the area would be conducted prior to construction.

Tooele County Alternative Route

Impacts to special status species under the Tooele County Alternative Route would be similar to those under the Proposed Action with the exception of grassland-dependent species (i.e., burrowing owl and short-eared owl; **Exhibit 4.9-1**). Approximately 115 acres of grassland habitat would be disturbed under the Proposed Action alignment, whereas the Tooele County Alternative Route would cross 27 acres of grassland/blackbrush habitat and 63 acres of disturbed grassland. Thus, more grassland habitat where burrowing owls or short-eared owls are likely to occur (i.e., undisturbed grassland) would be lost under the Proposed Action alignment. As a result, these species are less likely to be displaced by the installation of the pipeline under the Tooele County Alternative Route.

Rush Lake Alternative Route

Impacts to special status species the Airport Alternative Route would be the same as under the Proposed Action (see **Exhibit 4.9-1**) because similar habitats would be disturbed. The exact locations of special status species are not known in this area, thus it is not known whether any of the alignments would directly impact a known population of any special status species. Surveys for special status species that may occur in the area would be conducted prior to construction.

Millard County Alternative Route

Relative to the Proposed Action, impacts to special status species under the Millard County Alternative Route may be more adverse to sagebrush-dependant species (i.e., sage grouse and pygmy rabbit), some sensitive plants, or sensitive raptors that occur in the Cricket Mountains. In addition, 0.5 fewer acre of riparian woodland vegetation would be disturbed under the Millard Alternative than under the Proposed Action alignment (**Exhibit 4.9-1**).

More impacts to sage grouse and pygmy rabbit may occur under the Millard County Alternative Route because a larger amount of sagebrush and sagebrush scrub vegetation (468 more acres than the Proposed Action) would be crossed by the Millard alignment. The Proposed Action alignment would occur closer to Highways 6 and 257, as well as pass closer to the town of Delta, whereas the Millard alignment would be 0.5-2 miles from the existing road and town of Delta and generally would occur across more remote country. Sage grouse and pygmy rabbit are more likely to occur in sagebrush areas along the alignment that are more remote from human disturbances and noise (i.e., roads and inhabited areas), thus impacts to these species are more likely along the Millard alignment than under the Proposed Action. In addition, three sensitive plants could occur along the Millard alignment and are not likely to occur along the Proposed Action alignment. These species include giant fourwing saltbrush, Neese narrowleaf penstemon, and small spring parsley, all of which occur on sandy substrates. Sand habitats are not present within the Proposed Action alignment, thus impacts to these sensitive plant species are more likely under the Millard County Alternative alignment. Regarding raptors, the Millard County Alternative alignment would pass closer to the Cricket Mountains, where various special status raptors could be nesting. Because the Millard alignment is closer to potential nests, noise impacts are more likely, particularly as a result of blasting.

The Millard County Alternative alignment would cross the Sevier River at a reach that is likely to be dry and contain little or no riparian vegetation, or riparian species such as special status migratory birds. The Proposed Action alignment would cross the Sevier River northeast of Delta above the DMAD Reservoir, where there is likely to be both flow and riparian vegetation containing migratory birds. However, because only 0.5 fewer acres of riparian woodland vegetation would be disturbed under the Millard alignment, impacts to special status riparian species would be similar to the Proposed Action alignment. Refer to Wildlife (**Section 4.8**) for impacts to fish species. No special status fishes would be present in the Sevier River near the Millard or Proposed Action crossings.

No Action

None of the impacts to special status species or their habitat associated with construction, operation, and maintenance of the proposed pipeline project would occur under the No Action Alternative.

4.9.3. Best Management Practices and Mitigation

All BMPs and mitigation measures are listed in **Appendix D**. No specific BMPs are recommended for bat species. Mitigation measures pertaining to TEC species are listed below, in **Appendix D** and in the Biological Assessment. Other BMPs or post-project mitigations for special status species may be suggested at a later date by any agency if species are found in the disturbance areas and impacts are anticipated or unavoidable.

4.9.3.1. Birds

BLM-Sensitive Raptors and Owls

Aerial pre-construction surveys would be conducted during the breeding season to determine if active raptor nests are present near or within the proposed construction ROW. The surveys would cover 0.5 mile on either side of the outside edge of the construction work area. If active nests are identified during aerial surveys, the USFWS' established guidelines (Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances; USFWS 2002) would be followed to protect raptors from human disturbances, unless site-specific treatment of a nest is approved by the local USFWS field office, the BLM, and the UDWR (for nests in Utah) that takes into account the status of the nest, the proposed construction schedule, and the location of the nest.

Other Sensitive Migratory Birds

Pre-construction surveys would be conducted for migratory bird species of concern, which includes all sensitive migratory birds that may occur in the disturbance area (i.e., LeConte’s thrasher, loggerhead shrike, phainopepla, Lucy’s Warbler, and Lewis’s woodpecker) and other species on the Priority lists for PIF and BCC. If nests of migratory birds are found in the proposed disturbance area, construction would be delayed from 15 May to 15 July or until birds have fledged from the nest. A specific exception may be granted by the BLM due to natural screening or other factors that may reduce noise impacts. More detailed BMPs and mitigation are in **Appendix D**.

Greater Sage-grouse

Surveys would be proposed to be conducted in the spring (April - May) of 2008, prior to construction. Surveys would be conducted in between MP 45.5 and MP 78.5 and between MP 85.5 and MP 118. These areas have been designated by the UDWR as potential brood habitat. The project proponent would coordinate with the UDWR, and the BLM to determine the specific location and number of transects required for the 2008 surveys. Surveys would follow agency-recommended protocols at the historic lek locations within 2 miles of the proposed ROW. If breeding greater sage-grouse are found within the ROW, construction would be halted until critical breeding and brood rearing stages have been completed. Additionally, the disturbed areas would be re-contoured and reseeded immediately after construction according to guidelines outlined in the Restoration Plan for the project.

4.9.3.2. Fish and Amphibians

Desert Sucker

Mitigation recommendations for the Desert sucker would be the same as described for the Virgin spinedace.

Flannelmouth Sucker

Flannemouth sucker are most likely present in the Muddy River and, although not confirmed, may also occur in Meadow Valley Wash. They may also occur within the lower sections of Beaver Dam Wash, Magotsu Creek, and Moody Wash (during times that there is sufficient flow). However, they would not occur within the reaches of each stream to be impacted by the proposed pipeline route. Any potential impact to downstream populations would be reduced by the mitigation measures described previously and already in place to protect other aquatic species (specifically, refer to discussions of Virgin River chub, and Virgin spinedace).

Virgin River Chub

To avoid impacts to the Virgin River chub and its habitat, the Muddy River would be drilled under using HDD. All holes and workspace would be outside of the jurisdictional area of the river. No riparian vegetation would be removed and no ground water would be pumped out of the bore hole as a result of HDD at the Muddy River.

Virgin Spinedace

Impacts on ephemeral washes and intermittent streams such as Magotsu Creek, Moody Wash, and Beaver Dam Wash would be minimized by complying with the following mitigation measures and the USACE Section 404 permit conditions and state-issued Section 401 water quality certifications or waivers, and by implementing wetland construction and restoration measures. These measures would be an integral part of the Proposed Action and included in the final POD and Record of Decision.

- Construction on Beaver Dam Wash, Magotsu Creek, and Moody Wash would only take place during periods of the year when these streams are dry.
- In order to minimize the potential for introducing sediment to the aquatic system, a temporary sediment basin, or filter would be used to reduce sediment from in channel construction from being transported downstream or entering live water. In addition, sediment fences would be installed between other areas of disturbance outside the channel and the active channel. Sediment fences would be cleaned and inspected regularly to maintain function. Further, ground disturbance outside of the river channel would not occur during wet conditions (i.e., during or immediately following rain events).
- Immediately after construction, disturbed stream banks would be stabilized, using native rock riprap if necessary. Native riparian vegetation would be replanted dependent upon the surroundings and the ability of the area to support vegetation.

Following the Section 404 Permit conditions, proposed wetland mitigation would be designed to minimize the area and duration of disturbance, reduce the disturbance of soils, and enhance restoration following construction. These measures would include, but would not be limited to, the following:

- Limiting the width of the construction ROW in non-cultivated wetlands to 75 feet unless a wider ROW is expressly permitted
- Limiting the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration activities
- Limiting grading activities to directly over the trench line, except where additional grading is necessary to ensure safety
- Using low ground weight construction equipment, or operating equipment off of timber riprap, prefabricated timber mats, or geotextile fabric overlain with gravel in saturated or standing water wetlands
- Installing trench breakers or sealing the trench bottom as needed to prevent draining of a wetland and to maintain original wetland hydrology
- Prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland boundary
- Consulting with the appropriate land management or state agencies to develop plans for revegetating wetlands and, where necessary, preventing the invasion or spread of undesirable exotic vegetation
- Limiting post-construction maintenance of vegetation within wetlands to removal of trees that are greater than 15 feet in height and are within 15 feet of the pipeline centerline, and

maintenance of a 10-foot-wide strip of vegetation centered over the pipeline in herbaceous vegetation

- Monitoring the success of wetland revegetation annually for a period of 3 to 5 years after construction, and developing and implementing remedial revegetation plans for wetlands that are not successfully revegetated.

Implementation of these construction procedures, mitigation recommendations, and compliance with conditions included in the USACE Section 404 permit and state water quality certifications or waivers would reduce impacts on ephemeral washes and intermittent streams to less than significant levels.

Arizona Toad and Western Toad

To avoid impacts to fish and amphibians and their habitats, the Muddy River and Magotsu Creek would be crossed using HDD. Pre-construction surveys would target western toads within pinyon juniper habitat (MP 290-315) and particularly near potentially wet areas in the vicinity of pinyon juniper (Moody Wash at MP 298 and Magotsu Creek at MP 295) that may serve as breeding areas, summer range, or hibernacula sites. Moody Wash would be crossed when dry. If western toads were found during surveys a site evaluation by the appropriate agency would be necessary to determine the best way to conserve migration corridors for western toad around project disturbances.

4.9.3.3. Mammals

Impacts to sensitive mammals would be avoided by 1) placing escape ramps at maximum 1-mile intervals along the trench and at well-defined livestock and wildlife trails intersected by the trench and 2) by implementing environmental training programs for all employees and contractors. The environmental program would be approved by the USFWS, BLM, UDWR, and NDOW. The project’s expanded environmental training program would raise the awareness of construction personnel regarding the presence and protection of special status species during construction and would further reduce potential direct impacts from construction. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction. All field workers would be instructed that activities must be confined to locations within the approved areas.

Kit Fox

Any kit fox dens (identify by keyhole-shaped entrance) not in the immediate disturbance area would be preserved and flagged if active to prevent disturbance for the duration of construction activities. Den status would be determined for all possible dens in the disturbance area and construction may be restricted within 0.25 mile of occupied dens between 1 Feb and 1 May (while young are den-dependent), or at the discretion of the BLM or UDWR. Outside of these dates, adult kit foxes would be evicted and burrows blocked off to prevent re-entry during construction. All pipes and culverts would be inspected for kit foxes before burying, capping, or moving the structures.

Pygmy Rabbit

In areas of sagebrush/sagebrush scrub, biological monitors familiar with pygmy rabbits and their sign would inspect the area prior to construction. In the event that a potential pygmy rabbit burrow is encountered during construction, construction would stop until UDWR and BLM determined an appropriate course of action to avoid impacts to the species. In general, burrows would be avoided to the extent practicable within the 75-foot ROW.

Utah Prairie Dog

The following procedures in **Exhibit 4.9-2** have been compiled to inform authorized users/owners/cooperators of the process to follow if their proposed maintenance activity would be in

Utah prairie dog habitat. It should be noted that actions which might be denied under these procedures can be reanalyzed to see if the action could be authorized under different mitigation measures. If prairie dogs or their habitat might be impacted, the recommended stipulations to minimize take outlined below should be followed.

Exhibit 4.9-2 Process to Follow for Projects within Utah Prairie Dog Habitat

Step Number	If this statement applies, proceed to the step number in the following column.	Step Number
1	Authorized user/owner/cooperator determines maintenance is necessary within Utah prairie dog habitat	2
2	Type of maintenance needed is determined:	
	Emergency repairs to public utilities (such as gas, power, or telecommunications lines) where there may be harm to human health & safety	3
	Maintenance of existing dirt/gravel road within existing disturbed area	4
	Non-ground disturbing activity	5
	Ground disturbing activity	13
3	Repair work is initiated and BLM is notified within 24 hours	8
4	Work is completed, no further action needed	
5a	Work would occur between November 1 and February 28	4
5b	Work would occur between March 1 and October 31	6
6a	Proposed work can be completed according to the stipulations for Non-ground Disturbing and Non-mechanized Ground Disturbing Activities	4
6b	Proposed work cannot be completed according to the above stipulations	7
7	BLM is notified of proposed noncompliance with justification for request and proposed measures to minimize and mitigate impacts	8
8	Qualified biologist conducts a clearance survey	9
9a	Survey finding of Absent (no animals or recent activity)	4
9b	Survey finding of Present (animals present)	10
10a	BLM makes a no effect determination for proposal	4
10b	BLM makes a may effect determination for proposal	11
10c	In emergency situations with a may effect determination, BLM initiates consultation with USFWS	12a
11a	BLM denies request	15
11b	BLM initiates consultation with the USFWS	12
12a	Project is approved by BLM and USFWS, and may require additional stipulations and mitigation	4
12b	Project is denied	15
13a	Non-mechanized disturbance (shovel, etc.)	5
13b	Mechanized disturbance is proposed which incorporates stipulations for ground disturbing, mechanized activities	14

Step Number	If this statement applies, proceed to the step number in the following column.	Step Number
13c	Mechanical disturbance is proposed, but cannot be completed according to above stipulations	7
14	BLM is notified	16
15	Work is rescheduled	1
16	Qualified biologist conducts a clearance survey	17
17a	Survey finding of Absent (no animals or recent activity)	4
17b	Survey finding of Present (animals present)	18
18a	BLM concurs that disturbance would be minimal and that stipulations for Ground Disturbing, Mechanized Activities would be sufficient mitigation	4
18b	BLM estimates that disturbance, after hazing, may result in take of animals, estimated at ≤5	19
18c	BLM estimates that disturbance, after hazing, may result in take of animals, estimated at >5	11b
19	Area is lightly bladed for two days before digging to encourage dogs to move out	20
20	BLM determines that ≤5 dogs would be impacted	21
21	Projects continues with qualified biologist on site	22
22a	BLM records any take of animals	23
22b	Project halted immediately and USFWS notified if permit exceeded	12
23	Annual take of animals is quantified; summary report provided to USFWS	

Stipulations to Minimize Impacts

1. For BLM facilities: The Authorized Officer shall designate an individual as a contact representative who would be responsible for overseeing compliance with the stipulations contained in this list and providing coordination with the U.S. Fish & Wildlife Service. The representative would have the authority to halt activities which may be in violation of these stipulations.

For non-BLM facilities: The authorized user/owner/cooperator shall serve as a contact representative who would be accountable for overseeing compliance with the stipulations contained in this list and providing coordination with the BLM. The representative must halt activities which may be in violation of these stipulations.

2. All project employees shall be informed of the occurrence of the Utah prairie dog in the general area, and of the threatened status of the species. They shall be advised as to the definition of "take", and the potential penalties (up to $200,000 in fines and one year in prison) for taking a species listed under the Endangered Species Act, and the stipulations included in the list.

3. Project related personnel shall not be permitted to have firearms or pets in their possession while on the project site. The rules on firearms and pets would be explained to all personnel involved with the project.

4. All vehicles shall stay on existing roads within colonies, except as stated in #7. Storage of equipment and materials shall not occur within ¼ mile of colonies. Vehicle maintenance shall not occur within these areas.

5. If the situation would require vehicles to travel cross country within Utah prairie dog colonies, burrows must be avoided. Vehicles shall not exceed a speed of 10 miles per hour (cross country) in occupied Utah prairie dog colonies.

6. Within colonies, precautions shall be taken to ensure that contamination of the site by fuels, motor oils, grease, etc. does not occur and that such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum based or other toxic materials shall be cleaned up and removed immediately.

7. Implementing these measures should minimize take of Utah prairie dogs from the maintenance of existing facilities by non-ground disturbing and non-mechanized activities in Iron and Beaver Counties. Any form of take that is not incidental to these activities is not authorized.

8. If a dead or injured Utah prairie dog is located, initial notification must be made to the Service's Division of Law Enforcement, Salt Lake City, Utah at telephone 801-625-5570 or to the Cedar City office of the Utah Division of Wildlife Resources at telephone number 435-865-6100. Instruction for proper handling and disposition of such specimens would be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. Maintenance of Existing Facilities

<u>Additional Stipulations for Maintenance of Existing Facilities and Non-ground Disturbing and Non-mechanized Ground Disturbing Activities</u>

1. The use of any herbicide or pesticide is not authorized.

2. Workers may not be onsite, continuously, within a colony for more than 8 hours within a 24 hour period.

3. Ground disturbing activities by hand methods (such as shovel, post hole digger, etc.) must avoid all burrows by at least 10 feet.

<u>Additional Stipulations for Ground Disturbing and Mechanized Ground Disturbing Activities</u>

1. Proposed ground disturbance is determined to be minimal and can be completed by buffering most burrows by at least 15 feet.

2. A qualified biologist is required to be on-site during all work within the colony. The biologist would have the authority to halt activities which may be in violation of these stipulations.

3. All work must be scheduled for initiation between April 1 and September 30.

4.9.3.4. Reptiles

Desert Tortoise

<u>Construction</u>

The following mitigation measures would be followed during project construction in desert tortoise habitat:

- A Field Contact Representative (FCR) would be provided to be responsible for overseeing compliance with protective measures for the desert tortoise. The BLM and USFWS would approve the FCR(s), who may be authorized biologists, and must be on-site during all project activities. FCR(s) and authorized biologists would have authority to halt any activities that are in violation of the stipulations in the biological opinion for the project. The

FCR(s) and authorized biologists would have a copy of all stipulations when work is being conducted on the site. The FCR(s) and authorized biologists would report to the project proponent and the BLM. All instances of non-compliance or incidental take would be reported. This should be accomplished by providing BLM oversight on all personnel actions (that is, hiring and dismissal) on the project site, at a minimum.

- All proponent employees and its contractors working in the field would be required to complete a desert tortoise education program prior to reporting in the field. The program would be approved by the USFWS, BLM, and appropriate state agencies. At a minimum, the program would cover the distribution of the desert tortoise, general behavior and ecology of the desert tortoise, sensitivity to human activities, threats (including introduction of exotic plants and animals), legal protection, penalties for violations of federal and state laws, reporting requirements, and project measures in the Biological Opinion. All field workers would be instructed that activities must be confined to locations within the approved areas. In addition, the program would include fire prevention measures to be implemented by employees during project activities. The program would instruct participants to report all observations of desert tortoises and their sign during construction activities to a FCR.
- Existing routes of travel would be used to and from specific project sites. Any routes of travel that require construction or modification would have an authorized biologist survey the area for tortoises prior to modification or construction of the route. Cross-country travel by vehicles and equipment would be prohibited. Except on county-maintained roads, vehicle and equipment speed limits would not exceed 20 MPH within suitable desert tortoise habitat.
- Whenever a vehicle or construction equipment is parked longer than 2 minutes within desert tortoise habitat, whether the engine is engaged or not, the ground around and underneath the vehicle would be inspected for desert tortoises prior to moving the vehicle. If a desert tortoise is observed, an authorized biologist would be contacted. If possible, the tortoise would be left to move on its own. If the tortoise does not move within 15 minutes, the tortoise would be removed and relocated by the authorized biologist in accordance with the tortoise handling procedures.
- An appropriate number of authorized biologists would be onsite to act as biological monitors, and be present during construction for the protection of desert tortoises. The names of all authorized biologists would be submitted to the BLM and USFWS for review and approval at least 30 days prior to initiation of any desert tortoise clearance surveys. Project activities would not begin until authorized biologists have been approved. Replacements of authorized biologists would require BLM and USFWS approval. Authorized biologists would be assigned to monitor each area of activity where conditions exist that may result in take of desert tortoise (for example, clearing, grading, lowering in pipe, backfilling, re-contouring, and reclamation activities). An authorized biologist would be assigned to each piece/group of large equipment. Authorized biologists would be responsible for determining compliance with measures as defined by the Biological Opinion and other agreements. Authorized biologists would maintain a detailed record of all desert tortoises encountered during project surveys and monitoring.
- In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise*, an authorized desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the BLM and USFWS. The authorized biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist would have the ability to recognize and accurately record biological information.

- Construction sites, staging areas, and access routes would be cleared by a qualified tortoise biologist before the start of construction. An authorized biologist(s) would survey the site for desert tortoises using survey techniques providing 100-percent coverage of the area proposed for disturbance. Transects would be no greater than 10 meters apart. If construction occurs during the desert tortoise active season (March 1 through October 31), or when temperatures and environmental conditions are conductive to tortoise activity as determined by an authorized biologist, two surveys would occur. The first survey would be conducted within 14 days prior to surface-disturbance; and the second survey would occur immediately before surface disturbance. During the inactive season (November 1 through February 28, except as noted above) when conditions are not conducive to tortoise activity as determined by an authorized biologist, one survey would occur within 72 hours of surface disturbance or up to 5 days in advance of disturbance if conditions are not favorable for tortoise activity.
- All potential desert tortoise burrows found in the construction zone, whether occupied or not, would be excavated by an authorized biologist to allow removal of desert tortoises or desert tortoise eggs. Tortoises and nests found on the project area would be relocated by an authorized tortoise biologist in accordance with USFWS-approved protocol (Desert Tortoise Council 1994, revised 1999). Unoccupied burrows would be collapsed or blocked to prevent tortoise re-entry. All desert tortoise burrows and pallets that fall outside of but within 50 feet of the construction work area would be flagged for avoidance. All handling of desert tortoise and their eggs and excavation of burrows would be done by an authorized biologist in accordance with recommended protocol (Desert Tortoise Council, 1994, revised 1999). No stakes or flagging would be placed on the berm or in the mouth of a desert tortoise burrow. Desert tortoise burrows would not be marked in a manner that facilitates poaching. Avoidance flagging would be designed to be easily distinguished from access route or other flagging, and would be designed in consultation with experienced construction personnel and authorized biologists. All flagging would be removed following construction activities.
- Tortoise excavated from burrows would be relocated to unoccupied natural or artificially constructed burrows immediately following excavation. The artificial or unoccupied natural burrows must occur 150 to 300 feet from the original burrow. Relocated tortoises would not be placed in existing occupied burrows. If an existing burrow that is similar in size, shape, and orientation to the original burrow is unavailable, the authorized biologist would construct one. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist would be allowed some judgment and discretion to ensure that survival of the desert tortoise is likely.
- Desert tortoises that are found above-ground and need to be moved from harm's way would be placed in the shade of a shrub, from 150 to 300 feet from the point of encounter.
- Procedures for handling tortoises would follow those described in *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1994, revised 1999). All tortoises would be handled using disposable surgical gloves. The gloves would be disposed of after handling each tortoise. Equipment or materials that contact desert tortoises would be sterilized, disposed of, or changed before contacting another tortoise. Desert tortoises would only be moved by an authorized biologist and solely for the purpose of moving the tortoises out of harm's way. The authorized biologist would document each tortoise encounter/handling with the following information, at a minimum: A narrative describing circumstances; vegetation type; dates of observations; conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released; maps; whether animals voided their bladders; and diagnostic markings (that is, identification numbers marked on lateral scutes).

- If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40 degrees Fahrenheit or greater than 90 degree Fahrenheit), they would be held overnight in a clean cardboard box. These tortoises would be kept in the care of the authorized biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes would be appropriately discarded after one use and never hold more than one tortoise.
- If blasting is required in desert tortoise habitat, a biological monitor would be assigned to each blasting crew or area in which blasting would occur. Prior to any blast, a 200-foot area around the blast site would be surveyed for desert tortoises. Above-ground tortoises would be relocated at least 500 feet from the blast site. Tortoises in burrows within 50 feet of the blast site would be relocated at least 75 feet away from the blast site to an unoccupied existing or artificial burrow. Burrows located between 50 and 150 feet away from the blast site would be flagged and stuffed with newspaper prior to the blast. The newspaper would be removed immediately after the blast and burrows assessed for damage.
- Any fuel or hazardous waste leaks or spills would be stopped/repaired immediately and cleaned up at the time of occurrence. The storage and handling of hazardous materials would be excluded from the construction zone in areas within 100 feet of active tortoise burrows and wash crossings. Any unused or leftover hazardous products would be properly disposed of off-site.
- Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches above ground on the construction site for one or more nights would be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all structures may be capped before being stored on the construction site.
- Water would be applied to the construction ROW for dust control and to the topsoil piles as necessary to prevent the loss of topsoil due to wind erosion. The applications of water to the construction ROW maybe reduced by adding a non-toxic, organic tackifier to the dust control water during the tortoise active season (generally March 1 to October 31). However, the effectiveness of tackifier is dependent on the structure and moisture holding capabilities of the soil. Frequently these soil properties can only be determined after the removal of the topsoil and application of water. A tackifier would be applied to segregated topsoil piles in areas designed as highly susceptible to wind erosion. During the desert tortoise active season, an authorized biologist would be assigned to patrol each area being watered. The biological monitor would patrol the area immediately after the water is applied and at approximate 60-minute intervals until the ground is no longer wet enough to attract tortoises.
- Open pipeline trenches would be fenced with temporary tortoise-proof fencing or inspected by an authorized biologist periodically throughout and at the end of the day, and immediately prior to backfilling. Any tortoise that is found in a trench or excavation would be promptly removed by an authorized desert tortoise biologist in accordance with USFWS-approved protocol or alternative method approved by the USFWS if the biologist is not allowed to enter the trench for safety reasons. Tortoise escape ramps would be provided at maximum 1-mile intervals along the trench.
- Coordination with the BLM would ensure that appropriate measures are implemented to minimize public access and use of the pipeline ROW following completion of the project. Such measures may include signs and substantial physical barriers, and rehabilitation actions that would make the ROW impassible to vehicles.
- During the winter, modification of the number of monitors present may be requested, or other measures developed primarily to minimize effects to desert tortoise during periods of

tortoise activity. In such cases, the authorized biologist must confirm that no desert tortoises are above ground or present within the construction zone, or anticipated to be active for a minimum of three days. Any modifications would require concurrence from the BLM and USFWS.

- A trash abatement program would be initiated during the pre-construction phases of the project, and would continue though the duration of the project. Trash and food items would be contained in closed (raven-proof) containers and removed regularly (at least once a week) to reduce attractiveness to opportunistic predators such as ravens, coyotes, and feral dogs. Upon project completion, all construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes would be removed from the site and disposed of properly. Domestic dogs would be prohibited from the project site and site access.
- All pipeline marker signs within desert tortoise habitat would be fitted with “bird-be-gone” or similar bird repellent devices.
- Special habitat features identified by an authorized biologist would be avoided to the greatest extent possible. Work area boundaries would be delineated by posting signs and flagging, erecting temporary fencing, or otherwise clearly marking in order to minimize surface disturbance associated with vehicle or equipment movement. The authorized biologists and FCR(s) would ensure compliance with this measure.
- To the greatest extent possible, previously disturbed areas within the project sites would be used for temporary storage areas, lay down sites, and any other surface-disturbing activities. Specific routes of travel would be approved by the jurisdictional agency and marked prior to construction crew arrival. Efforts would be made to minimize impacts on vegetation and soils in all work areas.
- Site-specific Reclamation Plans and a Noxious Weed Plan provided by resource agencies, including posting a reclamation bond with the BLM to cover additional reclamation actions if the first effort is not successful, would be implemented. The Noxious Weed Plan would include maintenance activities, and treatments to be implemented prior to construction if environmental conditions are not favorable for weeds to be present above-ground (for example, dormant). After construction, the ROW would be re-contoured to match as closely as possible the contours of the area.
- To compensate for desert tortoise habitat affected during construction, these effects would be offset through either an acceptable land acquisition or an assessed financial contribution, based on the final construction footprint. Compensation ratios and the number of acres affected by the proposed project are identified below. The acres identified below are estimates based on surveys conducted for the existing (first) Kern River pipeline, and proposed ROW and extra work areas. Therefore, these numbers, although expected to be fairly accurate, are only an approximation of actual acres requiring compensation in the various ratio categories:

  In Utah:

  - 3:1 where overlapping previously disturbed tortoise critical habitat for 72.7 acres total
  - 1:1 for all non-critical habitat for 34.7 acres

  In Nevada:

  - 3:1 where overlapping previously disturbed tortoise critical habitat for 289.9 acres total
  - 1:1 for all non-critical habitat for 297.5 acres (199.5 acres previously disturbed and 98 acres of new disturbance).

- Upon completion of construction, a thorough inspection of the site would be conducted by the FCR and authorized biologist to determine the extent of compliance with the conditions of USFWS's Biological Opinion, including agreements between the proponent and the agencies. Within 90 days of completion of project activities, the FCR and/or authorized biologist would submit a report to the BLM. The report would document the numbers and locations of desert tortoises encountered, their disposition, effectiveness of protective measures, practicality of protective measures, recommendations for future measures that allow for better protection or more workable implementation, and the number of acres disturbed.
- A list of planned maintenance activities by name, category, location, and approximate start date would be submitted to the local BLM office. The list of activities would also be forwarded to the USFWS and state agencies. The agencies would have 30 days following receipt of the report to consider the Proposed Action. In the event of a rejection, the proponent would work with the agencies to resolve issues. Agency approval of the proposed list of projects is valid for one year after agency acceptance.

These measures would be taken from MP 316 to the project terminus at MP 398 in Nevada.

<u>Operation and Maintenance Activities</u>

The following measures would be proposed to minimize potential project effects on desert tortoises during pipeline operation and maintenance activities:

- *Maintenance Class I (or Routine).* Normal maintenance activities that do not result in new disturbance.
  - All proponent employees and its contractors involved with pipeline inspection and maintenance activities would be required to take a tortoise education program (described previously under Mitigation Recommendations for Construction Activities).
  - If desert tortoises or their burrows occur in the work area, appropriate measures described previously under Mitigation Recommendations for Construction Activities would be implemented.
  - Upon completion of each maintenance activity in the ROW, all used material and equipment would be removed from the site. This condition does not apply to fenced sites.
  - Routine road surface maintenance activities on existing access and/or patrol roads would be conducted during the inactive season of the desert tortoise, unless accompanied by authorized by an authorized biologist. Localized repair of major damage may take place throughout the year.
- *Maintenance Class II.* Maintenance activities that result in surface disturbance during the inactive season of the desert tortoise.
- *Maintenance Class III.* Maintenance activities that result in surface disturbance during the active season of the desert tortoise.
- *Maintenance Class IV.* Maintenance activities that may extend outside the pipeline ROW.

- Appropriate measures for maintenance activities described previously under Mitigation Recommendations for Construction Activities, in addition to the measures below, would be implemented.
- For Class III maintenance activities: The width of the disturbance area for any pipeline excavation project or construction of any above-ground facility would be determined prior to the onset of ground-disturbing activities. The work area would be restricted to the narrowest possible areas.
- If activities may extend outside of any pipeline ROW in all or in part, BLM would be contacted; additional consultation may be required between the BLM and the USFWS.

- *Maintenance Class V.* Emergency repairs.
  - For emergency situations involving a pipeline leak or spill or any other immediate safety hazard, the local BLM and USFWS offices would be notified within 48 hours. As a part of this emergency response, the BLM and USFWS may require specific measures to protect desert tortoises. During cleanup and repair, the agencies may also require measures to recover damaged habitats.

Although desert tortoise may be observed above ground any time of the year, the distinction being made among the maintenance classes recognizes the difference in risk associated with causing surface disturbance within or outside of the active season of the desert tortoise. The active season is defined as approximately March 1 to November 1.

Chuckwalla and Gila Monster

Species specific surveys were not conducted for the Gila monster although their habitat was noted adjacent to the ROW. This species potential habitat is encompassed within desert tortoise habitat and is assumed to be potentially present from MP 316 south to the project terminus. Authorized biologists would be instructed to remove chuckwalla or Gila monsters (see below) from the ROW when encountered during pre-construction surveys for desert tortoise and during construction monitoring. To further minimize impacts to these species all project proponent employees and its contractors working in the field would be required to complete a desert tortoise education program prior to reporting to the field. The desert tortoise education program would be expanded to include other target species, such as the Gila monster, and their protection. The program would be approved by the USFWS, BLM, UDWR, and NDOW. The project’s expanded environmental training program would raise the awareness of construction personnel regarding the presence and protection of these species, and other special status species, during construction and would further reduce potential direct impacts from construction. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction. All field workers would be instructed that activities must be confined to locations within the approved areas.

To further minimize impacts on Gila monsters, the project proponent would:

- relocate individuals identified along the ROW using measures set forth by the NDOW, which include the use of long-handled instruments to coax an individual into an open bucket or box;
- submit a report to the USFWS, the BLM, and the NDOW following construction detailing the locations where Gila monsters were found and released;
- incorporate the following specific provisions into its construction environmental awareness program:

- procedures to identify Gila monsters and distinguish them from other lizards such as chuckwallas and banded geckos;
- consequences of a bite resulting from carelessness or unnecessary harassment of Gila monsters; and
- protective measures for Gila monsters provided under Nevada state law.

Other Sensitive Reptiles

Although species-specific mitigation would not be proposed for development, these species would be included in the project's environmental training program to raise the awareness of construction personnel regarding the presence and protection of special status species during construction. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction.

4.9.3.5. Plants

Federally Designated Special Status Plant Species

In coordination with the BLM, UDWR, and NDOW preconstruction surveys would be conducted for the target plant species and any other rare plants identified by the agency biologists. Pre-construction surveys would be conducted for targeted species from March through June depending on each species phenology. In general, for those species found at higher elevation (for example, pinyon penstemon and Franklin's penstemon) surveys would be conducted from May through June. For species found at lower elevations (for example, threecorner milkvetch and sticky buckwheat) surveys would be conducted from March through May. Surveys would be conducted by qualified botanists on the BLM's list of approved list of surveyors for these species. BLM mitigation guidelines would be followed if these species are found in the project area of disturbance. If individuals are identified within the ROW during preconstruction surveys, ripe seed would be collected from these individuals prior to construction. The collected seed would be distributed over the approximate area where the plants were originally located as part of the reclamation activities.

All salvageable cactus, yucca, and Joshua trees present in the project area of disturbance would be salvaged and transplanted using procedures similar to those described for the Kern River pipeline (FERC and CSLC 2002) and summarized in the following text. Prior to pipeline construction, cactus, yucca, and Joshua trees present in the area of disturbance would be identified, removed, heeled-in, and irrigated in areas outside of the construction ROW, and then transplanted back onto the ROW as part of restoration activities. Transplant sites would be located randomly along the ROW and/or at locations specified by the BLM. The north orientation of all cacti to be salvaged would be recorded and restored at the time of transplanting. Transplants would be watered at the time of initial planting, with a second watering occurring 1 to 2 weeks following transplanting. Time-release gels (for example, Dri-Water™) that hold and slowly release water over several months would be used to enhance the survival of transplanted succulent species (FERC and CSLC 2002).

4.9.4. Unavoidable Adverse Effects

Unavoidable adverse impacts, including incidental "take" of TEC species or sensitive migratory birds, would be evaluated after BMPs and mitigation measures are approved by the regulatory agencies and after the Biological Opinion has been issued by USFWS.

4.10. LAND USE AND TRANSPORTATION

4.10.1. Indicators

An adverse impact on land use would be considered significant and would require additional mitigation if project construction, operation, maintenance or abandonment would result in any of the following:

- Conflicts with existing federal, state, and local land uses, plans and policies;
- Conflicts with existing BLM land use authorizations; and
- Changes in public land disposition.

The analysis of impacts to transportation is based on existing conditions in the area and project requirements. The following indicators were considered when analyzing potential impacts to transportation.

- Current capacity and condition of road system
- Traffic volume
- Projected number of project-related heavy vehicles utilizing roadway
- Changes in existing primary access on public roads through the area
- Changes in Levels of Service (LOS).

4.10.2. Direct and Indirect Effects

4.10.2.1. Proposed Action

Construction

Regulatory Compliance

The proposed project would amend the Pony Express RMP to establish a utility corridor including the ROW for the proposed pipeline. The proposed project would be consistent with the identified applicable BLM policies related to the siting of rights-of-way, the processing of applications for use authorizations, and the management of public land.

The project would be consistent with the identified applicable U. S. Forest Service policies related to lands and ranges.

The Moapa Band of Paiute Indian Reservation does not have a land management plan, so no policies exist to be evaluated.

Beaver and Davis counties' General Plans do not include policies that are applicable to the project, so no policies exist to be evaluated. The Washington County General Plan (n.d.) does not indicate any guidance on construction of industrial facilities. Location of the proposed pipeline would not conflict with Washington County's guidance on locating industrial development with access to freeways and away from residential areas.

Iron County has several policies related to its desire to continue the existing agricultural and grazing land uses. Millard County has a goal to allow growth to occur while maintaining its agricultural land use. Tooele County has a Growth Management Goal to preserve open space and agricultural land. Similarly, Lincoln County has a goal and policy that indicate its desire to maintain agricultural land uses. Construction of the project may temporarily interrupt agricultural and/or grazing land uses on parcels that the pipeline would cross, resulting in an inconsistency with these counties' goals/policies and a short-term impact.

The Proposed Action would impact approximately 4 miles of agricultural lands in Millard County in the vicinity of Lynndyl, Utah. Millard County's policy to, "… implement land use policies that allow growth to occur without compromising the area's rural atmosphere or the ability of agricultural land to remain under production (Millard County 1998)" would be conflicted in the short term by construction of the pipeline, which would temporarily interrupt agricultural production on these lands.

Juab County has several policies related to growth, land development and management, infrastructure, and protecting the environment. Construction of the project would have no effect on those policies.

Construction of the project would not conflict with Salt Lake County's policy to promote orderly physical development.

Construction of the project would not conflict with Clark County's goal to promote development that is compatible with the environment.

Construction of the project would not conflict with the City of North Salt Lake's intent to create a positive City image, establish a sense of community, and approve development that is attractive.

<u>Land Use</u>

Construction activities associated with the installation of the proposed pipeline would result in the temporary disruption of existing land uses on approximately 3,882 acres along the alignment during the project construction period. This acreage includes a 75-foot-wide construction ROW along the main pipeline route, the Airport Lateral, and the Cedar City Lateral, plus temporary staging areas along the proposed alignment.

Exhibit 4.10-1 lists the estimated acreage of lands that would be disturbed temporarily by project construction and also would be in a permanent ROW for the project by county-designated land use type for each of the counties. Definitions for the various zoning designations contained in the exhibit can be found in **Exhibit 3.10-2**.

Exhibit 4.10-1 Estimated Acreages of Each Land Use Type Needed for Project Construction and Operation by County [a]

County/Zoning Designation	Proposed Action		Airport Alternative Route		Tooele County Alternative Route	
	Temp. Dist.	Permanent Row	Temp. Dist.	Permanent Row	Temp. Dist.	Permanent Row
Beaver						
Future Developing	21	14	N/A	N/A	N/A	N/A
Rural Area	283	189	N/A	N/A	N/A	N/A
Davis						
M-1	10	7	N/A	N/A	N/A	N/A
A-5	3	2	N/A	N/A	N/A	N/A
Iron						
Agricultural 20	380	275	N/A	N/A	N/A	N/A
Juab						
Industrial District	71	47	N/A	N/A	N/A	N/A

County/Zoning Designation	Proposed Action		Airport Alternative Route		Tooele County Alternative Route	
	Temp. Dist.	Permanent Row	Temp. Dist.	Permanent Row	Temp. Dist.	Permanent Row
Grazing, Mining, Recreation, & Forestry - 160	251	167	N/A	N/A	N/A	N/A
Millard						
Unknown[b]			N/A	N/A	N/A	N/A
Salt Lake						
Agricultural	155	103	18	12	N/A	N/A
Industrial	13	8	14	10	N/A	N/A
Open Space/Recreation	5	4	0	0	N/A	N/A
Residential	9	6	0	0	N/A	N/A
Tooele						
MU-40	456	304	N/A	N/A	80	53
A-20	47	31	N/A	N/A	18	11
RR-5	31	21	N/A	N/A	15	10
RR-1	10	7	N/A	N/A	6	4
C-T	10	7	N/A	N/A	9	6
Washington						
OST-20	149	114	N/A	N/A	N/A	N/A
U.S. Forest Service	4	3	N/A	N/A	N/A	N/A
Not designated	219	169	N/A	N/A	N/A	N/A
Clark						
Heavy Industrial	46	36	N/A	N/A	N/A	N/A
Industrial	23	18	N/A	N/A	N/A	N/A
Open Lands	208	160	N/A	N/A	N/A	N/A
Tribal Lands	93	71	N/A	N/A	N/A	N/A
Lincoln						
A-5	182	140	N/A	N/A	N/A	N/A

[a]The acreages were estimated based on a review of the County Land Use maps, the project alignment map, the length of the proposed pipeline in each County, and the planned widths of the ROW for project construction and for the permanent ROW. The acreages presented do not include the staging/materials lay down areas that would be needed along the proposed alignment during project construction.

[b]The acreages by land use type for Millard County could not be calculated because no County Land Use map was available from the County.

Existing land uses that may be affected include: undeveloped open space; agriculture; wetlands and rangelands; rural and suburban residential land uses; utility alignments; and crossings of highways, roadways, and railroads. This would not be an issue for a large portion of the alignment, which would be routed within an existing utility corridor paralleling the existing Kern River gas pipeline. In other areas, project construction disturbance may temporarily preclude uses of the land during the construction period. The effects on any given parcel would depend on a variety of factors including the landowner/land management authority having jurisdiction over the land, existing and designated/zoned land use of the parcel, and the parcel's size.

The project would cross federal, state, and private land (see **Exhibit 3.10-1**). Construction of the project would affect the existing ownership of the land that would be crossed by the proposed pipeline only if the existing land use of a given parcel was compromised to the point where the land was rendered useless for that type of land use, and the existing landowner was then compensated for the loss of use of the land parcel (resulting in the parcel being purchased for the project and ownership being transferred to a new owner). This property transfer transaction would likely occur prior to the start of project construction activities. Parcels that would not be purchased for the project would not result in a change in land ownership.

Construction of the proposed pipeline would impact small portions of numerous grazing allotments overlapping the project area. Construction would result in the temporary loss of livestock forage, would damage or remove fences, could separate livestock from its watering source(s), and could trap or harm livestock that enter into the construction work area. Typically, less than 1 percent of any given allotment would be adversely affected, resulting in a minor impact on its overall forage availability (for example, AUMs) (FERC and CSLC 2002).

Amendment of the Pony Express RMP to establish a utility corridor may result in development of other utilities within the corridor in addition to the proposed pipeline. Establishment of the utility corridor would not have a direct effect on land use, as most existing land uses could continue with no change. Indirectly, future development within the established corridor could impact land use, however such changes are speculative at this time and cannot be evaluated.

<u>Grazing Allotments and Herd Management Areas</u>

Where project construction would cross grazing allotments, vegetation would be removed within the ROW, impacting short-term availability of forage. Acreages of disturbance to grazing allotments were calculated by multiplying the linear feet of each allotment crossed by the 75-foot ROW width, then converting the square footage to acres. With implementation of mitigation measures assuring successful reseeding of disturbed areas that are currently vegetated, there would be no long-term effects to rangeland resources such that Rangeland Health Standards and Guidelines would not be met. **Exhibits 4.10-2, 4.10-3, and 4.10-4** outline acreages of impacts to grazing allotments.

Exhibit 4.10-2 Acreage of Impacts to Grazing Impacts Along the Main Pipeline Route

State/Allotment Name	Allotment Number	Acres
Utah		
Oquirrh Mtn. – North	4083	25.79
Rush Lake	5080	72.35
Mercur Can - W. Ophir	4055	23.30
South Clover	4064	12.68
Ajax	4044	3.09
Deseret – Rush Valley	4050	43.68

State/Allotment Name	Allotment Number	Acres
Pony Express Trail	N/A	9.14
Toplift – Vernon Hill	4067	44.84
Boulter Wash	4047	110.34
Boulter	4501	29.13
Jenny Lind	4507	35.11
Tintic Pasture	N/A	48.07
Rattlesnake Peak	4350	6.01
Kimball Creek	4508	24.71
Shearing	4519	69.85
Gilson	4506	75.23
Beryllium	4400	53.71
Oak City	4406	60.77
Teeples	5798	4.31
McClintock	5793	16.59
Deseret	4004	186.45
Twin Peaks	4020	197.95
Crickett	5779	42.15
Red Rock	6211	31.72
Beaver Lake	6215	26.76
Smithson	6209	72.96
Bagnall	6210	57.96
Milford Cattle	6208	60.24
Cook	6201	87.15
Minersville no. 6	6106	46.25
Nada	15048	59.81
Desert	15020	63.85
Perkins	15055	23.70
Leigh Livestock	15039	40.70
Dick Palmer Wash	15021	62.49
Butte	15018	18.30
Antelope	5010	12.32
Sand Spring	15064	30.07
Silver Peak	15067	22.37
Pinto Creek	15057	17.24
Sevy East	15065	6.96
South Deseret	4065	0.49

State/Allotment Name	Allotment Number	Acres
Mineral Wash	N/A	22.24
Hill Spring	4054	55.90
South Woodruff	4018	22.48
Jackson Wash	14030	52.36
Scarecrow	14048	163.02
Nevada		
Terry	N/A	54.03
Sand Hollow	N/A	15.89
Beacon	N/A	28.76
Gourd Spring	N/A	105.72
Toquop Sheep	N/A	23.65
Upper Mormon Mesa	N/A	92.71
Glendale	N/A	54.67
Acton-Farrier	N/A	16.76
Ute	N/A	24.83
Private	N/A	137.59
Dry Lake	N/A	72.32
Las Vegas Valley	N/A	13.13

Exhibit 4.10-3 Acreage of Impacts to Grazing Allotments along the Cedar City Lateral

State/Allotment Name	Allotment Number	Acres
Utah		
Leigh Livestock	15039	65.28
Iron Springs	05032	22.98

Exhibit 4.10-4 Acreage of Impacts to Grazing Allotments from Staging Areas and Terminals

State/Allotment Name	Allotment Number	Component	Acreage
Deseret – Rush Valley	04050	Staging Area	1.435
Oak City	04406	Staging Area	1.435
Crickett	05779	Staging Area	1.435
Perkins	15055	Staging Area	1.435

State/Allotment Name	Allotment Number	Component	Acreage
Leigh Livestock	15039	Cedar City Lateral Takeoff	0.517
Silver Peak	15067	Staging Area	1.435
Jackson Wash	04030	Staging Area	1.435
Upper Mormon Mesa	N/A	Staging Area	1.435

During construction horses on the Chloride Wild Horse HMA would likely move away from construction disturbance. This may result in horses moving into areas having less productive water and forage sources. However, this impact would be temporary. Another potential effect would be the contamination of ponds on BLM and private lands within and next to the HMA. If the project had a major product spill in the area waters could become contaminated.

Transportation

During pipeline construction, there would be an influx of construction workers and the delivery of construction equipment, materials, and water to the project area. Construction equipment and materials deliveries would occur throughout the project construction period. Water deliveries would result in 24 round trips along the ROW in each spread per day (six spreads are planned for project construction). This would consist of four water trucks operating on each spread, each making approximately six round trips per day. These construction-related vehicle trips would temporarily affect the transportation system by creating minor traffic congestion on local roads leading to the ROW, and potentially increasing roadside parking hazards.

The delivery of construction equipment and materials to contractor yards may result in traffic congestion in the local area. Project construction at road and railroad crossings could affect vehicle and train traffic flow during the construction period. The permits necessary for road and railroad crossings would be applied for. Project construction at road and/or railroad crossings could pose a safety hazard at night.

Also during construction some roads would be crossed by the pipeline (see **Exhibit 3.10-7**). Many of the road crossings would not utilize open cut construction methods and therefore would not affect traffic. In some cases, road crossings may result in detours or periods of one-lane traffic that would cause traffic delays.

Existing access roads would be used for the project. A few of these roads would require improvement in conjunction with the proposed project. All roads that would be modified would be permanent and would add to transportation resources. The same access roads that were used during installation of the Kern River pipeline would be used to the extent they are still viable and are applicable to the proposed project. Road rights-of-way would be obtained for all access roads on public land that would be used or constructed for the purposes of the project. Despite the fact that roads would be improved in conjunction with the project, long-term beneficial impacts to transportation from these improvements would be negligible because the roads would be located in fairly remote areas that would not be anticipated to be heavily traveled.

Operations, Maintenance, and Abandonment

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to land use. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations.

Regulatory Compliance

Project operation is not expected to result in many long-term effects on existing agricultural and/or grazing land uses on parcels that the pipeline would cross, resulting in minimal expected inconsistencies with Iron County's, Millard County's, Tooele County's, and Lincoln County's goals/policies related to the preservation of existing agricultural and/or grazing uses. After project construction is complete, the majority of existing land uses is expected to resume. However, future agricultural land use would be precluded in locations where aboveground project facilities or pressure valves are installed. In those few locations where the existing agricultural or grazing land use is not able to resume after the project is constructed because of the presence of aboveground facilities, then an inconsistency with the County goal/policy is expected.

Land Use

Exhibit 4.10-1 lists the acreage, by county and land use type, that would be included in a permanent ROW for the project. Because pipelines are installed underground, they may not result in long-term interference with existing aboveground land uses (including residential, commercial, industrial, agricultural, grazing/rangeland, and open space uses) depending on the alignment location. In addition, inspection and maintenance activities are not anticipated to interfere with or to result in an adverse impact on existing land uses along the proposed pipeline alignment. In locations where the alignment would be installed within road rights-of-way or within easements or rights-of-way for other utilities, effects on existing land uses are expected to be minimal.

In locations where the proposed pipeline would bisect a parcel of land, there may be effects on the parcel's future land use. For example, if the pipeline were installed across the middle of a small agricultural land parcel of private property, its presence there would likely render the property unusable for future subdivision and residential or commercial development, resulting in a future adverse impact on land use. However, private landowners would be compensated for this loss in conjunction with negotiation of the easement. Given the remote nature of the majority of the proposed project area, potential for this kind of loss of future use is limited.

Utility markers that would be installed periodically along the proposed pipeline alignment would alert the public and agencies to the location of the underground pipeline, so that the potential for adverse effects on the proposed pipeline from surface or sub-surface disturbances would be minimized.

As indicated in **Exhibit 3.10-1**, the project would cross federal, state, and private land. Permanent ROW for the project is estimated at approximately 2,503 acres (approximately 413 miles long by 50-foot-wide (ROW)). Project operation would have no effect on the existing ownership of the land that would be crossed by the proposed pipeline. Changes in land ownership related to the project, if determined necessary, would have occurred prior to the start of project construction. As ownership of many of the lands crossed by the Cedar City Lateral and lands for the terminal location is unknown at this time, effects to changes in land ownership cannot be evaluated.

Grazing Allotments and Herd Management Areas

Operation of the proposed pipeline would have a minimal impact (if any at all) on grazing allotments overlapping the project area. It is expected that nearly all grazing activities that currently occur along the proposed alignment would resume after project construction is complete. Exceptions could include locations where aboveground project facilities would be constructed that would change the use of that land. In addition, it is expected that (1) Construction areas would be reclaimed to their pre-construction condition, thus eliminating potential livestock traps in the construction area, (2) fences that are removed for project construction would be replaced, and (3) livestock would resume their route to their watering source(s). Because livestock would likely be able to resume their grazing patterns after project construction is complete, and because the alignment would be allowed to revegetate, the impact on livestock and AUMs is expected to be minimal, even less than that discussed for project construction.

Transportation

No significant adverse transportation impacts would be expected during operation of the proposed project. There would be only minimal traffic associated with project operation and maintenance, and the traffic would coincide with the current levels of traffic associated with operation and maintenance of the existing Kern River pipeline. Proposed project operation would, therefore, not result in a decrease in the LOS of a roadway, nor would it increase the roadside parking hazard. It is possible that the number of petroleum tanker trucks on the interstate and intrastate highways in the region could decline because the proposed pipeline could provide some of the petroleum that previously was provided by tanker. This is considered a potential benefit by decreasing the amount of traffic on the highways. There would be an increase in the number of tanker trucks utilizing local roads servicing the Cedar City Lateral Terminal, potentially resulting in increased congestion and associated noise.

4.10.2.2. Airport Alternative Route

Construction

Regulatory Compliance

The Airport Alternative Route would not conflict with West Side Business Area of North Salt Lake City's planning and zoning requirements.

Land Use

Under the Airport Alternative Route, lands are privately owned, therefore impacts to land ownership would be the same as those described for the Proposed Action. Acreages of impacts by land use type are detailed in **Exhibit 4.10-6**.

Exhibit 4.10-6 Acreages of Impacts by Land Use Type under the Airport Alternative

Salt Lake County Land Use Category	Acres Disturbed during Construction	Acres in Permanent ROW
Agricultural	26	17
Industrial	2	1
Open Space/Recreation	1	1
Residential	2	1

The Airport Alternative Route would construct the pipeline on Blackhawk Duck Club property, requiring dewatering of the proposed project area prior to construction. Dewatering may temporarily affect the use of the land by the duck club resulting in short-term impacts to land use. Otherwise, there would be no difference in land use between the Airport Alternative Route and the Proposed Action. The Airport Alternative Route would cross all private lands.

Grazing Allotments and HMAs

No grazing allotments would be crossed by the Airport Alternative Route or the corresponding Proposed Action segment, therefore impacts to grazing allotments would be the same as those described for the Proposed Action. No additional HMAs would be impacted by the Airport Alternative Route.

Transportation

There would be no difference between the Airport Alternative Route and the Proposed Action in transportation effects during pipeline construction and operation. No roads would be impacted.

Operations, Maintenance, and Abandonment

Regulatory Compliance

Operation of the pipeline under the Airport Alternative Route would not conflict with West Side Business Area of North Salt Lake City's planning and zoning requirements.

Land Use

Under the Airport Alternative Route there would be no difference in land use effects during pipeline operation from the Proposed Action.

Grazing Allotments and HMAs

Because no grazing allotments or HMAs would be crossed under the Airport Alternative Route there would be no difference in grazing allotments and herd management areas effects during pipeline operation from those described under the Proposed Action.

Transportation

Under the Airport Alternative Route there would be no difference in transportation effects during pipeline operation from the Proposed Action.

4.10.2.3. Tooele County Alternative Route

Construction

Regulatory Compliance

The Tooele County Alternative Route would not conflict with county land use plans, policies or zoning established for Tooele County.

Land Use

Overall, the Tooele County Alternative Route would impact nearly 2 miles more lands than the Proposed Action, impacting fewer BLM lands but more private lands. Acreages of impacts by land use type are detailed in **Exhibit 4.10-7**.

Exhibit 4.10-7 Acreages of Impacts by Land Use Type under the Airport Alternative

Tooele County Land Use Category	Acres Disturbed during Construction	Acres in Permanent ROW
MU-40	115	77
A-20	12	8
RR-5	8	5
RR-1	3	2
C-T	3	2

Grazing Allotments and HMAs

No grazing allotments would be crossed by the Tooele County Alternative Route. The Proposed Action route crosses one grazing allotment in the segment corresponding to the Tooele Alternative

Route, which is the Oquirrh Mountain-North allotment. Selection of the Tooele County Alternative Route would result in 25.79 fewer acres of the Oquirrh Mountain-North allotment being disturbed than the Proposed Action.

HMAs

No additional HMAs would be impacted by the Tooele County Alternative Route.

Transportation

Despite changes in highways intersected and impacted by pipeline construction, overall impacts to transportation would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

Regulatory Compliance

Operation of the proposed pipeline under the Tooele County Alternative Route would not conflict with land use plans, policies or zoning for Tooele County.

Land Use

Under the Tooele County Alternative Route there would be no difference in land use effects during pipeline operation from the Proposed Action.

Grazing Allotments and Herd Management Areas

Because no grazing allotments or HMAs would be crossed by the Tooele County Alternative Route, operational impacts to grazing allotments and HMAs would be the same as those described for the Proposed Action.

Transportation

Under the Tooele County Alternative Route there would be no difference in transportation effects during pipeline operation from the Proposed Action.

4.10.2.4. Rush Lake Alternative Route

Construction

Regulatory Compliance

The Rush Lake Alternative Route would not conflict with county land use plans, policies or zoning established for Tooele County.

Land Use

Overall the Rush Lake Alternative Route impacts almost exactly the same amount of land as the corresponding segment of the Proposed Action route. The Rush Lake Alternative Route would impact slightly more BLM land and slightly less private land during pipeline construction from those described for the Proposed Action.

Grazing Allotments

Impacts to grazing allotments under the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

HMAs

No additional HMAs would be impacted by the Rush Lake Alternative Route.

Transportation

Impacts to transportation under the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

Regulatory Compliance

The Rush Lake Alternative Route would not conflict with county land use plans, policies or zoning established for Tooele County.

Land Use

Under the Rush Lake Alternative Route there would be no difference in land use effects during pipeline operation from those described for the Proposed Action.

Grazing Allotments and HMAs

Under the Rush Lake Alternative Route there would be no difference in grazing allotment or HMA effects during pipeline operation from those described for the Proposed Action.

Transportation

Under the Rush Lake Alternative Route there would be no difference in transportation effects during pipeline operation from those described for the Proposed Action.

4.10.2.5. Millard County Alternative Route

Construction

Regulatory Compliance

The Millard County Alternative Route would not conflict with county land use plans, policies or zoning established for Millard County.

Land Use

Overall, the Millard County Alternative Route would impact approximately 12 more miles of lands than the Proposed Action, impacting more BLM lands and fewer state and private lands.

The acreages by land use type for the Millard County Alternative Route could not be calculated because no County land use map was available from the County.

Grazing Allotments and HMAs

Grazing allotments impacted by the Millard County Alternative Route are detailed in **Exhibit 4.10-8**.

Exhibit 4.10-8 Acreage of Impacts to Grazing Allotments along the Millard County Alternative Route

State/Allotment Name	Allotment Number	Acres
Utah		
Gilson	4506	60.00
McIntyre	4511	8.83
Nelson	4512	49.31
Lyndyl	4405	37.85
Sugarville	4409	101.28
Smelter Mountain	4408	146.06
Chalk Knolls	4401	63.71

State/Allotment Name	Allotment Number	Acres
Deseret	5775	216.36
Total Allotment Acres Impacted		683.40

The main pipeline route under all alternatives enters the Gilson allotment at MP 105.9. The Millard County Alternative departs the Proposed Action route at MP 110.7 and continues across the Gilson allotment in a southwesterly direction for 1.8 miles. Under the Millard County Alternative Route, a total of 6.6 miles of the Gilson allotment is crossed, disturbing a total of 60 acres. The Proposed Action route would disturb approximately 75 acres of the Gilson allotment.

The Millard County Alternative Route enters the Deseret allotment at MP 45.7 and rejoins the Proposed Action route at MP 63.2 (MP 161 along the Proposed Action route). The main pipeline route under all alternatives continues through the Deseret allotment and exits at MP 167.3. The Millard County Alternative Route would cross a total of 23.8 miles of the Deseret allotment, disturbing a total of approximately 216 acres. The Proposed Action route would disturb approximately 186 acres of the Deseret allotment.

Approximately 407 acres total of the McIntyre, Nelson, Lyndyl, Sugarville, Smelter Mountain, and Chalk Knolls allotments would be impacted. Approximately 135 acres of the Beryllium, Oak City, Teeples, and McClintock allotments that would be impacted under the Proposed Action would not be impacted under the Millard County Alternative Route.

Exhibit 4.10-9 Acreage of Impacts to Grazing Allotments along the Segment of the Proposed Action Segment Correlating with the Millard County Alternative Route

State/Allotment Name	Allotment Number	Acres
Utah		
Gilson	4506	75.23
Beryllium	4400	53.71
Oak City	4406	60.77
Teeples	5798	4.31
McClintock	5793	16.59
Deseret	4004	186.45
Total Allotment Acres Impacted		397.06

Grazing allotments impacted under the Proposed Action in the segment that correlates to the Millard County Alternative Route are detailed in **Exhibit 4.10-9**. Under the Millard County Alternative, total disturbance to grazing allotments would be approximately 683.4 acres, which would be approximately 286 acres more disturbance than under the Proposed Action.

HMAs

No additional HMAs would be impacted by the Millard County Alternative Route.

Transportation

Despite changes in highways intersected and impacted by pipeline construction, overall impacts to transportation would be the same as those described for the Proposed Action.

Operations, Maintenance, and Abandonment

Regulatory Compliance

Operation of the proposed pipeline under the Millard County Alternative Route would not conflict with land use plans, policies or zoning for Millard County.

Land Use

Under the Millard County Alternative Route there would be no difference in land use effects during pipeline operation from those described for the Proposed Action.

Grazing Allotments and HMAs

Under the Millard County Alternative Route there would be no difference in grazing allotment or HMA effects during pipeline operation from those described for the Proposed Action.

Transportation

Under the Millard County Alternative Route there would be no difference in transportation effects during pipeline operation from those described for the Proposed Action.

4.10.2.6. No Action Alternative

If the No Action Alternative is implemented, no project-related ground-disturbing activities would occur in the proposed pipeline area. The No Action Alternative would result in no project-related effect on land uses including range resource, land ownership, or transportation, and no mitigation would be required.

4.10.3. Mitigation Measures

4.10.3.1. Regulatory Requirements

The following activities would occur and would ensure that the project is in compliance with federal, state, and local regulations:

- Coordinate with all of the affected land management jurisdictions to secure the required permits/approvals (including, but not limited to, Memoranda of Agreement, Conditional Use Permits, encroachment permits, grading/excavation/building permits), General Plan Amendments, and/or variances.
- Coordinate with all of the affected landowners along the proposed pipeline route to obtain approvals to enter their land, and negotiate the appropriate agreements with the landowners to obtain easements, rights-of-way, or purchase of the parcel.

4.10.3.2. Land Use

The following mitigation measures are recommended to minimize the potential for project effects on land use:

- If the land use of a parcel would be adversely affected by the current facility locations of the proposed project, modify the location of the pipeline alignment and/or associated aboveground structures, if feasible, to reduce the effects on the parcel's existing land use.
- If the land use of a parcel would be adversely affected by the current facility locations of the proposed project, and modifications to facility locations are not feasible, negotiate with the

landowner regarding compensation for the lost use of the land or for the outright purchase of the land.

4.10.3.3. Grazing Allotments and Herd Management Areas

To minimize impacts on rangeland resources and grazing operations, the following mitigation measures should be implemented in addition to those established for soil, wildlife, and vegetation resources:

- Construction of the proposed pipeline may temporarily disrupt water supply pipelines to livestock, or temporarily separate livestock from their water source. During this disruption, arrangement would be made with the livestock owner to provide an alternate water source for affected livestock.
- The proposed project would be designed to avoid disruption of the flow of water to stock watering reservoirs.
- Where the ROW crosses existing water pipelines, a pipe sleeve would be installed across the ROW, over the proposed pipeline, of sufficient size to allow for passage of a 2-inch plastic pipe. After the proposed pipeline is installed, the existing water pipeline would be repaired and the line threaded through the sleeve to facilitate repairs or replacement of the water line without the need to dig in the vicinity of the UNEV pipeline.
- Pipe sleeves would be installed along the pipeline alignment in locations specified by the BLM where future projects may require a water pipeline crossing the alignment to avoid digging over the line in the future.
- Disturbance to existing fences and other improvements from pipeline construction and ROW access would be minimized and damages promptly repaired to their original state or better. Functional use of these improvements would be maintained at all times. The owner would be contacted prior to disturbing improvements. Fences crossed for transportation access would be braced and secured to prevent slacking of the wire before cutting. Grazing allotment permittees would be contacted prior to crossing the fence on public lands or fences between public and private lands and the permittee would be offered the opportunity to be present when the fence is cut so that the permittee may be satisfied that the fence is adequately braced and secured. Openings in fences would be temporarily closed as necessary during construction to prevent passage of livestock.
- Ramps would be constructed to allow for escape of livestock from the trench as necessary during construction.
- Temporary fencing would be required to protect reseeded areas on public lands. Openings in temporary fencing may be required by BLM to allow livestock access to water or grazing land.
- Implementation of the measures listed above would result in less than significant impacts on rangeland resources.
- Upon completion of construction, damaged livestock fences, gates, cattle guards, and natural barriers would be repaired or replaced.
- In order to minimize long-term effects to range resources, a grazing deferment plan would be developed with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

4.10.3.4. Transportation

To minimize traffic impacts from construction of the proposed pipeline, the following mitigation measures should be implemented:

- Require that construction workers park their personal vehicles in contractor yards. Construction workers would be transported to the construction site in buses provided by the contractor.
- Locate contractor yards only in areas that have existing adequate roadway access to the pipeline construction areas.
- Allow only company vehicles access to the pipeline ROW.
- Use sequential construction so that there is a low frequency of construction vehicles on any particular roadway at any one time.
- Fill water trucks at water storage locations and then apply the water to the ROW, as necessary, to control dust.
- Locate the water storage areas directly adjacent to or in proximity to the construction ROW to minimize the impact of the water trucks on public roads.
- Use the open-cut construction method (excavation of an open trench in which pipe would be laid) on rural roads that are unsurfaced or lightly traveled after obtaining approval from the landowner or land management agency.
- Detour or control traffic during construction to minimize traffic delays where open-cut road crossings occur.
- Leave at least one lane of traffic open at crossings where reasonable detours are not feasible.
- Provide emergency vehicle access at all road crossings.
- Complete open-cut road crossings in one day to the extent feasible and possible.
- Use the boring construction method to cross major or improved roads and railroads to avoid disrupting traffic.
- Bore all railroad crossings from locations outside of the railroad rights-of-way.
- Place and maintain flaggers, signs, barricades, guard rails, safety fences, and signals at road crossings as required by city, county, state, and federal regulations and ROW and permit conditions. In the absence of such regulations, place danger signs that would be visible in both directions during darkness at the crossing location and also 500 feet in each direction from the crossing. At a minimum, the danger signs should be legible at a 100-foot distance, and flashers would run continuously from 30 minutes before sundown until 30 minutes after sunrise.
- Use existing access roads to the extent possible during pipeline construction to minimize creation of new roadways. Use the same access roads that were used during installation of the Kern River pipeline to the extent they are still viable and are useable for the proposed pipeline. Other roads constructed by public and private entities along the pipeline route may also be used, provided they are suitable and landowner/land management agency approval is received. Repair all existing roads used for access, if necessary, after construction. A list of access roads planned for use and to be improved during the proposed project is included in **Exhibit 2.1-9**.

- During wet road conditions, any ruts deeper than 4 inches remaining on the roads from the project would be repaired at the authorized officer's discretion.
- Reclaim/restore new access roads as soon as no longer needed for construction, provided they are not needed for project operation and maintenance.

4.10.4. Unavoidable Adverse Effects

Unavoidable adverse impacts on land use including range resources would occur from pipeline construction in the short term as production on agricultural and grazing lands may be temporarily interrupted. Long-term unavoidable adverse effects to land use and range resources from construction and operation of the proposed pipeline are not expected. Construction and operation of the inlet pumping station, mainline valves, and the Cedar City Lateral Terminal may permanently occupy lands previously utilized for agricultural purposes, and conflict with stated county use plans for maintaining agricultural uses within the county. However, acreages involved in these permanent uses would be minimal.

Unavoidable adverse effects to transportation would include short-term increased congestion, particularly on secondary roads, from equipment operation in conjunction with construction of the proposed pipeline. Slowing of traffic and congestion in the vicinity of intersections of roads and the pipeline route would also be unavoidable in the short term. No long-term unavoidable adverse effects to transportation would be anticipated in association with operation, maintenance, or abandonment of the proposed pipeline.

4.11. VISUAL AND RECREATION RESOURCES

4.11.1. Indicators

Analysis of the project's potential impacts was based on an evaluation of the changes to the existing visual resources that would result from project construction and operation. In making a determination of the extent and implications of the visual changes, consideration was given to the following:

- Specific changes in the visual character of the affected environment, and any specially valued qualities.
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration.
- The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the likely changes.

The following impact evaluation criteria were applied:

- Would the project have a substantial adverse effect on a scenic vista?
- Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway corridor?
- Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

4.11.2. Direct and Indirect Effects

4.11.2.1. Proposed Action

Construction

As visual contrasts can affect recreation experience, recreation impacts are implicit in the visual analyses below. The proposed pipeline alignment would cross BLM lands designated as VRM Class II, III, or IV. Class II prescribes that changes in form, line, color, and texture should not be evident and that contrasts may be seen, but must not attract attention. Class III allows for changes that are moderate. Such changes may attract attention, but should not dominate the view. Class IV allows major modifications to the existing landscape character; changes may dominate the view. The proposed pipeline would be consistent with the management objectives for Classes II, III, and IV because those designations allow changes to the landscape that can be seen. BLM Form 8400-4 *Visual Contrast Rating Worksheet* was completed for KOPs 1, 2, and 3 (photo numbers 1-4, 9, and 11, respectively). The BLM forms are included in **Appendix G**. As indicated, the long-term contrast rating from the proposed project would be considered either weak or no contrast with implementation of recommended mitigation measures.

The proposed pipeline alignment would cross Forest Service lands having an SIO of Moderate. Moderate scenic integrity allows the landscape character to appear slightly altered and noticeable deviations must remain visually subordinate to the landscape character. The proposed pipeline would be consistent with the Moderate SIO as noted for BLM classes above.

Project construction would be consistent with Salt Lake County's planning Goals 3 and 4, as they relate to the landscape and visual resources. The majority of the proposed pipeline in Salt Lake County would be installed underground, so would not be visible, thus enabling the county to promote development that is in harmony with its surrounding built environment. In that area, the proposed pipeline would be constructed in areas designated for open space, residential, commercial, and industrial land uses. Implementation of mitigation that is recommended in **Section 4.11.3** would ensure that the project would be consistent with the county's goals.

Construction of the proposed pipeline and associated facilities would cause construction-related visual impacts. The impacts would be caused by vegetation removal, earthwork and grading scars, piles of dirt, staging areas, heavy equipment tracks, trenching, blasting, rock formation alteration or removal, temporary support machinery and tool storage, and construction personnel and vehicles. The visual effects of the presence of construction equipment and activities would be temporary, lasting approximately 12 months. The visual impacts resulting from construction activities and pipeline installation would be reduced by site reclamation activities, but they would still be long-term because of the length of time required to re-establish vegetation in disturbed areas. Visual impacts would be greatest along that portion of the pipeline route not previously disturbed and comparatively less along that portion of the pipeline route that would parallel the existing Kern River Pipeline. It should be noted that, depending on location, views toward the proposed pipeline construction activities could be blocked by topography, shrubs, structures, or other features in the viewer's immediate foreground. In addition, beyond approximately 3 miles from the construction area, the proposed project would not be visible due to screening by the features identified above, or would be of such a small size in the background field of view that there would be no significant impacts to visual resources.

The removal of vegetation along the northern portion of the proposed pipeline alignment that would not parallel the existing Kern River pipeline would create a visible scar on the land, creating a line across the landscape when viewed from the air. However, much of the alignment is not accessible or visible by the public at ground level. The removal of vegetation along the alignment would change the color and texture along the alignment.

The southern portion of the alignment that would be constructed within the same disturbance area as the Kern River pipeline would require minimal trimming of vegetation where the disturbance area would be expanded. The previously disturbed swath of the Kearn River pipeline alignment is currently vegetated with species that differ from the adjacent and surrounding landscape. However, because it is vegetated, as opposed to unvegetated bare soil, the disturbed swath in the corridor appears green from a distance, albeit a different green hue than the adjacent landscape. Project construction activities would result in the removal of the existing vegetation where the pipeline trench would be constructed, resulting in a greater level of color and texture contrast than currently exists. However, the expected visual impact from project construction would be less than the initial impact of the Kern River as the baseline condition is a disturbed utility corridor.

Because additional vegetation may need to be removed immediately adjacent to the currently disturbed area to accommodate construction activities, the project may increase the area of visual impact. However, all additional impacts would be within the designated utility corridor. It is expected that project staging areas would be located within the existing disturbed area in the corridor and that existing access roads or the pipeline ROW would provide adequate access to the project construction areas.

When construction is complete, it is expected that revegetation of project-disturbed areas would commence. Before, during, and after revegetation efforts and prior to vegetation becoming established and mature along the alignment, the pipeline's presence would also introduce a new line that would be visible from many locations. Pipeline construction would result in an adverse effect on the landscape; however, it is expected that the restored project trench would not dominate the view toward the pipeline.

During the project construction period, materials delivery trucks and construction personnel would periodically enter and exit the construction lay down site. These visual changes would be substantial; however, they would be temporary and would not create long-term visual impacts in any given area.

Project construction activities are planned to occur between 7:00 a.m. and 8:00 p.m. on Monday through Friday. In the event that nighttime construction activities become necessary, illumination that meets federal, state, and local worker safety regulations would be required during the nighttime construction period. To the extent possible, the nighttime lighting would be erected pointing toward the center of the site where activities are occurring, and would be shielded. Task-specific lighting would be used to the extent practical while complying with worker safety regulations.

Construction of the proposed pipeline would have direct localized short-term adverse impacts to dispersed recreation resources in the immediate vicinity of construction activities. Noise, equipment and activity associated with construction would disrupt remote recreational experiences; however the likelihood of recreationists encountering project activities would be minimal given the amount of public lands open to recreation in the area. Long-term adverse impacts to recreation would result from the visual disturbance remaining after the completion of construction.

There would be potential for construction to disrupt the Tri-States ATV Jamboree should construction in the area coincide with the Jamboree. Mitigation measures would be implemented to reduce or prevent conflicts between construction and the Jamboree (see **Section 4.11.3** below).

Improvement of existing primitive roads in conjunction with the proposed project could result in indirect effects to recreation from route proliferation, as the public uses these improved roads to access previously inaccessible public lands. Impacts to recreation could include degradation of quality of recreational resources by a network of "social" roads, however the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Amendment of the Pony Express RMP to establish a utility corridor may result in development of other utilities within the corridor in addition to the proposed pipeline. Establishment of the utility corridor would not have a direct effect on visual or recreational resources. Indirectly, future development within the established corridor could increase the visual impact or affect the value of public lands for recreational use however such changes are speculative at this time and cannot be evaluated.

Operations, Maintenance, and Abandonment

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to visual resources or recreation. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations.

After the pipeline is installed and revegetation occurs, minimal effects on form, texture, and color would occur. Until the vegetation is completely grown within the proposed pipeline ROW, there would be an effect on the existing line, texture, and color.

The aboveground structures associated with the project, such as the pump station, terminals, and valves would be visible from various locations, but would not dominate landscape views. Their presence would alter the landscape; however, these facilities would be located in areas with generally compatible surroundings. For example, the inlet pumping station would be located within the City of North Salt Lake, the pressure reduction station would be located near Cedar City, and a pressure station would be located at the Apex receiving terminal near Las Vegas. Pipeline markers along the proposed pipeline would also be permanent additions to the landscape; however, they would be small and generally not noticeable.

During the operation and maintenance phase of the project, vegetation within the pipeline ROW would be periodically trimmed to minimize conflicts/hazards with utility equipment. This vegetation trimming activity is not expected to significantly change the landscape from its existing, or future condition. The presence of the few operation and maintenance personnel and their vehicles and equipment when performing the trimming or maintenance is not expected to significantly degrade the landscape because of the relatively infrequent need for trimming and maintenance activity and the minimal amount of time at any given location to perform such activities.

No impacts to recreation are anticipated from operations, maintenance, and abandonment of the proposed pipeline. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW would likely be unnoticeable by recreationists in the area.

4.11.2.2. Airport Alternative Route

Construction

Construction of the proposed pipeline under this alternative would result in visual and recreational impacts similar to those discussed under the Proposed Action. The Airport Alternative Route and the segment of the Proposed Action route corresponding to the alternative would both cross private lands; therefore no Federal lands would be impacted. The alternative would also be consistent with Salt Lake County's planning Goals 3 and 4, as they relate to the landscape and visual resources. The majority of the proposed pipeline in Salt Lake County would be installed underground, so would not be visible, thus enabling the County to promote development that is in harmony with its surrounding built environment. In that area, the proposed pipeline would be constructed in areas designated for open space, residential, commercial, and industrial land uses. Implementation of mitigation that is recommended in **Section 4.11.3** would ensure that the proposed project would be constructed and operated consistent with the County's goals.

Operations, Maintenance, and Abandonment

The operation, maintenance, and potential abandonment of facilities under this alternative would result in visual and recreation resource impacts similar to those discussed under the Proposed Action.

4.11.2.3. Tooele County Alternative Route

Construction

The Tooele County Alternative Route would cross approximately 0.05 miles more BLM VRM Class III lands than the proposed action. This alternative would increase the area south of I-80 where construction would be visible by motorists traveling through that area. In addition, the Alternative Route would closely parallel Utah Highways 138 and 112. Although the volume of traffic in this area would be anticipated to be relatively low, construction would be visible to motorists in the area. Therefore construction along the Tooele County Alternative Route would be more visible than the Proposed Action. Construction impacts to recreation would be similar to those described for the Proposed Action.

Operations, Maintenance, and Abandonment

The operation, maintenance, and potential abandonment of facilities under this alternative would provide visual and recreation resource impacts similar to those discussed under the Proposed Action.

4.11.2.4. Rush Lake Alternative Route

Construction

Construction of the proposed pipeline under this alternative would result in visual and recreational impacts similar to those discussed under the Proposed Action.

Operations, Maintenance, and Abandonment

The operation, maintenance, and potential abandonment of facilities under this alternative would result in visual and recreation resource impacts similar to those discussed under the Proposed Action.

4.11.2.5. Millard County Alternative Route

Construction

The Millard County Alternative Route is further removed from U.S. 6 than the northern portion of the Proposed Action segment. The Alternative Route would cross U.S. 6 and would be visually noticeable to travelers in that vicinity, but overall construction activities along the Alternative Route would be less visible to the traveling public than the Proposed Action. The corresponding segment of the Proposed Action route would cross 1.5 miles of Class III lands and 14.1 miles of Class IV lands. The Millard County Alternative would cross 7.8 miles (6.3 miles more than the Proposed Action) of Class III lands and 47.9 miles (33.7 miles more than the Proposed Action) of Class IV lands. Construction impacts to recreation would be similar to those described for the Proposed Action.

Operations, Maintenance, and Abandonment

The operation, maintenance, and potential abandonment of facilities under this alternative would result in visual and recreation resource impacts similar to those discussed under the Proposed Action.

4.11.2.6. No Action

If the No Action Alternative is implemented, no project related, ground-disturbing activities would occur in the proposed pipeline area. The No Action Alternative would result in no project-related effect on visual resources or aesthetics, and no mitigation would be required.

4.11.3. Mitigation Measures

The following mitigation measures are recommended as part of the proposed project to reduce the visual impacts of the pipeline and the aboveground structures:

- Use minimal signage, and construct project signs using non-glare materials and unobtrusive colors, in accordance with the local land management planning agency. Conform the design of any signs to the criteria established by safety regulations.
- Consider siting aboveground structures so that they are not visible from public roads, recreation sites, and residences.
- Utilize agency color palates and work with agency representatives to select an appropriate neutral color to match the surrounding environment (such as gray, tan, or brown matte finish) for all facilities located on public lands. After construction, ground surfaces should be restored to match original topography, and any native vegetation that had been removed during the construction process should be replaced with similar vegetation.
- A revegetation plan approved by the BLM should be implemented. Such a plan should consider the following:
  - Minimize the removal of vegetation along the proposed pipeline alignment.
  - In areas along the proposed pipeline alignment where vegetation requires trimming, consider trimming vegetation to create irregular lines rather than a straight line.
  - For revegetation, specify the use of similar vegetation to the species that were removed and are in the area of the disturbance.

The following mitigation measures would reduce the visible changes to ambient lighting conditions from the aboveground facilities associated with the proposed pipeline:

- If lighting is required at project facilities, lighting would be limited to those areas required for safety, security, or operations. Low light technology would be utilized to minimize light pollution. Lighting would be directional and shielded from public view to the extent possible. Timers and sensors would be used to minimize the time that lights are on in areas where lighting is not normally needed for safety, security, or operation.
- If project facilities are located in an area that has developed facilities nearby, lighting would be provided that is consistent with the color of lighting used at the adjacent or nearby sites.
- Use flashing red warning lights on project structures only where required.

The following mitigation measures are recommended as part of the proposed project to reduce impacts to recreation from project-related construction:

- No construction would be conducted during peak visitor days at recreation sites, including cultural sites, Mountain Meadows and Topaz National Historic Landmarks.
- No construction would be conducted in the permitted area for the annual Tri-States ATV Jamboree during the time of the scheduled event.

4.11.4. Unavoidable Adverse Effects

With the implementation of the recommended mitigation measures, no unavoidable adverse impacts on visual resources are expected to occur.

4.12. CULTURAL RESOURCES

4.12.1. Indicators

An impact on cultural resources would be considered significant if project construction or operation would result in an irresolvable adverse effect on the characteristics that contribute to the eligibility of a historic or prehistoric property for the NRHP (for federal undertakings). Adverse effects may include, but are not limited to, the following:

- Physical destruction of or damage to all or part of the property
- Change in the character of the property's use or of physical features within a property's setting that contribute to its historic significance (for example, by isolating the property from its setting)
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features (Self et al. 2008).

In evaluating cultural resources, several criteria are considered. First, significant cultural resources (as defined for federal undertakings) include those prehistoric and historic sites, districts, buildings, structures, and objects, as well as properties with traditional religious or cultural importance to Native Americans or other groups, that are listed or are eligible for listing on the NRHP, according to the criteria outlined in Title 36 CFR Part 60.4. Second, cultural resources that do not meet the NRHP criteria but may qualify as a unique characteristic of an area are considered under NEPA. Historic properties (that is, NRHP listed or eligible cultural resources) must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of the following NRHP criteria:

- Association with events that have made significant contributions to the broad patterns of the history of the United States
- Association with the lives of people significant in United States history
- Embodiment of the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possession of high artistic value; or representation of a significant and distinguishable entity whose components may lack individual distinction
- Yielding, or is likely to yield, information important in prehistory or history (Self et al. 2008).

4.12.2. Direct and Indirect Effects

4.12.2.1. Proposed Action

Potential project impacts or effects include not only the physical disturbance of cultural resources, but may also include the introduction, removal, or alteration of various visual or auditory elements that could alter the traditional setting or ambience of the property. In accordance with the provisions outlined in the Programmatic Agreement, the consulting parties would determine eligibility of and effects on cultural resources. Impacts on sites determined to be non-significant are not considered effects and no further treatment or consideration is accorded these sites before construction and related project activities. If a cultural resource site listed on or eligible for listing on the NRHP would be subject to direct or indirect impacts, mitigation would be proposed. Mitigation may include, but is not limited to one or more of the following measures: (1) avoidance through the use of realignment of the pipeline route; relocation of temporary extra workspaces, or changes in the construction and/or operational design; (2) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and (3) the use of screening with landscaping or other techniques that would reduce or eliminate effects on the historic setting of standing structures (Self et al. 2008).

The project proponent has completed cultural resources surveys along the entire proposed pipeline route in Utah and Nevada, including existing two-track access roads requiring grading or improvement, and known extra-work space areas as of October 2007. As stipulated in the Programmatic Agreement, the BLM would provide determinations as to site eligibility to the Utah and Nevada SHPOs. For those historic properties that would be adversely affected by the undertaking, the project proponent is required by the Programmatic Agreement to prepare a Historic Property Treatment Plan (HPTP) indicating how impact would be reduced or mitigated. Once a treatment plan is approved by the consulting parties pursuant to the Programmatic Agreement, the project proponent would implement the specified treatment measure(s) before receiving notice to proceed with project construction within the area of any significant historic property. Additional consultation with Native American groups is also required to identify and address any concerns these groups may have. Because the Programmatic Agreement provides for the resolution of adverse effects (Title 36 CFR Part 800.14(b)), no irresolvable adverse effects are anticipated for the proposed project. Therefore, implementation of the Programmatic Agreement would ensure that project-related adverse effects would be reduced to less than significant levels for the purposes of Section 106 and NEPA compliance (Self et al. 2008).

Construction

Construction of the proposed pipeline and associated facilities could result in direct impacts to significant cultural resources that exist within the project construction area, along access roads, in lay down areas, and in extra work space areas. Construction could also result in indirect impacts from a visual perspective in the vicinity of newly-introduced above-ground structures, such as the inlet pump station, if standing historic architectural resources are located in the viewshed. Activities that can directly affect historic properties include:

- Clearing and grubbing the ROW
- Grading the ROW
- Trenching for pipeline installation
- Access road widening or maintenance
- Post-construction final grading (Self et al. 2008).

<u>Utah</u>

A total of 282 cultural resource sites have been recorded within the surveyed areas of the proposed pipeline project area in Utah. The final Class III Survey Report is currently in preparation, and, as a result, final determinations of eligibility by the BLM and Utah SHPO have not yet been made on these sites. Once eligibility has been determined, a HPTP would be prepared for agency review and approval as detailed in the Programmatic Agreement. The HPTP would detail the mitigation to be conducted at each significant site (i.e., historic property) (Self et al. 2008). The professional recommendation of the project's cultural resources consultant on site eligibility, which could differ from that of the BLM and SHPO, is as follows: 147 sites are recommended to be eligible for NRHP listing, 135 sites are recommended ineligible.

If any subsurface cultural materials are encountered during construction, all work would stop in the vicinity until a qualified archaeologist can assess the significance of the remains. An Emergency Discovery Plan conventional with the ACHP and accepted by applicable agencies such as the BLM, Utah SHPO, and tribal agencies would be followed (Self et al. 2008).

<u>Nevada</u>

A total of 64 cultural resource sites have been recorded within the surveyed areas of the proposed pipeline project area in Nevada. The final Class III Survey Report is currently being prepared, and as a result, final determinations of eligibility by the BLM and Nevada SHPO have not yet been made on these sites. Once eligibility has been determined, an HPTP would be prepared for agency review and approval as detailed in the Programmatic Agreement. The HPTP would detail the mitigation to be conducted at each significant site (i.e., historic property). The professional recommendation of the project's cultural resources consultant on site eligibility, which could differ from that of the BLM and SHPO, is as follows: 10 sites are recommended to be eligible for NRHP listing, and 54 sites are recommended ineligible (Self et al. 2008).

If any subsurface cultural materials are encountered during construction, all work would stop in the vicinity until a qualified archaeologist can assess the significance of the remains. An Emergency Discovery Plan conventional with the ACHP and accepted by applicable agencies such as the BLM, SHPO, and tribal agencies would be followed (Self et al. 2008).

Operations, Maintenance, and Abandonment

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance and no impacts to cultural resources. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations.

<u>Utah</u>

Operation and maintenance of the proposed pipeline and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered during Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Utah (Self et al. 2008).

<u>Nevada</u>

Operation and maintenance of the proposed pipeline and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered during Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Nevada (Self et al. 2008).

4.12.2.2. Airport Alternative Route

Construction

Construction of the Airport Alternative Route and associated facilities could result in direct impacts to two NRHP-eligible cultural resource sites that exist within the project construction area. Impacts to the historic canals, drains, and railroad grades would be avoided by boring under the sites. Impacts to one additional historic site would either be avoided by a re-route or mitigated through data recovery as detailed in the Programmatic Agreement.

Operations, Maintenance, and Abandonment

Operation and maintenance of the Airport Alternative Route and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered during Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Utah.

4.12.2.3. Tooele County Alternative Route

Construction

Construction of the Tooele County Alternative Route and associated facilities could result in direct impacts to 14 NRHP-eligible cultural resource sites that exist within the project construction area. Impacts to NRHP-eligible sites would either be avoided by project design or mitigated through data recovery as detailed in the Programmatic Agreement. Construction could also result in indirect impacts from a visual perspective in the vicinity of newly-introduced above-ground structures, such as the inlet pump station, if standing historic architectural resources are located in the viewshed.

Operations, Maintenance, and Abandonment

Operation and maintenance of the Tooele County Alternative Route and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered During Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Utah.

4.12.2.4. Rush Lake Alternative Route

Construction

Construction of the Rush Lake Alternative Route and associated facilities could result in direct impacts to one NRHP-eligible cultural resource site that exists within the project construction area. Impacts to the NRHP-eligible site would either be avoided by project design or mitigated through data recovery as detailed in the Programmatic Agreement. Construction could also result in indirect impacts from a visual perspective in the vicinity of newly-introduced above-ground structures, such as the inlet pump station, if standing historic architectural resources are located in the viewshed.

Operations, Maintenance, and Abandonment

Operation and maintenance of the Rush Lake Alternative Route and associated facilities is anticipated to have few impacts on cultural resources. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered During Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Utah.

4.12.2.5. Millard County Alternative Route

Construction

Construction of the Millard County Alternative Route and associated facilities could result in direct impacts to 11 NRHP-eligible cultural resource sites that exist within the project construction area, along access roads, in lay down areas, and in extra work space areas. Impacts to NRHP-eligible sites would either be avoided by project design or mitigated through data recovery as detailed in the Programmatic Agreement. Construction could also result in indirect impacts from a visual perspective in the vicinity of newly-introduced above-ground structures, such as the inlet pump station, if standing historic architectural resources are located in the viewshed.

Operations, Maintenance, and Abandonment

Operation and maintenance of the Millard County Alternative Route and associated facilities is anticipated to have few impacts on cultural resources because potential impacts on all known sites would have been mitigated prior to operation of the pipeline. In the event that unknown sites are found as part of pipeline operation and maintenance, they would be treated as an unanticipated discovery as defined in 36 CFR 800.11 ("*Properties Discovered During Implementation of an Undertaking*"), or as otherwise required under state and federal laws and regulations in Utah.

4.12.2.6. No Action

Under the No Action Alternative, no project related, ground-disturbing activities would occur in the proposed pipeline project area. The No Action Alternative would have no project-related effect on any undiscovered resources, historic or cultural, that might be present. No mitigation would be required.

4.12.3. Mitigation Measures

Mitigation for potential construction impacts may include one or more of the following measures: 1) avoidance through the use of realignment of the pipeline route; relocation of temporary extra workspaces, or changes in the construction and/or operational design; 2) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and 3) the use of screening with landscaping or other techniques that would reduce or eliminate effects on the visual setting of standing structures (Self et al. 2008).

Mitigation recommendations would be made by the project proponent's cultural resources consultant to the BLM and SHPOs (and consulting parties to the Programmatic Agreement) following completion of the BLM Class III Survey Report, wherein eligibility of the sites in the APE would be determined. In lieu of formal mitigation decisions from these agencies, it is recommended that significant historic properties (i.e., NRHP-eligible cultural resources) be avoided wherever possible through redesign or other engineering alternatives (such as boring or drilling). If avoidance is not possible, then data recovery through professional archaeological excavation, or documentation in the case of standing structures, should be implemented on the basis of an approved HPTP. Following data recovery or documentation, thorough analysis of any recovered data, preparation of a professional technical report of findings, and curation of recovered artifacts would be required in accordance with the Programmatic Agreement on the project (Self et al. 2008).

4.12.4. Unavoidable Adverse Effects

All potential impacts to significant historic properties would be addressed through implementation of the project's HPTP to the satisfaction of the concurring parties to the Programmatic Agreement. Implementation of the Programmatic Agreement would ensure that project-related adverse effects would be reduced to less than significant levels for the purposes of Section 106 and NEPA compliance.

Implementation of mitigation on the basis of agency consultation, as described above, is intended to reduce any adverse impacts to an acceptable level. No unavoidable (residual) adverse impacts are anticipated.

4.13. NATIVE AMERICAN CONCERNS

4.13.1. Indicators

The analysis of potential impacts to Native American Concerns is based on a review of known tribal interests, traditional cultural places, trust assets/treaty rights resources, and consultation with the potentially affected Tribes.

Impacts to prehistoric cultural resource sites are disclosed in **Section 4.13**. Consultation with the Tribes regarding impacts to NRHP-eligible prehistoric cultural resource sites is required under Section 106 of the NRHP.

4.13.2. Direct and Indirect Effects

4.13.2.1. Proposed Action

Construction

There would be no direct or indirect impacts to known places of cultural and/or geographic interest to the Tribes. Consultation with the Tribes is on-going. No concerns have been raised to date by the various Tribes.

Operations, Maintenance, and Abandonment

There would be no direct or indirect impacts to known places of cultural and/or geographic interest to the Tribes under operations, maintenance, or abandonment of the proposed pipeline. No concerns have been raised to date by the various Tribes.

4.13.2.2. Airport Alternative Route

Construction

The effects would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

The effects would be the same as the Proposed Action.

4.13.2.3. Tooele County Alternative Route

Construction

The effects would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

The effects would be the same as the Proposed Action.

4.13.2.4. Rush Lake Alternative Route

Construction

The effects would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

The effects would be the same as the Proposed Action.

4.13.2.5. Millard County Alternative Route

Construction

The effects would be the same as the Proposed Action.

Operations, Maintenance, and Abandonment

The effects would be the same as the Proposed Action.

4.13.2.6. No Action

No project-related impacts on Native American concerns would occur under the No Action Alternative.

4.13.3. Mitigation Measures

No mitigation has been proposed since there are no impacts to Native American concerns identified at this time. However, consultation is ongoing. If concerns are identified and mitigation were deemed necessary, it would be in accordance with the Programmatic Agreement.

4.13.4. Unavoidable Adverse Effects

There would be no unavoidable adverse impacts on Native American concerns.

4.14. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.14.1. Indicators

The types of impacts that might constitute a significant socioeconomic impact would most likely be one or more of the following:

- A permanent or temporary population increase larger than local services, infrastructure or population can accommodate.
- A tax burden to local residents that is not compensated by the project.
- A disproportionate share of an adverse impact to any racial, ethnic, or socioeconomic group.

4.14.2. Direct and Indirect Effects

4.14.2.1. Proposed Action

The Proposed Action includes both construction and operations phases, which would have substantially different types and degrees of impacts. **Section 2.1.2.4** shows the construction schedule and **Section 2.1.2.5** provides an estimate of the workforce that would be required for construction of the pipeline and its associated facilities (stations and terminals). **Section 2.1.3** describes the operations phase of the project.

Construction

The construction phase of the proposed pipeline would employ 350 to 400 workers over a seven to eight month period. Approximately 40 percent of the workers would be skilled and, likely, brought in from outside the area. The proponent expects that, of the remaining 60 percent of the workforce, half would be hired locally. While some of the workforce may be concentrated at the above ground facility construction sites at Salt Lake City, Cedar City, and north of Las Vegas, most of the workforce would be working at one or more of the seven construction spreads along the 409-mile long construction ROW. These spreads vary in length from 38.5 to 66 miles, with the average being 57 miles.

To estimate social and economic impacts in the project area during construction several assumptions must be made. The proponent estimates a maximum workforce of 350 to 400 at any given time during the construction phase, and that a typical crew for the eight major activities of pipeline construction (grading, excavation, pipe crew, tie-in/bending crew, lowering, backfilling, cleanup and restoration, and hydrostatic testing) is approximately 95 workers (**Exhibit 2.1-14**). Assuming a maximum of two crews per spread at any given time, then construction impacts due to work force influx may be estimated using the numbers in **Exhibit 4.14-1**.

Exhibit 4.14-1. Assumptions for Determining Work Force Impacts to Local Areas

Assumption	Result
Maximum workforce at any given time (proponent)	350-400 people
Workforce per full crew (all eight tasks) (proponent)	95
Assume maximum of two full crews per construction spread at any given time	190
Assume 30% local hires (proponent)	57
Non-local hires (190-57)	133
Assume approximately 20% of non-local hires bring their families, and each family adds three people (133 x 20% x 3)	80
Total non-local populations (non-local workforce plus families) (133+80)	213
Assume 30% of non-local workers would bring trailers for their housing (133 x 30%) (proponent)	40
Period of construction for project, 7-8 months (proponent)	210-240 days
Assume peak period of construction per spread is 2-3 months	60-90 days
Local spending by non-local workers and families	
Taxes collected on local spending by non-local workers and families	

Additional economic impacts to the area may include purchase of materials locally, such as gravel for pipe bedding and concrete for various facilities. The extent of local purchases would be at the discretion of construction contractors, and cannot be estimated at this time.

Establishment of a utility corridor through amendment of the Pony Express RMP could have an indirect effect on socioeconomics in the northern portion of the project area, as the utility corridor could be further developed in the future. However, such development is speculative at this point in time and socioeconomic impacts cannot be evaluated.

Population, Economy, and Employment

Construction of the proposed project would represent a sizeable total investment in material and labor expenditures in both states and individual counties through which the pipeline would pass. The number of construction workers would vary depending on the stage of construction, ranging from site preparation to testing and commissioning for new pump stations and installation of additional units at existing stations.

The construction workforce would include both local and non-local workers. When available, local workers would be employed for construction. Additional construction personnel hired from outside the project area would include construction specialists, supervisory personnel, and inspectors who would temporarily relocate to the project area. It is estimated that up to 30 percent of the construction workforce would be local hires, depending on union agreements and the methods the contractor uses to hire subcontractors. The overall effect would be to generate additional employment opportunities and local spending during this period of time.

Project-area population impacts are expected to be temporary and proportionally small. The total population change would equal the total number of non-local construction workers, plus any family members accompanying them. Given the brief construction period, most non-local workers are not expected to be accompanied by their families. Assuming 20 percent of the non-local construction workers per spread bring three other family members with them, the total increase in population along each spread would be between 200 and 250 people during a peak period of 60-90 days.

Among the counties the pipeline would traverse, the least populated is Lincoln County in Nevada. With 4,738 people (see **Exhibit 3.14-1**), a temporary influx of 250 people would represent a population increase of 5.3 percent, however, with the small section of pipeline in Lincoln County (22.5 miles), and its proximity to Las Vegas to the west and St. George to the east, workers and their families could find other locations to live and recreate. Consequently, the impact of the construction workforce would be minor to negligible. Clark County, by comparison, has a population 375 times larger than Lincoln County.

In Utah, the affected county with the lowest population is Beaver County (6,294, see **Exhibit 3.14-1**). A temporary influx of 250 people would represent an increase of less than four percent of the population. The dividing line between the fourth and fifth spread, MP 215, is within 3 miles of Milford in Beaver County, which is the second largest city in the county with 1,441 people (Beaver is the largest with 2,631 people, and is less than 25 miles from MP 215). Spread four goes north to midway through Millard County. Within 25 miles of the proposed pipeline are the two largest towns in Millard County, Fillmore and Delta. The fifth spread goes south into Iron County and is within 25 miles of Cedar City, Enoch, Parowan and Kanarraville. Consequently, workers on spreads four and five could find locations within commuting distance of the pipeline outside of Beaver County. Thus, the population impacts to Beaver County would be negligible to minor.

<u>Housing</u>

Construction of the project could affect the availability of housing in the project area; however, no significant impacts on local housing markets are expected. Because the construction period is relatively short through each county and most non-local workers are expected to come alone without their families because of the temporary nature of the relocations, most workers are likely to use temporary housing such as hotels, motels, apartments, and campgrounds within commuting distance of the project area.

Assuming that local construction workers do not require housing, up to 150 housing units for non-local workers may be required. Previous pipeline experience suggests that approximately 30 percent of the non-local workers would provide their own housing units (that is, travel trailers or RV campers). Given the vacancy rates (**Exhibit 3.14-3**), the number of rental housing units in the area, and the number of hotel/motel rooms and camp sites available in cities and towns in the vicinity of the proposed route (**Exhibits 3.14-4** and **3.14-5**), construction crews would most likely not encounter difficulty in finding temporary housing. Should accommodations not be available near the pipeline route, construction workers would have to locate accommodations outside the immediate area. Temporary camps along the construction ROW would not be used to accommodate construction workers. Housing for the construction crews would not cause the vacancy rate for temporary housing to be adversely impacted.

<u>Public Services</u>

The non-local pipeline construction workforce would be small relative to the current population. Construction of the pipeline and associated facilities would therefore result in negligible to minor temporary impacts on local community facilities and services such as police, fire, medical, and waste disposal. Local communities have adequate infrastructure and community services to meet the needs of the non-local workers that would be required for the project. Other construction-related demands on local agencies could include increased enforcement activities associated with issuing permits for vehicle load and width limits, local police assistance during construction at road crossings to facilitate traffic flow, and emergency medical services to treat injuries in the event of construction accidents. Effective emergency response would be coordinated with local firefighters and other emergency responders. The degree of impact would vary from community to community depending on the number of non-local workers (and any accompanying family members) that temporarily reside in each community, how long they stay, and the size of the community. Although these factors are too variable to accurately predict the degree of the impact, the effects would be short-term and are therefore not expected to be significant.

The project has no wastewater treatment requirements and would not require construction of new or expanded wastewater facilities or storm water drainage facilities that could potentially cause significant environmental effects. The project's solid waste disposal needs would be modest and can be accommodated by existing recycling programs and landfills. The project would comply with federal, state, and local statutes and regulations related to wastewater and solid waste disposal.

Overall, construction of the proposed project would not result in significant impacts on local public services in the project area.

<u>Property Values</u>

The impact a pipeline may have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Subjective valuation is generally not considered in appraisals. This is not to say that the pipeline would not affect resale values. A potential purchaser of property may make a decision to purchase based on his or her planned use, such as agricultural, future subdivision, or second home on the property in question. If the presence of a pipeline renders the planned use infeasible, it is possible that a potential purchaser would decide not to purchase the property. However, each potential purchaser has different criteria and differing capabilities to purchase land.

Construction of the proposed project also would require purchase of easements currently held by private entities, states, and the federal government. The effect that an easement may have on property values is a damage-related issue and should be negotiated between the parties during the easement acquisition process or would be determined during condemnation proceedings. This negotiation is beyond the scope of this technical report, although fair market prices are expected to be paid for easements.

<u>Tax Revenue</u>

Construction of the proposed pipeline would have a beneficial impact on local tax revenue based on projected tax revenue as described in the preceding section. Revenue from sales tax would be greater during construction based on the temporary influx of workers to the area. The generation of additional sales and income taxes in the states where pipeline construction occurs are additional revenues that would not be realized in the absence of the proposed project.

<u>Environmental Justice</u>

No environmental justice issues have been identified in direct relation to the construction or operation of the proposed pipeline (see **Section 3.14.3.7**). Construction activities in populated areas would be completed quickly and cause minimal disturbances. As such, the proposed project would have no disproportionately high and adverse human health or environmental effects on minority, and/or low-income populations.

Operations, Maintenance, and Abandonment

Upon abandonment, the pipeline would be capped and left in place resulting in no further ground disturbance. Above ground facilities would be removed and sites rehabilitated resulting in impacts similar to construction in those locations, with negligible impacts to socioeconomics anticipated.

<u>Population, Economy, and Employment</u>

Approximately 16 permanent employees would be added to operate and maintain the project. None of these employees would be located at the pump stations because the stations are designed to operate remotely. The project operations workforce would work from existing district offices in Salt Lake City, Cedar City, and Las Vegas.

Housing

Because the number of permanent employees that would be added would be so small and the potential locations for the positions are large, fully developed communities, no impacts on housing would be expected from operations, maintenance and abandonment of the proposed pipeline.

Public Services

Because of the few permanent employees that would be added and minimal operations activities, the Proposed Action would not result in significant impacts to local public services in the project area.

Property Values

Property taxes for a piece of property are generally based on the actual use of the land. Construction of the pipeline would not change the general use of the land, but it would preclude construction of aboveground structures on the permanent ROW. If a landowner feels that the presence of a pipeline easement reduces the value of his or her land, resulting in an overpayment of property taxes, he/she may appeal the issue of the assessment and subsequent property taxation to the local property tax agency. This is the proper forum for this issue to be addressed.

Section 3.14.3.5 and **Exhibit 3.14-6** describe assessed property values (which are based on market values), including assessed values for pipelines and gas utilities. Pipelines vary considerably from county to county as a percentage of property on which property tax is collected, but the percentage tends to be higher in counties with lower overall property tax bases. In Beaver County, for example, pipelines constitute 13.3 percent of taxable property, value while in Salt Lake County, pipelines represent 0.6 percent of taxable property value. Consequently, for the less populous counties, pipelines have a long-term beneficial effect on property values and property tax base. **Exhibit 4.14-2** shows estimated property tax payments for the pipeline.

Exhibit 4.14-2. Estimated Property Tax Payments by State for the Proposed Pipeline Project

State/Facility	Estimated Annual Ad Valorem and Property Taxes
Utah	
Pipeline and any associated facilities	$ 2,384,818
Nevada	
Pipeline and associated facilities	$ 824,797
Project Total	$ 3,209,615

*Utah estimates based on county averages using 2006 rates. Utah rates for 2007 to be finalized in September. Nevada estimates based on county final rates for 2007-2008.

Tax Revenue

Operation of the proposed pipeline would have a beneficial impact on local tax revenue based on projected tax revenue. There would be a permanent increase in property tax revenue, equaling about $3.2 million annually, and sales tax revenue from the permanent staff added at existing district offices.

<u>Environmental Justice</u>

No environmental justice issues have been identified in direct relation to the operation of the proposed pipeline (see **Section 3.14.3.7**).

4.14.2.2. Airport Alternative Route

Impacts to socioeconomics from construction and operations of the Airport Alternative Route would be the same as those described above for the Proposed Action.

4.14.2.3. Tooele County Alternative Route

Impacts to socioeconomics from construction and operations of the Tooele County Alternative Route would be the same as those described above for the Proposed Action.

4.14.2.4. Rush Lake Alternative Route

Impacts to socioeconomics from construction and operations of the Rush Lake Alternative Route would be the same as those described above for the Proposed Action.

4.14.2.5. Millard County Alternative Route

Impacts to socioeconomics from construction and operations of the Millard County Alternative Route would be the same as those described above for the Proposed Action.

4.14.2.6. No Action

Under the No Action Alternative, no pipeline installation would occur, no pump, pressure-reducing, or terminal stations would be constructed or operated, and there would be no project-related socioeconomic effects. The St. George/Las Vegas region would continue to receive a large portion of their petroleum products via tanker truck. The socioeconomic-related effects associated with hauling petroleum products by tanker truck would remain.

4.14.3. Mitigation Measures

Based on the above discussion of potential environmental effects and lack of significant impacts, no mitigation is required for the Proposed Action.

4.14.4. Unavoidable Adverse Effects

Based on the above analysis, there would be no unavoidable adverse socioeconomic impacts from the proposed project.

4.15. HAZARDOUS MATERIALS AND SOLID WASTE

4.15.1. Indicators

Adverse impacts of the proposed project would be considered significant if known or unknown existing in-situ hazardous materials were released or mobilized into the environment. Significant impacts of such events could include adverse effects to human health and the environment.

4.15.2. Direct and Indirect Effects

4.15.2.1. Proposed Action

Construction

Sixteen potential sources of hazardous and solid waste were identified near the proposed pipeline route using federal and state databases. All of these sites are in Utah. No sites were identified in Nevada. Most of these sites would likely have little or no impact on pipeline construction and operation, but would be further evaluated as described in **Section 4.15.3** to ensure that no hazardous materials would likely be encountered.

An additional eight facilities were identified along the proposed pipeline route using aerial photographs. These facilities would be evaluated as described in **Section 4.15.3** to determine whether they have hazardous or solid waste present that could potentially impact pipeline construction or operation.

It is possible but not likely that contaminated soil or groundwater from the sites discussed in Chapter 3 could be encountered during pipeline construction. Caution would be taken during pipeline construction to prevent possible exposure or disturbance of hazardous or solid waste. **Section 4.15.3** discusses the six-step process for further site evaluation, if needed, in order to avoid or mitigate potential effects of hazardous or solid waste on pipeline construction or operation. Debris generated during pipeline construction would be disposed of at approved landfills or other approved sites traditionally used for disposal of construction debris.

The proposed route in Tooele County, in the vicinity of Jacobs Smelter Superfund OU 2 Site, avoids all known contaminated soil sites. Not all former smelter locations are known precisely however. Mitigative measures ahead of and during construction would be implemented (see **Section 4.15.3**).

UNEV conducted soil sampling in accordance with an approved sampling plan for the portions of the ROW that would fall within the proposed OU 2 boundary of the Jacobs Smelter Superfund Site. The purpose of sampling the soil along the pipeline ROW through the Jacobs Smelter site is to determine if there are areas of soil contaminated with lead or arsenic above the action levels that have been developed for the site. The results of the sampling will be sent to the EPA as part of a request for a Reasonable Steps letter requesting EPA's concurrence that UNEV has taken "reasonable steps" to ensure safety and minimize liability.

Facilities of unknown types that have the potential to generate hazardous and/or solid waste that would be encountered during pipeline construction and operation would be investigated to determine what type of facility they are (such as farm, ranch, power station, etc.) and if they have hazardous or solid waste that could potentially impact pipeline construction or operation. The investigation would be accomplished as described in **Section 4.15.3** below. It is unlikely that these facilities have hazardous or solid waste present, but this would be evaluated. Operations, Maintenance, and Abandonment

Identified and potential sites containing hazardous materials and solid wastes would have little or no effect on pipeline operations, maintenance and abandonment. Contamination or hazardous materials encountered during construction would be documented so that any future required maintenance in those locations could take those factors into consideration.

The UNEV pipeline project would be governed by federal regulations, stipulations, and permitting processes to ensure safe pipeline operation, and maintenance and proper care for environmental resources. As a part of a ROW grant or permit issued for the proposed UNEV pipeline, the BLM would include stipulations and other requirements to ensure the pipeline and associated facilities were operated in a manner that would protect the safety of workers and protect the public from sudden ruptures and slow degradation of the pipeline. A ROW grant would be suspended or terminated for noncompliance with these requirements.

Portions of the proposed Salt Lake to Las Vegas UNEV pipeline route would be subject to the "Integrity Management Rule for High Consequence Areas." This regulation would result in increased inspection, enhanced damage prevention, improved emergency response, and other measures to prevent and mitigate pipeline leaks.

To determine the integrity of the pipeline, internal inspections of pipelines would be completed by the use of internal inspection tools or "smart pigs." In accordance with current federal regulations, the new UNEV pipeline system would be evaluated by either smart-pigging or hydro-testing immediately following construction and would be re-evaluated every 5 years thereafter. Internal inspection is used primarily to ensure mechanical integrity of pipelines after installed, prior to or during operation. However, other non-destructive testing methods ensure mechanical integrity of the pipe material used during fabrication and installation prior to operation. During pipe manufacturing, 100 percent of the pipe seam welds would be inspected using ultrasonic instruments. During construction, girth welds would be inspected using radiographic and ultrasonic methods, among others. Hydrostatic pressure testing is another method employed by operators to ensure the mechanical integrity of the pipelines.

Defects detected during testing with any of the abovementioned methods would be located and corrected before putting any new pipeline in operation. UNEV would maintain records of hydrostatic testing and weld inspection reports as long as the pipeline is in service. The records would be available for review by the OPS in accordance with 49 CFR § 195.310 Records.

To maintain and monitor the mechanical integrity of the proposed UNEV pipeline, cathodic protection test stations would be installed at approximately 2 mile intervals. Pipeline markers would be installed to mark the approximate location of the pipeline centerline at 500-foot intervals so that they are clearly visible along the route.

4.15.2.2. Airport Alternative Route

Construction

Because there are no hazardous or solid waste issues identified along the Airport Alternative Route, there would be no impacts to hazardous or solid waste from construction under this alternative.

Operations, Maintenance, and Abandonment

Because there are no hazardous or solid waste issues identified along the Airport Alternative Route, there would be no impacts to hazardous or solid waste from operations, maintenance and abandonment under this alternative.

Health and safety measures for the Airport Alternative Route would be the same as those described for the Proposed Action.

4.15.2.3. Tooele County Alternative Route

Construction

Because there are no hazardous or solid waste issues identified along the Tooele County Alternative Route, there would be no impacts to hazardous or solid waste from construction under this alternative.

Operations, Maintenance, and Abandonment

Because there are no hazardous or solid waste issues identified along the Tooele County Alternative Route, there would be no impacts to hazardous or solid waste from operations, maintenance and abandonment under this alternative.

Health and safety measures for the Tooele County Alternative Route would be the same as those described for the Proposed Action.

4.15.2.4. Rush Lake Alternative Route

Construction

There are no hazardous or solid waste issues identified along the Rush Lake Alternative Route, except those already discussed for the Jacob Smelter OU2 under the Proposed Action. There would be no impacts to hazardous or solid waste from construction under this alternative. The Rush Lake Alternative Route would impact 2 fewer miles within the Jacobs Smelter Superfund OU 2 Site boundary than the Proposed Action. As described in Section 4.15.2.1 above, the results of the soils sampling within the Jacobs Smelter Superfund Site will be sent to the EPA as part of a request for a Reasonable Steps letter requesting EPA's concurrence that UNEV has taken "reasonable steps" to ensure safety and minimize liability.

Operations, Maintenance, and Abandonment

Because there are no hazardous or solid waste issues identified along the Rush Lake Alternative Route, there would be no impacts to hazardous or solid waste from operations, maintenance and abandonment under this alternative.

Health and safety measures for the Rush Lake Alternative Route would be the same as those described for the Proposed Action.

4.15.2.5. Millard County Alternative Route

Construction

Because there are no hazardous or solid waste issues identified along the Millard County Alternative Route, there would be no impacts to hazardous or solid waste from construction under this alternative.

Operations, Maintenance, and Abandonment

Because there are no hazardous or solid waste issues identified along the Millard County Alternative Route, there would be no impacts to hazardous or solid waste from operations, maintenance and abandonment under this alternative.

Health and safety measures for the Millard County Alternative Route would be the same as those described for the Proposed Action.

4.15.2.6. No Action

If the No Action Alternative were implemented, no project-related ground-disturbing activities would occur in the proposed pipeline area. The No Action Alternative would result in no project-related effect on sites of concern relative to hazardous materials in or near the proposed pipeline route.

4.15.3. Mitigation Measures

Based on the data collected from the federal and state databases, a number of sites were identified as solid or hazardous waste sites that could potentially impact pipeline construction and operations. These sites would require further evaluation prior to construction. The following methodology would be used:

- The exact location of each site and the proximity to the proposed pipeline alignment would be determined.
- Location of the alignment would be selected and/or adjusted to avoid any identified solid or hazardous waste sites.

- If crossing a known solid or hazardous waste site is unavoidable, a site-specific mitigation plan would be developed and implemented.
- For sites located within 0.5 mile of the proposed pipeline alignment, each site owner would be contacted to discuss possible hazardous and solid waste concerns and verify boundaries.
- Visual site inspections of the proposed pipeline route would be conducted, as necessary, to ensure that hazardous and solid wastes would not be encountered.
- Care would be taken throughout pipeline construction to continually assess the potential for possible solid and hazardous waste impacts. If previously unidentified hazardous materials are encountered during construction, work would cease at that location and arrangements would be made for proper assessment, treatment, and disposal of those materials.

A preconstruction screening protocol would be developed for use in the vicinity of the former smelters in Tooele County (e.g., Jacob's smelter, Bauer dump and tailings). X-ray fluorescence sampling would be utilized at depths along the pipe centerline ahead of construction. A draft Field Sampling Plan has been developed describing sampling procedures and action to be taken based on sampling results (CH2MHill 2008o). Except for a conspicuous orange soil layer in contaminated sites, there are no reliable visual indicators of contamination. Three options are available if contaminated soils are encountered: cover, remove, or avoid.

The POD for the project (December 13, 2007) addresses mitigation regarding hazardous materials. If a crossing of a known solid or hazardous waste site is unavoidable a site specific mitigation plan would be developed and implemented. If a previously unknown hazardous material site is encountered during construction, work would cease at that location and proper assessment/characterization, handling and disposal of the hazardous materials would be undertaken.

4.15.4. Unavoidable Adverse Effects

As described previously, pipeline construction would be conducted following a six-step process that would avoid or mitigate the potential for adverse effects from hazardous or solid waste. Assuming the pipeline does not leak and is not breached in the future, there should be no release of hazardous materials to the environment. This would result in no unavoidable adverse impacts.

4.16. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible commitment of resources occurs if the commitment cannot be changed once made. An irretrievable commitment of resources occurs when resources are used, consumed, destroyed, or degraded during project construction and operation and cannot be reused or recovered for the life of the project or beyond.

4.16.1. Air Quality and Noise

Air emissions during the lifetime of the project would produce irreversible commitments of resources from activities such as fossil fuel combustion, thermal oxidation, the use of storage tanks and pumps, and fugitive dust production from mobile equipment on haul roads. Despite any assumptions on the extensiveness of these proposed emissions, once pollution enters the atmosphere, it cannot be removed, thus making it an irreversible commitment of resources.

Irretrievable commitments of resources would occur if nearby Class I and II areas were inundated with air emissions from the pipeline project, no longer permitting them to be "clean air areas." Over time, however, these areas could return to their clean-air state once temporary emission sources from the pipeline project were terminated.

There are no irreversible effects due to noise expected; however, irretrievable effects during operation of the pipeline are likely. Activities such as maintenance, repair, and general operation would cause irretrievable commitments for the lifetime of pipeline operation. If at some future period, pipeline operations cease, noise related commitments would cease as well.

4.16.2. Geology and Minerals

No irreversible or irretrievable impacts on geology and minerals are expected from implementation of the project (either construction or operation).

4.16.3. Paleontological Resources

Paleontological resources discovered during construction activities would be removed and this would be an irreversible commitment of these resources. However, these resources would be curated and available for study and/or exhibit providing a beneficial commitment of these resources.

4.16.4. Soils

There would be an irreversible commitment of soil resources on lands associated with the access roads and aboveground facilities where land uses would change for the life of the project. There would be an irretrievable commitment of soil resources if soil losses occur because of increased erosion or where soil productivity is reduced because of the presence of permanent aboveground facilities. These effects are not expected to be significant.

4.16.5. Water Resources

There would not be an irreversible commitment of water resources, either groundwater or surface water, resulting from the proposed project. Surface water features, particularly wetlands, would be disturbed during construction and then again temporarily during maintenance activities; however, because the pipeline facility is located underground, wetland areas could be restored during the life of the project as part of the proposed mitigation activities. There would be an irretrievable commitment of some municipal water supplies, wells, and/or surface water utilized during pipeline construction activities. There is also the potential for a release of hazardous pipeline transmission material, which could represent an irreversible or irretrievable loss of both groundwater and surface water resources, depending on the location, severity, and response capacity at the point of release.

4.16.6. Vegetation

Vegetation communities would be removed or destroyed in the long-term time frame of the project, particularly those associated with access roads and aboveground facilities. However, these resources would not be irreversibly or irretrievably committed, as these areas could be revegetated and reclaimed during the service life of the Proposed Action (or its alternative segments) or following the service life of permanent facilities. Additionally, there are no unique or rare vegetation resources that would be committed as part of the project.

4.16.7. Wildlife

There would not be an irreversible commitment of wildlife resulting from the proposed project, but there would be an irretrievable commitment of wildlife resources because of disturbance and/or potential for loss of vegetation, terrestrial and aquatic species, and habitat resulting from construction activities and the presence of some aboveground facilities for the life of the project. These effects are not expected to be significant with the implementation of mitigation measures to be developed further and agreed to in consultation with the regulatory agencies.

4.16.8. Special Status Species

There would not be an irreversible commitment of special status species resulting from the proposed project, but there would be an irretrievable commitment because of disturbance and/or potential for loss of vegetation, terrestrial and aquatic species, and habitat resulting from construction activities and the presence of some aboveground facilities for the life of the project. These effects are not expected to be significant with the implementation of mitigation measures to be developed further and agreed to in consultation with the regulatory agencies.

4.16.9. Land Use and Transportation

Existing land uses would change at the location of the inlet pump station, valves, Cedar City Terminal, and Apex Terminal, and would be an irreversible/irretrievable commitment of land use resources for the life of the pipeline. No irreversible or irretrievable commitments of resources would be expected with regard to transportation.

4.16.10. Visual and Recreational Resources

Irreversible and irretrievable commitments would occur in areas where the proposed pipeline alignment or any area containing associated project components would be cleared of vegetation and maintained cleared throughout the project's life, or in areas where permanent aboveground structures along the proposed alignment would be constructed. Although aboveground structures could be removed permanently if the project is taken out of service, thus returning the landscape to its preconstruction condition, once the proposed pipeline is in place, it is unlikely that such activities would occur. No irreversible or irretrievable commitment of resources with regard to recreation would be anticipated.

4.16.11. Cultural Resources

For cultural resources, there would be an irreversible impact and irretrievable commitment of cultural resources if sites are inadvertently discovered and disturbed during project construction or as a result of increased human activity in the project area. This would result in an irretrievable commitment of cultural resources compared to existing conditions, although mitigation measures would be implemented that address the recovery, documentation, analysis, reporting, and curation of cultural resources if encountered during project construction.

4.16.12. Native American Concerns

There appear to be no irreversible or irretrievable commitments of resources of Native American concern at this time, however consultation is ongoing.

4.16.13. Socioeconomics

There would be no irreversible or irretrievable commitments of socioeconomic resources.

4.16.14. Hazardous Materials and Solid Waste

As described previously, pipeline construction would be conducted following a six-step process that would avoid or mitigate the potential for adverse effects from hazardous or solid waste. Assuming the pipeline does not leak and is not breached in the future, there should be no release of hazardous materials to the environment. There would be no unavoidable adverse impacts, no irreversible impacts, and no irretrievable commitment of resources involving hazardous or solid waste.

4.17. RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF RESOURCE

For purposes of this discussion, "short-term" is defined as the approximate 7 to 8 month period during project construction and shortly thereafter during initial project operation. "Long-term" is defined as the commercial life of the Proposed Action, which is estimated to be 50 years or longer.

4.17.1. Air Quality and Noise

Short-term effects of air quality during the implementation of the pipeline project include a significant rise in the local emissions where construction is taking place. Activities such as fossil fuel combustion and fugitive dust production from mobile equipment on haul roads would contribute to immediate sources of emissions. Long-term activities such as thermal oxidation and the use of storage tanks and pumps would have more long-term effects that would last the duration of pipeline operation. Although the burning of fossil fuels and fugitive dust emissions would have their greatest impact on the short-term, long-term impacts are eminent due to general operations, maintenance and repair of the pipeline.

From a noise standpoint, short-term effects from construction would be most significant. The use of front-end loaders, backhoes, tractors, concrete mixers, haul trucks, pneumatic drills, saws, etc. would result in substantial but temporary noise increases. Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

4.17.2. Geology and Minerals

There are no short-term adverse impacts to geology or mineral resources. Presence of the pipeline may limit the extent to which minerals could be mined immediately beneath the pipeline, however mineral resources at greater depths could still be accessed, or resources could be mined immediately adjacent to the proposed pipeline ROW. There would be little or no effect to long-term productivity of mineral resources.

4.17.3. Paleontological Resources

In the short term, paleontological resources encountered during construction activities could be destroyed or degraded, however implementation of the PRMMP would mitigate these potential impacts. There would not be impacts to long-term productivity.

4.17.4. Soils

Short-term pipeline construction activities and the long-term presence of aboveground facilities for the life of the project would result in soil or soil-related impacts including increased erosion in the short term resulting from construction disturbance on erosion-prone soils, and long-term increases in erosion arising from difficulties with revegetating disturbed areas. Mitigation measures would be implemented to minimize the potential for such impacts to occur and would reduce the magnitude of impacts to a less than significant level. Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

4.17.5. Water Resources

Short-term pipeline construction activities would require the use of water, which would be acquired from municipal water supplies, wells, and/or surface water rights. Construction would also result in impacts to surface water features and local groundwater flow patterns. Mitigation measures associated with the project POD would seek to avoid and minimize these short-term impacts to the extent possible. As stated above, long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

4.17.6. Vegetation

Short-term impacts to vegetation resources within the Proposed Action area (or its alternative segments) would be most directly related to wildlife habitat and range resources, and therefore more accurately addressed in those respective sections. Long-term effects of vegetation resources would be similar in relation to wildlife and range.

4.17.7. Wildlife

As described previously, short-term pipeline construction activities and the long-term presence of aboveground facilities for the life of the project can result in impacts to wildlife, aquatic resources, and special status species. Mitigation measures agreed to in consultation with the regulatory agencies would be implemented to minimize the potential for such impacts to occur and would reduce the magnitude of impacts to a less than significant level. Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada’s existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

4.17.8. Special Status Species

Short-term versus long-term impacts would be the same as for Wildlife.

4.17.9. Land Use and Transportation

Aboveground land uses along the pipeline alignment are generally expected to revert to their pre-project construction land use, with exception of lands occupied by the inlet pump station, valves, Cedar City Terminal, and Apex Terminal where the lands would be lost to their previous use. The underground land use would have been modified to provide a conveyance for petroleum products over the long-term. Short-term adverse effects to transportation may occur during construction due to increased traffic, congestion, and slowing in construction zones that intersect roadways.

Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada’s existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products. Long-term beneficial effects to transportation may result from a reduction in the number of tanker trucks on the highway as fuel would be transported via pipeline instead.

4.17.10. Visual and Recreational Resources

Construction of the project would result in a short-term change in visual resources along the proposed pipeline alignment. These short-term changes would result from the presence of construction vehicles, equipment, materials, and workers. Aboveground land uses along the pipeline alignment are generally expected to revert to their pre-project construction land use, so that visual resources associated with activities on the land (the land use activities that a person would see) would be similar to existing conditions. The landscape along the proposed pipeline alignment would have been modified by the removal of vegetation; until the construction ROW is revegetated, a change to visual resources within the construction ROW would result. Once the construction ROW is revegetated, a minor long-term change to the landscape along the alignment would result.

Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

Public lands involved in the proposed project are anticipated to be used lightly and intermittently for recreation (such as hunting). Areas of public lands may be unavailable for recreation in the short term, however, once the proposed pipeline would be installed, minimal long-term effects to recreational resources would be anticipated from the improvements to access roads.

4.17.11. Cultural Resources

Implementation of mitigation on the basis of agency consultation is intended to reduce any adverse impacts to an acceptable level. There would be no effects to the long-term productivity of cultural resources from the proposed project.

4.17.12. Native American Concerns

In the short term, there would be no impacts to known Native American concerns. There would not be impacts to long-term productivity.

4.17.13. Socioeconomics

In the short term, the project would have local socioeconomic beneficial impacts through increased employment, utilization of local rental housing and lodging resources, some purchase of local supplies and materials, and associated resulting increases in sale and bed taxes. In the long term, increased permanent employment would have no measureable effect as the increase in workforce would be small. The main effect to long-term socioeconomic productivity would be increased property taxes from the pipeline.

4.17.14. Hazardous Materials and Solid Waste

There would be no short-term or long-term uses of the environment or environmental effects involving hazardous or solid waste. Long-term productivity related to the Proposed Action includes responding to the high population growth and increasing demand for petroleum products for the benefit of Utah and Nevada's existing and future petroleum products consumers, and addressing private, commercial, industrial, and military demands for refined fuel products.

4.18. CUMULATIVE EFFECTS

4.18.1. Cumulative Effects Areas

The cumulative effects area (CEA) for the Proposed Action for air quality and noise would be the same as the area of analysis described in **Sections 3.2.1.1** and **3.2.1.2,** respectively, as these are the areas that would be anticipated to be cumulatively affected. The CEA for water resources would include the two major HUCs crossed by the proposed project ROW. The CEA for visual resources would be an area within 6 miles of the project ROW, consistent with the area of analysis used in Chapter 4. The CEA for all other resource areas retained for detailed analysis in this EIS would include all locatable projects within a 1-mile radius of the 75-foot ROW. Because of the linear nature of the project, past, present, and reasonable foreseeable land uses and projects within a 1-mile radius of the ROW would reasonably capture cumulative effects for these other resources that intersect the CEA. In the case of geology and minerals the 1-mile radius corresponds to the area of analysis described in **Section 3.3.1** and would be the area anticipated to be cumulatively affected.

4.18.2. Past, Present, and Reasonable Foreseeable Activities

4.18.2.1. Past and Present Activities

In the northern section of the proposed project area, past and present activities include:

- Development and expansion in conjunction with the Salt Lake City metropolitan area.
- Development and expansion of oil refining facilities in the Salt Lake City area.
- Development and expansion in conjunction with the Tooele Valley.
- Agricultural land uses, including cultivation of private property and extensive permitted grazing of public lands.
- Numerous existing ROWs (utility, roads, etc.) in areas that are adjacent or intersect the proposed ROW. Within the Fillmore Field Office, for example, there are 67 existing or pending ROWs that could be affected by the Proposed Action (**Appendix A**).
- BLM ROW for approximately 200,000 acres in Millard County (**Appendix A**) for the Telescope Array Project. The project is a collaboration between universities and institutes in Japan, Taiwan, China and the United States. The cosmic rays are observed at three fluorescence sites and a separate ground array consisting of 576 detectors (Telescopearray.com 2008).

In the southern section of the proposed project area, past and present activities include:

- Development and expansion in conjunction with Cedar City, St. George, and Las Vegas.
- Development and expansion of the Apex Industrial Park, the terminus for the Proposed Action. The Park contains power plants, landfills, sand and gravel excavation, and other industrial uses.
- Expansion of the Kern River Gas Transmission Company natural gas pipeline system from one 36-inch pipe to two looped 36-inch pipes. Portions of the pipeline ROW (particularly from MP 250 south to Apex Industrial Park) are within the CEAs (FERC & CSLC 2002).

4.18.2.2. Reasonably Foreseeable Activities

Exhibit 4.18-1 below outlines the reasonably foreseeable activities that, when added to the anticipated effects from the proposed project results in cumulative effects to the resources. Descriptions of projects listed in the table are provided below.

Exhibit 4.18-1. Reasonably Foreseeable Projects along the Pipeline Proposed Alignment

Project	Location	Description	Stage/Timing
Linear Projects			
InterLinx Communications Desert Mound Fiber Optic New Castle to Cedar City	BLM Cedar City Field Office T36S, R14W & 15W	New Castle to Cedar City, Utah along Highway 56 and Desert Mound Roads. 25.38 miles of buried fiber optic within a 15 ft permanent ROW	Application submitted Jan 30, 2008
PacifiCorp/Rocky Mountain Power Mona to Oquirrh	BLM Fillmore Field Office T1-12S; R1-6W	New double-circuit 500/345 kV transmission line, 60-120 miles in length, 250 ft corridor	NOI 10/16/2007 – Anticipated in-service date June

Project	Location	Description	Stage/Timing
Transmission Corridor Project		plus future corridor with one-mile separation for a second 500/345 kV double circuit	2012
Gateway South & Trans West 500 kV Transmission Lines (2)	Corridor from Wyoming to Las Vegas	Exploring possible routes from Wyoming to Las Vegas, including the Intermountain Power Project (IPP) corridor	Pre-application discussions
White Pine Energy Station Transmission Corridor	Eastern Nevada	500kV transmission line from White Pine County Nevada to the Apex Industrial Park in Clark County Nevada	DEIS issued in late 2007
Milford Wind Corridor	BLM Cedar City Field Office T26S; R9W & 10W	300 MW wind farm with 120-188 wind turbines, 90-mile 345 kV transmission line & associated facilities	scoping occurred in September 2007
Cedar Fort Telecommunications Cable	BLM Salt Lake Field Office T5-7S; R2-4W	Buried telecommunications cable approximately 13.18 miles in length within 20-foot ROW	Scoping through 2/5/2008
Westwide Energy Corridor	Eleven western states including Utah and Nevada	Mandated by the Energy Act of 2005, energy corridors through 11 western states; utilizes existing corridors including sections that coincide with the proposed project corridor	Draft Programmatic EIS issued
South West Intertie Project (SWIP)/ Ely Energy Center Transmission Lines	Eastern Nevada	500 kV transmission line to connect the Ely Energy Center in White Pine county Nevada with Harry Allen substation at the Apex Industrial Park in Clark County, Nevada	Draft DEIS scheduled for late 2008
Energy Development			
Milford Wind Corridor Amendment One	BLM Fillmore Field Office T22, 24, 25S; R8-10W	Six 80 meter test towers (anemometers) over 13,440 acres. Amendment adds one additional tower	CX began January 2007, expected grant issuance in September, 2008
Milford Wind Corridor Site Testing #2.	BLM Fillmore Field Office T24-26 S; R9-11W	Seventeen, 60-meter test towers over 61,542 acres	Application submitted to BLM
Ridgeline Energy, LLC	BLM lands in northeast Juab County and southeast Utah County, Utah	Three-year ROW for wind energy site testing and monitoring over 5,476 acres for up to 10 anemometers.	Application submitted to BLM

Project	Location	Description	Stage/Timing
Mormon Mesa Power Partners, LLC	BLM lands in the area of the Cricket Mountains and the Confusion and Conger Mountains	Three-year ROW for wind energy site testing and monitoring for up to 6 anemometers.	Application submitted to BLM
Milford North Wind Park	BLM lands in the Cricket Mountains area	Three-year ROW for wind energy site testing and monitoring over 4,920 acres for 1 anemometer.	ROW grant issued
Confidential Wind Generator Sites	Multiple sites in or adjacent to the proposed project corridor.	Currently the BLM is having pre-application discussions with several companies exploring the possibility of constructing wind generating facilities on BLM land. Three of four proposals are for 37,418 acres (combined).	In pre-application discussions with the BLM
Pacific Wind Development	BLM St. George Field Office T40S; R19W	Construction of four meteorological towers to measure wind speed, temperature and direction, 198 feet high	Public comment period ended 4/30/2007
Toquop Energy Project	Approximately 12 miles northwest of Mesquite on 640 acres of BLM land	Construction of a 750 MW coal fired electric generating plant (previously permitted for 1100 MW natural gas plant)	DEIS issued October 2007
Oil and Gas Exploration/Production	eastern Nevada and western Utah	BLM oil and gas leasing areas of eastern Nevada and western Utah are experiencing increased interest from oil and gas companies and wildcat drillers	Ongoing
Miscellaneous Projects			
Highway 257 Fence	BLM Fillmore Field Office Area	UNEV is a cooperator on a fence project along Highway 257 to keep cattle from wandering on to the highway where collisions have killed animals and damaged cars.	Planning Stages
Graymont Access Roads and Utility Corridor	BLM Fillmore Field Office	New access roads with parallel utility corridors being constructed to access to rock quarries in the Cricket Mountains	
Wilshire Rock Canyon Road ROW	Rock Canyon West of Goshen Valley	ROW for accessing patented mining claims for rock quarries. Salt Lake City Field Office, BLM,	

Project	Location	Description	Stage/Timing
Sheeprock/Tintic OHV	BLM Fillmore Field Office T10-16S; R3-10W	OHV competitive racing area north of the Little Sahara sand dunes in Juab County	EA started January 2007
Veyo Community Pit	BLM St. George Field Office T39S; R16W	Expansion of community cinder pit from 40 to 100 acres	EA in progress 8/30/2007
Kern River CF Mitigation Donation	BLM St. George Field Office T43S; R19W	Donation of 320 acres to BLM in partial mitigation for impacts to desert tortoise habitat from pipeline construction	
Moapa Hidden Valley Development	Lincoln County Nevada	918 acre residential/commercial development southwest of Moapa, Nevada	
Lincoln County Land Act	Lincoln County, Nevada	Lincoln County Water District proposes to construct groundwater facilities and ancillary utility infrastructure designed to pump and convey groundwater in the Clover Valley and Tule Desert Hydrographic Basins, primarily to meet future municipal needs in southeastern Lincoln County	Ongoing
Southern Nevada Water Authority (SNWA)	Lincoln and Clark counties, Nevada	Series of projects to import ground water from Lincoln County to Las Vegas to support population growth	Ongoing
Lincoln County Conservation, Recreation, and Development Act	Apex Industrial Park in Clark County north through Lincoln, Nye and White Pine counties	Corridor will house electrical transmission lines from the Ely Energy Center and other generating facilities in White Pine and potentially other counties; corollary to the Lincoln County Land Act, authorizes sale of BLM land to local government and private parties for economic development	FONSI issued August 2007

4.18.2.3. Reasonably Foreseeable Project Descriptions

InterLinx Communications Desert Mound Fiber Optic

The Proposed Action is to bury and place 25.38 miles (9.94 miles BLM; 0.92 Utah State Lands; 14.52 Private) of two 1.25-inch polyethylene pipe conduits. InterLinx Communications (InterLinx) has requested a 30-foot wide construction ROW along Highway 56, Desert Mound Road, and Iron Springs Road between New Castle and Cedar City, Utah for the installation and operation of a buried fiber optic line. After construction is completed, the ROW would reduce to 15 feet. The ROW would be perpetual and would become a secondary, or redundant, fiber path to the existing primary fiber path along Highway 56 for transport of voice, data, internet, and various broadband and other telecommunications services (BLM 2008a).

PacifiCorp/Rocky Mountain Power Transmission Corridor

PacifiCorp proposes to establish a new double-circuit 500/345 kilovolt (kV) transmission line from the Mona Substation near Mona in Juab County, Utah to new expanded facilities at the existing Oquirrh Substation located in West Jordan and the Terminal Substation located in Salt Lake City, in Salt Lake County, Utah. As part of long-range planning, this project will also include the identification of a ROW for a double-circuit 500/345kV line, the siting of two 500/345kV substations and plan amendment for utility corridors. Corridors, large enough to allow for a 1-mile separation between the proposed double-circuit 500/345kV line and the future double-circuit 500/345kV line would be considered. The estimated lengths of the proposed transmission line route and future line would be determined through the environmental studies but could range 60-120 miles. A ROW of up to 250 feet in width and a ROW grant for 50 years would be required to construct, operate, and maintain the transmission line and structures. Specific acreages of access roads and temporary work areas would be determined through the environmental studies. The proposed project would take approximately eighteen months to construct, with an in-service date of June 2012. Once constructed, the project would be in operation year round transporting electrical power to the Wasatch Front. Permitting is under the leadership of the BLM Salt Lake Field Office, in conjunction with the Fillmore Field Office (BLM 2008a).

Gateway South and Trans West Transmission Lines

This project is still in the exploration phase for a transmission corridor between Wyoming and Las Vegas. The TransWest Express Project would be a new 500-kV direct current (DC) transmission line between Wyoming and Arizona with a capacity of about 3,000 megawatts. It will cover more than 1,000 miles at an estimated cost of $3 billion. The target in-service date is 2015. The Gateway South Project would be a 500-kV alternating current (AC) transmission line starting in Wyoming and going to central Utah, then extending through southwestern Utah into Nevada. Several configurations are being considered, including a reference case capable of delivering up to 3,000 megawatts. The target in-service date is 2014. One or both of the lines may use the IPP transmission corridor in the BLM Fillmore Field Office area.

White Pine Energy Station Transmission Line

This project includes a proposed 500 kV line between the proposed White Pine Energy Station power plant in White Pine County, Nevada and Apex Industrial Park in Clark County, Nevada. White Pine Energy Associates, LLC, is proposing to construct a coal-fired power plant in north Steptoe Valley, about 30 miles north of Ely, Nevada. The project consists of power generation units and related facilities, rail line, and transmission lines connecting northern and southern Nevada. Up to three 530-megawatt units (1,600-megawatts total) could be constructed (BLM 2007).

Milford Wind Corridor

Milford Wind Corridor, LLC proposes to construct a 300 megawatt wind farm. The project consists of 120-188 wind turbines, 90-mile 345kV transmission line, substations, operations and maintenance facility, access roads, underground electrical and communication facilities and temporary use areas. The project would be located approximately 10 miles northeast of Milford, Utah in Beaver and Milford County. Permitting is under the leadership of the BLM Cedar City Field Office, in conjunction with the Fillmore Field Office (BLM 2008a).

Cedar Fort Telecommunications Cable

The BLM is considering a proposal to install a telecommunications cable which would serve residents in Utah and Tooele Counties. The project would start in Cedar Fort, Utah County and would parallel State Road 73 into Tooele County up to the junction of SR73 with SR 36. The line would be approximately 13.18 miles in length of which approximately 7.6 miles would cross public land. A 20-foot ROW has been requested. The cable would be plowed into the ground at an approximate depth of 36-48 inches. The project would be South of Oquirrh Mountains (BLM 2008a).

West-Wide Energy Corridor

Mandated by the Energy Act of 2005, the Westwide Energy Corridor would provide a unified corridor through public lands in eleven western states. Many of the corridor segments are already in use, including segments of the corridor that would be used by the proposed pipeline.

Southwest Intertie Project (SWIP)

This project includes a proposed utility corridor through eastern Nevada that would house, among other utilities, transmission lines between the Ely Energy Center in White Pine County, Nevada and the Harry Allen substation at the Apex Industrial Park in Clark County, Nevada. The Southwest Intertie Project was originally proposed as a 540-mile-long 500-kilovolt transmission line from Idaho to termination points in southern Nevada and Delta, Utah. A right-of way for the project was granted in the 1990s, but the project was never constructed. However, approximately 383 miles of the Southwest Intertie Project corridor were maintained in the Ely planning area as a designated corridor. In addition to the Ely Energy Center, two other entities are considering use of the Southwest Intertie Project corridor for the construction of north-south transmission lines through eastern Nevada. These are the Great Basin LLC 500-kilovolt line and the TransCanada direct current line (BLM 2007).

Milford Wind Corridor I, Amendment One

Milford Wind Corridor I, LLC, filed an application for an amendment to their ROW grant that authorized wind energy site testing and monitoring of four project areas (totaling 13,440 acres) with a total of six 80 meter anemometers (test towers). The purpose of the amendment is to add one additional The proposed anemometer would be located in south central Millard County, Utah, in T25 S, R9 W, section 34(BLM 2008a).

Milford Wind Corridor, LLC (Site Testing #2)

Milford Wind Corridor, LLC applied for a second **ROW** for wind energy site testing and monitoring of a project area (totaling 61,542 acres). The project would consist of 17 anemometer towers with a planned height of up to 60 meters. The proposed project is located in south central Millard County east of the San Francisco and Cricket Mountains.

Ridgeline Energy LLC

Ridgeline Energy LLC has applied for a 3-year ROW grant for wind energy site testing and monitoring of a 5,476-acre project with up to ten anemometers. The proposed project would be located on lands administered by the Fillmore and Salt Lake Field Offices in northeast Juab County and southeast Utah County, Utah.

Mormon Mesa Power Partners, LLC

Mormon Mesa Power Partners, LLC has applied for a 3-year ROW grant for wind energy site testing and monitoring of a project area (total acres not yet available) with up to 6 anemometers. The proposed project would be located on lands administered by the Fillmore Field Office in the area of Cricket Mountains and the Confusion and Conger Mountains.

Milford North Wind Park

A 3-year ROW grant was recently issued to Milford North Wind Park for wind energy site testing and monitoring of a 4,920-acre project area with one anemometer. The proposed project would be located on lands administered by the Fillmore Field Office in the Cricket Mountain area.

Confidential Wind Testing Sites

In the BLM ELY District, up to 40,000 acres of rights-of-way for wind farms could be granted over the next ten to twenty years. This would accommodate approximately 5,000 megawatts of generating capacity. Entities currently investigating wind energy projects in the area (from north to south) include: Nevada Wind (Antelope Range), Power Partners Wind (Diamond Range), Nevada Wind (Egan Range), Enxco Wind (Egan Range), Invenergy Wind (north Spring Valley), Spring Valley Wind (north Spring Valley), Nevada Wind (Schell Creek Range), and Table Mountain-Mount Wilson Wind (Wilson Creek Range) (BLM 2007).

Pacific Wind Development

Pacific Wind Development has applied for a 3 year ROW to place 4 meteorological towers, 198 feet in height, on public land near the community of Motoqua in west Washington County, Utah. The meteorological towers are specifically designed to collect wind speed, temperature and direction information. No new road construction would be required. The proposed project would occur entirely on public lands administered by the BLM, St. George Field Office. The company will use the test to determine the feasibility of constructing one or more wind farms (BLM 2008a).

Toquop Energy Project

The Toquop Energy Project is a proposed electrical generating facility in Lincoln County, Nevada. Toquop Energy, Inc. has the permits required to construct and operate a 1,100-megawatt, natural gas-fired, water-cooled electric generating plant in southeastern Lincoln County, Nevada. The project includes a 12.5 mile long water line, 1,300 foot long electric transmission line, a 2,400 foot long 20-inch gas pipeline, and a 14.4 mile access road. The current proposal is for a coal-fired generating plant instead of the gas-fired unit. The coal would be delivered by rail along a new 45 mile spur, and the revised plant design would have a 750-megawatt capacity (BLM 2007).

Oil and Gas Exploration and Production

BLM offices in eastern Nevada and western Utah are leasing public land for oil and gas exploration and production wells. For example, twenty-three parcels covering approximately 42,106 acres are proposed for the Utah BLM February 2008 Oil and Gas Lease Sale in Rich County (BLM 2008a).

Highway 257 Fence

UNEV is one of several cooperators on a fence along Utah Highway 257 designed to keep cattle off the highway. Frequent vehicle/cattle collisions along the highway have prompted the project (BLM 2008b).

Graymont Access Roads and utility Corridors

Graymont Western, Inc. has requested a ROW to construct access roads with parallel utility corridors in the vicinity of its Cricket mine. These access roads would be located between Utah Highway 257 and the Cricket Mountains and would include a utility corridor for water and power lines and access two quarries (BLM 2008b).

Wilshire Rock Canyon Road ROW

Proponent has requested a ROW on three portions of an existing road that cross public lands. The purpose for the access road would be to mine surface and subsurface rock from patented mining claims and haul it out to market in local urban areas. The applicant would need to improve, widen, and maintain the road for year-round use. The existing road is approximately 15 feet wide and 3000 feet long. They propose to use a bulldozer to perform the initial widening of the road and a road grader to level it, and then place four to six inches of gravel on the road. The project is within the BLM Salt Lake City Field Office area, in Rock Canyon, West of Goshen Valley (BLM 2008a).

Sheeprock/Tintic OHV

An EA is being prepared for the Sheeprock/Tintic OHV Racing area within the BLM Fillmore Field Office. This area is known as the Sheeprock/Tintic OHV Competitive Racing area and is located north of the Little Sahara Sand dunes in Juab County (BLM 2008a).

Veyo Community Pit

The Veyo cinder community pit is administered by the BLM and is located approximately 2 miles north of the town of Veyo and 20 miles north of St. George, Utah, in Washington County, Utah. Mining of cinders has taken place in the Veyo Community Pit since the 1960’s and a total of 130,000 cubic yards of cinders have been produced. The purpose for establishing the pit was to provide a local source of cinders to the community. Both short and long-term contracts to remove mineral materials are issued to state and local governments, companies and the general public. Mineral materials are sold at fair market value, which is determined through appraisal. Approximately 19 acres have been affected by mining to date, within and outside of the designated area of 40 acres. The pit is no longer sufficient for the size and scope of the proposed future operations. Mining operations within the Veyo Community pit are designed to be low impact and yearly sales are limited to 25,000 tons per year or less as necessary. The proposed 100 acre designation would encompass the existing disturbance and allow for continued resource development. Washington County is rapidly growing and the current and planned development projects will increase demand for all mineral materials. Mineral material sales may be made as long as the aggregate damage to public lands and resources would not exceed the benefits derived from the proposed sale (43 CFR 3600.0-4) (BLM 2008a).

Kern River CF Mitigation Donation

The Kern River Expansion Project EIS was prepared to analyze the impacts of the Kern River Gas Transmission Company (KRGT) proposal to construct a 634.5 mile 36-inch-diameter pipeline through the states of Wyoming, Utah, Nevada, and California. The EIS concluded that the potentially significant adverse environmental impacts of the proposed project could be mitigated to a level of insignificance with appropriate mitigation measures. One of the mitigation measures identified in the EIS was desert tortoise habitat compensation. KRGT committed to provide no more than $330,113 for the purchase of approximately 585.8 mitigation acres. The Proposed Action is for BLM to accept donation of 320 acres of land purchased from the Utah State Trust Land Administration to be managed as the Beaver Dam Area of Critical Environmental Concern (BLM 2008a).

Moapa Hidden Valley Development

This project includes a proposed residential development on 910 acres south of Moapa, Nevada. The community would include a small commercial center surrounded by over 4,000 homes. Home sites would range from half-acre lots up to multi-family homes with 18 units per acre. The property is adjacent to Reid Gardner power plant. Nevada Power raised concerns about the development limiting future economic growth through industrial development because of the proximity of the proposed residential development to the power plant (Moapa Valley Progress 2006).

Lincoln County Land Act

As mandated by the Lincoln County Land Act of 2000, the BLM Ely Field Office disposed of 13,500 acres of public land located north and west of Mesquite, Nevada. The sold land would be used to expand the community of Mesquite, Nevada (BLM 2007).

Southern Nevada Water Authority (SNWA)

Groundwater development in Lincoln County may occur. Proposals by the Southern Nevada Water Authority and Lincoln County Water District are currently being evaluated by the BLM Ely Field Office in separate EISs. It is anticipated that the water would be used in Lincoln County for industrial or residential development or would be transported to Clark County (BLM 2007).

Lincoln County Conservation, Recreation, and Development Act

The Lincoln County Conservation, Recreation, and Development Act was signed into law on November 30, 2004. The Act authorizes the sale of up to 90,000 acres of BLM-administered land in Lincoln County, with 10 percent of the revenues going to Lincoln County for economic development, 5 percent to the state for education, and 85 percent being retained by the federal government. The Act also designates approximately 770,000 acres of wilderness (BLM 2007).

4.18.3. Air Quality and Noise

Construction and operation of the proposed pipeline would include emission sources from a number of activities such as fossil fuel combustion and fugitive dust production from mobile equipment on haul roads. The cumulative effects of these emissions would be limited primarily to the combined impacts of other construction projects located within the same airsheds as the proposed pipeline and/or previous construction activities along the pipeline alignment. These include the various disturbed corridors of the Kern River Pipeline and various electric transmission lines that the UNEV pipeline would travel through. Assuming proper construction mitigation measures are used/or have been used in the past, these cumulative impacts should not be significant.

Operation of the proposed pipeline would include emission sources from fossil fuel combustion (associated with tankers hauling fuel from the terminals), thermal oxidation, the use of storage tanks valves and pumps. The Cedar City Lateral Terminal and the Apex Terminal proposed to be located at Apex Industrial Park would not have emissions levels that would require quantitative analysis of cumulative effects from operation of the terminals in conjunction with surrounding emissions sources.

Construction of the pipeline would involve the use of heavy equipment that produces noise. The majority of these short-term potential noise effects during construction would be mitigated by the large geographical area over which the pipeline would be located. Noise impacts are particularly localized and attenuate quickly as the distance from the noise source increases. Therefore, cumulative noise impacts associated with construction would be unlikely.

Operation of the proposed inlet pump station at the pipeline origin could add to the cumulative noise impacts in the Woods Cross area.

4.18.4. Geology and Minerals

In the short term, cumulative effects on geology and mineral resources affected by the proposed project would be limited primarily to the combined impacts of other construction projects located within the same watersheds as the proposed pipeline and/or previous construction activities along the pipeline alignment. These include the various disturbed corridors of the Kern River Pipeline and various electric transmission lines that the proposed pipeline would travel through. Assuming proper construction mitigation measures are used/or have been used in the past, these impacts should not be significant.

Long-term cumulative effects to geology would not be expected as ground disturbance associated with projects in the cumulative impacts scenario would be relatively small. Long-term cumulative effects to minerals would be similar to effects described for the Proposed Action. Placement of underground pipes may limit access to mineral resources immediately beneath the pipelines, or require alternative routes to achieve access. However, given the relatively small area occupied by buried pipelines, the cumulative effect to mineral resources would be small.

4.18.5. Paleontological Resources

Encountering paleontological resources during development/disturbance has the potential to destroy and/or lose the resource. However, it also has the potential of providing additional data and rare or previously unknown specimens which can further scientific knowledge. Additional impacts to paleontological resources in conjunction with the proposed pipeline project would not be known until discovered and evaluated. Impacts associated with federal land management decisions/actions would be minimized or reduced in accordance with federal legislation and existing standard operating procedures. Thus, cumulative impacts to paleontological resources would be negligible.

4.18.6. Soils

Cumulative short-term effects on soil resources affected by the proposed project would be limited primarily to the combined impacts of other construction projects located within the same watersheds as the proposed pipeline and/or previous construction activities along the pipeline alignment. These include the various disturbed corridors of the Kern River Pipeline and various electric transmission lines that the proposed pipeline would travel through. Assuming proper construction mitigation measures are used/or have been used in the past, these impacts should not be significant.

Long-term impacts to soils would result from construction of permanent fixtures on the soil surface. Other pipelines would have surface facilities similar to those described in this EIS. Transmission lines and wind generators would have concrete bases supporting towers. Given the number of acres in the region with little or no permanent facilities, the long-term cumulative effect to soils would not be significant.

4.18.7. Water Resources

Cumulative effects on groundwater resources affected by the proposed project would be limited primarily to the combined impacts of other construction projects location within the same watersheds as the proposed pipeline and/or previous construction activities along the pipeline alignment. Assuming proper construction mitigation measures are used (or have been used in the past) these impacts should not be significant.

The pipeline would not involve construction of permanent diversions or dams, and therefore it is expected to have only temporary impacts on surface water resources. Cumulative effects on surface water resources affected by the proposed project would be limited primarily to water bodies that are affected by other projects located within the watersheds as the pipeline. Because much of the proposed pipeline route follows an existing utility corridor or other disturbed areas, there is a potential for cumulative impacts as a result of continued alteration of surface contours; the compaction of sediments at adjacent river banks where horizontal direction drilling is proposed; compaction and/or softening of sediments at previous open-cut crossings; and dredge and fill of wetlands and/or other waters of the U.S. Mitigation measures associated with the project POD would seek to avoid and minimize cumulative effects of the proposed pipeline to the extent possible.

4.18.8. Vegetation

Cumulative effects of the Proposed Action or its alternative segments on vegetation resources would be primarily associated with the spread of noxious weeds to newly disturbed areas, or areas of the region that had not previously had noxious weeds introduced there. The pipeline potentially represents a movement corridor for noxious weed spread into uncolonized areas of Great Basin and Mojave Desert regions. The cumulative removal of undisturbed woodland and desert vegetation by such projects would have long-term effects because vegetation of arid and semi-arid regions is slow to recover.

4.18.9. Wildlife

Cumulative impacts to wildlife and wildlife habitat and to aquatic resources can result from the effects of past, present, or other future reasonably foreseeable construction activities occurring at, or near, the same time and location as the proposed pipeline project. The cumulative removal of undisturbed wildlife habitat by such projects and activities would have long-term impacts because vegetation/wildlife habitats of arid and semi-arid regions are slow to recover.

For the sake of this analysis it is assumed that in undisturbed areas, fragmentation is occurring in habitat adjacent to the proposed route. As a result, the impacts may be of a magnitude sufficient to result in significant effects to wildlife populations dependent upon unfragmented habitat.

Another potential long-term or permanent impact of the project would be the increased level of human-wildlife interaction in the project area. By expanding the existing ROW and especially by creating a new ROW, the project would likely add to the existing matrix of open desert, jeep trails, dry washes, and cleared ROWs currently attracting OHV users. Pipeline access roads may provide public access into previously unroaded areas along portions of the pipeline and would result in additional user-created roads and trails branching off from these roads (USDI and USDA 2001). Public access may be restricted on most pipeline roads on BLM lands through the use of fences and gates. If implemented, this is expected to be successful in limiting the majority of public access. However, the open nature of the terrain in the project area combined with the proliferation of four-wheel-drive trucks and all-terrain vehicles would allow the creation of user-created roads (USDI and USDA 2001). This would cause additional road-related direct and indirect impacts to wildlife in the form of additional disturbance over large open areas because of the great sight distances along the pipeline route. This impact would be lessened because the pipeline route is primarily adjacent to existing ROWs. Newly constructed and existing roads would be used as access to the construction ROW and effective OHV blocking measures would be installed in sensitive areas as determined by the landowner or land management agency.

4.18.10. Special Status Species

4.18.10.1. Species Protected Under the Endangered Species Act

Cumulative effects under ESA regulations are defined as those of future non-federal (state, local government, or private) activities that are reasonably certain to occur during the course of project activity. Future federal actions are subject to the consultation requirements established in Section 7 of the ESA and, therefore, are not considered cumulative to the Proposed Action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

Activities on private lands in the project area continue to contribute to desert tortoise habitat degradation within the proposed project area and the vicinity. These activities include vandalism, illegal dumping, and unauthorized vehicle use. As the human population in southwestern Utah and southern Nevada continues to grow these activities are likely to increase. Actions on private lands in the region also include urbanization, particularly in St. George, Utah, and Mesquite, Moapa, and Las Vegas, Nevada. Because the purpose of this project is to meet the demand for petroleum products in this growing market, the proposed project would likely allow for an increase in development of private lands. As a result, the project would indirectly contribute to the loss and degradation of desert tortoise habitat on private lands. Within desert tortoise habitat, these effects would be minimized and mitigated through the Clark County Multiple Species Habitat Conservation Plan and Washington County Habitat Conservation Plan.

The majority of land surrounding the proposed project within the range of the desert tortoise is administered by the BLM; therefore, any federal action on those lands will be subject to consultation under Section 7 of the ESA (USFWS 1990; USFWS 2002).

4.18.10.2. Other Special Status Species

Cumulative impacts to other special status species and their habitat can result from the effects of past, present, or other future reasonably foreseeable construction activities occurring at, or near, the same time and location as the proposed pipeline project. The cumulative removal of undisturbed special status species' habitat by such projects and activities would have long-term impacts because vegetation/wildlife habitats of arid and semi-arid regions are slow to recover.

4.18.11. Land Use and Transportation

The general plans of the various city and county jurisdictions call for growth and development to occur within their planning boundaries. Such planned growth and development envision and would govern change to the existing land uses. Because the proposed project is consistent with or does not conflict with established plans for growth and development, it would make no contribution to cumulative effects to land use. The presence of the pipeline allows for future potential for development of lateral lines and terminals (similar to the Cedar City Lateral and Terminal) in other remote and/or rural communities that would enhance future growth and development, thus contributing a beneficial effect to land use. However, the actual potential or magnitude of effect cannot be evaluated at this time.

During construction of the proposed pipeline, the hauling of construction materials and interruption of traffic for construction across roads could contribute to adverse effects to transportation should other projects in the cumulative effects scenario be under construction at the same time and in proximity to the proposed pipeline. The likelihood of concurrent construction in terms of timing and location is low, and effects would not be significant.

In the long term, increased levels of truck traffic in the vicinity of the terminals (Cedar City and Las Vegas at Apex Industrial Park) would contribute to local traffic volumes and may result in adverse impacts to transportation however those impacts would not be anticipated to be significant. Operation of the pipeline may reduce truck traffic volume from the refineries in the Salt Lake City area, having a slight beneficial impact on transportation.

4.18.12. Visual and Recreational Resources

The proposed pipeline project would contribute to cumulative effects to visual resources in conjunction with other projects in the immediate vicinity of the proposed pipeline. Where the proposed pipeline is in the same alignment as the Kearn River pipeline, there would be no additive effect to the existing disturbance. Contributions to cumulative effects could be both short- and long-term. Despite the fact that the proposed pipeline consists mostly of underground facilities due to the fact that vegetation is slow to recover in the dry, desert regions, rendering the pipeline route visually obvious for many years. Given the remote nature of most of the proposed pipeline route, contributions to cumulative effects to visual resources would not be anticipated to be significant.

The proposed pipeline would contribute to cumulative effects to recreational resources where other projects in the cumulative effects scenario are in the immediate vicinity of the proposed pipeline project, such as pipelines or transmission lines in the same utility corridor. Much of the public lands crossed by the proposed project are open to dispersed recreation. Concurrent construction projects may increase the noise or visual disturbance to recreationists; however the likelihood of concurrent construction is low. Cumulative adverse effects to wildlife habitat could have indirect effects on recreational resources through reduced wildlife populations available for hunting, although the combination of projects needed to have a noticeable effect on wildlife populations is not foreseen. Improvement of existing roads in conjunction with development projects on public lands can have a beneficial cumulative effect on recreation by creating new access routes for use of public lands. Conversely, visual resources could be adversely impacted by the cumulative proliferation of access routes.

4.18.13. Cultural Resources

Past and present disturbances to, and cumulative effects on, cultural resources in the project area have been related to prior studies; accidental disturbance by OHV users; intentional destruction or vandalism; and construction and maintenance operations associated with existing roads, railroads, transmission lines, and pipelines. It is anticipated that any future proposed projects in the pipeline project area would include mitigation measures designed to avoid or minimize additional direct impacts on cultural resources. Where direct impacts on significant cultural resources are unavoidable, mitigation (for example, data recovery and curation of materials) would occur before construction. Pressure on nearby cultural resources sites is likely to continue, however, and would be at least slightly exacerbated by the additional cleared rights-of-way in the same general area. Increased access by rights-of-way and service roads would increase the potential for trespass or vandalism at previously inaccessible sites. The proposed pipeline would add incrementally to past and present cumulative effects and to potential cumulative effects of other reasonably foreseeable projects on cultural resources in the project area.

4.18.14. Native American Concerns

The continued modification of the landscape through numerous regional projects that impact culturally and/or geographically important places or modify the Tribes' visual relationship to the landscape can have a cumulative impact on Native Americans. However, how this cumulative impact affects the Tribe or the individual over time is unknown and difficult to quantify. No cumulative effects are anticipated.

4.18.15. Socioeconomics and Environmental Justice

Cumulative socioeconomic effects are anticipated to be primarily beneficial. The overall short-term effects from construction of the proposed project, and others in the cumulative impacts scenario, are expected to be positive because of additions to employment opportunities. Because the funding for construction of the projects in the cumulative impacts scenario would come primarily from private industry resources that would otherwise not be spent in the project area, the employment, earnings, and other benefits are therefore truly 'new' and, in the short term, would cumulatively contribute to the local and regional economies in addition to existing levels.

The overall long-term effects from operation of the proposed project are expected to be positive, primarily because of additions to tax revenues. Some slight additions to employment and taxable income from projects in the cumulative impacts scenario would be expected, but would be limited and result in a negligible effect.

4.18.16. Hazardous Materials and Solid Waste

Because no direct or indirect effects involving hazardous or solid waste are anticipated either because of the pipeline construction area avoiding such sites or potential effects being mitigated, there would be no potential for the occurrence of cumulative effects involving hazardous or solid waste.

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CHAPTER 5. CONSULTATION AND COORDINATION

5.1. Public Participation Summary

5.1.1. Public Scoping Period and Meetings

The public was provided a 30-day scoping period at the beginning of the EIS process to identify potential issues and concerns associated with the Proposed Action. The Notice of Intent (NOI) for the UNEV Pipeline EIS was published in the Federal Register on August 9, 2007. A copy of this NOI is included in the UNEV Pipeline Scoping Report dated October 26, 2007. A legal notice was published in local newspapers as follows:

Tooele Transcript Bulletin	Thursday, August 9, 2007
Las Vegas Review Journal	Friday, August 10, 2007
The St. George Spectrum	Friday, August 10, 2007
The Salt Lake Tribune	Saturday, August 11, 2007
Deseret Morning Newspaper	Saturday, August 11, 2007
Millard County Gazette	Tuesday, August 14, 2007
Millard County Chronicle Progress	Wednesday, August 15, 2007

A scoping letter was prepared and sent to a list of approximately 1,000 potentially interested individuals, agencies, and organizations. The BLM compiled the initial contact list by using contact lists from previous projects compiled from each BLM office and the BLM Utah State Office. The initial scoping list is included in the Scoping Report.

In addition, a postcard was mailed to the same list notifying the public of a new e-mail address set up to receive public comments.

5.1.2. Meetings

Prior to public scoping meetings, Holly Energy met with municipalities and other stakeholder groups (**Exhibit 5.1-1**) to brief them on project plans, inform them of the NEPA process, and to obtain feedback.

Exhibit 5.1-1 Advance Meetings

Organization	Contact
Ambassador Duck Club	Representative
Beaver County	Administrative Assistant, Commissioner, Planning Administrator, Assistant Planning Administrator
Bernum Duck Club	Representative
Black Hawk Duck Club	Representative
Brown Duck Club	Representative
Cedar City Mayor	Mayor Sherratt
City of North Salt Lake	City Manager & City Engineer
Clark County Commissioner	Chris Giunchigliani

Organization	Contact
Clark County Commissioner	Rory Reid
Delta City	Mayor, Public Works Director
Division of Wildlife Resources	Pam Krammer
Friends of the Great Salt Lake	Director
Great Salt Lake Keeper	Director
Harrison Duck Club	Representative
Hinckley Town	Mayor
Iron County	Zoning Administrator, Iron County Planner
Juab County	City Administrator
Lake Front Duck Club	Representative
Las Vegas Fuel Standards Environmental	Committee
Las Vegas Mayor	Mayor Goodman
Lynndyl Town	Mayor
McCarren International Airport	Randall Walker, Rosemary Vassil, Barbara Bolton
Milford City	City Manager
Millard County	County Commissioner
Nellis Air Force Base	Planning Division, Environmental Division
Nevada State Senator	Warren Hardy
Nevada: The Nature Conservancy	Project Director
New State Duck Club	Representative
North Las Vegas Councilwoman	Shari Buck
North Las Vegas Mayor	Mayor Michael Montandon
North Point Duck Club	Representative
Rudy Duck Club	Representative
Salt Lake City	City Engineer Director, Senior Technology Consultant, Finance Division
Salt Lake County	Planner
Salt Lake International Airport	Steve Domino, John Buckner
Salt Lake International Center	Kim Hibbert
South Shore Wetlands Association	Representative
Southern Utah Wilderness Alliance	Dave Garbett
St. George Economic Development	Director
St. George Mayor	Mayor MacAurther
Stockton Town	Mayor
Tooele Army Depot	Tom Turner, Larry McFarland
Tooele City	City Mayor, City Engineer, Public Works Director
Tooele County	County Engineers
US Fish and Wildlife	Paul Abate

Organization	Contact
Utah Congressman Matheson	District Director
Utah Petroleum Association	Director
Utah Petroleum Marketers & Retailers Association	Director
Utah: Governor's Energy Advisor	Laura Nelson
Utah: Governor's Energy Advisor	Dianne Nielson
Utah: The Nature Conservancy	Director
Vernon	Mayor
Wasatch Duck Club	Representative
Washington County	Planning Commission
Wetlands Management Association	Director, Legal Representative
Woods Cross	City Administrator
Zions Securities Corporation	Project Director

Scoping meetings were held at the following locations:

Salt Lake City	August 22, 2007
Tooele	August 23, 2007
Las Vegas	August 27, 2007
Cedar City	August 29, 2007
Delta	August 30, 2007

All attendees of scoping meetings were asked to sign in and provide their contact information. Lists of individuals who signed attendance sheets at the public meetings are included in the Scoping Summary Report (JBR 2007b). The meetings were held from 5:00 to 8:00 PM. There were eleven information display stations, with BLM and UNEV personnel available to answer questions about the proposed project. Comment forms were available to all attendees to provide written comments. Comments could be submitted during the meeting, mailed, or e-mailed.

Information regarding the proposed action and the NEPA process was posted on the BLM's project website at: http://www.blm.gov/ut/st/en/prog/more/lands_and_realty/unev_pipeline_eis.html .

The proponent developed a website to disseminate project information to the public, which is located at: http://projects.ch2m.com/unev/public/ .

5.1.3. Scoping Response

The 30-day scoping period during which comments were received was from August 9 through September 10, 2007. All responses received by BLM were logged, analyzed, and summarized to discern issues of concern. A total of 58 letters, emails and faxes were received in response to the request for public comment regarding the Proposed Action.

Responses were received from 7 counties within the Project Area and 5 responses came from counties outside of the Project Area, but within Utah and Nevada. There were 10 responses from other states in the U.S. and 6 responses from unknown geographic locations. Responses were received from various organizations and unaffiliated individuals. Respondents include businesses, preservation organizations, and the oil and gas industry, as well as unaffiliated individuals and others. The most numerous responses were from land owners, businesses, and unaffiliated individuals. Substantive comments are presented in the Scoping Summary Report (JBR 2007b).

Comments received in response to solicitations, including names and addresses of those who commented, are considered part of the public record on this proposed action and are available for public inspection. The mailing list for the Project was revised to add those persons who provided comments in response to scoping, requested to be on the mailing list, or signed a scoping meeting list.

5.2. Distribution

A Notice of Availability was published in the Federal Register specifying dates for the comment period and the date, time, and location of the public comment meetings. In addition, legal notices were published in the same area newspapers as for the initial public scoping announcement. Interested parties identified in the updated EIS mailing list (**Exhibit 5.2-1**) were notified of the publication of the Draft EIS. Hard copies were provided to those who requested them and electronic copies were made available via the Internet.

5.2.1. Mandatory Mailing List

The mandatory mailing list used for scoping notification was compiled from mailing lists provided by each BLM Field Office and the Utah State Office. The Utah State Office list was generated by determining land owners with properties within or adjacent to the proposed ROW. The mandatory mailing list also contained federal and state agency contacts.

5.2.2. Interested Parties Mailing List

The Interested Parties mailing list in **Exhibit 5.2-1** is divided into federal agencies, state agencies, and others. This list is composed of interested parties who submitted unique responses during the scoping process.

Exhibit 5.2-1 Interested Parties Mailing List

Organization Name	First Name	Last Name	City	State
Federal Agencies				
Bureau of Reclamation, Environmental Compliance Group, Lower Colorado Regional Office	Christa	Monaco	Boulder City	NV
BLM Washington Office, Div. of Lands and Realty (WO-350), Las Vegas Field Office	Lucas	Lucero	Las Vegas	NV
NRCS	M. Ron	Davidson	Salt Lake City	UT
State Agencies				
Office of the Governor, Public Lands Policy Coordination	John	Harja	Salt Lake City	UT
Utah Div. of Wildlife Resources	Doug	Sakaguchi	Springville	UT

Organization Name	First Name	Last Name	City	State
Other Organizations and Interested Individuals				
Nevada Power Company	Paul B.	Aguirre	Las Vegas	NV
Southern Nevada Water Authority	Kenneth	Albright	Las Vegas	NV
	Kathy	Alford	Tracy	CA
Kern River Gas Transmission Company	Brent	Arnold	Salt Lake City	UT
	Ronald S. & Barbara E.	Barnes	Auburn	IN
	Larry & Debbie	Brown	Riverton	UT
	Lou	Brown		
	Jean	Corey	Sandy	UT
Moapa Band of Paiutes	Iris	Daboda	Moapa	NV
Moapa Band of Paiutes	Darren	Daboda	Moapa	NV
	Tom	Dailor		
Desert Tortoise Council	Celeste	Doyle	Beaumont	CA
	Sam	Ghosh		
	Dick	Gilbert		
	Richard	Gilbert	West Valley	UT
	Charles	Gillmor	Salt Lake City	UT
Dixie Power Water Light & Telephone	Darrell	Hafen	Washington	UT
	Darrell	Hafen		
Tooele Associates, L.P.	Drew	Hall	Tooele	UT
	Mike	Heining		
	Ladd	Holman	Lemington	UT
	J. B.	Ingold	Ivins	UT
Foster Properties	Thereasa	Jensen	Cleveland	UT
	Albert	Jibilian	Playa	CA
	Bonny	Kelly-Ingle	Mesa	AZ
Patriot Transport	April	Kloehn		
Hopi Cultural Preservation Office	Leigh	Kuwanwisiwma	Kykotsmovi	AZ
	LVC	Large	Henderson	NV
	Wayne	Martinson		
Environmental Management and Homeland Security, URS Corporation	David	Marx	San Diego	CA
Beehive Telephone	Chuck	McCown		
	Wayne	McLain	St. George	UT
	Robert	Nielson	Lynndyl	UT
	Robert	Peel	Idaho Falls	ID
	Larry & Carol	Peterson	Fillmore	UT
Union Pacific Railroad Company	Greg L.	Pinker	Omaha	NE
	Hans	Roelofs	Cedar City	UT
	Carmela	Ruby	Sacramento	CA
	Hans	Rulofs	Cedar City	UT
	Ann	Schreiber	Moapa	NV

Organization Name	First Name	Last Name	City	State
Moapa Band of Paiutes	Vickie	Simmons	Moapa	NV
	Pete	Stamatakis	Price	UT
	Julie	Swaner	Salt Lake City	UT
	R. Christopher	Swaner	Salt Lake City	UT
	Gosia	Sylwestrzak	Carson City	NV
Utah Environmental Congress	Sarah	Tal	Salt Lake City	UT
Las Vegas Paving Corporation	Golden	Welch	Las Vegas	NV
	Frank LaVoy	Woolsey	Cedar City	UT

5.3. Consultation with Others

Letters and oral comments received by the agencies on the Draft EIS will be reviewed and evaluated by the BLM to determine if information provided in the comments requires formal response or contains new data that identifies deficiencies in the EIS.

5.3.1. Cooperators

As mentioned in **Section 1.4.2**, several agencies are participating as Cooperating Agencies. As such these agencies are consulted on all stages of the EIS preparation and are involved in monthly project phone conferences. These cooperators include:

- Bureau of Indian Affairs
- Moapa Band of the Paiute Tribe
- U.S. Air Force, Nellis Air Force Base
- U.S. Army, Tooele Army Depot
- U.S. Forest Service, Dixie National Forest

5.3.2. Other Agencies

The following state and federal agencies were also consulted during preparation of the EIS:

- Bureau of Reclamation
- Dixie National Forest
- Department of the Interior
    - Office of Hearings & Appeals
    - Office of the Solicitor
- National Park Service
    - National Trails Office
    - Utah State Coordinator
    - Zion National Park
- U.S. Attorney’s Office
- U.S. Fish & Wildlife Service
- Utah State Institutional Trust Lands

5.3.3. Native American Tribal Consultation

On June 15, 2007, the BLM Utah State Office mailed certified notification letters, a project summary, and a project location map to the following 12 Tribal governments and associated cultural resource departments:

- Hopi Tribal Council and Hopi Cultural Preservation Office
- Kaibab Paiute Tribe
- San Juan Southern Paiute Council
- Pahrump Paiute Tribe
- Las Vegas Paiute Tribe
- Moapa Band of Paiutes
- Shoshone-Bannock Tribes
- Confederated Tribes of Goshute Reservation
- Northwestern Band of Shoshone Nation
- Paiute Indian Tribe of Utah
- Skull Valley Band of Goshute Indians
- Uintah and Ouray Tribal Business Committee and Uintah and Ouray Cultural Rights and Protection Department

Several meetings were held with members of the Moapa Band of the Paiutes. These meetings generally included representatives of the BLM, UNEV representatives, third-party environmental contractors, and members of the Tribal Council. The purpose of the meetings was to discuss the environmental analysis process for the project and address tribal concerns. During scoping, a meeting to inform the Tribe was held on August 28, 2007 in Moapa, Nevada.

5.4. List of Preparers and Reviewers

BLM Interdisciplinary Team members and other representatives from Cooperating Agencies were responsible to review the EIS.

Exhibit 5.4-1 BLM Interdisciplinary Team and Technical Specialists

Name	Location	Role
Joe Incardine	Washington, D.C. (Utah State Office)	National Project Manager
Kent Hoffman	Utah State Office	Deputy State Director
Matt Craddock	Utah State Office	Land and Realty Chief
Mike Dekeyrel	Utah State Office	ROW Lead
Rhonda Flynn	Utah State Office	UTSO Lead, Assistant Project Manager
Greg Thayn	Utah State Office	NEPA Specialist
Ron Bolander	Utah State Office	Biology Review
Chris Keefe	Utah State Office	Lead Biological Resources Review

Name	Location	Role
Byron Loosle	Utah State Office	Cultural Resources Review
Lisa Bryant	Utah State Office	Review
Andrew Dubrasky	Cedar City Field Office, Utah	GIS Lead
Randy Trujillo	Cedar City Field Office, Utah	Associate Field Manager
Rob Wilson	Cedar City Field Office, Utah	Field Office Lead
Nancy Allen	Fillmore Field Office, Utah	Acting Field Manager
Joelle McCarthy	Fillmore Field Office, Utah	Lead Cultural Resources, Review
Clara Stevens	Fillmore Field Office, Utah	Field Office Lead
Kathy Abbott	St. George Field Office, Utah	Field Office Lead
Jim Crisp	St. George Field Office, Utah	Field Manager
Glen Carpenter	Salt Lake Field Office, Utah	District/Field Manager
Dave Murphy	Salt Lake Field Office, Utah	Associate Field Manager
Mike Nelson	Salt Lake Field Office, Utah	Field Office Lead
Patrick Gubbins	Nevada State Office	NVSO Manager
Jackie Gratton	Nevada State Office	NVSO ROW Lead
Tom Burke	Nevada State Office	Review
Jane Peterson	Ely Field Office, Nevada	District Energy Coordinator
Brenda Linnell	Ely Field Office, Nevada	Field Office Lead
Doris Metcalf	Ely Field Office, Nevada	Field Office Realty
Rick Baxter	Caliente Field Station, Nevada	Lead Biological Resources Review
Adrian Garcia	Las Vegas Field Office, Nevada	Review
Brenda Warner	Las Vegas Field Office, Nevada	Field Office Lead
Jeffrey Steinmetz	Las Vegas Field Office, Nevada	Review
Susanne Rowe	Las Vegas Field Office, Nevada	Review

Two third-party contractors were employed to prepare this EIS. CH2M Hill and subcontractors (**Exhibit 5.4-2**) prepared resource technical reports detailing the affected environment and analyzing impacts to resources from the Proposed Action and its alternatives. JBR Environmental Consultants, Inc. (**Exhibit 5.4-3**) prepared the EIS by compiling information provided in the technical reports and other information supplied by the proponent, synthesizing analyses from the technical reports into comprehensive analysis of the project, and refining information into a cohesive document.

Exhibit 5.4-2 Third Party Contractor – CH2M Hill

Name	Location	Role/Resource	Education	Years Exp
Regan Giese	Houston	Environmental Permitting Manager	B.A. Anthropology M.A. Anthropology	42
Gabriel Valdes	Flagstaff	Socioeconomics and Environmental Justice; Hazardous and Solid Waste; Biological Resources	B.S. Zoology M.S. Biology	16
Mark Cochran	Tucson	Vegetation, Wildlife, and Special Status Species	B.A. Biology	28
Prabhat Bhargava	Phoenix	Air Quality	B.S. Chemical Engineering M.S. Environmental Engineering	28
Chuck Blair	Boise	Biological Resources	B.S. Wildlife Biology M.S. Wildlife Biology	30
Louise Brown	Portland	Noise	M.S. Environmental Science and Engineering	10
Mark Bastasch, P.E.	Portland	Noise	B.S.,M.S. Environmental Engineering	12
Todd Isakson	Salt Lake City	Water Resources	B.S. Geology	13
Ian Schofield	Salt Lake	Water Resources	B.S. Geology B.S. Environ Science M.S. Geology	6
Wendy Haydon	Sacramento	Land Use and Transportation; Visual and Recreation	B.A. Environemental Studies M.S. Recreation Administration	20
Karen Jarocki	Albuquerque	Hazardous and Solid Waste	B.S. Geology, M.A.Geology	12
Denny Mengel	Boise	Soils	B.S. Wildlife M.S. Forestry Ph.D. Soils	25
W. Geoffrey Spaulding	Las Vegas	Paleontological Resources	BS. Anthropology MS & Ph.D. Geosciences (Paleobiology)	27

Name	Location	Role/Resource	Education	Years Exp
Jay Vanlandingham	Phoenix	Geology and Minerals	B.S. Geology M.S. Geology	16
Subcontractors				
John Ravesloot	Tucson	Cultural Resources	Ph.D. Anthropology	35
Bill Self	Tucson	Cultural Resources	M.A. Anthropology	30
Molly Molenaar	Salt Lake	Native American Concerns	B. A. English M. A. Anthropology	9

Exhibit 5.4-3 Third Party Contractor – JBR Environmental Consultants, Inc.

Name	Location	Role/Resource	Education	Years Exp
Tom Hale	Salt Lake City	Project Manager Senior NEPA review Recreation Resources Visual Resources	B.L.A. Landscape Architecture M.L.A. Environmental Planning M.S. Natural Resources Management	17
Rob Foy	Salt Lake City	Assistant Project Manager Proposed Action and Alternatives Hazardous Materials	B.S. Biology M.E.A. Engineering	31
Claudia Gallegos	Salt Lake City	GIS Specialist Map Creation Resource Disturbance Calculations	B.S. Environmental Studies	6
Erin Hallenburg	Salt Lake City	Air Quality Noise	B.S. Civil Engineering B.S. Biology	27
Spencer Daines	Salt Lake City	Air Quality Noise	B.S. Meteorology	1
Jim Sage	Salt Lake City	Geology & Mineral Resources	B.S. Geology	9
Schelle Davis	Salt Lake City	Soils, Land Use and Transportation	B.A. Environmental Studies	4
Ryan Clerico	Salt Lake City	Water Resources Wetlands Vegetation	B.S. Biology	10

Dave Kikkert	Salt Lake City	Wildlife	B.S. Fisheries & Wildlife M.S. Aquatic Ecology	3
Laura Arneson	Salt Lake City	Special Status Species	B.S. Biology M.S. Biology	6
Jenni Prince Mahoney	Salt Lake City	Cultural Resources Native American Concerns Paleontological Resources	B.S. Anthropology MC NEPA	14
Jon Schulman	Salt Lake City	Socioeconomics Environmental Justice	B.A. English M.A. Journalism M.S. Environmental Engineering	13
Sue Terry	Salt Lake City	Administrative Assistant	Secretarial Science Degree	22

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Appendix A

BLM Interdisciplinary Team Checklists

SLFO

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: UNEV Pipeline　　　　**NEPA Log Number:** UT-USO-07-015

File/Serial Number: UTU-79766　　　　**Project Leader:** J. Incardine/M. Nelson

DETERMINATION OF STAFF:

Determination	Resource	Rationale for Determination	Signature	Date
		CRITICAL ELEMENTS		
NI	Air Quality	PROJECT IS IN A NON-ATTAINMENT AREA (SALT LAKE COUNTY) FOR SO2 AND PM10. ITS ALSO IN A MAINTENANCE AREA (S.L. COUNTY) FOR O3. IT MAY FALL INTO SALT LAKE CITY MAINTENANCE AREA FOR C.O. PROJECT WILL NOT CONFLICT W/ UTAH'S DAQ SIP AND NAAQS WILL NOT BE EXCEEDED. ANY P.M. SHOULD DISPERSE QUICKLY.	B. Clark	2/19/08
NP	Areas of Critical Environmental Concern	resource not present	Pamela Schuller	2/19/08
PI	Cultural Resources	The project will have a significant impact to 30+ National register eligible cultural Resources.	Peter Ainsworth	02/11/08
PI	Environmental Justice	Minority/low income populations are present.	Pamela Schuller	2/19/08
NI	Farmlands (Prime or Unique)	Soil units listed in the Tooele Soil Survey may be designated as prime or unique farmlands, these areas on public lands are not irrigated and are considered Rangelands.	Michael Gates	2/11/08
NI	Floodplains	Soil units listed as floodplain in the Tooele soil survey may be present. The proposed Action would restrict access to individuals [illegible]	Michael Gates	2/11/08
PI	Invasive, Non-native Species	This project is too significant to not have major problems regarding weed spread. PL Party needs to have include weed control along with as part of R/W	[illegible]	2/11/08
PI	Native American Religious Concerns	The Fillmore FIELD OFFICE is HANDLING The Native American Consultation	Peter Ainsworth	02/11/08
NP	Threatened, Endangered or Candidate Plant Species Including Special Status Species	No record of Utah Special Status plants for this Area	Rodd Hardy	2/13/08
NI	Threatened, Endangered or Candidate Animal Species	Isolated habitats may be crossed by the project but most can be avoided or mitigated	[illegible]	2/19/08
PI	Wastes (hazardous or solid)	The proposed ROW goes through the Jacob Smelter OU2 unit boundary + could have adverse issues	M. Nelson	2-20-07
NI	Water Quality (drinking/ground)	water quality resources are present, but should not be impacted enough to warrant further analysis	[illegible]	2/19/08

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

Det ermi-nation	Resource	Rationale for Determination	Signature	Date
NI	Wetlands/Riparian Zones	Isolated riparian areas may occur along proposed route. Riparian areas should be avoided to avoid impacts	[illegible]	2/11/08
NP	Wild and Scenic Rivers	Not present.	[illegible]	2/11/08
NP	Wilderness	Not present.	[illegible]	2/11/08
		OTHER RESOURCES / CONCERNS		
PI	Livestock Grazing	Potential Impacts associated with pipeline Installation through allotments in Tooele County	[illegible]	2/11/08
PI	Woodland / Forestry	Potential Impacts associated with the pipeline installation.	[illegible]	2/19/08
PI	Vegetation	Potential Impacts to vegetation from removal of vegetation during construction	[illegible]	2/11/08
PI	Fish and Wildlife Including Special Status Species other than FWS candidate/listed	Potential Impacts to many sensitive species, migratory birds + raptors.	[illegible]	2/19/08
PI	Soils	Potential Impacts associated to vegetation Removal	[illegible]	2/20/08
NI	Recreation	No impacts to recreation access or opportunities.	[illegible]	2/11/08
NI.	Visual Resources	VRM Class IV in project area.	[illegible]	2/11/08
NI	Geology / Mineral Resources/Energy Production	• mineral resources may occur, but the proposed action should not effect them. • There may be oil & gas leases that are within the path of the proposed action, but the action would not interfear with any possible future oil & gas activity.	[illegible]	2/11/08
NP	Paleontology	There are no known significant paleontological resources along the proposed gas line. If any are located, the AO needs to be contacted immediately	[illegible]	2/11/08
PI	Lands / Access	This is being coordinated with National Project lead in EIS. Access & ROW	[illegible]	2/11/08
NI	Fuels / Fire Management	Standard fire prevention stipulations apply.	[illegible]	2-11-08
PI	Socio-Economics	AUM allocation may change.	[illegible]	2/19/08

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NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

Det ermi-nation	Resource	Rationale for Determination	Signature	Date
NP	Wild Horses and Burros	The are no HMA with in the Papo Park T	[signature]	2/11/2008
NP	Wilderness Characteristics	Not present.	[signature]	2/11/08

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: UNEV Pipeline

NEPA Log Number: Pending (EIS planned)

File/Serial Number: UTU-79766

Project Leader: Clara Stevens

PROJECT DESCRIPTION: Holly Energy Partners is proposing to build a 12" refined petroleum products pipeline from the Holly Refinery in Woods Cross, Utah to Las Vegas, Nevada. The pipeline would generally follow the proposed route of one of the corridors identified in the West-Wide Energy Corridor (WWEC) PEIS. This route generally follows Highway 6 south from where it comes into Juab County to just north of Delta, then the route goes east around Delta, back west to Highway 257 following Highway 257 south to approximately 3+ miles north of Black Rock, the route then goes west to the IPP powerline and follows that corridor into Beaver County. A pumping station is proposed to be built in Millard County. The project would also include the construction of two refined products bulk loading terminals, one in the Cedar City area and one in the north Las Vegas area.

- **Millard County Alternative** (identified on March 10, 2008) – This new alternative leaves Highway 6 approximately 8-10 miles north of Lyndyll and clips the southeast edge of the Little Sahara Recreation Area heading southwest, avoiding private land. Once the alignment enters Millard County it heads west for approximately 16 miles, then southwest to the IPP transmission line, then west along the transmission line for approximately 4 miles, the alignment then heads generally south staying approximately 3-5 miles east of the IPP transmission line, the alignment then ties back into the Highway 257 corridor approximately 2-3 miles south of the Clear Lake town site.

Please complete the checklist, including comments for the proposed route and separate comments for the Millard County Alternative.

MANAGEMENT REVIEW OF PROPOSAL:

Field Office Manager	Date Reviewed	Comments
/s/ Sherry K. Hirst	08/30/2008	

STAFF REVIEW OF PROPOSAL:

Determi-nation	Resource	Rationale for Determination*	Signature	Date
CRITICAL ELEMENTS				
NI	Air Quality	All required mitigation measures for air quality have been incorporated as part of the design criteria within the POD.	/s/Matt Rajala	3/20/2008
NP	Areas of Critical Environmental Concern	There are six ACECs within the Fillmore Field Office according to the current Warm Springs Resource Area and House Range Resource Area RMPs; however none of these are within the	/s/SBonar	3-18-08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		project area.		
PI	Cultural Resources	A programmatic agreement (PA) is in place. The SHPO and Advisory concur with the procedure. Millard County Alternative – Consultation with the SHPO and Advisory Council will be reopened to determine if the PA covers everything.	/s/ Joelle McCarthy	3-20-08
NP	Environmental Justice	Utilizing EPA's Enviromapper, there are no affected groups, or minority or low income populations disproportionately affected within the Fillmore Field Office.	/s/ Matt Rajala	3-20-2008
PI	Farmlands (Prime or Unique)	It is recognized that prime and unique farmlands and farmlands of statewide importance are present and would be intersected by the pipeline. Largely these farmlands are only considered prime and unique if irrigated. No BLM administered lands that would be intersected are currently irrigated. However, private lands along some of the alternatives are private and currently being used for agriculture. If any of these lands are intersected by the pipeline, coordination with the landowner must occur so that the pipeline does not remove lands from agricultural production. The proposed pumping station is the only permanent surface structure that would remove lands from agricultural production. While the location of the pumping station has not been finalized the location of the pumping station shall not permanently remove any potential prime and unique farmlands from production.	/s/ Matt Rajala	3-20-2008
PI	Floodplains	Both of the proposed routes for the pipeline would cross floodplains. At a minimum, 100yr flood event planning must be incorporated into the design criteria for the construction of the pipeline.	/s/ Matt Rajala	3-20-2008
PI	Invasive, Non-native Species	See attachment for mitigation measures.	/s/ RB Probert	3/19/2008
PI	Native American Religious Concerns	Consultation is on-going	/s/ Joelle McCarthy	3-20-08
NP	Threatened, Endangered or Candidate Plant Species	There are no known federally listed plants within either the Millard County Alternative or the proposed corridor on BLM lands within the Fillmore Field Office	/s/DWhitaker	3/19/08
	Threatened, Endangered or Candidate Animal Species			
NP	Wastes (hazardous or solid)	Same comment for either route. All required mitigation measures for hazardous or solid wastes have been incorporated as part of the design criteria within the POD.	/s/B Crosland	3/20/08
PI	Water Quality (drinking/ground)	The proposed and alternative routes would cross existing water pipelines and associated troughs or ponds as identified on field office allotment and project maps. If construction and mitigation measures, as identified in the POD are followed, there should be no impact to either surface or subsurface water quality for the proposed or alternative routes as a result of construction activity. There are potential impacts to surface or subsurface water quality if pipeline integrity is compromised by natural events, human caused accidents or pipeline failure.	/s/ Paul Caso	3/18/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
PI	Wetlands/Riparian Zones	With either the proposed action or the Millard County Alternative there are riparian areas along and near the Sevier River Channel and Old Sevier River Channels. The wetlands in the Millard County Alternative do not receive enough water to support many riparian species which would normally be present since much of the water which would naturally flow to this area has been used for irrigation. While those along the Sevier River in the proposed action do not lack water and the species which are present are those which would naturally occur in soils which are wet much of the time. Along the Millard County Alternative there are riparian areas along the Sevier River Channel, the old river channels and several large wet areas including Swan Lake Salt Marsh, Swan Lake and Crafts Lake. The proposed pipeline would go between Swan Lake Salt Marsh and Swan Lake. The Swan Lake Salt Marsh is in the SWSE of section 25 and in most of section 36 of T.18S., R.9W. Crafts Lake is in the E1/2 of the SE1/4 of section 12 and in the NE1/4NE1/4 of section 13 of T.18S., R.9W. and in the E1/2 SW1/4 of Section 7 of T.18S., R.8W. Riparian areas along the Sevier River Channel which would be crossed by the pipeline are in sections 12 & 13 of T.18S., R.9W. Mudflats which are dry most of the time and support little or no vegetation are along the proposed route in section 31 of T.18S., R.6W., sections 6,7 & 18 of T.19S., R.7W., and in sections 11, 14 & 15 of T.15S., R.8W. Where these riparian areas can be avoided they should be. Where they cannot be avoided the disturbed areas need to have rehabilitation measures which would include planting species which are likely to grow in the type of riparian areas which are highly alkaline. Species which are most likely to become established include saltgrass, alkali sacaton and alsike clover in the dryer areas. In those areas which have water more frequently and for a longer duration species such as the following could be planted. Nebraska sedge, Baltic rush, saltgrass, alsike clover and alkali bulrush. Most of these species do not establish well by seeding and plugs would need to be planted (the only exceptions would be alkali sacaton and alsike clover). Mud flats which support little or no vegetation would not be seeded or planted with anything. The proposed action would have the pipeline pass south & east of Delta and goes through some mud flats in sections 12, 13 & 14 of T.19S., R.8W. and across mud flats, riparian vegetation along drainage ditches and other wetlands from the eastern part of section 11 of T.18S., R.6W. through the northern part of Sections 28 of T.18S., R.7W. Much of the riparian areas along this proposed route can be avoided. However, where the pipeline would cross the Sevier River upstream from the DMAD Reservoir is a sizeable wetland and riparian area which cannot be avoided. Seeding and planting of riparian species would be the same as for the Millard County Alternative except in the wetlands along the Sevier River where plantings should include species which would be more likely to grow in more moist soils than those in the Millard County Alternative. Examples of such species include coyote willow, Geyers	/s/ Bill Thompson	3/19/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		Willow, creeping spikerush and Cattail. Mud flats which support little or no vegetation would not be seeded or planted with anything.		
NP	Wild and Scenic Rivers	The National Wild and Scenic River inventory does not identify any Wild and Scenic Rivers within the Fillmore Field Office Area.	/s/SBonar	3-19-08
NP	Wilderness/WSA's	There are no wilderness/WSAs, as identified in the House Range Resource Area and Warm Springs Resource Area RMPs, within the two alternatives currently proposed for this project.	/s/SBonar	3-18-08
NI	Rangeland Health Standards and Guidelines	The proposal would not affect the rangeland resources to the point that the land through which the pipeline would pass, would not continue to be in compliance with the Rangeland Health Standards and Guidelines as long as disturbed areas where there is existing vegetation are successfully reseeded.	/s/ Bill Thompson	3/11/08
PI	Rangeland Management	The proposed pipeline crosses over water pipelines and through allotment and pasture fences. Any damage to the fences and waterlines must be repaired. There are several grazing allotments involved in either alternative. The proposed pipeline must be at least fifty feet from water troughs and fences (except where the proposed pipeline would cross them). There are several stock watering reservoirs along the proposed routes. The project should be designed to avoid disruption of the flow of water to these reservoirs and to avoid disturbance to them that would prevent them from functioning properly. All sites that are disturbed must be leveled and seeded except where there is no existing vegetation. Where protection fences are established along disturbed areas for vegetation rehabilitation either access for cattle to cross the disturbed area must be established or new water developments may be required in specific areas to allow livestock to graze on both sides of the protected areas.	/s/ Bill Thompson	3/11/08
NP	Woodland / Forestry	No impacts to forestry due to limited forestry products on routes.	/s/B Crosland	4/23/07
PI	Vegetation including Special Status Plant Species other than FWS candidate or listed species	*Sphaeralcea caespitosa* (Jones globemallow) has been found in salt desert shrub communities east of the Cricket Mountains four miles south of the point where the Millard County Alternative and the Proposed Route join back together. In addition to the Jones globemallow, there are three other plant species that occur on sandy soils, semi-stabilized dunes, or active sand dunes that need to be addressed: *Penstemon angustifolius* var. *dulcis* (Neese narrowleaf penstemon), *Cymopterus acaulis* var. *parvus* (small spring parsley), and *Atriplex canescens* var. *gigantea* (giant fourwing saltbush). The Millard County Alternative intersects 8-10 miles of potential sandy habitat for these three species north of IPP and the section just south and southeast of Little Sahara Recreation Area (LSRA). The Proposed Action, however, only intersects a small portion of potential habitat southeast of LSRA. All plant surveys for the four species mentioned above will need to be completed during the appropriate time of year when the particular plants in question can be found and positively identified by a qualified Botanist that has been approved by the BLM in advance. Plant surveys will be completed on BLM, state and private lands. Both the project proponent and the	/s/DWhitaker	3/19/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		BLM-approved Botanist should coordinate with the BLM prior to starting plant surveys in order to clearly define survey methods, plant survey protocols, and the required products of the plant surveys (i.e. maps, reports, survey forms, etc.).		
	Fish and Wildlife Including Special Status Species other than FWS candidate or listed species e.g. Migratory birds.			
NI	Soils	All required mitigation measures for soils have been incorporated as part of the design criteria within the POD.	/s/Matt Rajala	3/20/2008
NI	Recreation	Based upon impacts from other existing/similar projects, impacts to casual recreation may result in increased OHV use on the unvegetated pipeline. The pipeline may be seen as a new route for casual OHV use. The Lynndyl Alternative passes through the southeast corner of the Little Sahara Recreation Area (LSRA). Due to the location of this route, recreation at LSRA wouldn't be impeded.	/s/SBonar	3-18-08
PI	Visual Resources	The Proposed Alternative and the Lynndyl Alternative pass through VRM Class III and Class IV and pass near VRM Class II as identified in the House Range and Warm Springs RMPs. The Millard County Alternative passes near VRM Class III and through VRM Class IV. Each of the three pipeline alternatives may impact future view sheds in either direction. See the VRM Report for more details.	/s/SBonar	3-18-08
PI	Geology / Mineral Resources/Energy Production	The project area is seismically active. These lands are open to location under the mining law. There is currently no activity on any claims in the area. There are currently three Free-Use Permits in the vicinity of the proposed right of way. Millard County has two; sec. 1 T16S R9W and sec. 24 T23S R11W, UTU 79851 and 72833-10 respectively. Utah Department of Transportation has the other in secs. 19 and 30 T23S R9W, UTU 72857. Coordination with these permit holders is necessary.	/s/ J Mansfield	03/21/2008
NI	Paleontology	Adequate mitigation measures for paleontological resources have been incorporated as part of the design criteria within the POD.	/s/ J Mansfield	03/21/2008
PI	Lands / Access	As described in the Plan of Development, the proposed action would not affect access to public land. Proposed project would be subject to valid prior existing ROWs. Coordinate proposed project with ROW holders and adjacent non-federal landowners. See attached Realty/Access Report, for existing ROWs and mitigation measures.	/s/ CStevens	03/21/2008
NI	Fuels / Fire Management	No impact due to nature of project	/s/JCJ	10/18/06
NI	Energy Resources	Recognizing that this is an energy project; this action will not have a direct or indirect adverse impact on energy development, production, supply and/or distribution within the Fillmore Field Office. The lands are prospectively valuable for oil and gas and there is wind energy interest in the area, but again there will be no direct impact within the Fillmore Field Office.	/s/ J Mansfield	03/21/2008
NI	Socio-economics	There would be some short term impacts to socioeconomics related to the construction phase of the project. These impacts are not expected to be significant in context or intensity. Future development opportunities may be present with the location of the pipeline; however, these impacts would be speculative and	/s/ Matt Rajala	3/21/2008

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		therefore are not analyzed.		
NP	Wild Horses and Burros	The project area is not adjacent to or within any designated wild horse Herd Management Areas (HMAs) managed by the Fillmore Field Office.	/s/ EReid	3/20/2008
NP	Wilderness characteristics	The BLM wilderness characteristics inventory process did not identify any wilderness characteristics for this area as identified in the Final Wilderness EIS (cite!)	/s/SBonar	03/19/08
PI	Prevention/Education (Fire)	The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and rehabilitation. In the event of a fire, personal safety will be the first priority of the holder or its contractors. The holder or its contractors will: 1. Operate all internal and external combustion engines on federally managed lands per 36 CFR 261.52, which requires all such engines to be equipped with a qualified spark arrester that is maintained and not modified. 2. Carry shovels, water, and fire extinguishers that are rated at a minimum as ABC - 10 pound on all equipment and vehicles. 3. Initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If a fire spreads beyond the capability of workers with the stipulated tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes. 4. Notify the Richfield Interagency Fire Center at 435-896-8404, immediately of the location and status of any escaped fire or call 911. 5. Notify the BLM of the incident. 6. When welding, grinding, cutting or conducting other similar, spark-producing work, choose an area large enough to contain the sparks that is naturally free of all flammable vegetation or remove the flammable vegetation in a manner compliant with the permitted activity. If adequate clearance cannot be made, wet an area large enough to contain all sparks prior to the activity and periodically throughout the activity to reduce the risk of wildfire ignition. Regardless of clearance, maintain readiness to respond to an ignition at all times. In addition, keep a shovel per person and at least one fire extinguisher as specified earlier (#2) on hand during this activity.	/s/ Wwilding	03/17/08
PI	Other	Actions have been proposed to Congress through a coalition group to establish the Red Rock Wilderness. BLM has not identified any wilderness characteristics in this area. The Red Rock Wilderness Act may or may not be passed in Congress.	/s/ SBonar	03/19/08

Reviewer Title	Signature	Date	Comments

NEPA / Environmental Coordinator			
Authorized Officer			

Noxious Weed Clearance Fillmore Field Office

Date: 3/19/08 **Examiner:** R.B. Probert

Project Name: Holly UNEV Pipieline

Project Location: See Proposal

County: See proposal

General Comments and Background: Noxious weeds are those exotic plant species having noxious characteristics and are of economic and/or environmental significance. Noxious weeds are designated and regulated by various State and Federal laws.

Invasive weeds are exotic species that have become naturalized in a location to levels that total control is infeasible due to extensive weed establishment and/or treatment costs.

In Millard County the following species have been identified and documented: White top also known as Hoary Cress (Cardaria draba), Squarrose knapweed (Centaurea virgata), Russian knapweed (Centaurea repens), Scotch thistle (Onopordum acanthium), Musk thistle (Carduus nutans), Perennial pepperweed (Lepidium latifolium), Spotted knapweed Centaurea maculosa, and Purple loosestrife (Lythrum salicaria).

In Juab County the following species have been identified and documented: White top also known as Hoary Cress (Cardaria draba), Squarrose knapweed (Centaurea virgata), Russian knapweed (Centaurea repens), Scotch thistle (Onopordum acanthium), Musk thistle (Carduus nutans), Leafy spurge (Euphorbia esula), Perennial pepperweed (Lepidium latifolium), Spotted knapweed Centaurea maculosa, Purple loosestrife (Lythrum salicaria), and Dalmation toadflax (Linaria genistifolia).

Presently these species have not been documented within Juab or Millard counties. They are a concern due to locations in surrounding areas. Species of concern are Black henbane (Hyoscyamus niger), Camelthorn (Alhagi pseudalhagi), Yellow starthistle (Centaurea solstitialis), Diffuse knapweed (centaurea diffusa), and Poison hemlock (Conium maculatum).

Noxious Weeds Located Within Project Area: There are known noxious weeds located within the project area. The north end of the proposed route is known to have large infestations Squarrose knapweed and some small infestations further south along the proposed route. Also the Millard County alternative has some Squarrose knapweed scattered throughout the proposed route.

Noxious Weeds Located near the Project Area:

Mitigation: To eliminate the spread of noxious/ invasive weeds throughout the field office area one or both mitigation measures will be implemented:

1- (x) Equipment will be cleaned prior to entering the proposed project area to minimize the introduction of noxious/invasive weeds in other areas.
2- (x) Equipment will be cleaned prior to exiting the project area.

Date//

Signature//

Visual Resource Management (VRM) Report
Steve Bonar, Recreation Specialist
April 9, 2008

Holly/UNEV Pipeline
UTU-79766

Project Location:	**Juab County**	**Millard County**
	T. 10 – 14 S., R. 3-4 W.	T. 15-26 S., R. 5-11 W.
	various sections	various sections

The Proposed Alternative and the Lynndyl Alternative pass through VRM Class III and Class IV and pass near VRM Class II as identified in the House Range and Warm Springs RMPs. The Millard County Alternative passes near VRM Class III and through VRM Class IV.

Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV: The objective of this class is to provide for management activities which require major modification to the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements

Each of the three pipeline alternatives may impact future view sheds in either direction.

/s/ Steve Bonar

*Realty/Access Report
Clara Stevens, Realty Specialist
March 20, 2008

Holly/UNEV Pipeline
UTU-79766

Project Location:	**Juab County**	**Millard County**
	T. 10 – 14 S., R. 3-4 W.	T. 15-26 S., R. 5-11 W.
	various sections	various sections

Mitigation Measures:

- Existing roads and trails would be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than four inches remaining on the roads from the project would be repaired at the Authorized Officer's discretion.

- Generated trash/debris should be removed from public land and discarded at an authorized facility.

- The proposed project would be subject to valid prior existing rights-of-way (ROW). The Master Title Plat (MTP) and LR2000 Geo Report shows the following existing rights-of-way (ROW) within the project area. The proposed project is subject to these existing ROWs. These ROW holders should be contacted and coordinated with if their ROW would be affected by this project.

Rights-of-way that may be affected by Proposed Route

UTSL-11073 UTSL-16969 UTU-44448
Los Angeles and Salt Lake Railroad
4416 Dodge Street
Omaha, Nebraska 68179

UTSL-27231
Central Utah Water Co.
Phil Nielson
Lynndyl, UT 84640

UTSL-34200
Utah Division of Water Resources
PO Box 146201
Salt Lake City, UT 84114-6201

UTSL-62152 UTSL-62931 UTSL-66229 UTSL-67497 UTSL-69265 UTU-42667
UTU-51141 UTU-53166 UTU-72919 UTU-12512 UTU-25863 UTU-67497
UTU-69205 UTU-99205 UTU-115872
Federal Highway Administration
2520 W. 4700 S. #9-A
Salt Lake City, UT 84118-1847

UTU-57RR UTU-94RR
Union Pacific Railroad
422 W. 6th Street
Los Angeles, CA 90014

UTU-61RR
Tintic Valley Railroad
Salt Lake City, UT 84111

UTU-320RW UTU-8574 UTU-14023 UTU-43517 UTU-57024 UTU-63468
UTU-75948 UTU-46158 UTU-73133 UTU-133566 UTU-141196
PacifiCorp DBA UP&L
1407 W. North Temple #110
Salt Lake City, UT 84116

UTU-42199 UTU-44368 UTU-43199 UTU-83209-Pending
Graymont Western U.S. Inc.
3950 S. 700 E. #301
Salt Lake City, UT 84107

UTU-51890
Frontier Communications
40 W. 100 N.
Tremonton, UT 84337

UTU-51941 UTU-54112
Bureau of Land Management
35 E. 500 N.
Fillmore, UT 84631

UTU-51960

Bureau of Land Management 35 E. 500 N. Fillmore, UT 84631	&	Utah Division of State Lands PO Box 652 Richfield, UT 84701

UTU-51961

Bureau of Land Management 35 E. 500 N. Fillmore, UT 84631	&	Utah Department of Transportation 1470 N. Airport Road Cedar City, UT 84720

UTU-58574 UTU-75938 UTU-79476-Pending UTU-80192
Millard County
71 S. 200 W.
Delta, UT 84624

UTU-68170
Questar Pipeline Co.
PO Box 45360
Salt Lake City, UT 84145-0360

UTU-72901
Utah Department of Transportation
1470 N. Airport Road
Cedar City, UT 84720

UTU-75932
Citizens Communication
40 W. 100 N.
Tremonton, UT 84337

UTU-75937
Central Utah Telecom Services, LLC
PO Box 7
Fairview, UT 84629

UTU-78540
Skyline Telecom
PO Box 7
Fairview, UT 84629

UTU-44134
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

UTU-69195
Federal Aviation Administration
1601 Lind Avenue Southwest
Renton, WA 98055-4056

UTU-75943
Bliss Dairy
818 Bristlecone Lane
Delta, UT 84624

UTU-82046-Pending
Ridgeline Energy, LLC
4 Nickerson, Suite 301
Seattle, WA 98109

UTU-82047-Pending
Milford North Wind Park
Wasatch Wind Development LLC
357 W 910 S
Heber City, Utah 84032

UTU-820478-Pending
Mormon Mesa Power Partners, LLC
c/o Champlin Wind
Box 540
Santa Barbara, CA 93012

<u>Rights-of-way that may be affected by the Millard County Alternative</u>

UTSL-24585
Desert Irrigation Company
Jerry Skeem
5275 S. 2950 W.
Oasis, UT 84650

UTU-2234
PacifiCorp DBA UP&L
1407 W. North Temple #110
Salt Lake City, UT 84116

UTU-45882
IPP Operating Agent
P.O. Box 51111 Rm. 1208
Los Angeles, CA 90051-0100

UTU-78473
UNAVCO Inc.
6350 Nautilus Drive
Boulder, CO 80301

UTU-3842
Federal Highway Administration
2520 W. 4700 S. #9-A
Salt Lake City, UT 84118-1847

<u>Rights-of-way that may be affected by BOTH the Proposed Route and the Millard County Alternative</u>

UTU-42519 UTU-45883
IPP Operating Agent
P.O. Box 51111 Rm. 1208
Los Angeles, CA 90051-0100

UTU-59239
Worldcom Network Services, Inc.
6929 N. Lakewood Avenue
Tulsa, OK 74117

UTU-60642
City of Los Angeles
PO Box 111
Los Angeles, CA 90051

UTU-80667
Sierra Pacific Communications
PO Box 10100
Reno, NV 89520

UTU-81962 UTU-82972-Pending UTU-82973-Pending UTU-83210-Pending
Milford Wind Corridor 1, LLC
1 Capital Plaza
Concord, NH 03301

UTU-54024
PacifiCorp DBA UP&L
1407 W. North Temple #110
Salt Lake City, UT 84116

UTU-78850
AT&T
1200 Peachtree Street
Atlanta, GA 30309

UTU-80712 Telescope Array Project ROW encompasses 200,000+ acres
University of Utah
Physics Department
201 James Fletcher Building
Salt Lake City, UT 84112

(Millard County Alternative goes through the middle of this project, the proposed action is on the edge of the project, but could affect access.)

/s/ Clara Stevens

CC FO

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: Holly Energy

NEPA Log Number: UT-

File/Serial Number: UTU-79766

Project Leader: Ervin Larsen

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		CRITICAL ELEMENTS		
NI	Air Quality	Air quality in central Iron and Beaver Counties is good, as is typical of relatively undeveloped areas of the western United States. Air quality is currently meeting state standards. This proposal would increase ambient dust and exhaust emissions from vehicle / construction machinery, which would quickly settle or disperse, resulting in no long term impact to air quality.	C. Egerton	09/29/06
NP	Areas of Critical Environmental Concern	There are no ACEC's in the Planning Area.	W. Judy	09/26/06
PI	Cultural Resources	How big a job this turns out to be depends on how the APE for this project coincides with those for the 2 Kern River undertakings. If they are very close, there may not be much cultural left to do. But there will be some either way, particularly if we get a reroute around Pinnacle Pass, and just sorting it out will be a task A lot of review, too, as well as orienting the mitigation research design. I would think that cultural would want at least 100 hours for this – we put more than that into Kern 2. Good job for Noel.	G. Dalley	09/29/06
	Environmental Justice			
PI	Farmlands (Prime or Unique)	Soils in the project area are capable of becoming prime or unique farmlands when irrigation water is applied. There are no known prime or unique farmlands on public lands in the proposal area. However, with the scale of the map currently available, I cannot tell if prime or unique farmlands occur on private lands, but I suspect they do especially near New Castle. Prime and unique farmlands must be assessed as a critical element to determine presence or absence and any effects upon them.	C. Egerton	09/29/06
PI	Floodplains	The project crosses several flood plains including the Beaver River, The Big Wash, Dick Palmer Wash, and others. The project may involve fills, diversions, placement of facilities in	C. Egerton	09/29/06

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		flood plains. As such, the project must be analyzed for and comply with Executive Order 11988		
PI	Invasive, Non-native Species	Applicant would be responsible for any noxious weeds within the ROW, weeds must be managed according to BLM policy. If any noxious weeds are present during construction phase, treating &/or avoiding is necessary to avoid spreading. Use of clean equipment in the project area to prevent any possible carrying or transferring of noxious weed seed.	J. Bulloch	10/10/06
PI	Native American Religious Concerns	Consultation initiated on April 20, 2007. Please notify the Tribe of changes to the project, and the location of cultural sites, and type of resources found.	A Stanworth	04/20/07
NP	Threatened, Endangered or Candidate Plant Species	There are no known occurrences of Threatened, Endangered, or Candidate plant species within the Cedar City Field Office.	C. Pontarolo	9/27/06
PI	Threatened, Endangered or Candidate Animal Species	Will need to address bald eagle in EA (winter construction). Might require a portion to be inventoried for UPD; I need to think about this. Informal consultation. 1 day for BE, 5 more if we involve UPD.	R. Bonebrake	04 October 2006
NI	Wastes (hazardous or solid)	All fuels, oils and/or chemicals used for the operation will need to be stored within secondary containment. Any transfer or on-site fueling will also require containment in order to confine any spills. Should any spills occur, they will require reporting and cleanup in accordance with all State and Federal regulations.	R. Peterson	09/27/06
PI	Water Quality (drinking/ground)	Safeguards for water quality are not known at this time. Project should incorporate safeguards to assure no leakage into the aquifer and / or surface waters. Primary concern is groundwater contamination, but there may be surface water concerns as well. Potential impacts to water quality must be analyzed.	C. Egerton	09/28/06
PI	Wetlands/Riparian Zones	Project is likely an NI. However, this needs to be verified. Need <½ day unless something is found, then will need a few days more.	R. Bonebrake	04 October 2006
NP	Wild and Scenic Rivers	There are no WSR's in the Planning Area	W. Judy	09/26/06
NP	Wilderness	No designated wilderness areas or WSA's are on or adjacent to the project area as proposed.	W. Judy	09/26/06
NI (If stipulations are adhered to)	Rangeland Health Standards and Guidelines	Short-term livestock disturbance would be expected during construction activities. Livestock grazing may occur at any time of the year on the project line due to the number of allotments and different seasons of use that the project encompasses. The majority of the allotments in the northern portion of the project area are fall/winter permits. Where livestock grazing occurs during construction it would be expected that livestock distribution would be temporarily impaired due to increased traffic, noise, etc..... The disturbance would be expected to be short-term in nature. Avoidance of range improvement projects is recommended. If it is impossible to avoid range improvement projects the company will be responsible for maintenance of the projects to BLM standards. Recommend at a minimum a 200 foot buffer from developed and undeveloped springs utilized by livestock to alleviate any impacts from noise, increased traffic, etc... Gates along the project line would need to remain closed to alleviate livestock trespass. The company would be responsible for avoidance of noxious weeds along the project	D. Fletcher Richard Barry	9/27/06 9/29/06

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		line. Following disturbance the company would also need to be held responsible to plant an aggressive BLM seed mix along the entire project line to alleviate noxious weed, cheatgrass and halogeton concerns. It is expected that if the above stipulations are adhered to that there would not be impacts to the Rangeland Health Standards and Guidelines. The majority of allotments in the central portion of the project area is a mixture of year round and fall/winter permits. The same stipulations as written above apply.		
PI (4 hours)	Livestock Grazing	Refer to the Rangeland Health Standards and Guidelines. It is expected that if the stipulations identified in the Rangeland Health Standards and Guidelines are adhered to that there would be short-term impacts to livestock distribution throughout the allotments due to the increased traffic, noise, etc...	D. Fletcher Richard Barry	9/27/06 9/29/06
NI	Woodland / Forestry	It is unlikely that this proposal will have any substantial or significant effects on forest/woodland resources as most of the corridor through Iron and Beaver counties is through non-wooded vegetation type and/or follows existing ROW corridors.	Doug Page I will probably not need more than a day's time.	10/4/06
PI	Vegetation including Special Status Plant Species other than FWS candidate or listed species	Possible special status plant species (*Penstemon pinorum*) may occur in the vicinity of the ROW on USFS administered lands. Special status plant field surveys may be required for the ROW. Other rare plants (*Eriogonum batemanii, Sclerocactus spinosior*) may occur in the vicinity of the ROW.	C. Pontarolo 40-80 hours estimated for Special Status Plants and Wildlife including Special Status Animals: depending on level of involvement and other workloads.	9/27/06
PI	Fish and Wildlife Including Special Status Species other than FWS candidate or listed species e.g. Migratory birds.	Special status species that may occur in the area include but are not limited to ferruginous hawk, kit fox, burrowing owl, dark kangaroo mouse, and greater sage grouse. The area is also crucial yearlong pronghorn habitat. Mule deer habitat in the area is identified as crucial summer and winter, as well as fawning habitat. Wildlife surveys would need to be completed. Entire line needs raptor clearance. Should review & try to use stips from Kern River, add as necessary. 40 hours minimum.	C. Pontarolo R. Bonebrake	9/27/06 04 October 2006
PI	Soils	Soils would be disturbed by construction activities, possible access roads, etc. An assessment of amount of pre-disturbed vs. new disturbance should be made in the NEPA document. Much of the soils information is available in the NRCS Iron County soil survey.	C. Egerton Probably looking at about 24 hours for all resources working with contractor to complete the NEPA	09/29/06
NI	Recreation	Other than a minor amount of dispersed recreation, there are no existing recreation resources which would be affected as a result of this proposal.	W. Judy	09/26/06
NI	Visual Resources	Project as proposed is consistent with existing VRM classifications.	W. Judy	09/26/06
NI	Geology / Mineral Resources/Energy Production	The proposed project would not substantially impact any existing or proposed mineral exploration or development projects. Any mineral resources that might be present in the proposed project area would not be substantially impacted by the proposal.	Ed Ginouves	9/26/06
	Paleontology			

Determi-nation	Resource	Rationale for Determination*	Signature	Date
PI	Lands / Access	Project will require ROW analyses. Will likely interact with other projects in corridors.	E Larsen	10/03/06
NI	Fuels / Fire Management	This resource would not be impacted as long as the company takes precautions not to start any fires with pipeline construction or vehicles.	M Mendenhall	10/4/06
	Socio-economics			
PI	Wild Horses and Burros	The project would run along the Westside of the Chloride Wild Horse Herd Management Area (HMA). During the construction of the project horses would be moved out of the area by the disturbance. This could result in the horses having to move into areas with less productive water and forage sources. However, this disturbance would be temporary. Another possible impact would be the contamination of ponds on the BLM and Private lands within and next to the HMA. If the project had a major product spill in the area waters could become contaminated. Mitigation to provide fresh water for horse in this instance is needed.	C. Hunter 8-16 hours depending on how proposed action mitigates possible spills.	10/05/06
NP	Wilderness characteristics	The project areas as proposed does not include any areas currently included in proposed wilderness legislation or areas that possess or are likely to possess wilderness characteristics.	W. Judy	09/26/06

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
NEPA / Environmental Coordinator			
Authorized Officer			

Follow the italicized instructions below and then delete the asterisks "" in the checklist, this sentence, and the instructions.*

**Rationale for Determination is required for all "NIs" and "NPs." Write issue statements for "PIs"*
*** Varies by specific location and BLM Field Office*

SGFO

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: Holly Energy Petroleum Line (UNEV pipeline)

NEPA Log Number: UT-USO-07-015

File/Serial Number: UTU-79766

Project Leader: Kathy Abbott

Project Description: Holly Energy Partners is proposing to install a 12" liquid petroleum pipeline from their Woods Cross refinery in Salt Lake City to northeast Las Vegas. In Washington County the alignment would be within the Kern River corridor. Trenching and construction activities along the route will be limited to a 100 foot wide maximum disturbance on public land. Soils and vegetation will be stabilized using water bars, sediment barriers, seeding, etc. Work areas and stockpiles will be watered for dust suppression. Cultural inventories have been conducted. A Cultural Resources Monitoring and Discovery Plan has been prepared. Construction within desert tortoise habitat will occur during hibernation. If construction is necessary during active season, surveys, monitoring and mitigation measures will be coordinated with FWS and the BLM. A reclamation plan will be developed.
(See map attached at the bottom of checklist)

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

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NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		CRITICAL ELEMENTS		
PI	Air Quality	Analyze impacts in EIS	D. Corry	3/24/08
PI	Areas of Critical Environmental Concern	Approximately 4.3 miles of pipeline will need to be constructed within the Beaver Dam Slope ACEC. This ACEC contains critical habitat for the desert tortoise, the proper management of which is considered essential for the continued survival of the population in is this part of the Northeastern Mojave Recovery Unit.	D. Kiel	4/7/08
PI	Cultural Resources	Analyze impacts to historic properties in EIS, based on recent Class III inventory conducted for this project.	G.McEwen	
PI	Environmental Justice	Analyze in EIS	D. Ferris-Rowley	
NP	Farmlands (Prime or Unique)	No Prime and Unique farmlands are present in the proposed pipeline route in Washington County, Utah.	D. Corry	3/24/08
NP	Floodplains	No Floodplains are present in the proposed pipeline route in Washington County, Utah.	D. Corry	3/24/08
PI	Invasive, Non-native Species	There are a few existing infestations of Scotch thistle on the Kern River pipeline ROW. There is a potential that this activity will	K Leany	4/3/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		scatter seed from these infestations as well as introducing new invasives via vehicles and machinery. Precautionary measures, such as avoiding existing infestations where possible and cleaning vehicles and machinery if needed prior to public land entry, should be made mitigative requirements for this project.		
PI	Native American Religious Concerns	BLM will conduct consultations with culturally-affiliated American Indian Tribes to identify and mitigate such concerns related to this proposal.	D. Ferris-Rowley	
NP	Threatened, Endangered or Candidate Plant Species	No Threatened, Endangered, or Candidate plant species occur along the proposed route.	R. Douglas	4/17/08
PI	Threatened, Endangered or Candidate Animal Species	The project passes through low to medium densities of desert tortoises (<u>Gopherus agassizii</u>, Federal Threatened Species) within the Beaver Dam Slope ACEC. Prior to any surface disturbances, the areas of anticipated disturbance within desert tortoise habitat should be marked on the ground, and a survey conducted to determine potential impacts to tortoises (qualified biologist). Desert tortoises, or tortoise dens should be clearly marked on the ground so they can be avoided during construction. To provide maximum mitigation to desert tortoises and habitat, and to provide compensation for loss of habitat, the "Utility Protocols" used on past major projects along this corridor should be followed through all phases of this project. To improve restoration success, a restoration plan should be developed that would include areas to be reseeded and species to be seeded. California condors (<u>Gymnogyps californianus</u>, Federal Endangered Species) may use the project area infrequently for hunting and foraging. No nests, roosts, or other special use areas for California condors have been identified in the project area. During the period of installation of the pipeline, any California condors using the project area could be disturbed and forced to use adjacent habitat. The effects on California condors should be minimal and short term. After completion of the project, California condors would likely return to the area for foraging purposes.	R. Douglas	4/17/08
NP	Wastes (hazardous or solid)	No known issues	R Schreiner	03/27/08
PI	Water Quality (drinking/ground)	Analysis in chapter three in proposed EA adequately addresses water quality resource issues.	D. Corry	3/24/08
PI	Wetlands/Riparian Zones	Analysis in chapter three in proposed EA adequately addresses Wetland/Riparian resource issues.	D. Corry	3/24/08
NP	Wild and Scenic Rivers	There are no Wild and Scenic River segments affected by this project. This includes any segments that are classified as eligible, suitable, or designated.	D. Kiel	4/7/08
NP	Wilderness	The proposed project does not affect any designated wilderness or wilderness study areas	D. Kiel	4/7/08
OTHER RESOURCES / CONCERNS**				
NP	Rangeland Health Standards and Guidelines		K Leany	4/3/08
PI	Livestock Grazing	Approx, 11/2 miles of 11/2 inch PE pipeline in the Jackson spring area has been damaged and compromised by previous utility installations along this corridor. Livestock operators report that the line is now, more shallow due to repeated grading of the road and is more susceptible to damage causing them more effort to keep it functional. Replacing the pipeline with stronger pipe and	K Leany	4/3/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		burial much deeper along the existing route would mitigate this problem. Rehabilitation will likely require protection from livestock grazing for several years and a description of the current grazing operations along the utility corridor would be useful.		
NI	Woodland / Forestry	Few wood lands remain along proposed project route, due to fires and previous activities.	K Leany	4/3/08
PI	Vegetation	Vegetation will be damaged or destroyed and rehabilitation will be required similar to previous activities in this corridor.	K Leany	4/3/08
PI	Special Status Plant Species other than FWS candidate or listed species	The following Special Status plant species may occur in the project area: Baird camissonia (Camissonia bairdii), Nevada willowherb (Epilobium nevadense), and pinyon penstemon (Penstemon pinorum). Prior to any on the ground disturbances, a biological survey should be conducted to identify populations of these species which may occur in the project area. Any populations found within the project area should be clearly marked, and avoided if possible.	R. Douglas	4/17/08
PI	Fish and Wildlife Including Special Status Species other than FWS candidate or listed species eg. Migratory birds.	The following Special Status Species may occur in the project area: burrowing owl (permanent resident, uncommon), ferruginous hawk (permanent resident, uncommon), greater sage grouse (permanent resident, uncommon), Lewis' woodpecker (permanent resident, rare), Northern goshawk (permanent resident, rare), short-eared owl (transient, rare), bald eagle (winter visitor, uncommon), big free-tailed bat (summer resident, rare), fringed myotis (permanent resident, uncommon), kit fox (permanent resident, uncommon), pygmy rabbit (permanent resident, uncommon), spotted bat (permanent resident, rare), Townsend's big-eared bat (permanent resident, fairly common), Western red bat (permanent resident, extremely rare), desert sucker (permanent resident, fairly common), Virgin spinedace (permanent resident, fairly common), Arizona toad (permanent resident, fairly common), Common chuckwalla (permanent resident, uncommon), desert iguana (permanent resident, rare), Desert night lizard (permanent resident, uncommon), Gila monster (permanent resident, rare), Mojave rattlesnake (permanent resident, uncommon), Sidewinder (permanent resident, fairly common), Speckled rattlesnake (permanent resident, uncommon), Western banded gecko (permanent resident, uncommon), Western threadsnake (permanent resident, rare), Western toad (permanent resident, uncommon), and Zebra-tailed lizard (permanent resident, fairly common). The project area supports low to medium densities of small mammals, birds, and reptiles that are generally concentrated in the larger drainages. Wildlife that typically would be found in this area include: badgers, antelope ground squirrels, kangaroo rats, deer mice, desert wood rats, Gambel's quail, mourning doves, common ravens, wrens, house finches, side-blotched lizards, and Western whiptails. Frequently, larger animals such as raptors, coyotes, gray fox, and mule deer may pass through the area. During construction, small mammals, birds, and reptiles would be disturbed or killed and dens or nests destroyed. Overall impacts to small mammals, birds, and reptiles would be insignificant to populations in the general area. Larger animals would be temporarily disturbed and displaced to adjacent habitats. Once construction is completed, larger animals would return to the area. Any disturbance to small mammals, birds, and reptiles (once habitat has been restored) would be short-term (lasting several	R. Douglas	4/17/08

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		years). Impacts to Special Status Species would be similar to impacts to general wildlife in the area.		
PI	Soils	Analyze impacts in EIS.	D. Corry	3/24/08
PI	Recreation	The proposed project alignment crosses three of the routes used in the Tri-State ATV Jamboree at ten separate locations. It either parallels, or is directly on top of 13 miles of the same routes. The affected routes are the Castle Cliffs, Gunlock/Goldstrike, and Joshua Forest Loops. These routes are also popular ATV routes for the general public throughout the year. Impacts are expected to by minor unless construction occurs during the ATV Jamboree in early spring. If this occurs, it could have a major impact on this popular event.	D. Kiel	4/7/08
PI	Visual Resources	Since the project occurs within one of the utility corridors identified in the St. George FO RMP, impacts to visual resource are expected to be negligible. However, on a statewide basis, it appears the existing VRM analysis in Chapter 3 of the EIS contains a significant problem: 1. On page 3-126, the EIS describes the use of KOP's in conjunction with BLM Form 8400-1, *Scenic Quality Field Inventory*. Since VRM Management Classes are already in place along the corridor, the use of this form was unnecessary. There is no need to "inventory" visual resources when the management class is already known. Also, such a small sample (3 KOP's) for a project of this size gives the impression that visual values are being given lip service only. A better approach would be to remove this section and make sure that form 8400-4, *Visual Contrast Rating Worksheet*, is used in Chapter 4 This form is required when trying to determine if the proposed project meets the VRM objectives in the project area. 2. Having only three KOP's seems to be a very small number for a project of this size (although more may be used in Chapter 4). A better approach would be, at a minimum, to use KOP's in any area that is classified as VRM II. If a pipeline project is going to fail a visual contrast rating, it will be in VRM II. Effective mitigation measures could then be designed. It would also be a good idea to have a couple of "representative" contrast ratings for areas with a VRM III classification.	D. Kiel	4/7/08
NP	Geology / Mineral Resources/Energy Production	No known issues	R Schreiner	3/27/08
NI	Paleontology	A short segment of the pipeline will cross Jurassic–age Formations south of Square Top Mountain. The Moenave and Kayenta Formations have contained significant vertebrate fossils and track sites in Washington County. Should bedrock excavation of these formations be required, they should be monitored for potential paleontological sites.	R Schreiner	3/27/08
PI	Lands / Access	Need to consult and coordinate with existing right-of-way holders, livestock permit holders, State of Utah, Washington County and private land owners along the alignment.	K Abbott	03/24/08
NI	Fuels / Fire Management	Fire management plans already call for the suppression of fires threatening the utility corridor.	K Leany	4/3/08
PI	Socio-economics	Disclose impacts on Washington County socio-economic values in EIS	D. Ferris-Rowley	

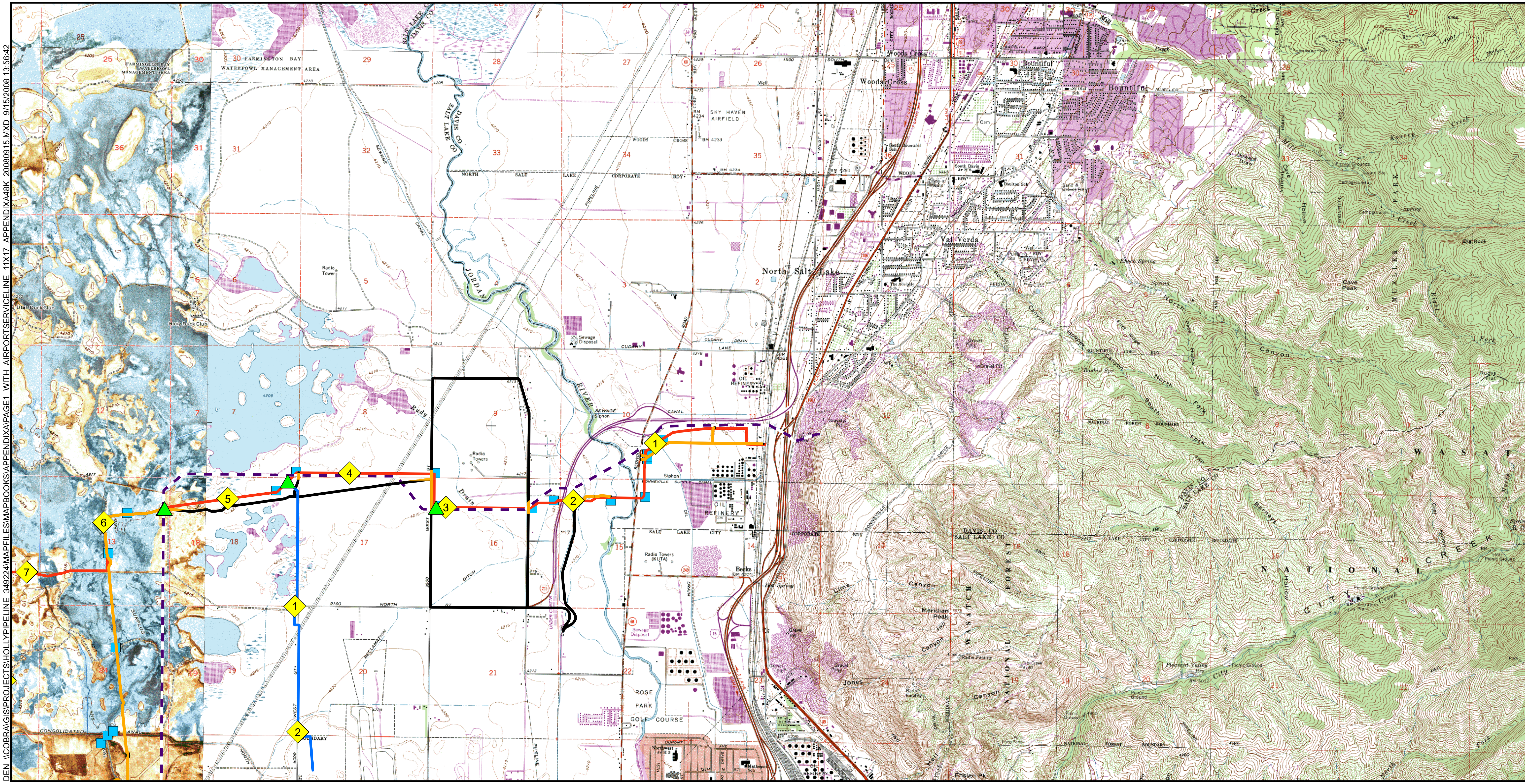
Determi-nation	Resource	Rationale for Determination*	Signature	Date
NP	Wild Horses and Burros	St. George Field Office does not manage wild horses and burros on public lands in Washington County, UT	K Leany	4/3/08
PI	Wilderness characteristics	The 1999 Utah Wilderness inventory contains no acreage within the identified pipeline corridor. However, the Utah Wilderness Coalition proposal contains 3,900 acres of lands identified as having wilderness characteristics. This identified acreage is all within the existing utility corridor.	D. Kiel	4/7/08

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
NEPA / Environmental Coordinator	D. Ferris-Rowley	4/22/08	
Authorized Officer			

Delete the asterisks"*" in the checklist and these sentences:
****Rationale for Determination is required for all "NIs." Write issue statements for "PIs"***
***** Varies by specific location and BLM Field Office***

Appendix B
Proposed Main Alignment
Mileposts 1-399



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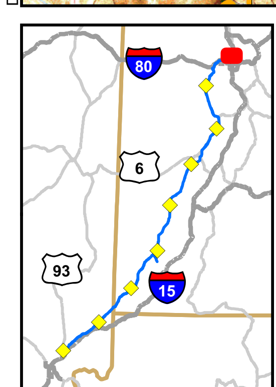

Key Map

N W E S

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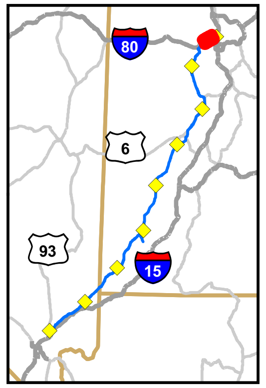
Feet

Legend

- Proposed Action Alignment
- Airport Service Line
- Mileposts
- Valves
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Terminal
- Kern River Alignment

UNEV PIPELINE, LLC

UNEV PIPELINE
Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment



Key Map

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Legend

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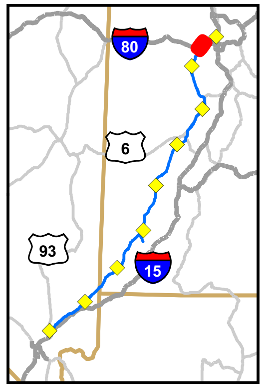

Key Map

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Feet

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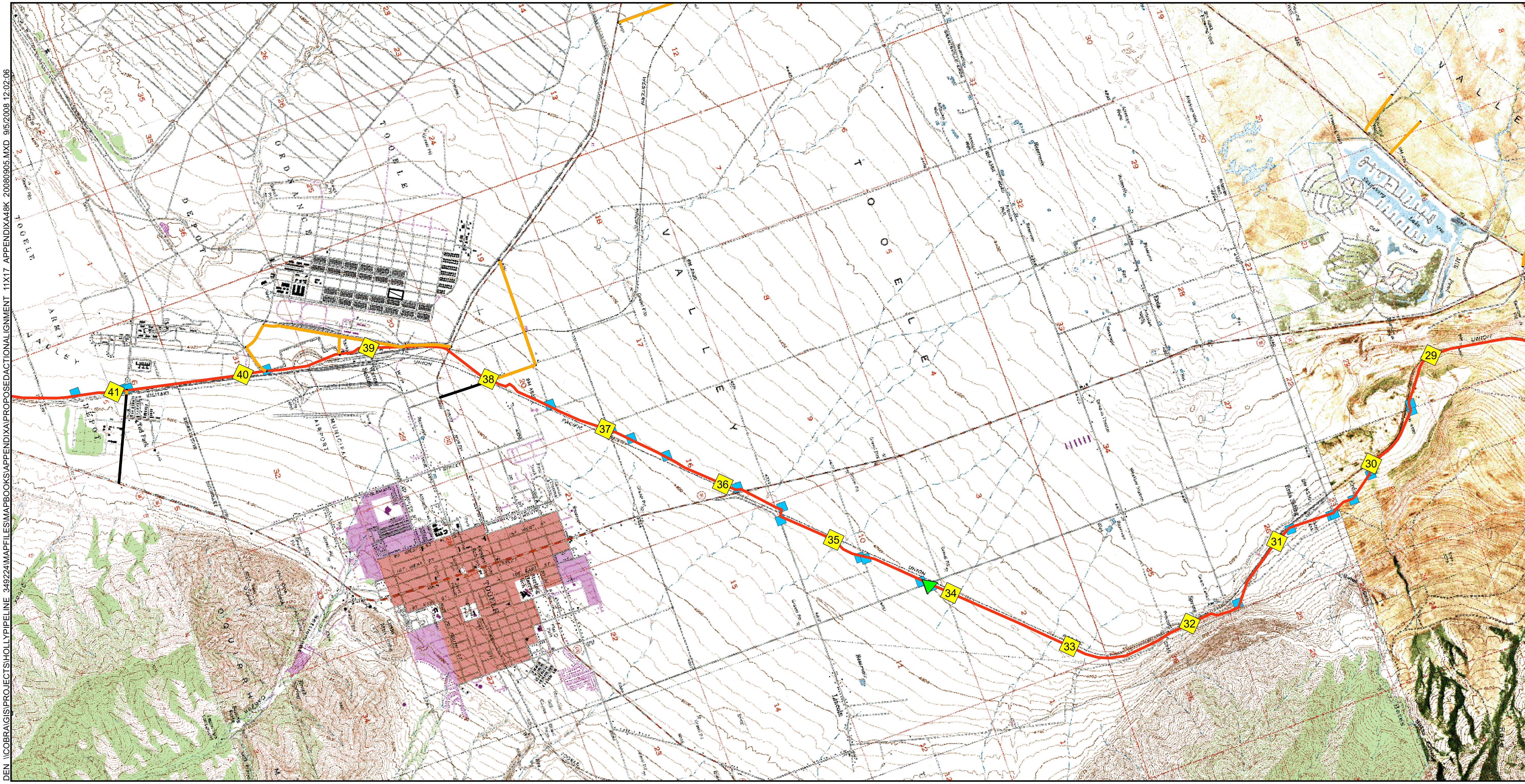
Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008



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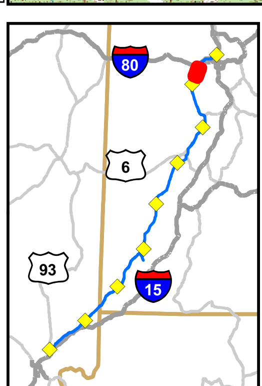

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Proposed Action Alignment

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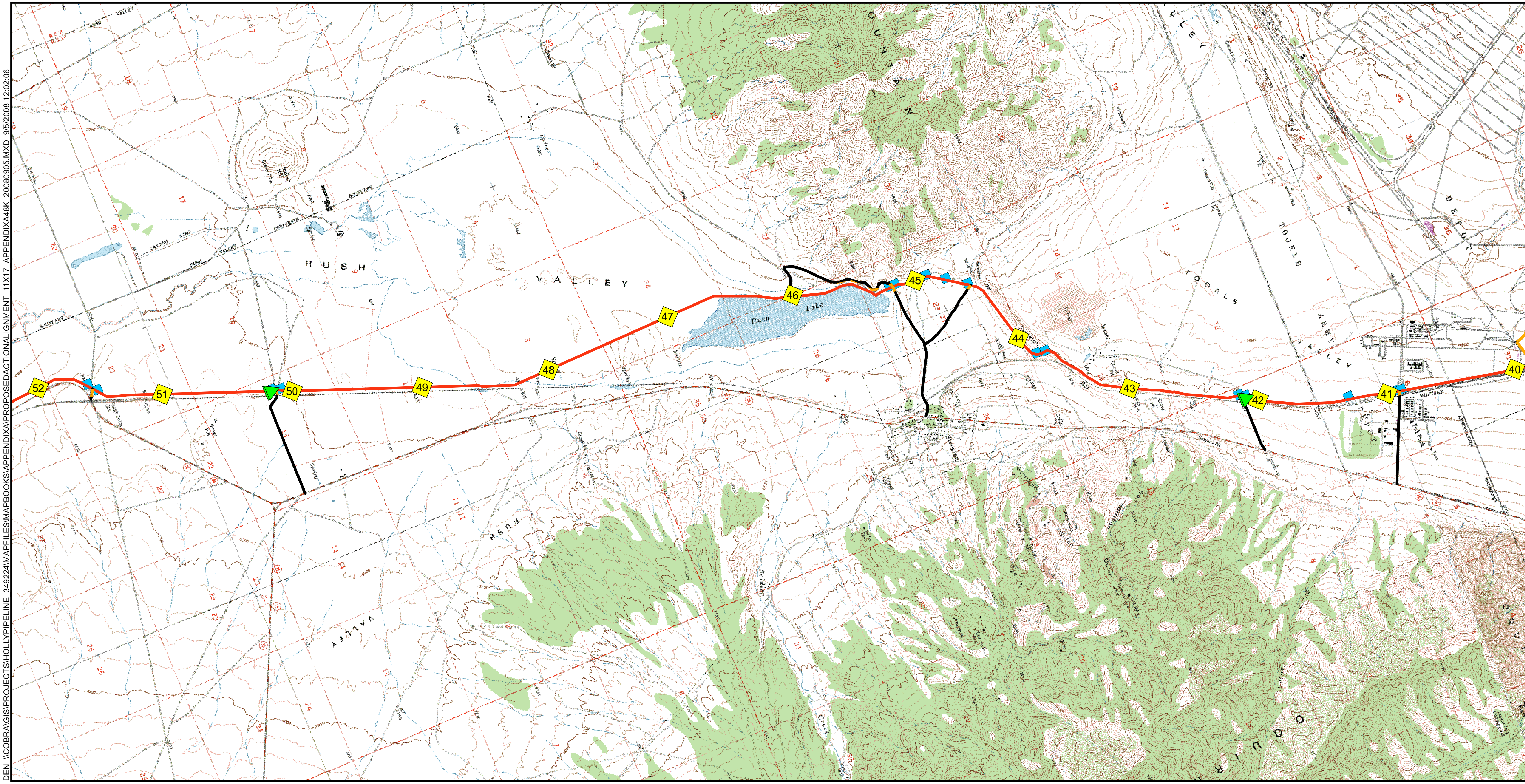

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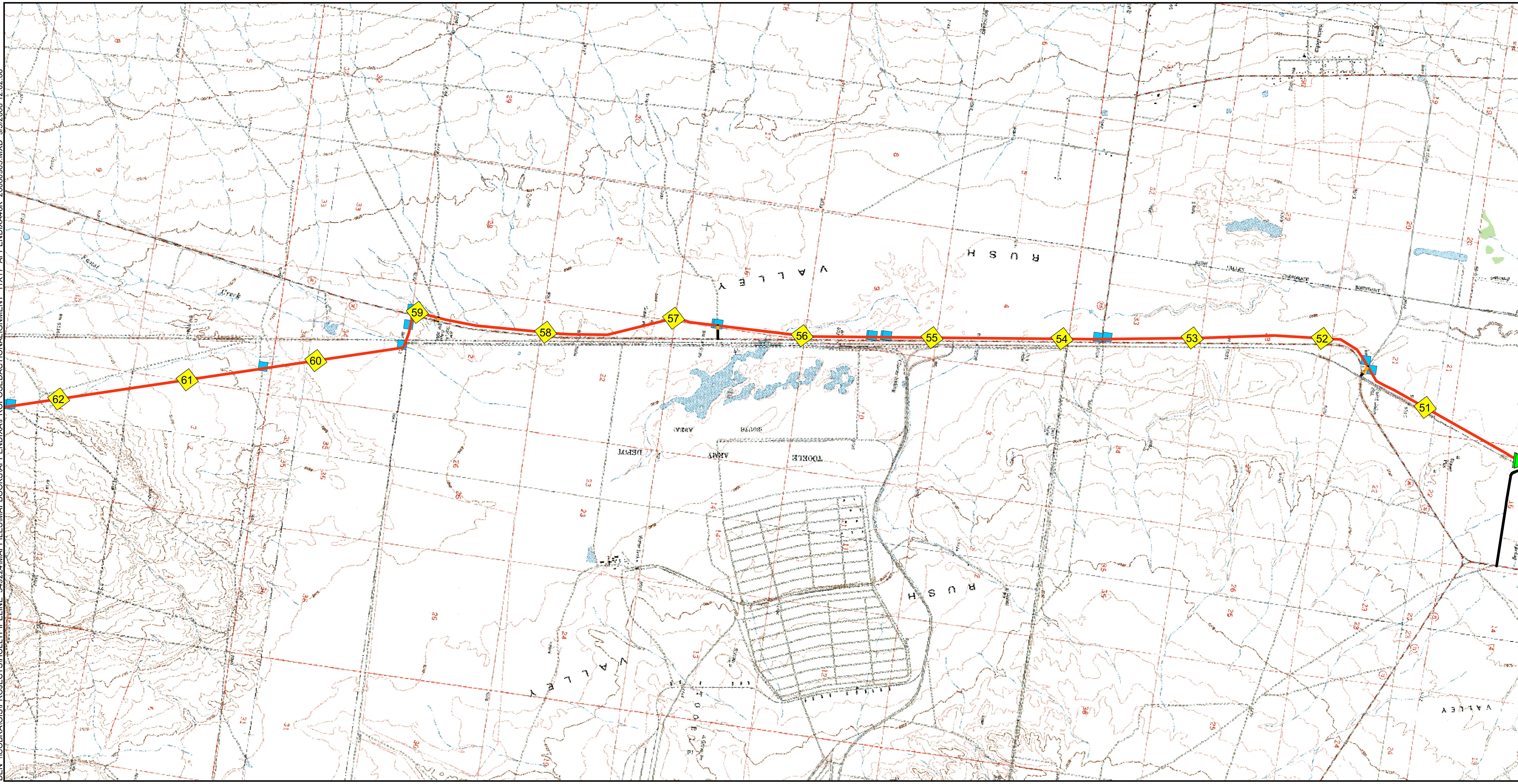

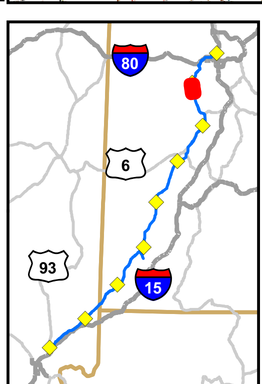

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UNEV PIPELINE, LLC

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Proposed Action Alignment

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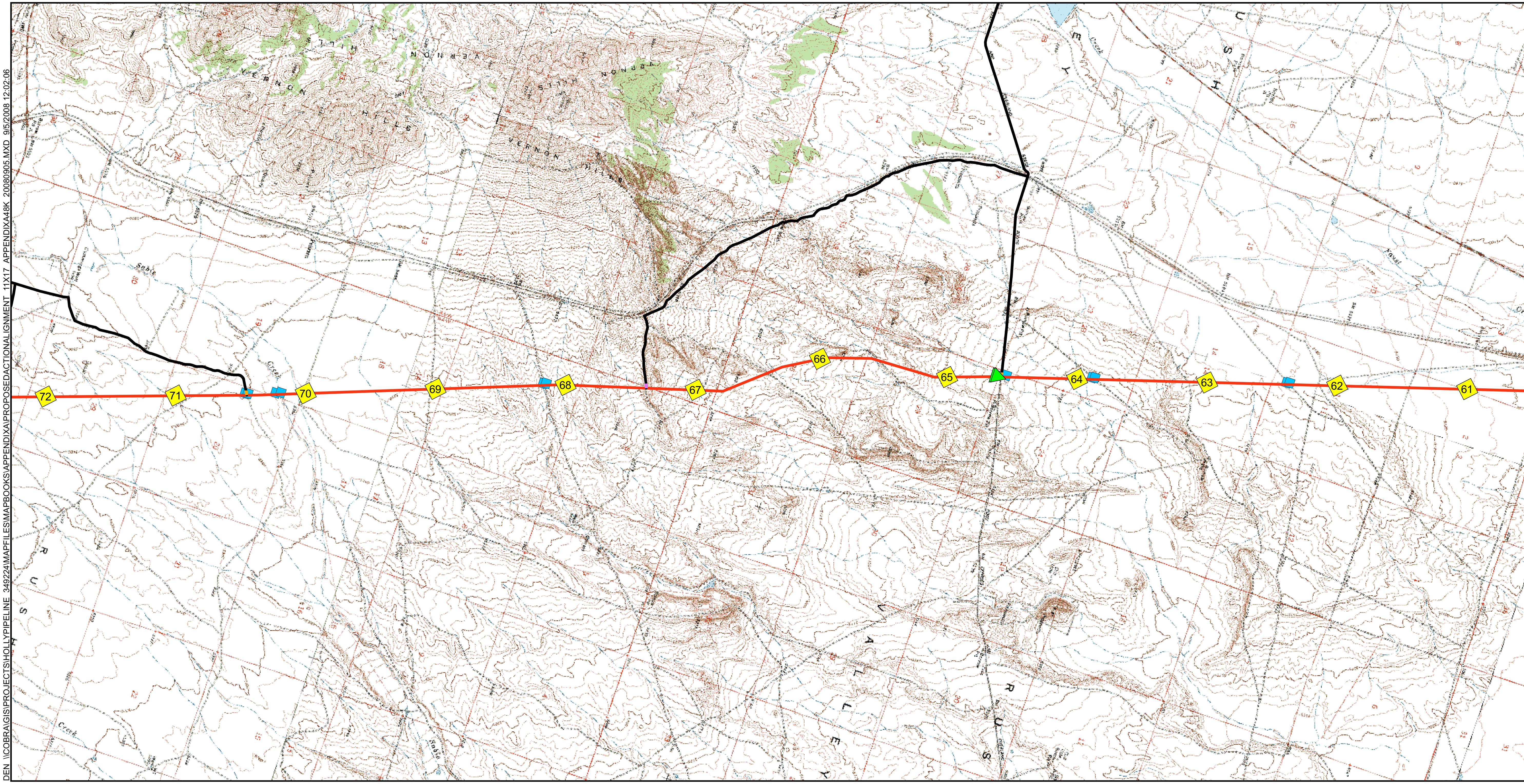

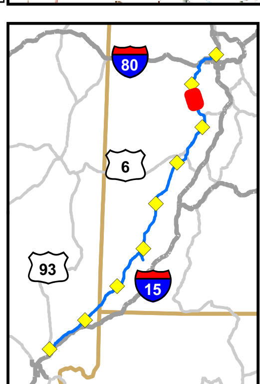

Key Map

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Feet

Legend

Proposed Action Alignment

Mileposts

Valves

Additional Temporary Workspace

Access Roads

Surveyed Access Road

Surveyed Access Road to be Improved

Pipeyard

Terminal

Kern River Alignment

UNEV PIPELINE, LLC

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Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008

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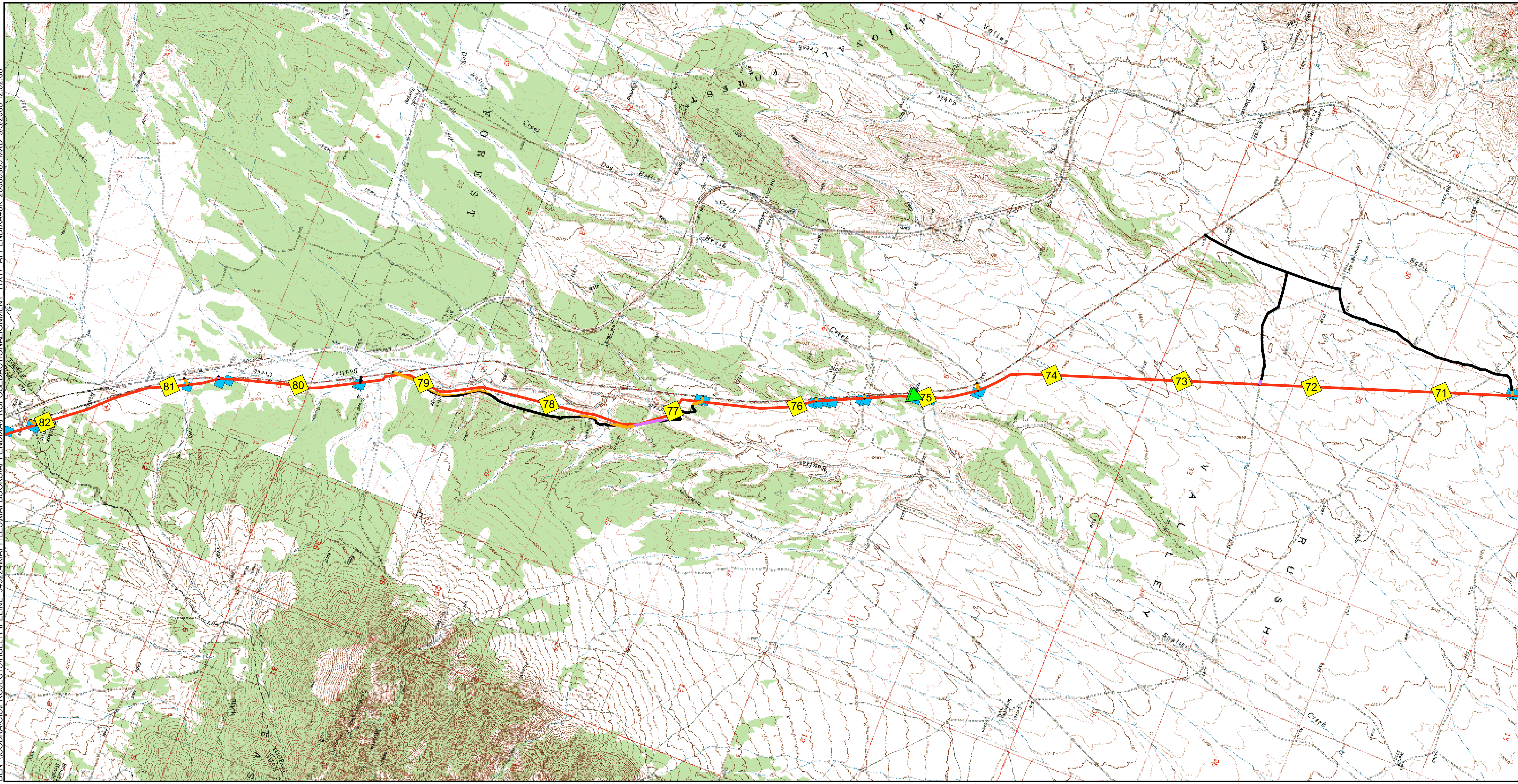

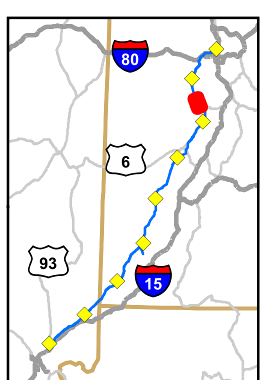

Key Map

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Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

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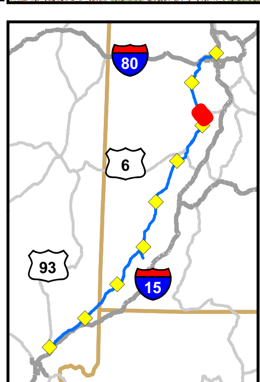

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Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

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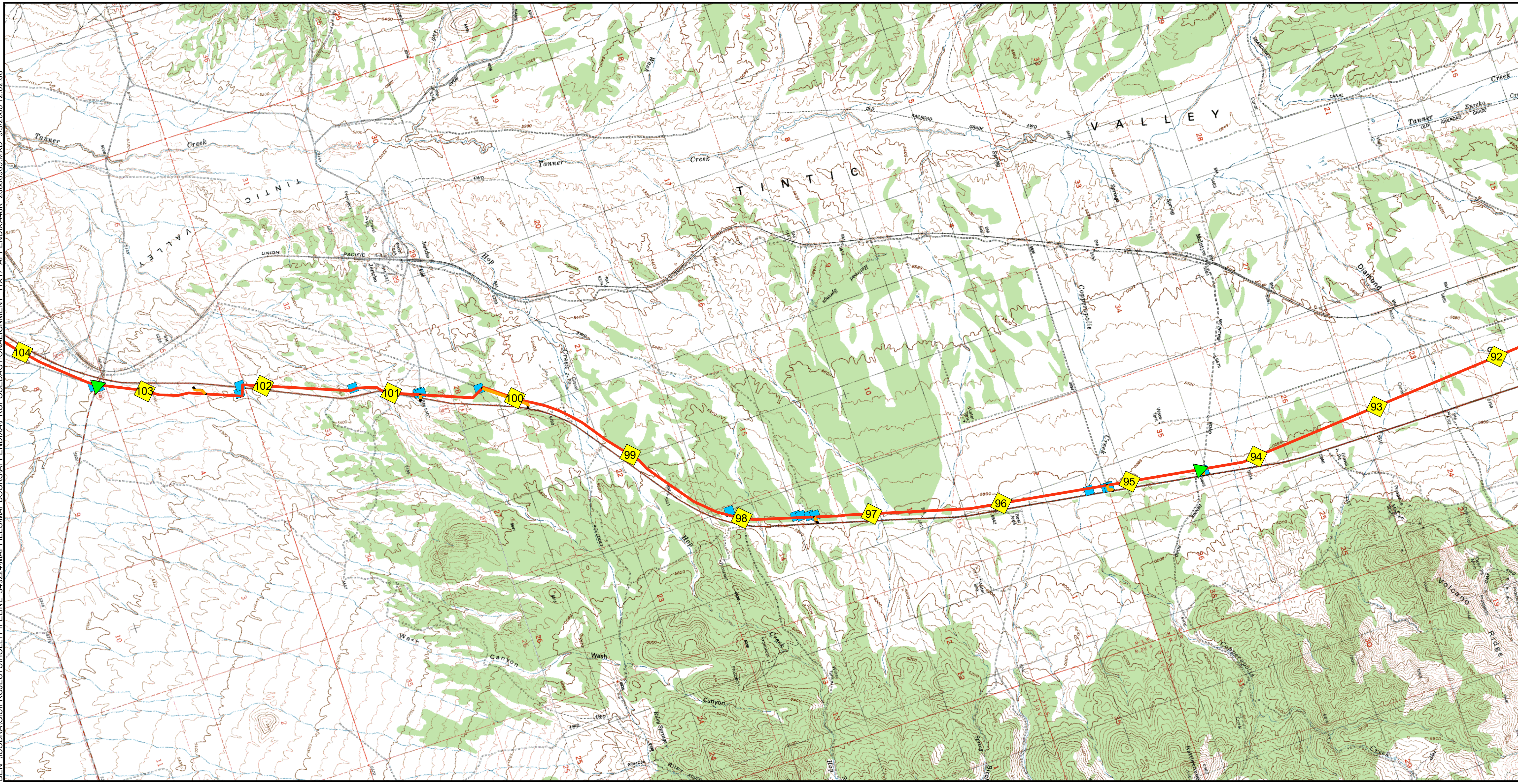

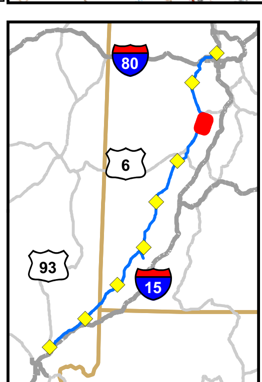

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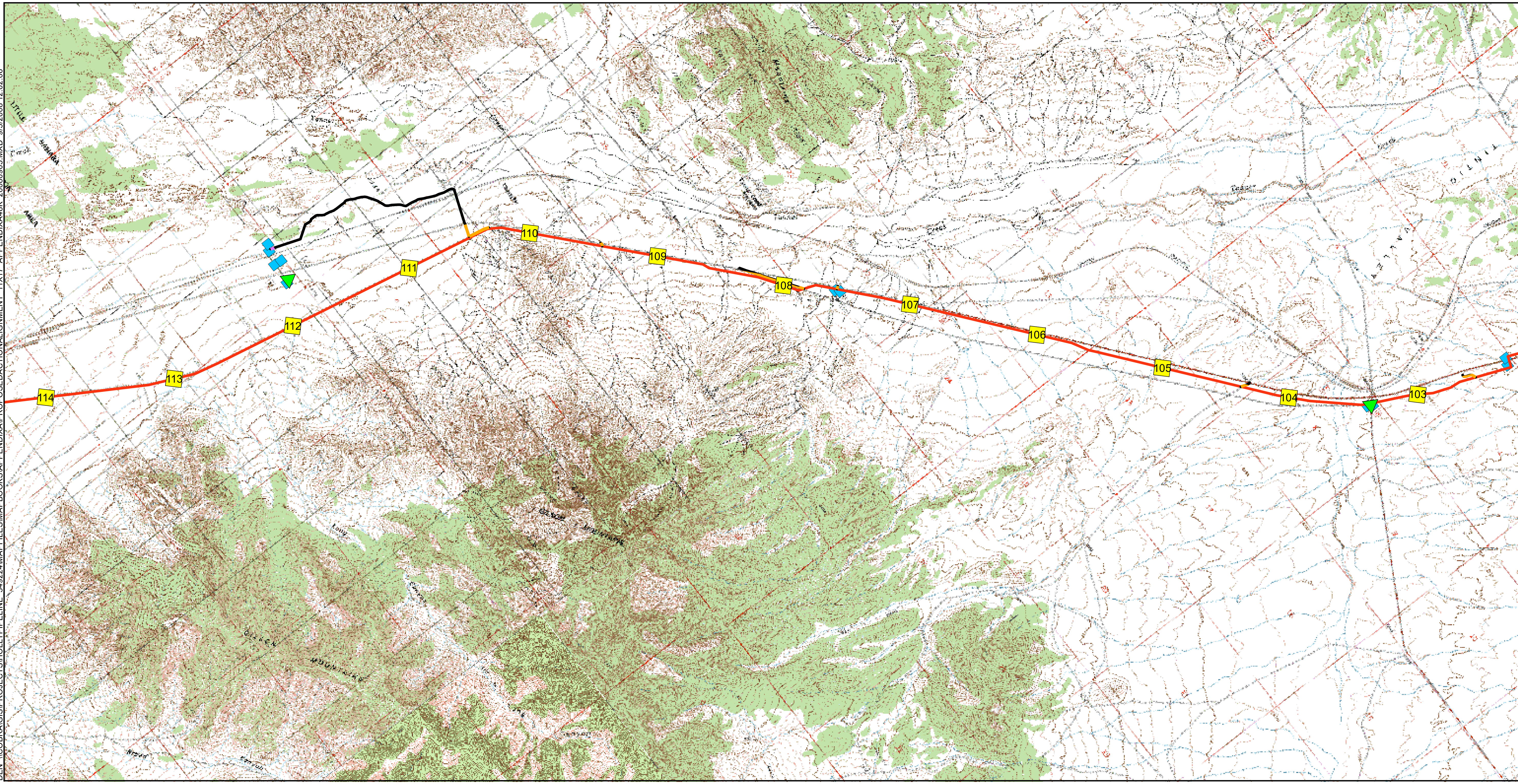

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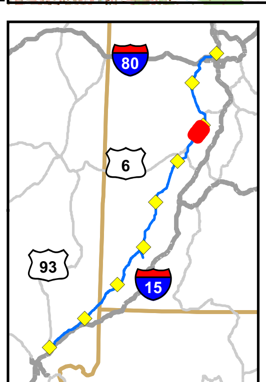

Key Map

Legend

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- Mileposts
- Valves
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UNEV PIPELINE, LLC

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Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008

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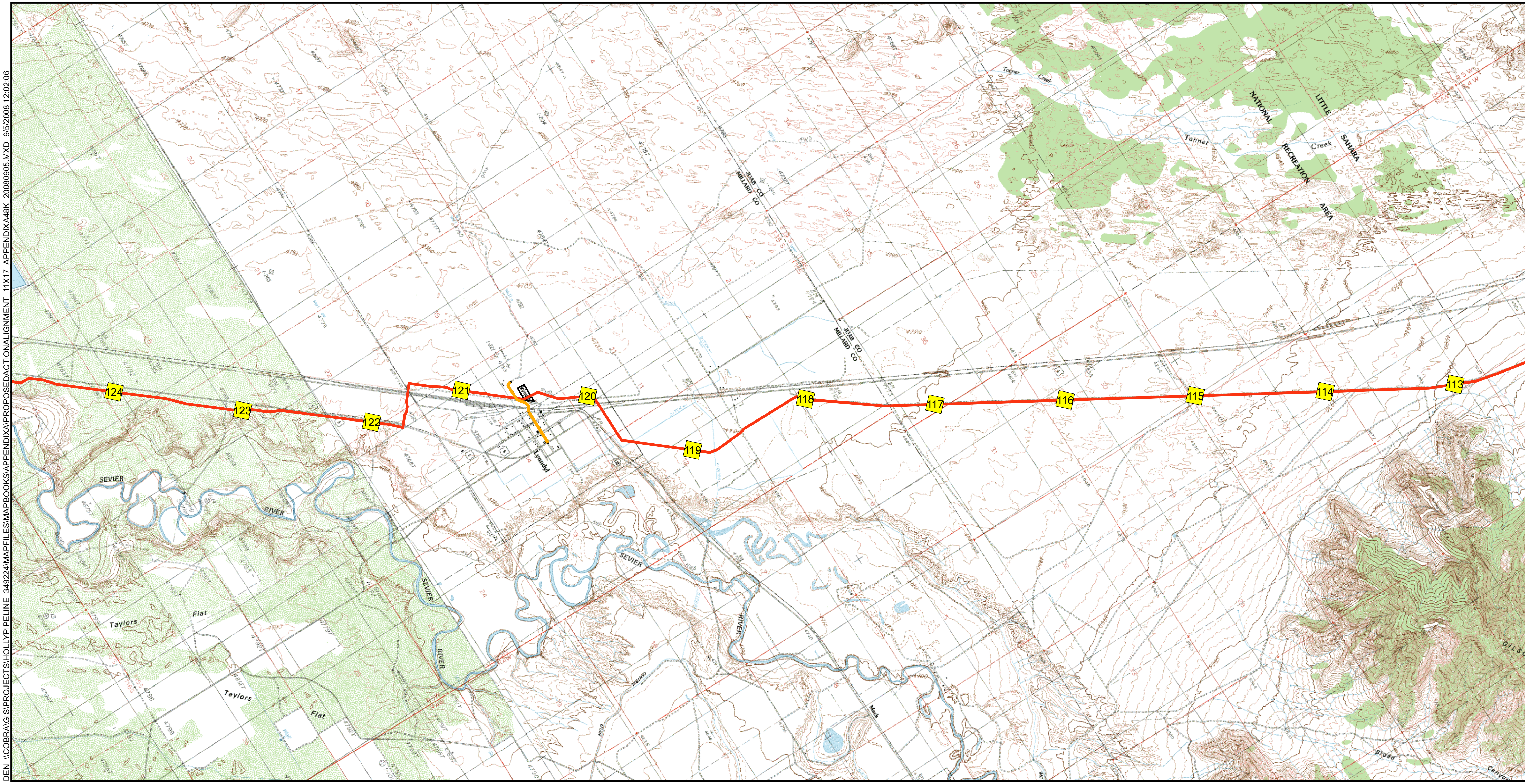

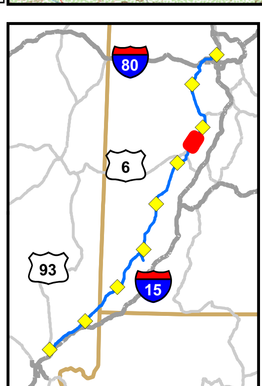

Key Map

Legend

- Proposed Action Alignment
- Mileposts
- Valves
- Additional Temporary Workspace
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- Surveyed Access Road
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Salt Lake City, Utah to Las Vegas, Nevada

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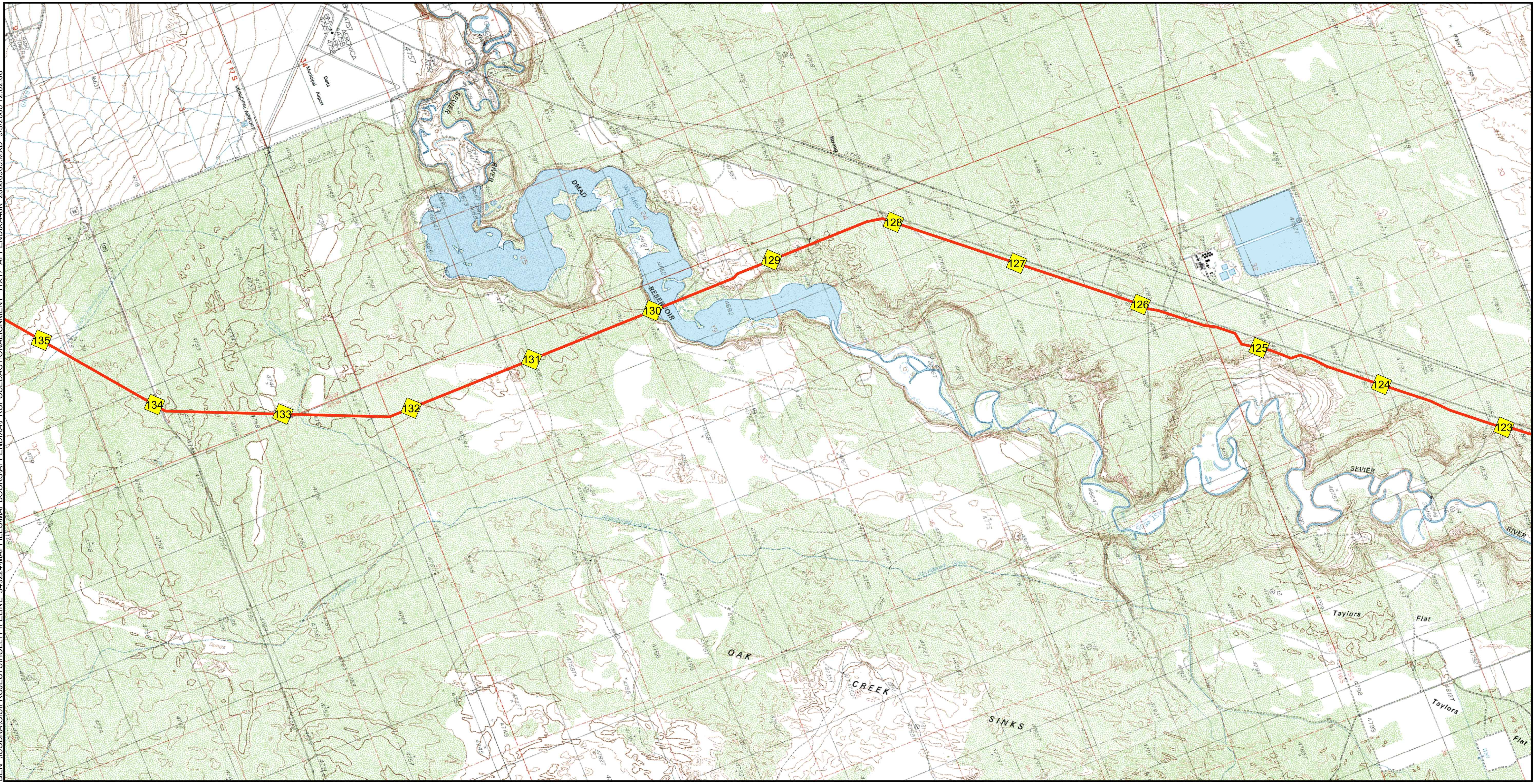

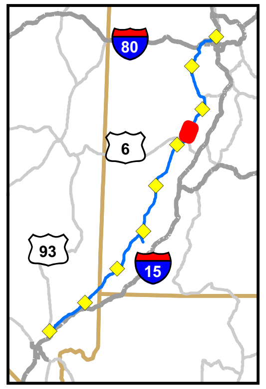

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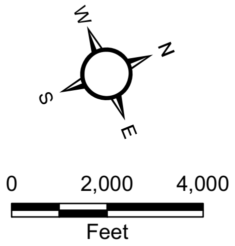

Legend

Proposed Action Alignment	Access Roads	Pipeyard
Mileposts	Surveyed Access Road	Terminal
Valves	Surveyed Access Road to be Improved	Kern River Alignment
Additional Temporary Workspace		

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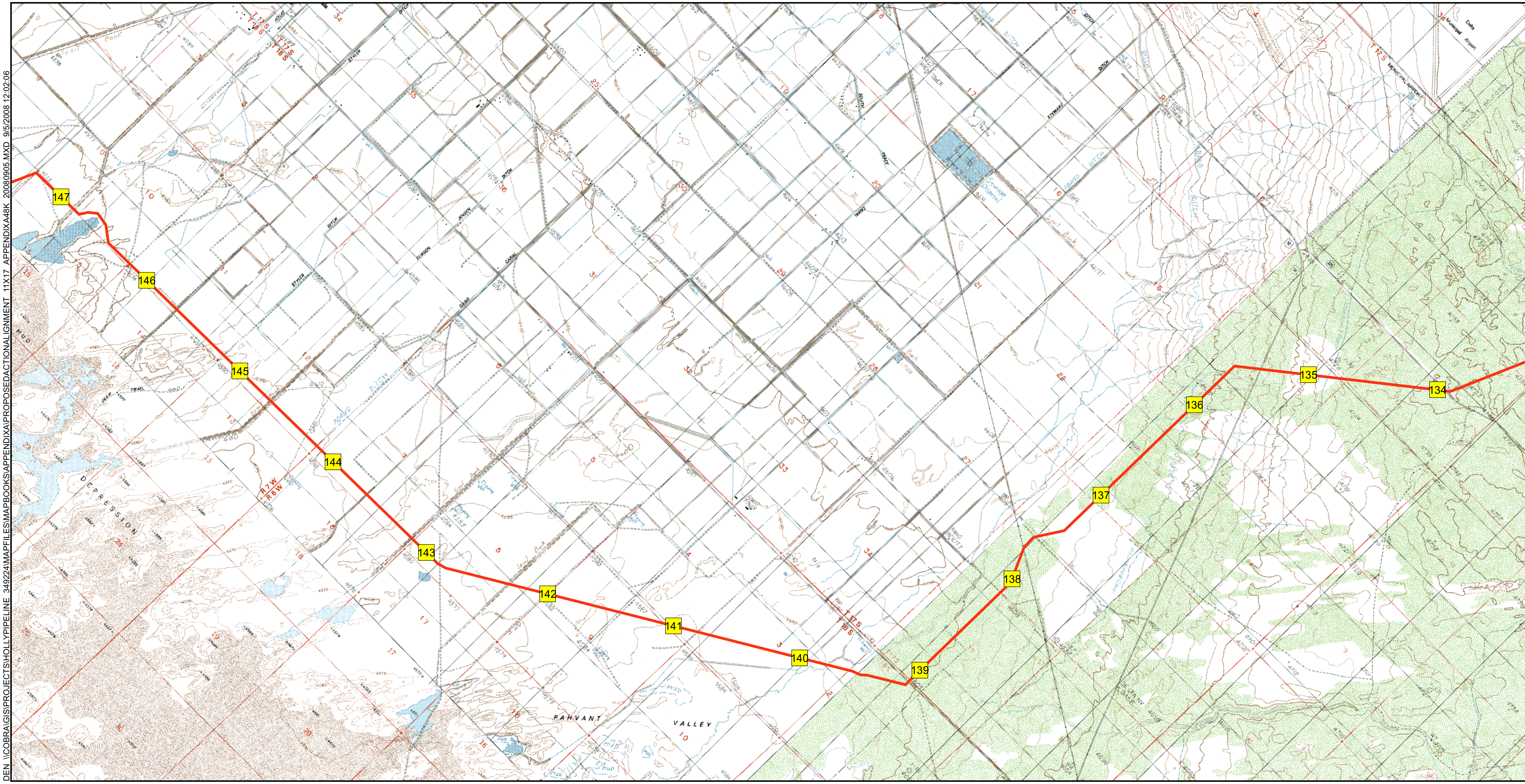
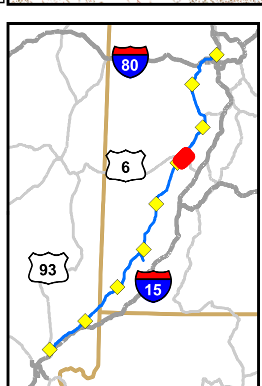
Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008





Key Map

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Feet

Legend

- Proposed Action Alignment
- Mileposts
- Valves
- Additional Temporary Workspace
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- Surveyed Access Road
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Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

Sep 05, 2008

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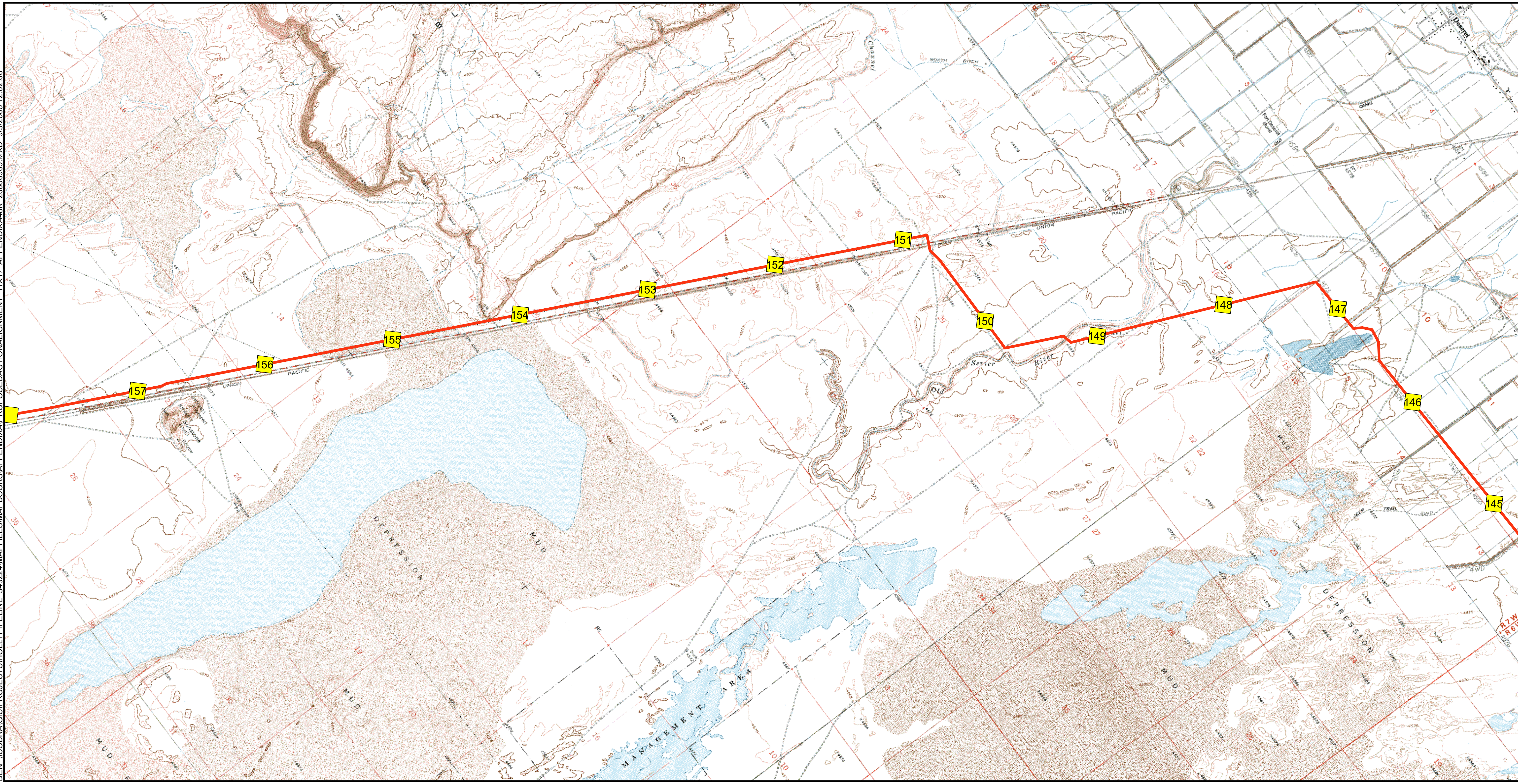

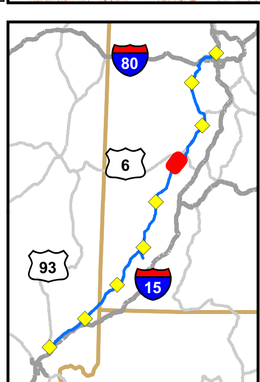

Key Map

W N S E

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Feet

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Sep 05, 2008

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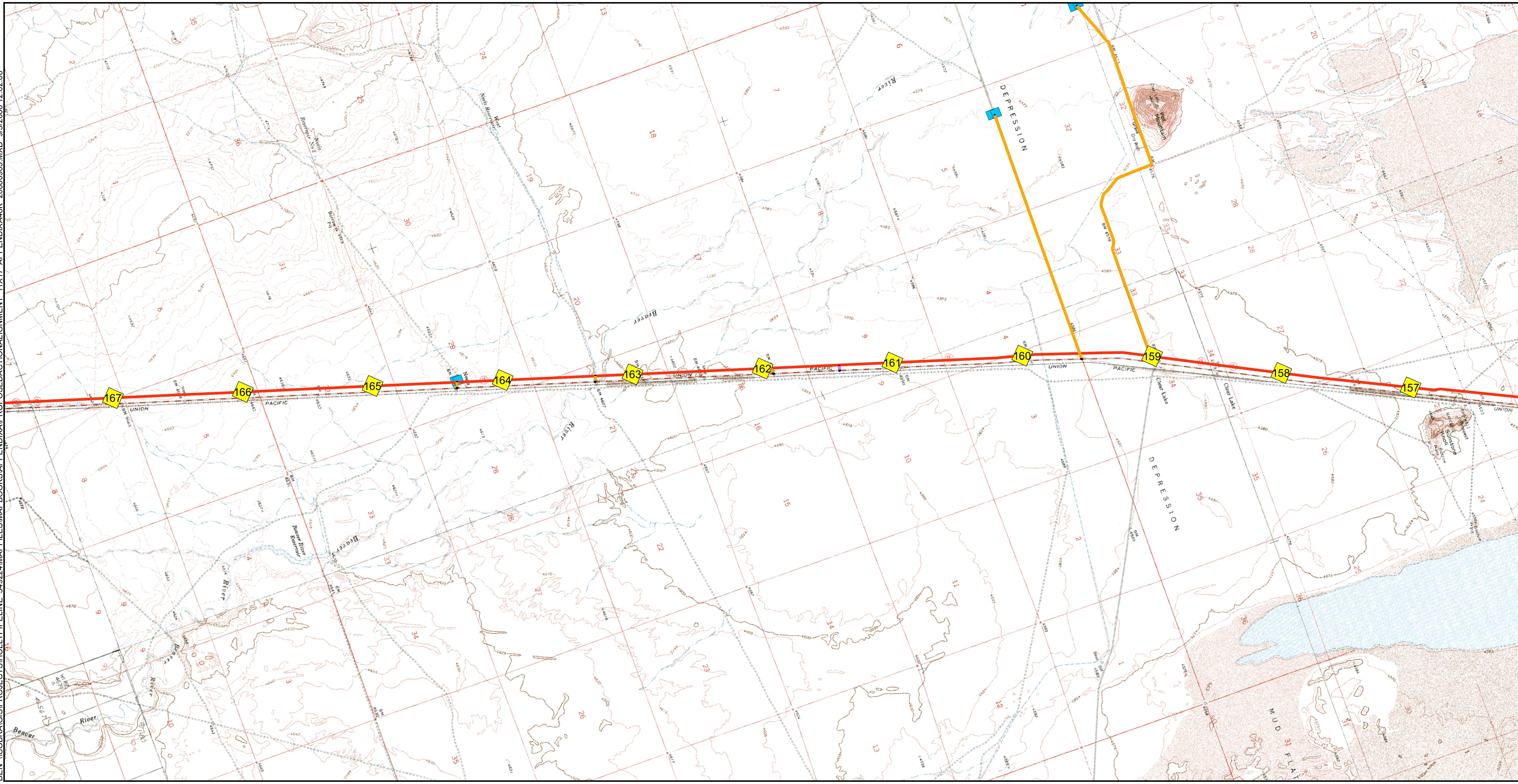

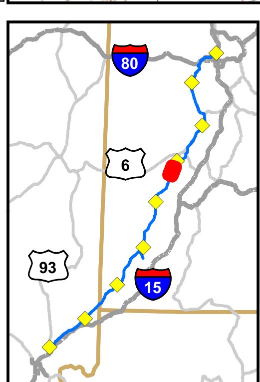

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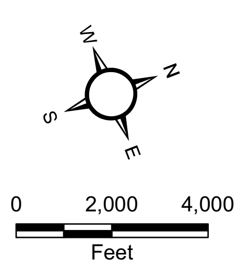

Legend

- Proposed Action Alignment
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UNEV PIPELINE, LLC

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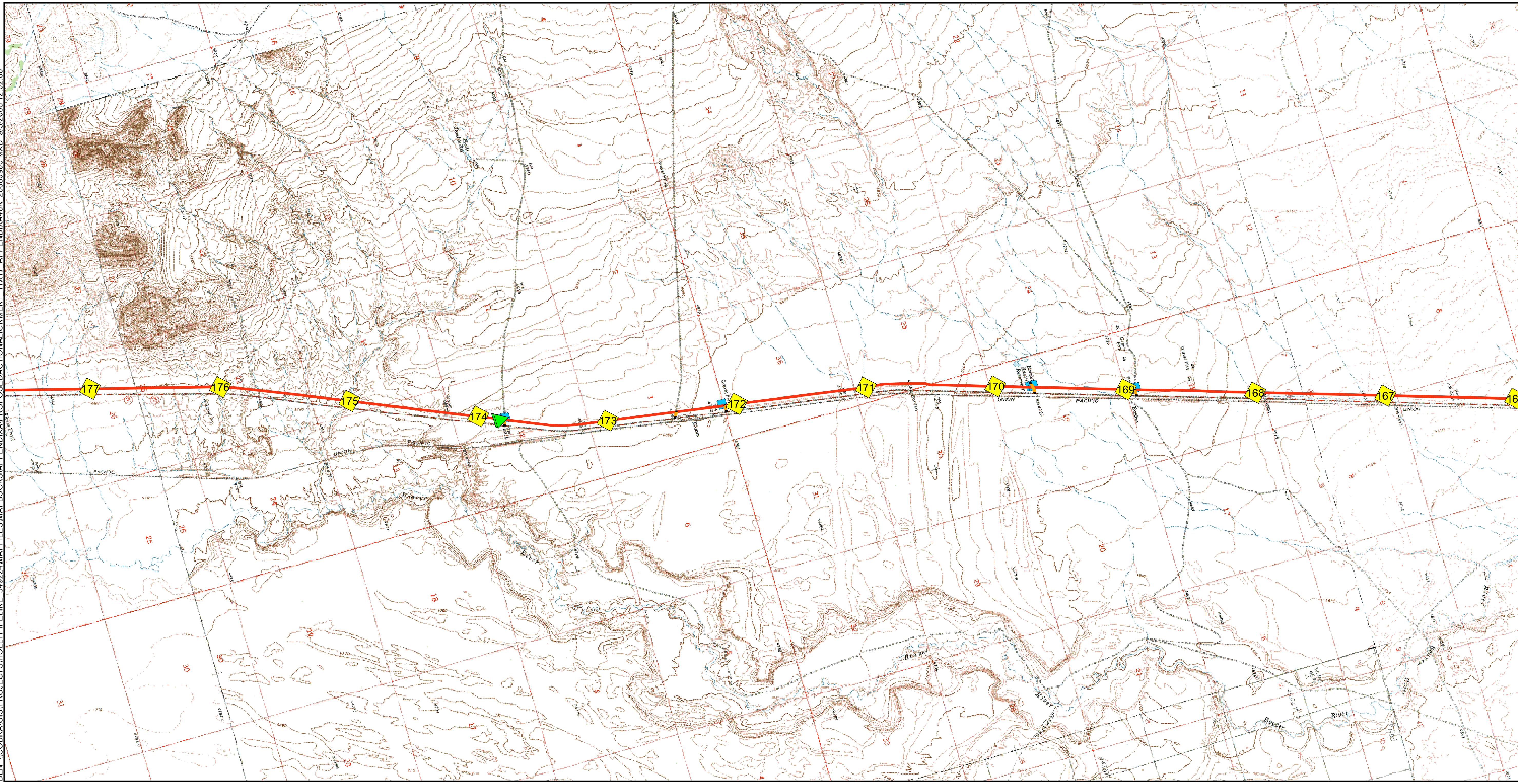
Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment



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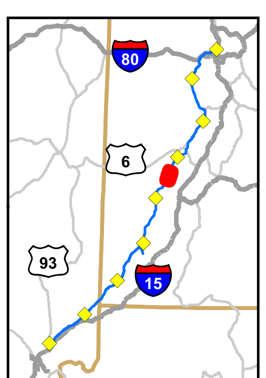

Key Map

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Feet

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Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

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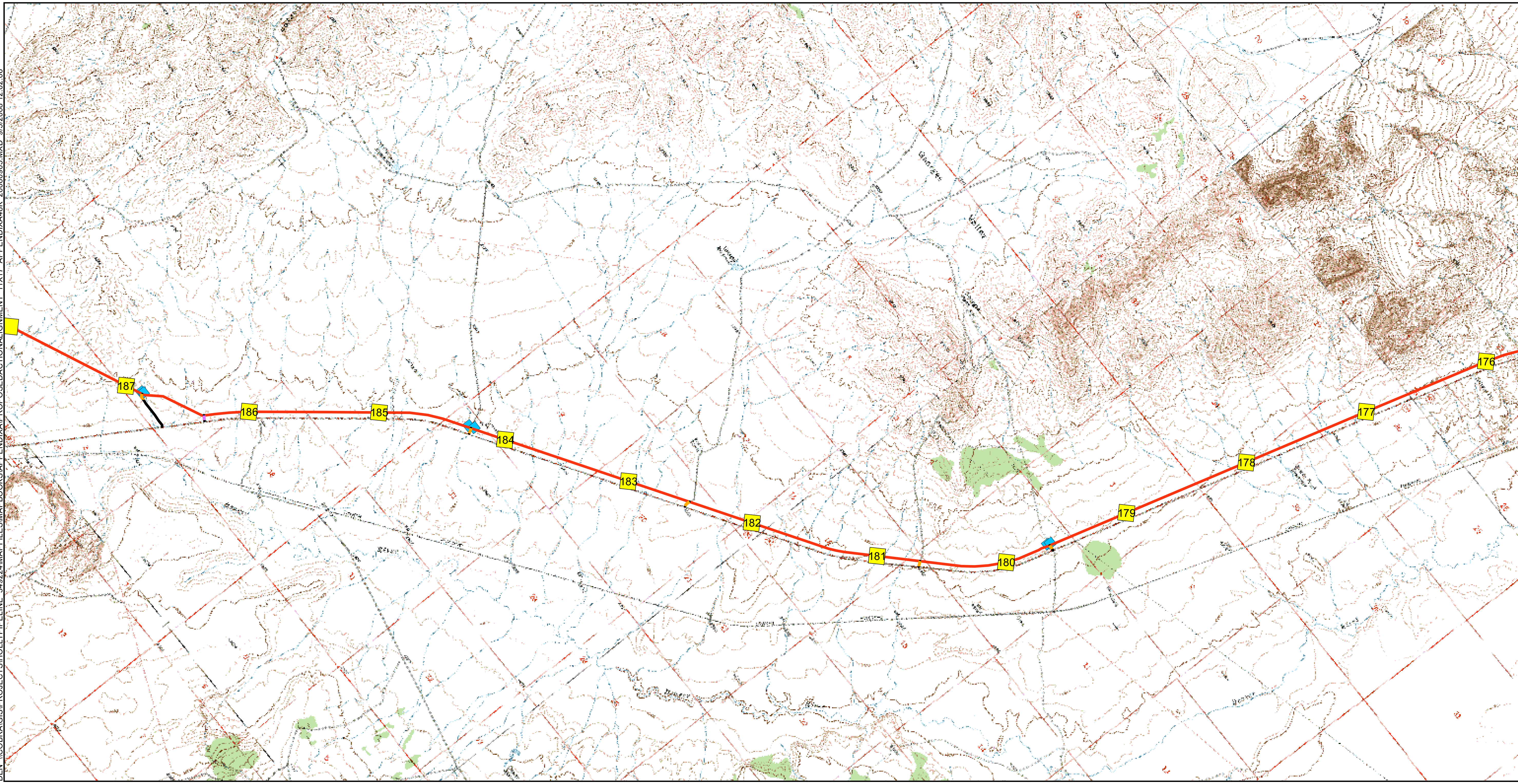

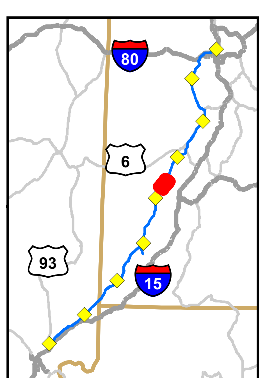

Key Map

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Feet

Legend

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Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

Sep 05, 2008

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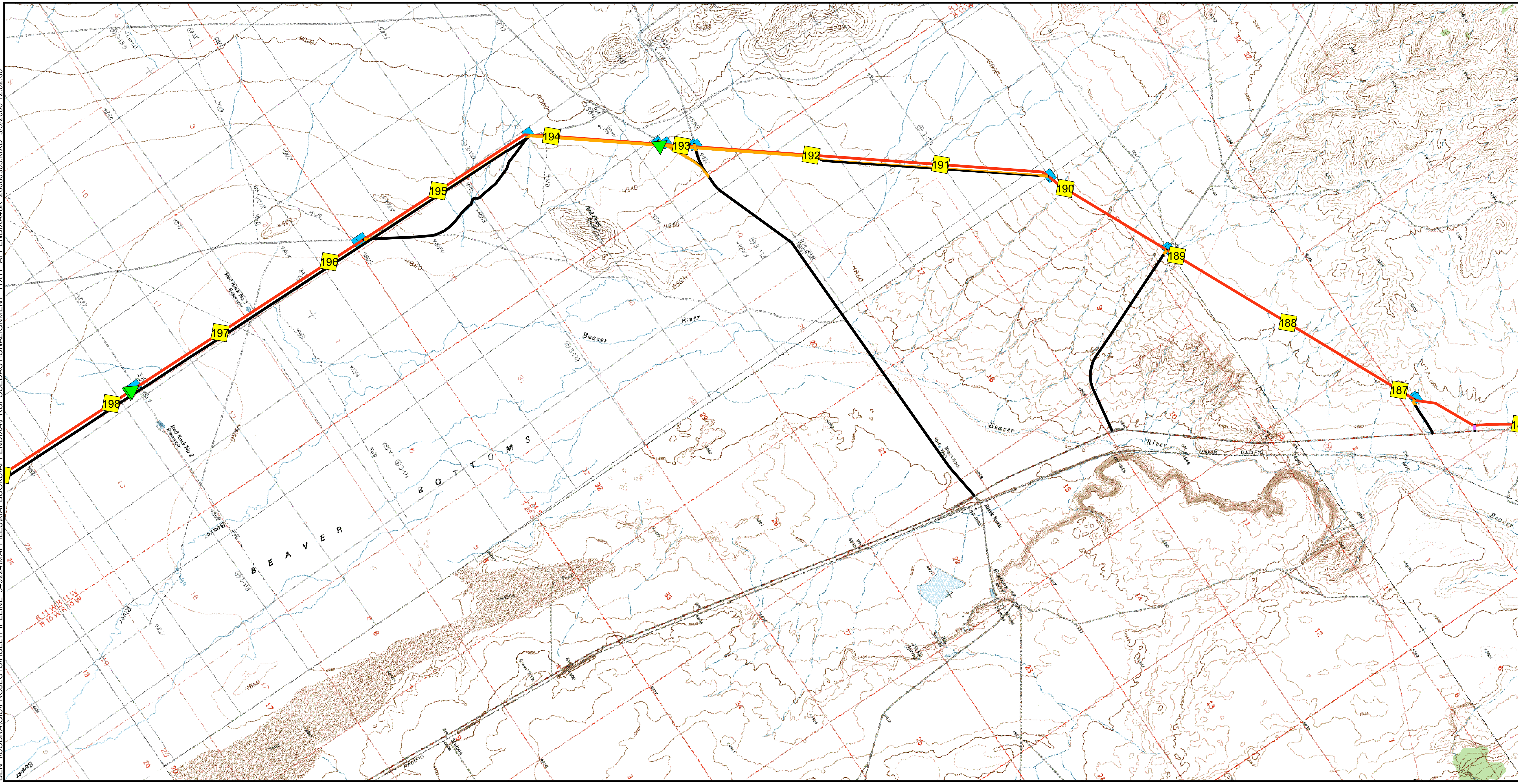

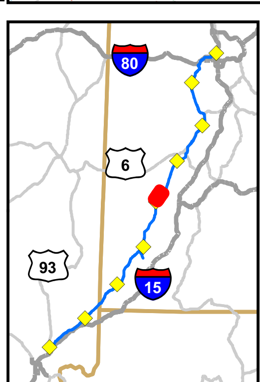

Key Map

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Feet

Legend

- Proposed Action Alignment
- Mileposts
- Valves
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
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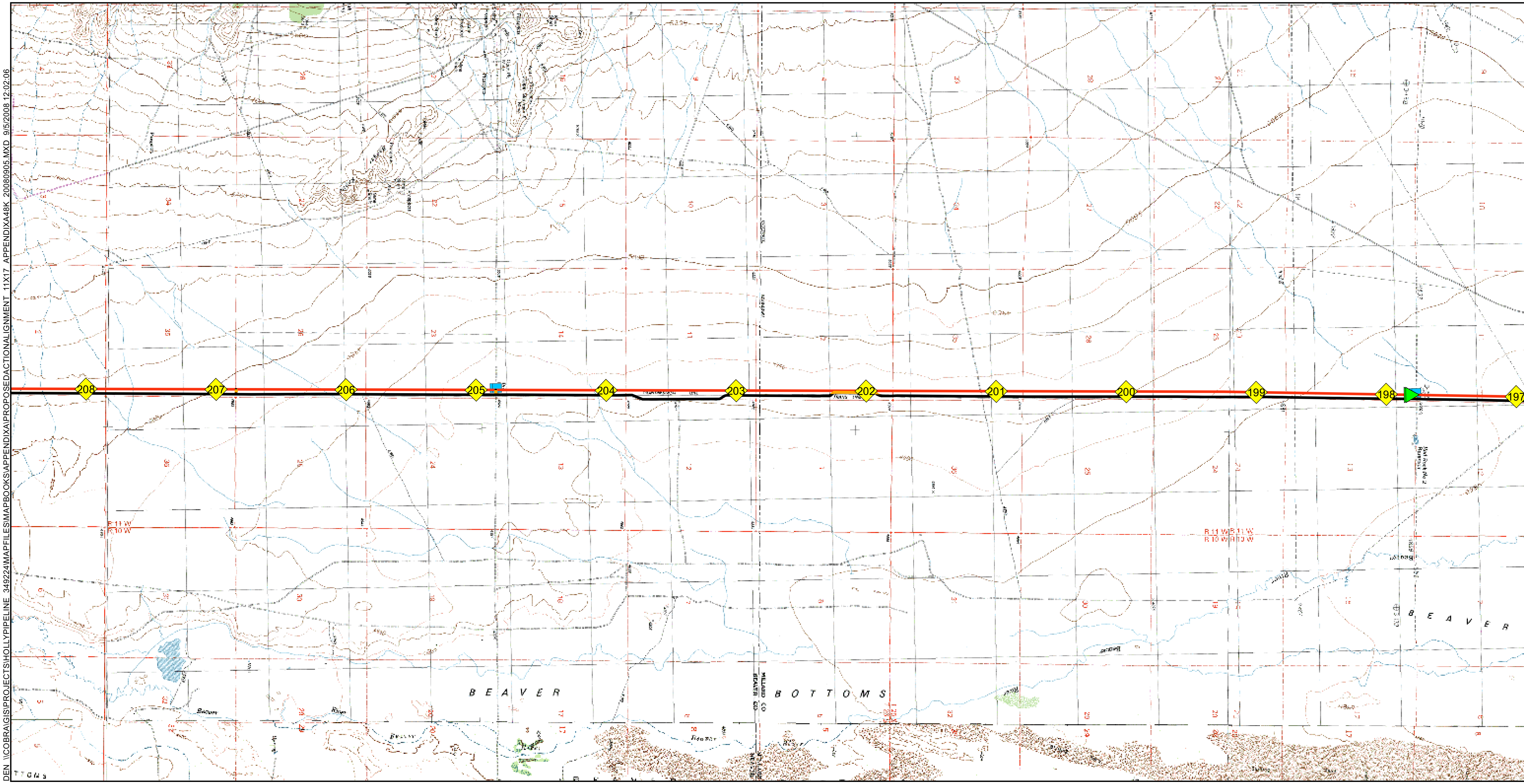
- Terminal
- Kern River Alignment

UNEV PIPELINE, LLC

UNEV PIPELINE
Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment



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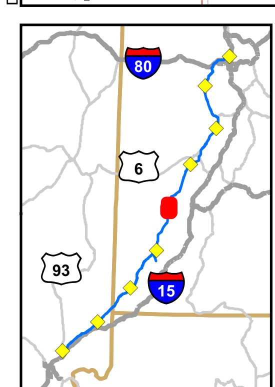

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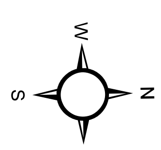

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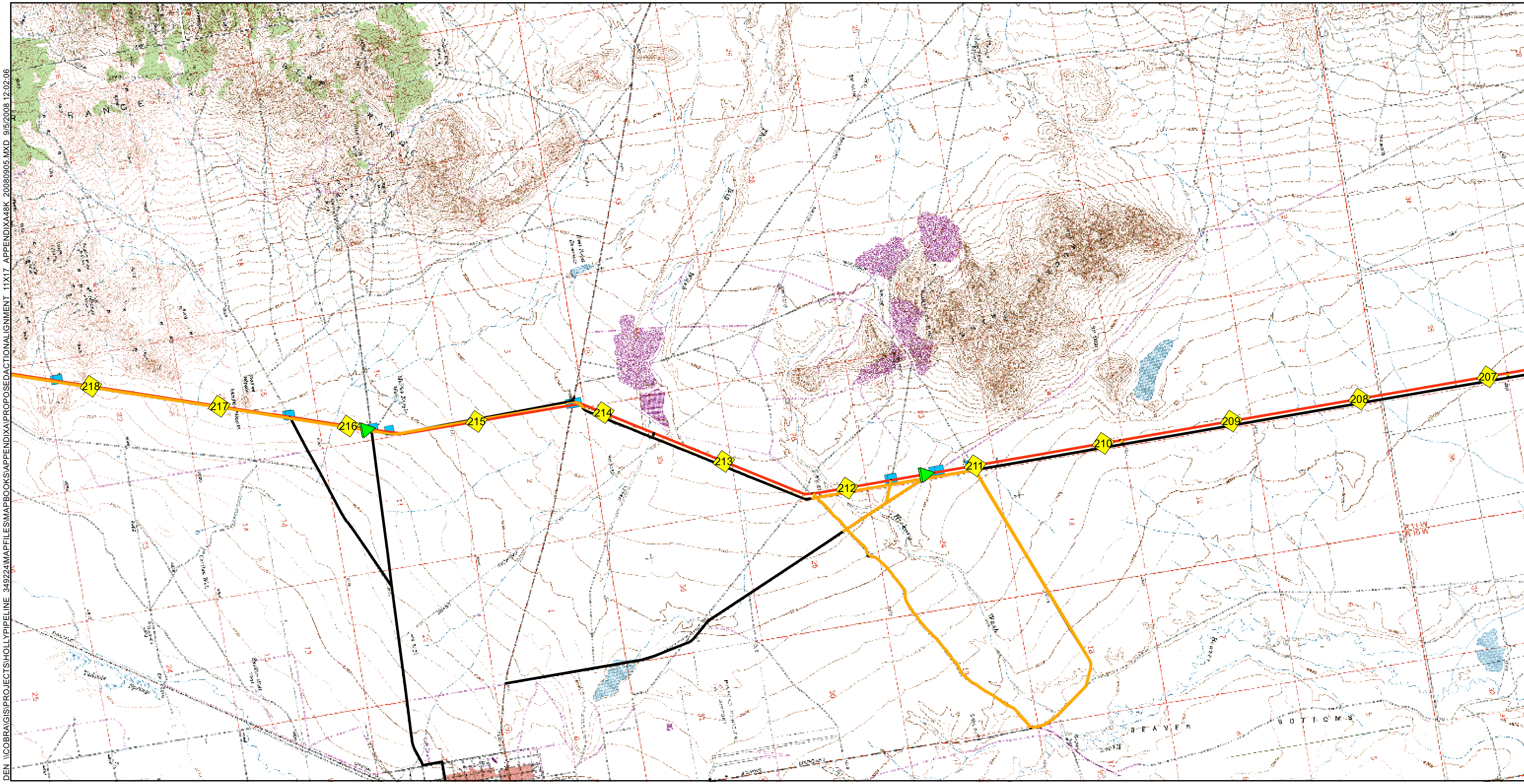

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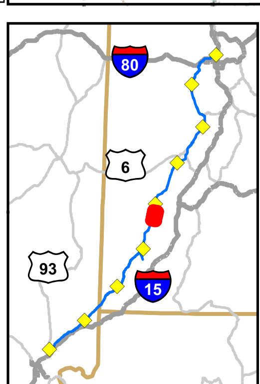

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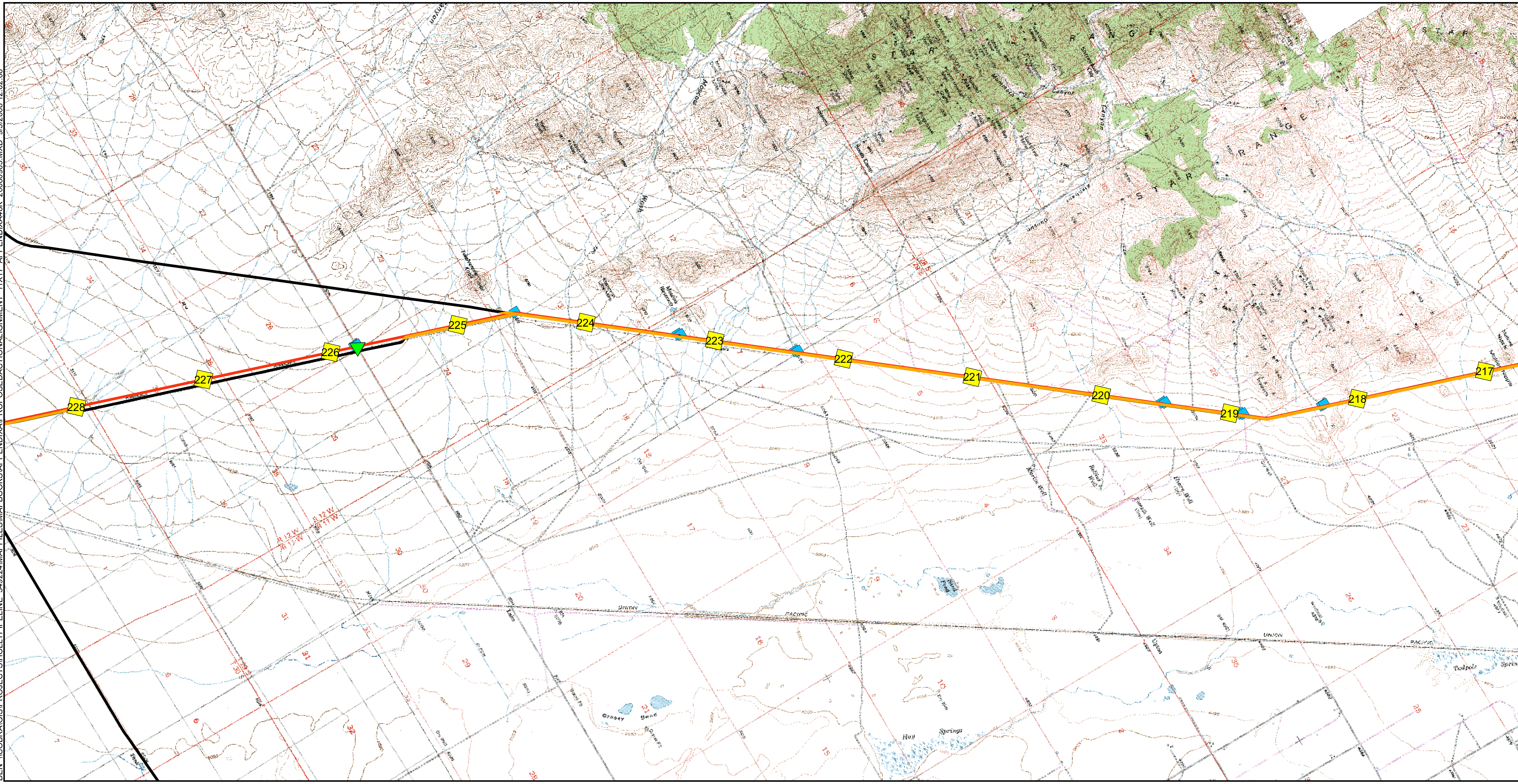
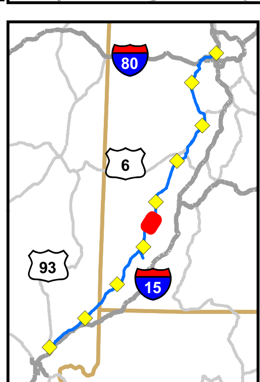
Salt Lake City, Utah to Las Vegas, Nevada
Proposed Action Alignment

Sep 05, 2008





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Salt Lake City, Utah to Las Vegas, Nevada
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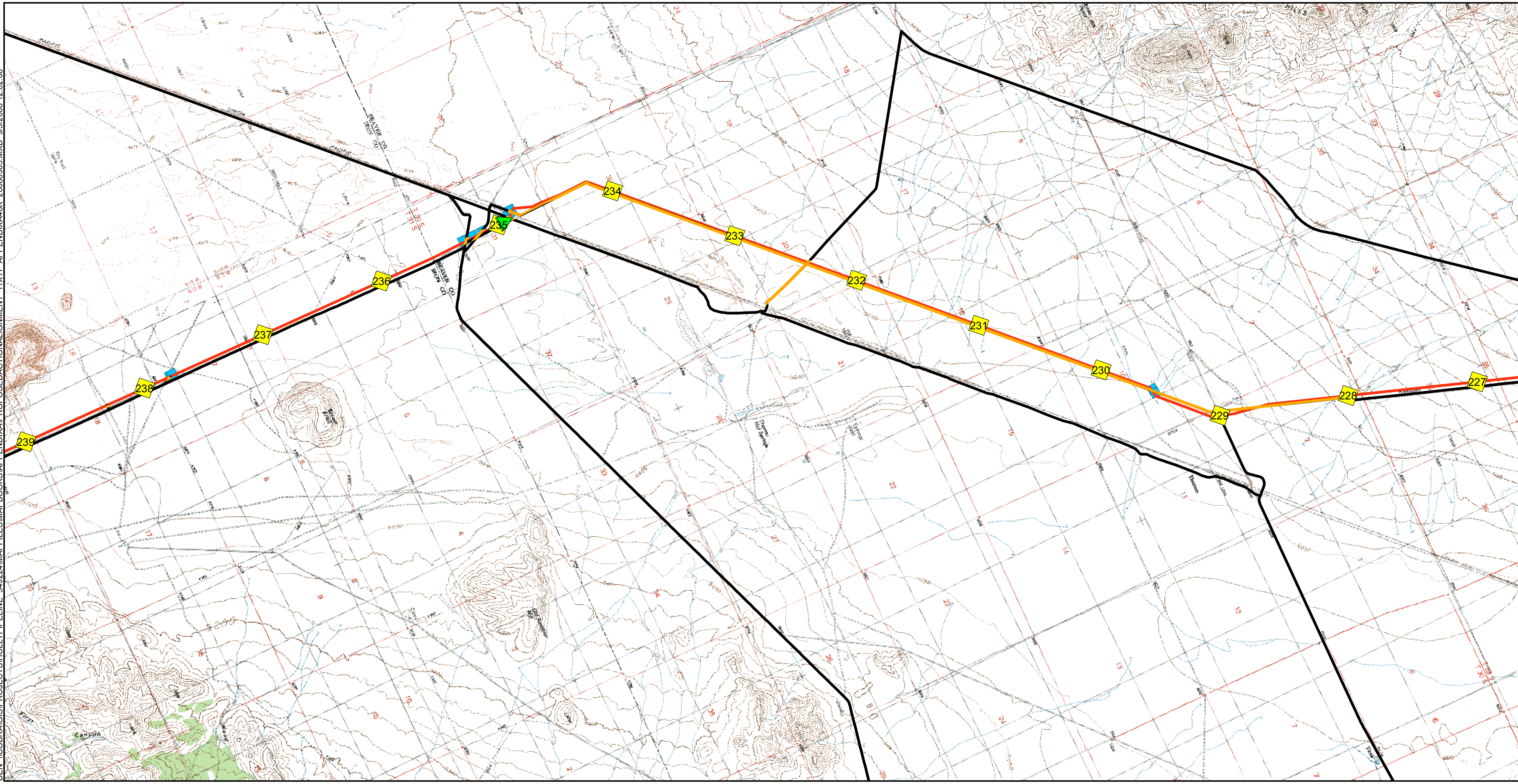

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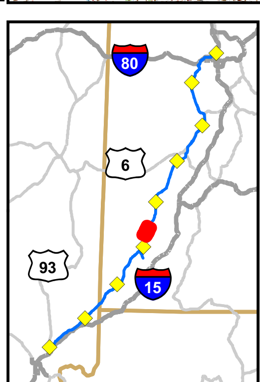

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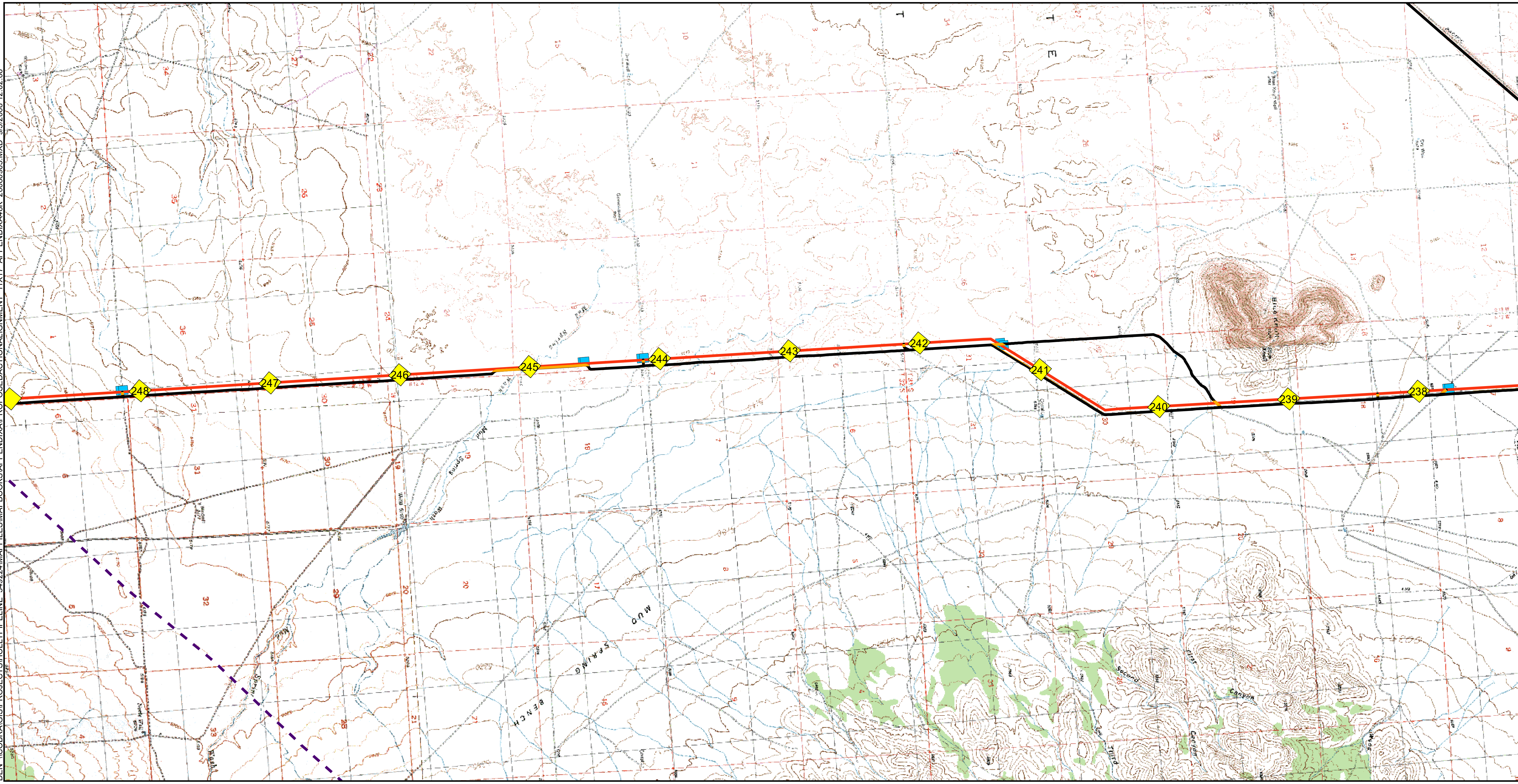

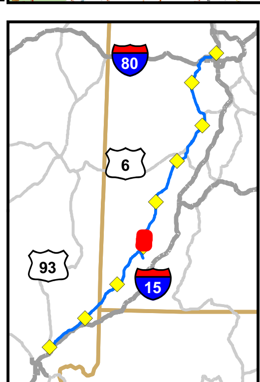

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Salt Lake City, Utah to Las Vegas, Nevada
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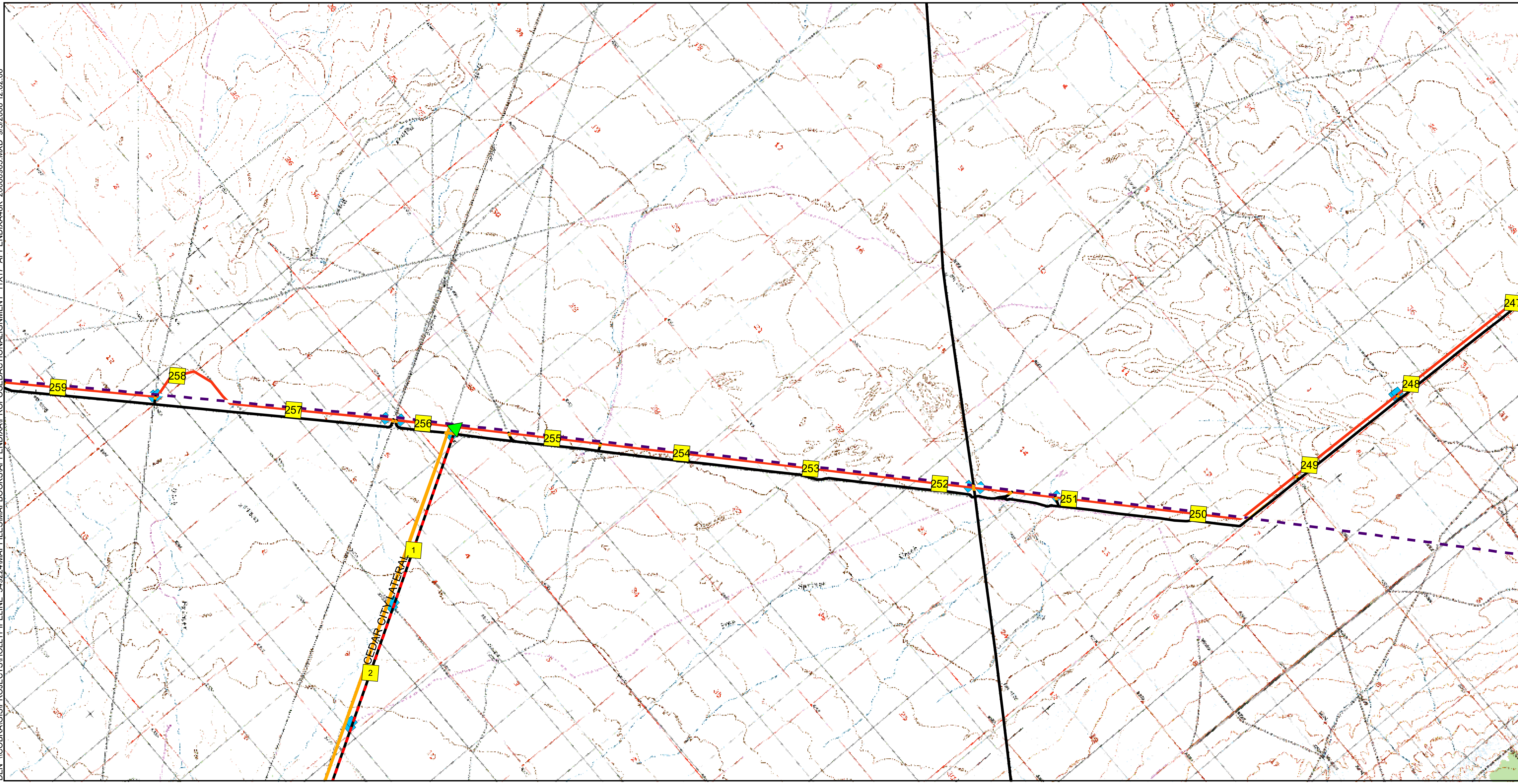

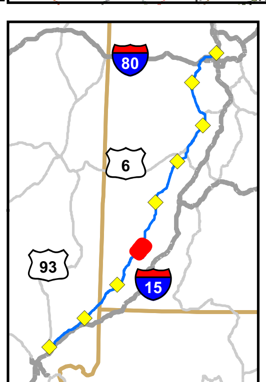

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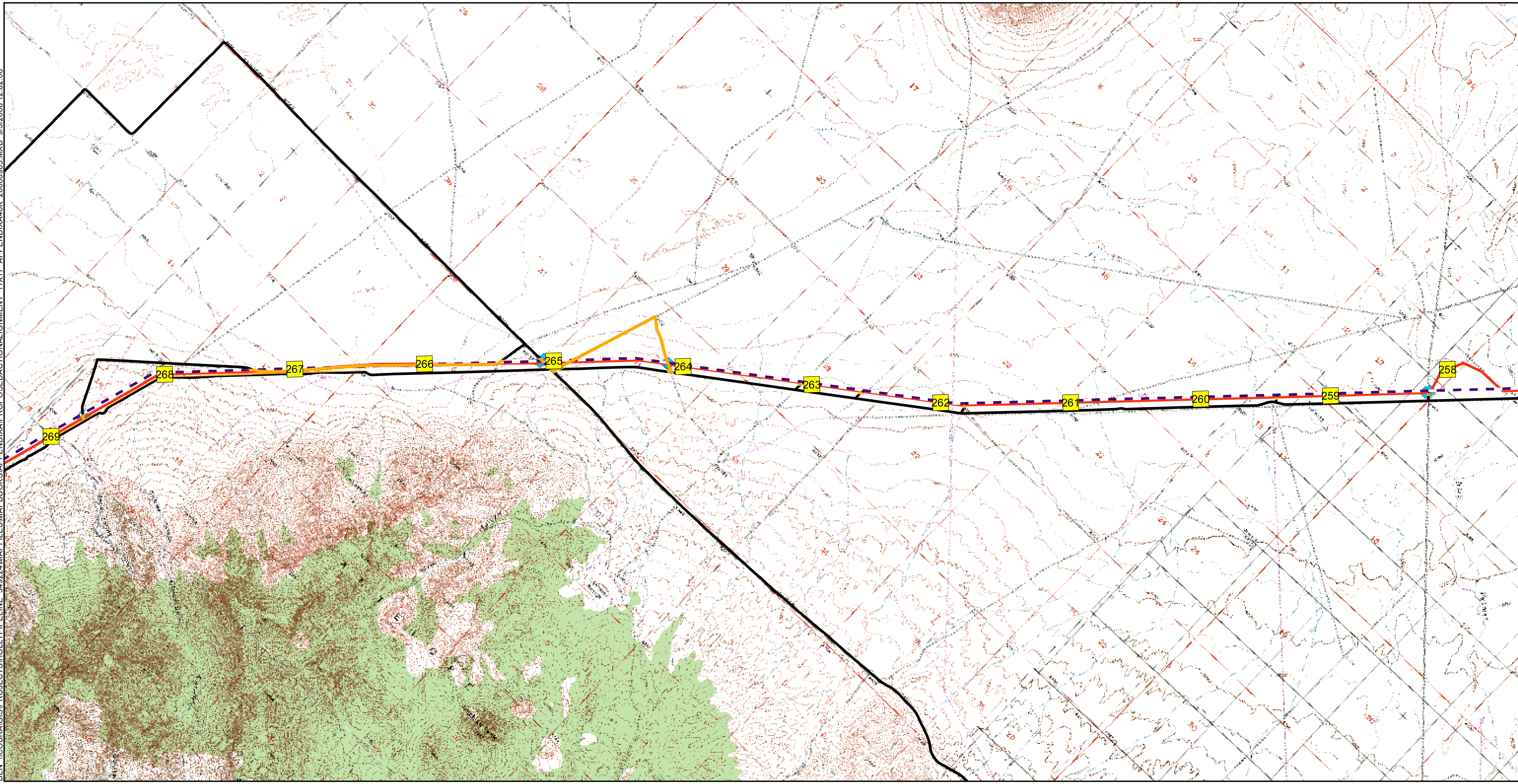

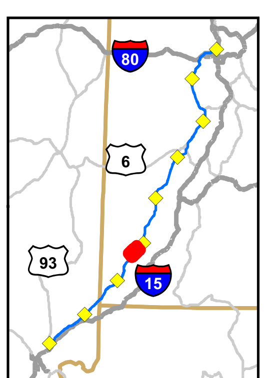

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Salt Lake City, Utah to Las Vegas, Nevada
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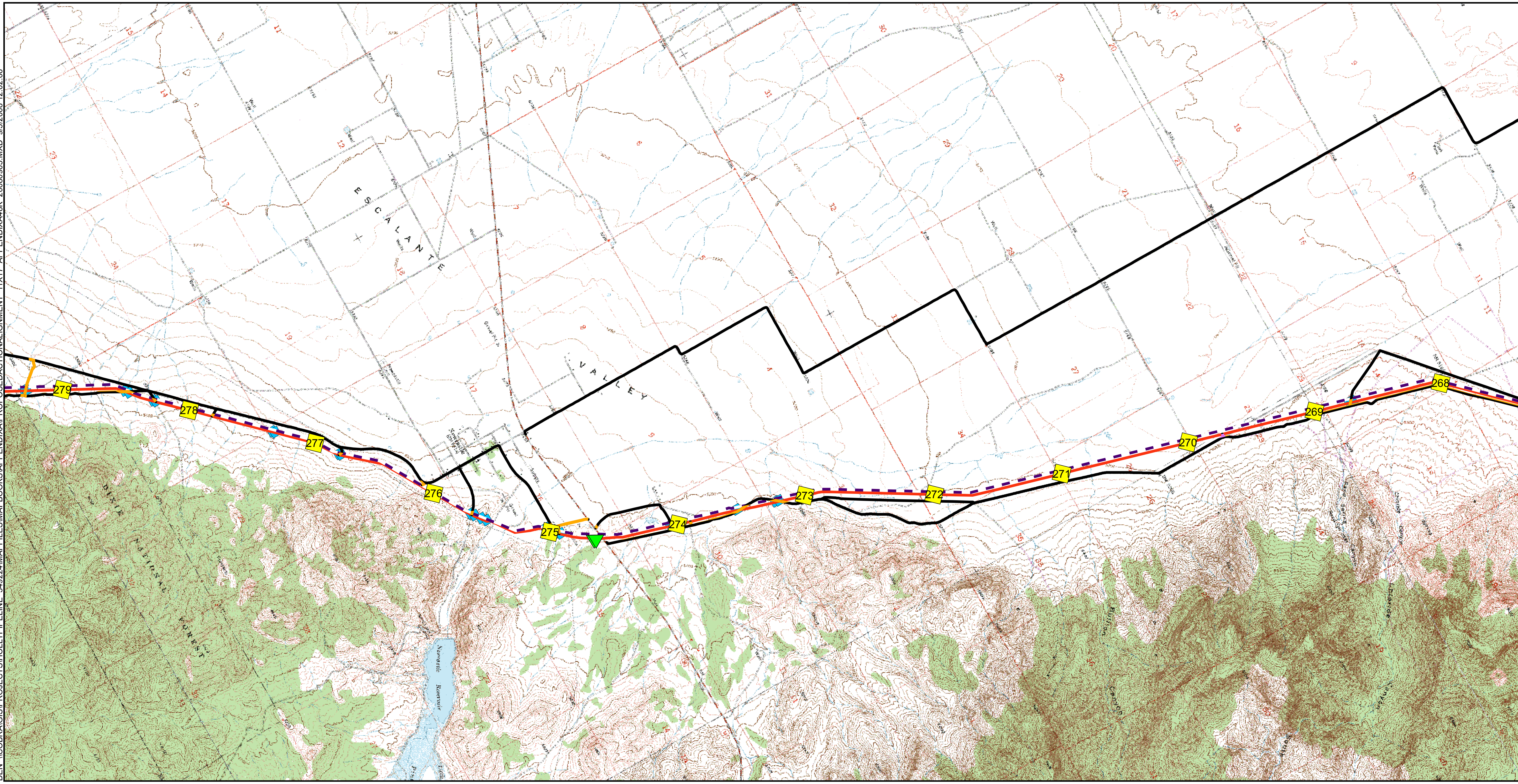

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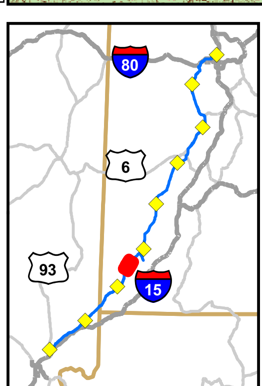

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Salt Lake City, Utah to Las Vegas, Nevada
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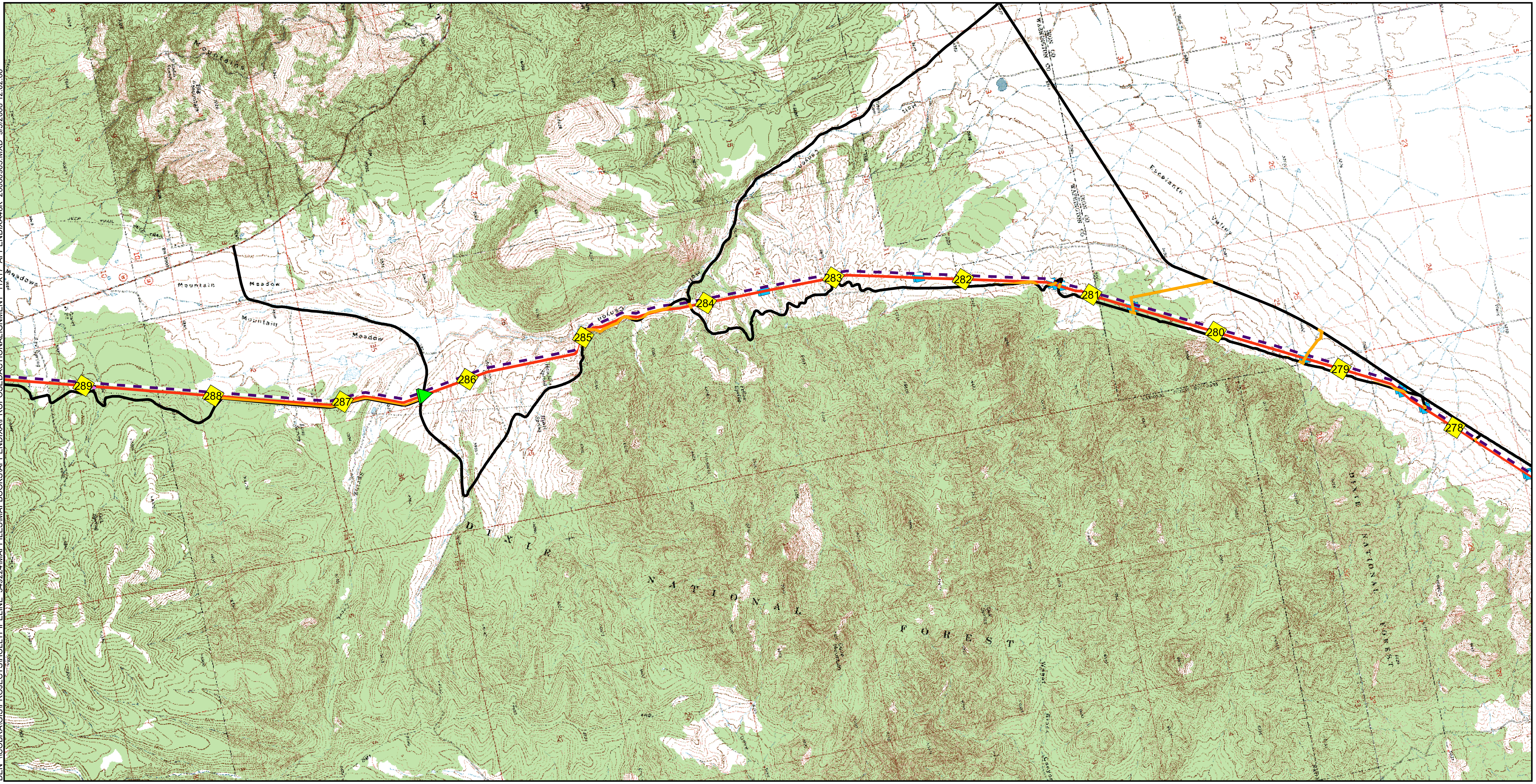

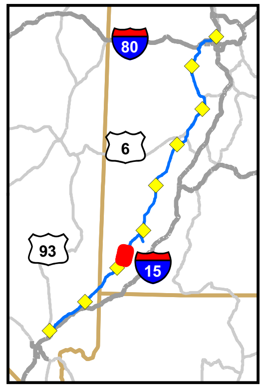

Key Map

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Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

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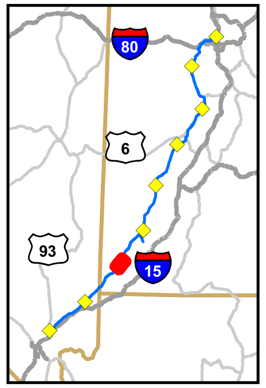

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UNEV PIPELINE, LLC

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Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008

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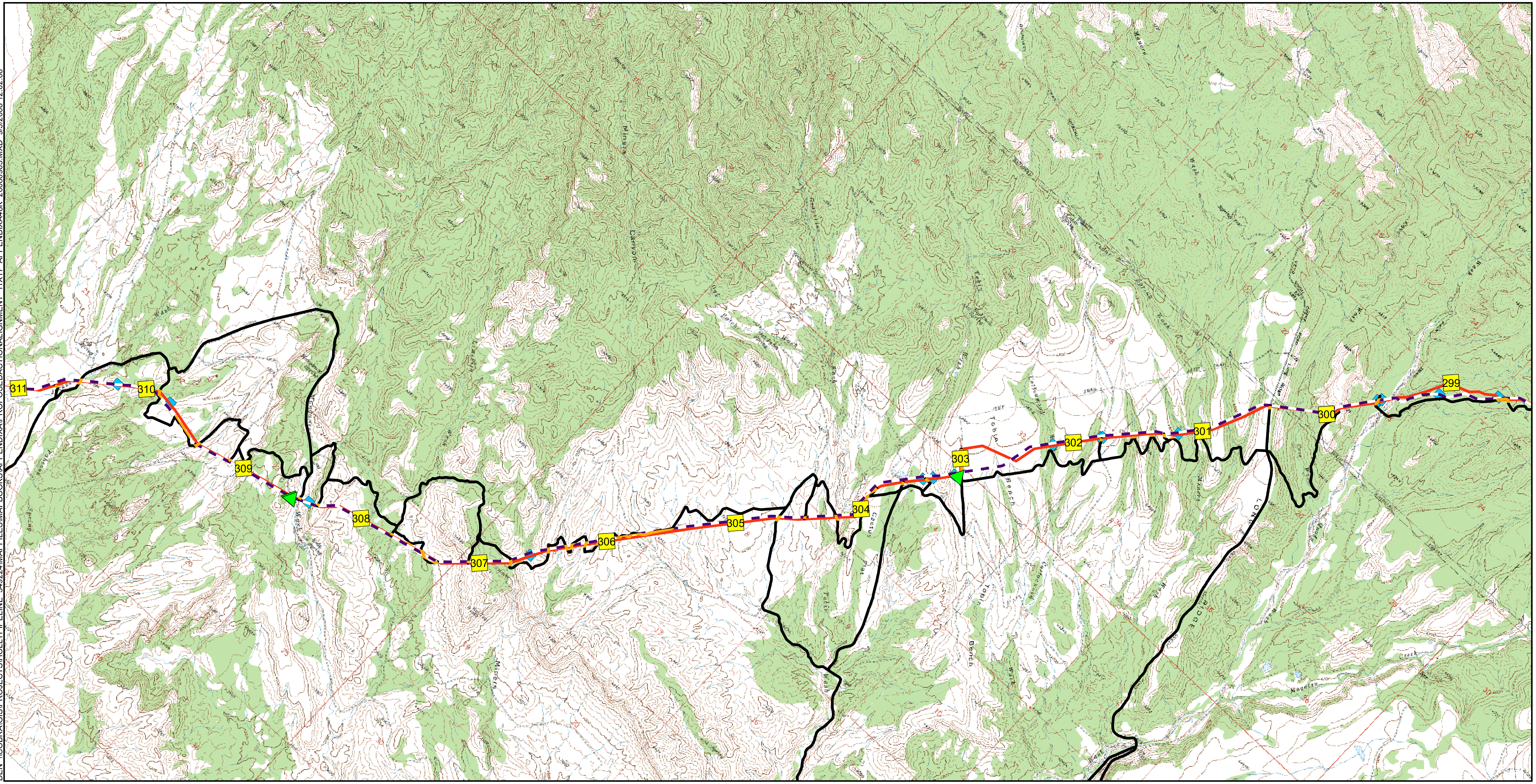

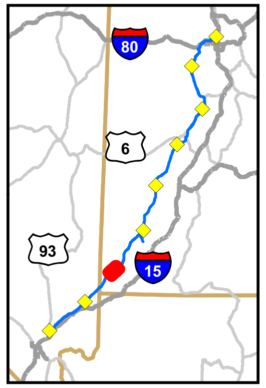

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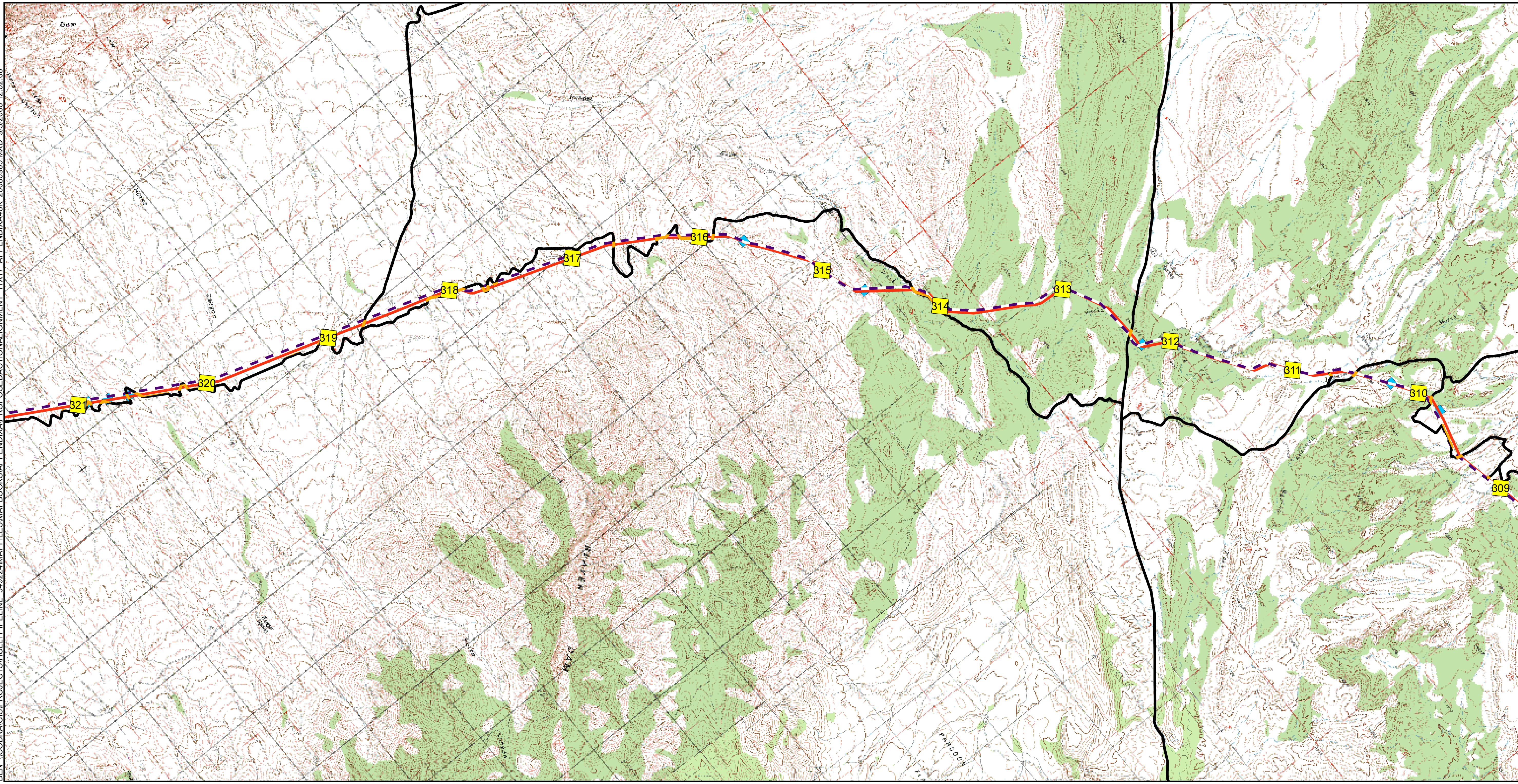
Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Sep 05, 2008



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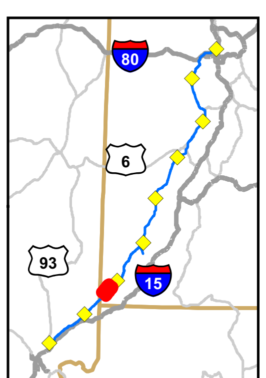

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Salt Lake City, Utah to Las Vegas, Nevada
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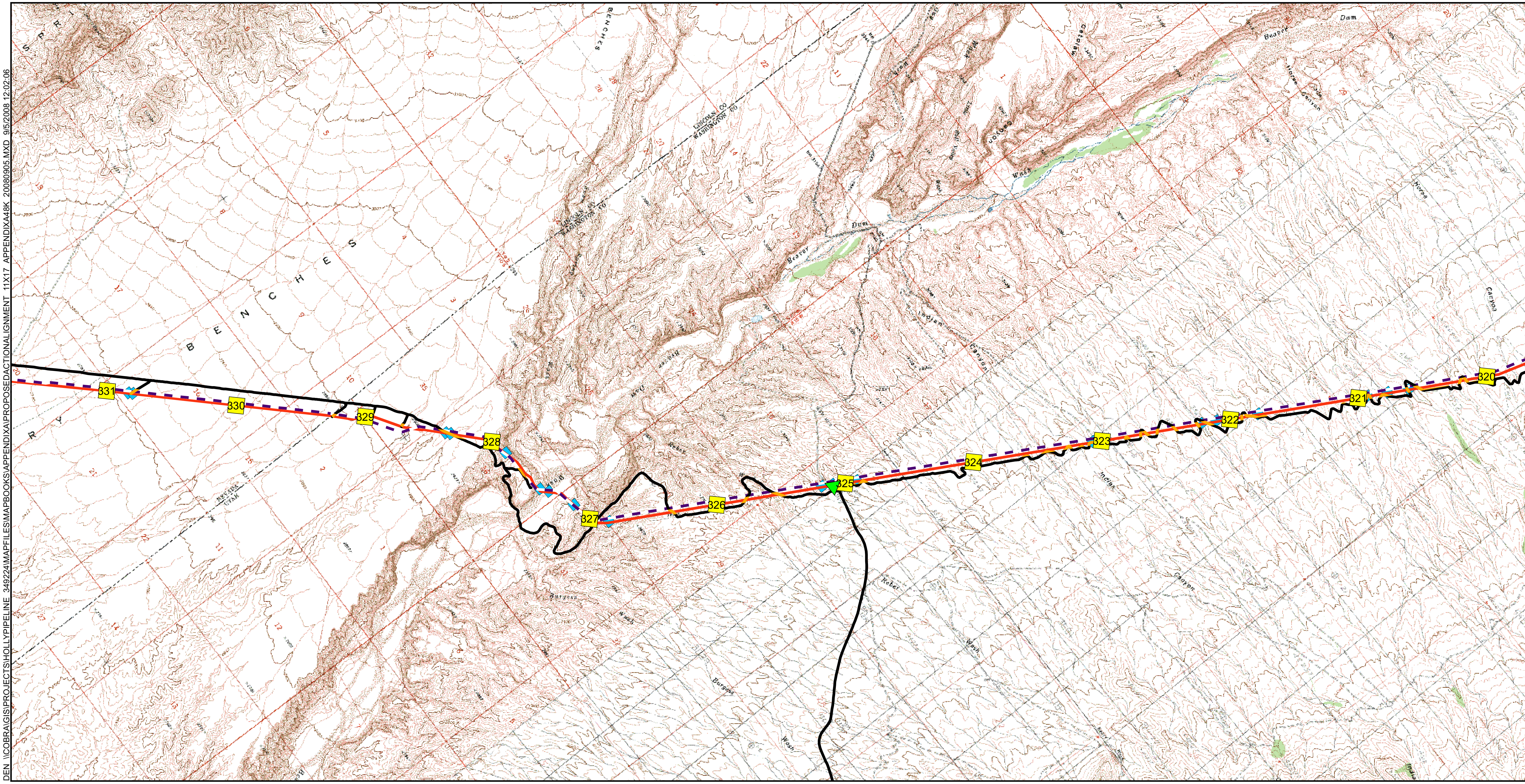

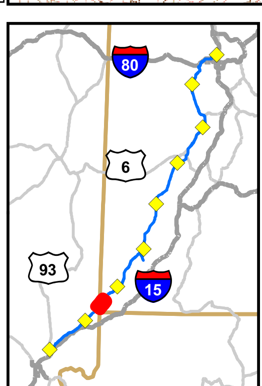

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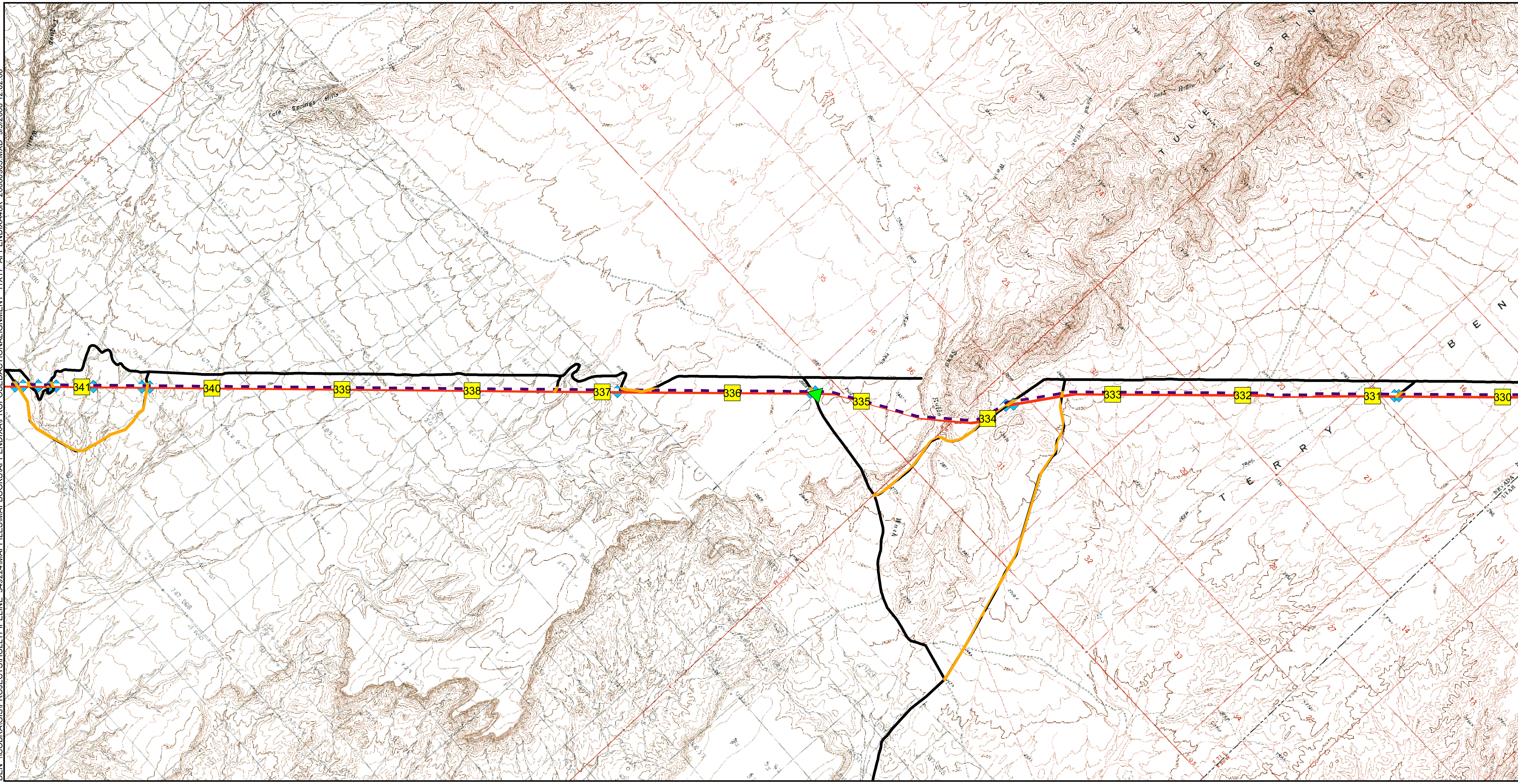

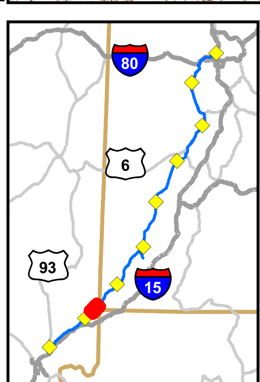

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Salt Lake City, Utah to Las Vegas, Nevada
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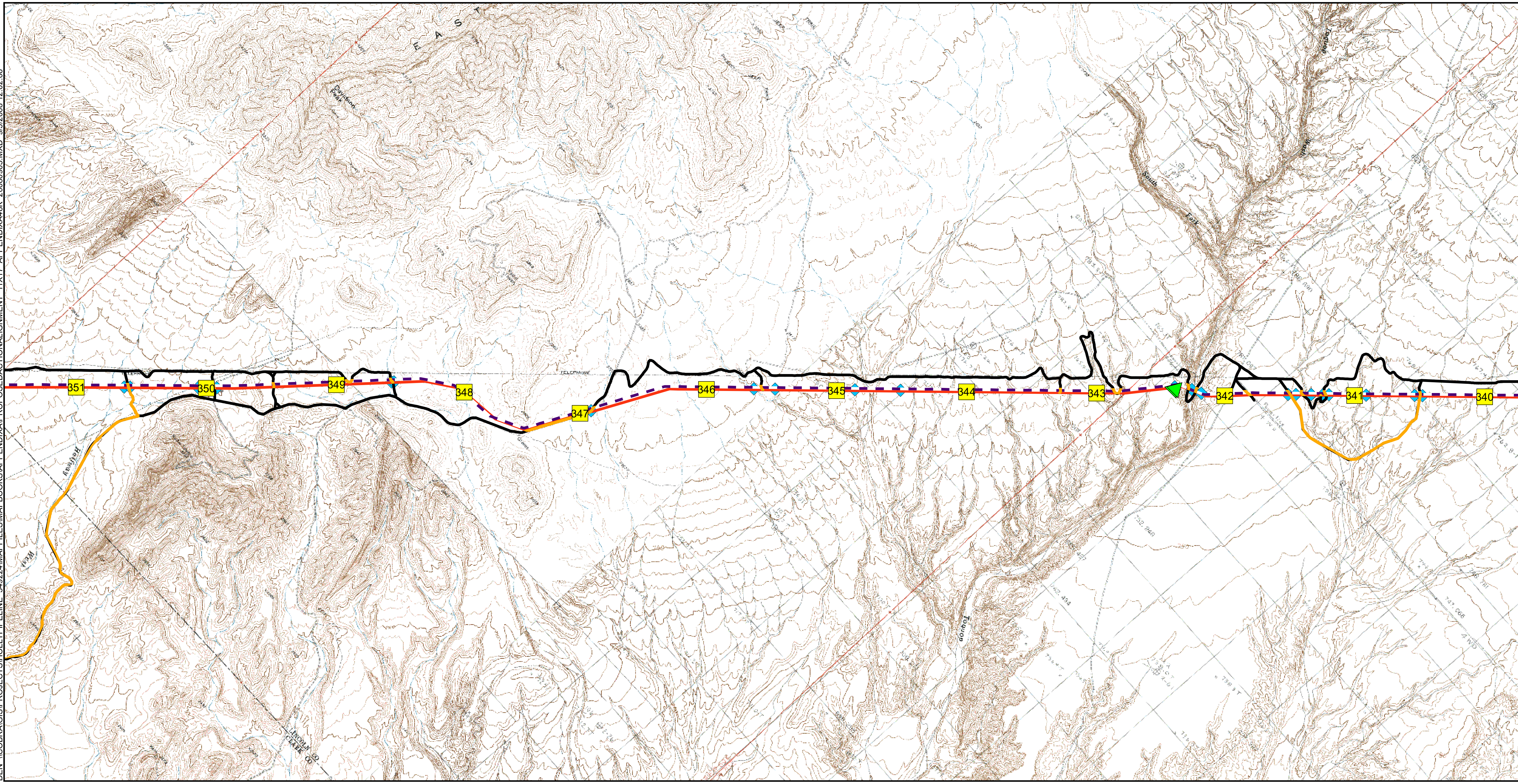

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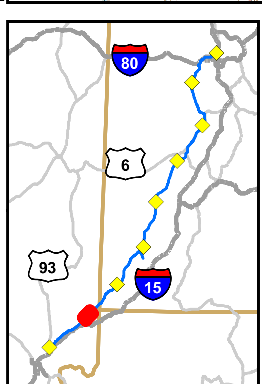

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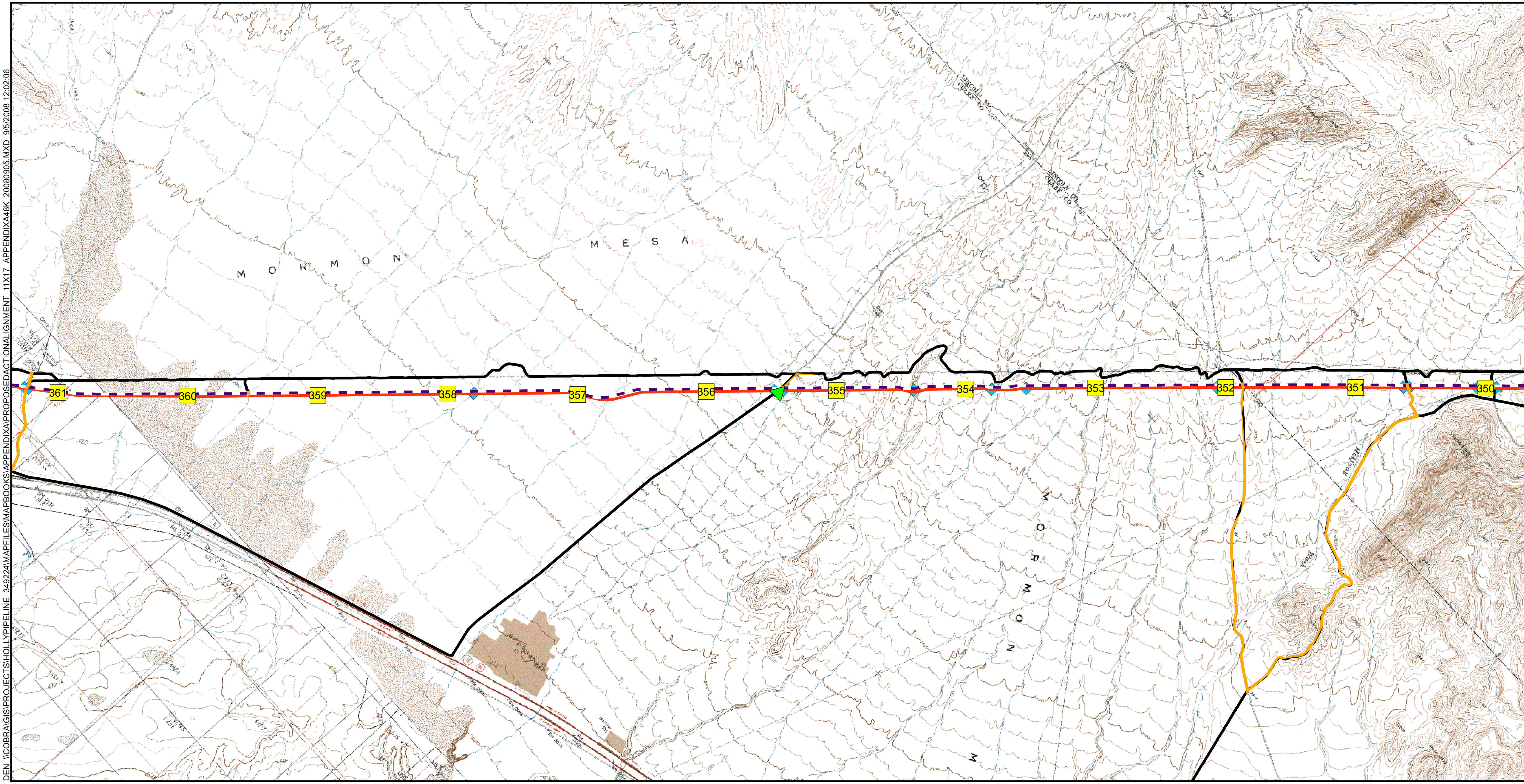

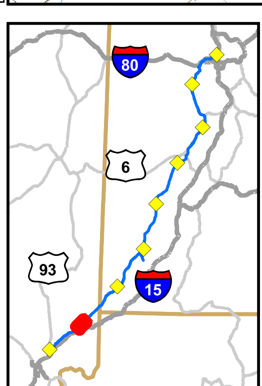

Legend

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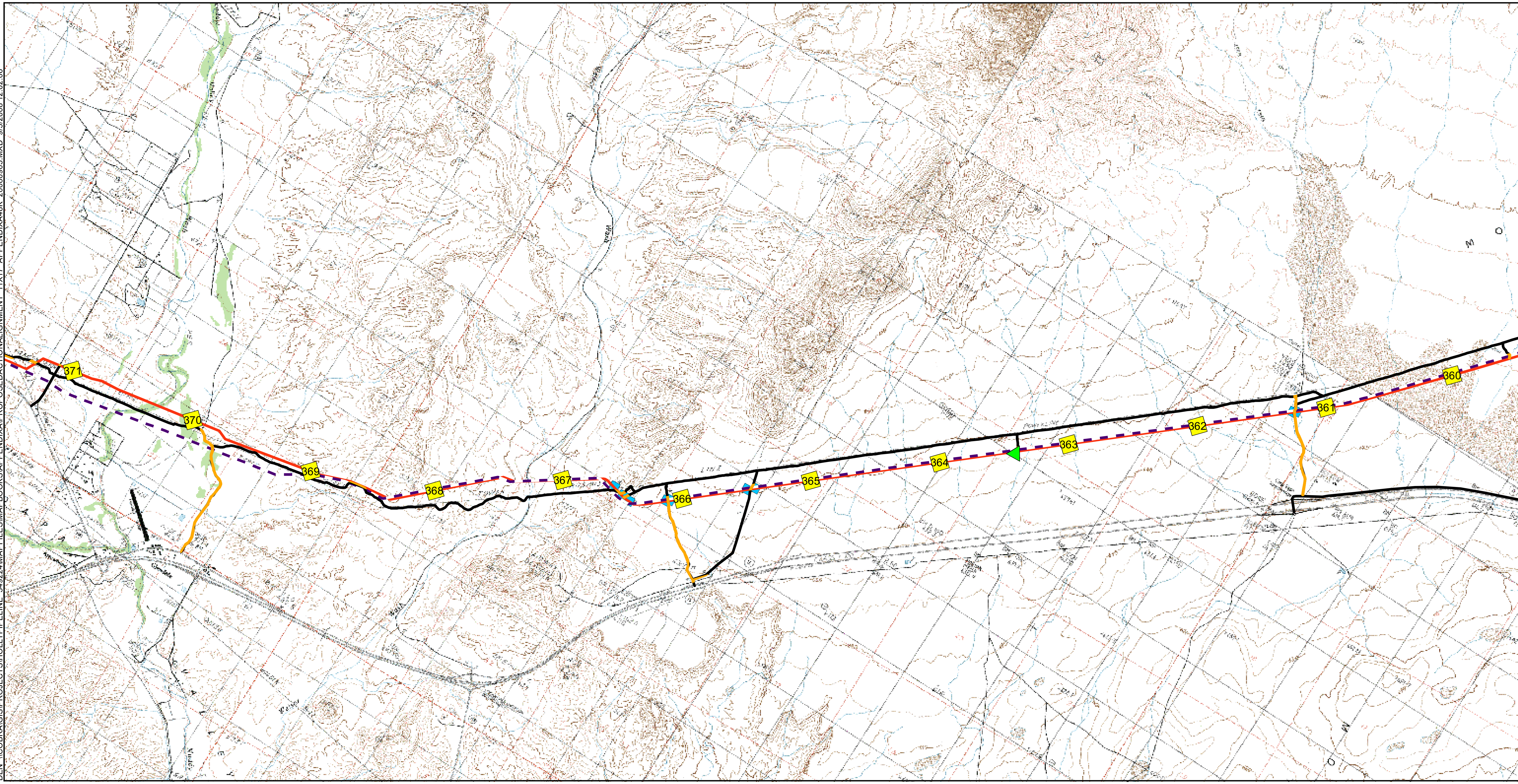

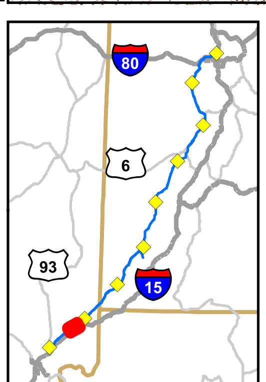

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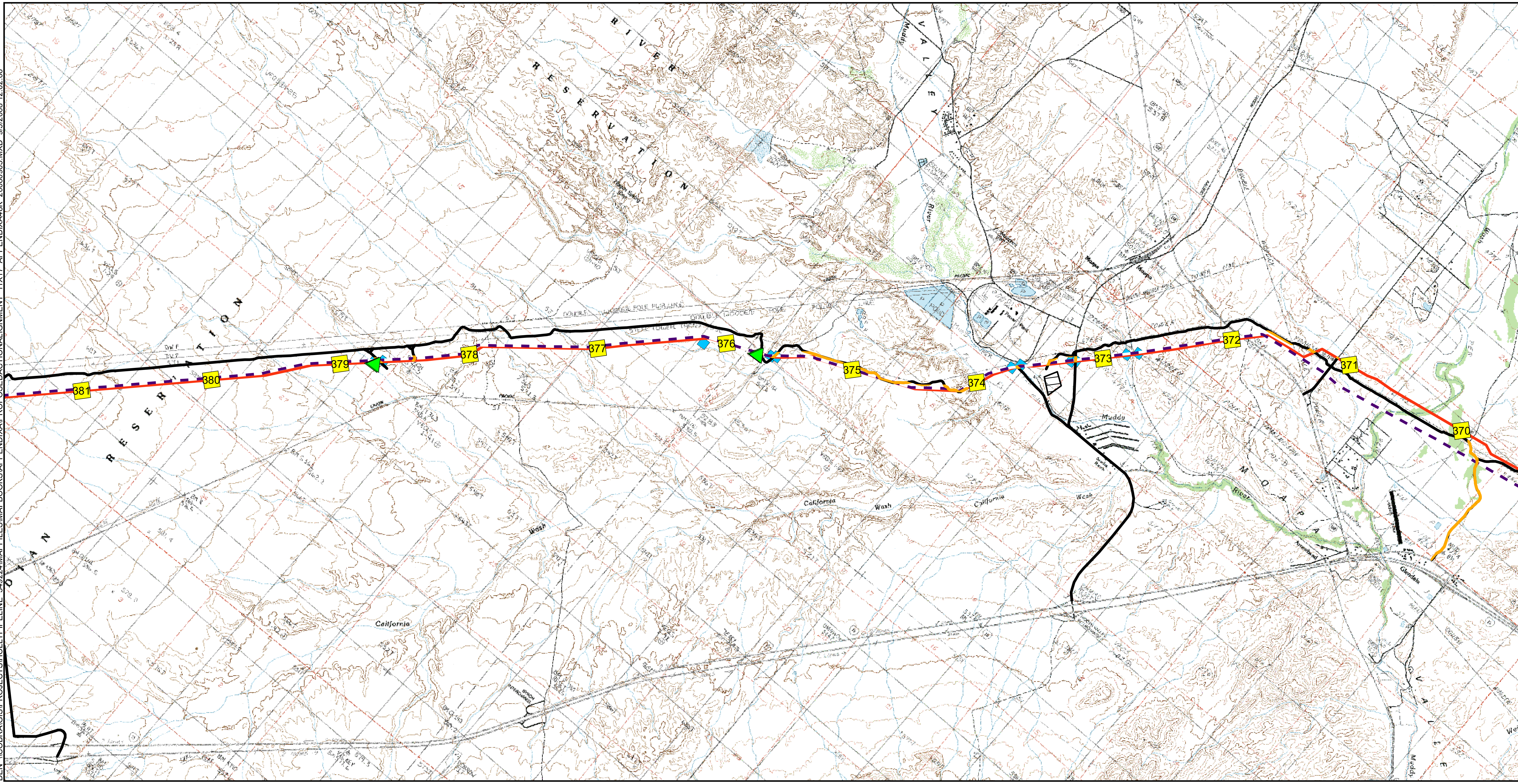

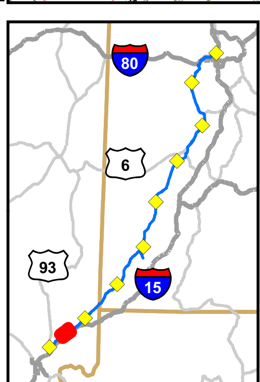

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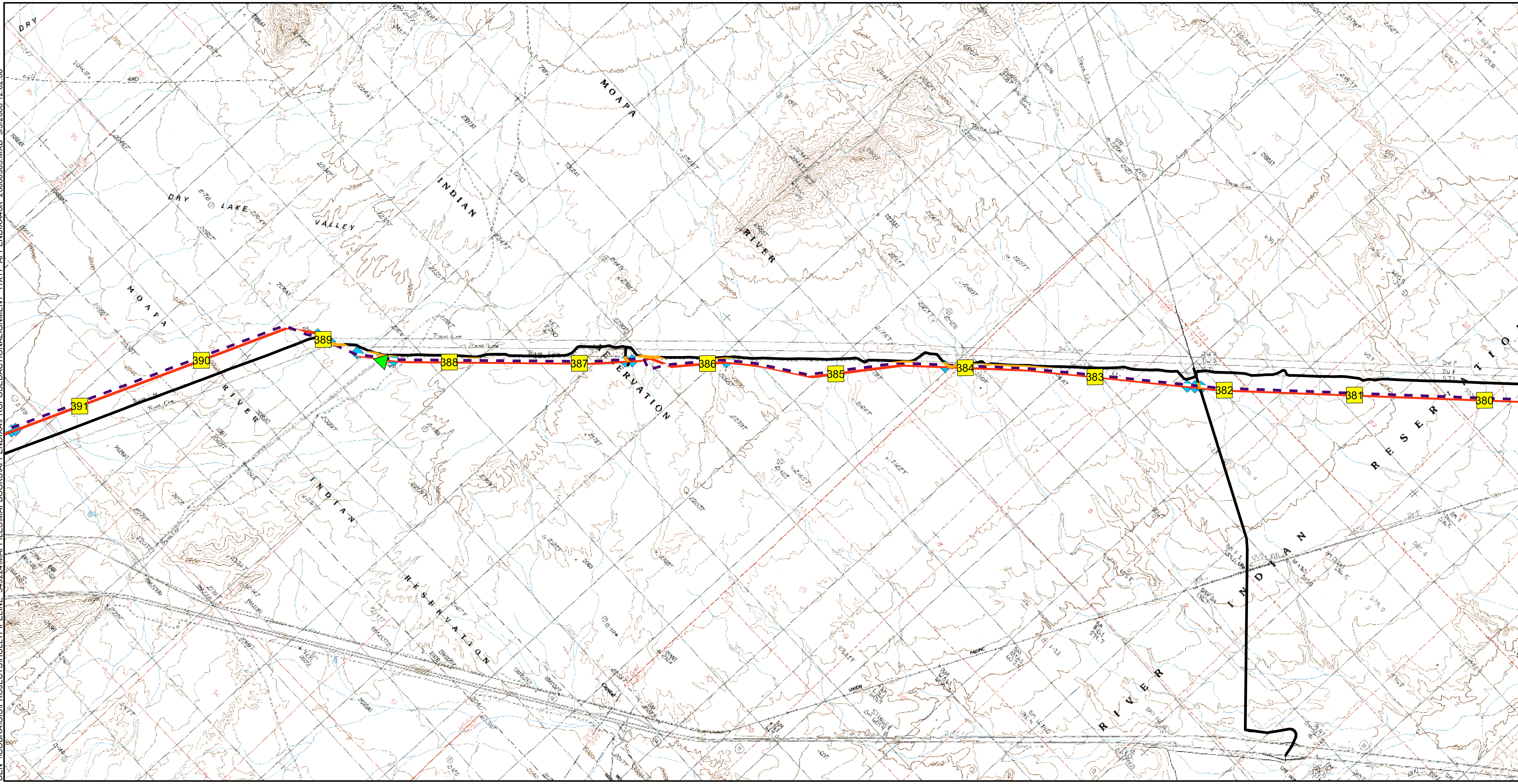

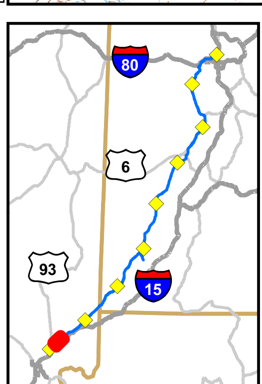

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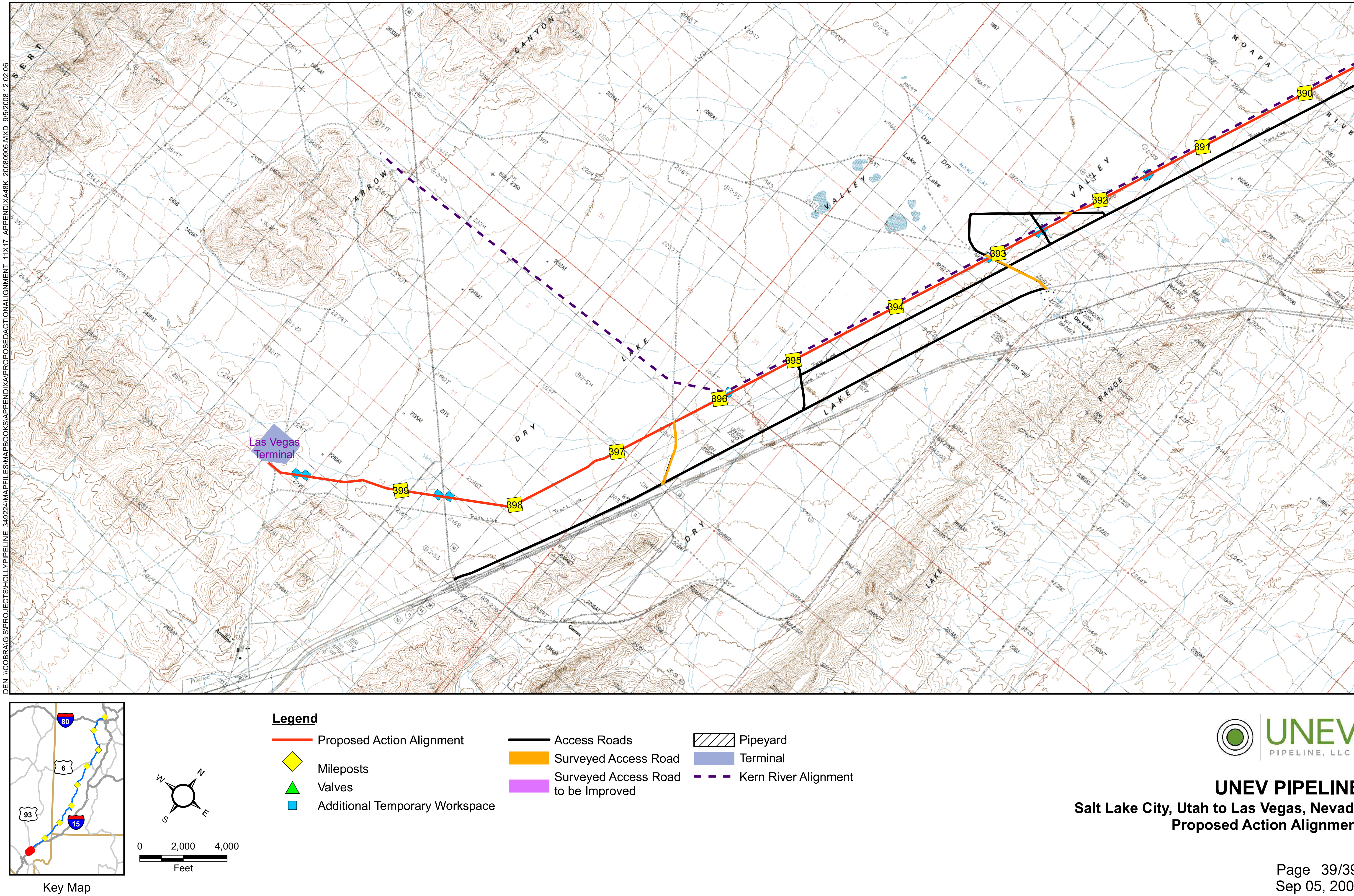

Legend

- Proposed Action Alignment
- Mileposts
- Valves
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Terminal
- Kern River Alignment

UNEV PIPELINE, LLC

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Salt Lake City, Utah to Las Vegas, Nevada

Proposed Action Alignment

Appendix B
Proposed Cedar City Lateral Line
Mileposts 1-9

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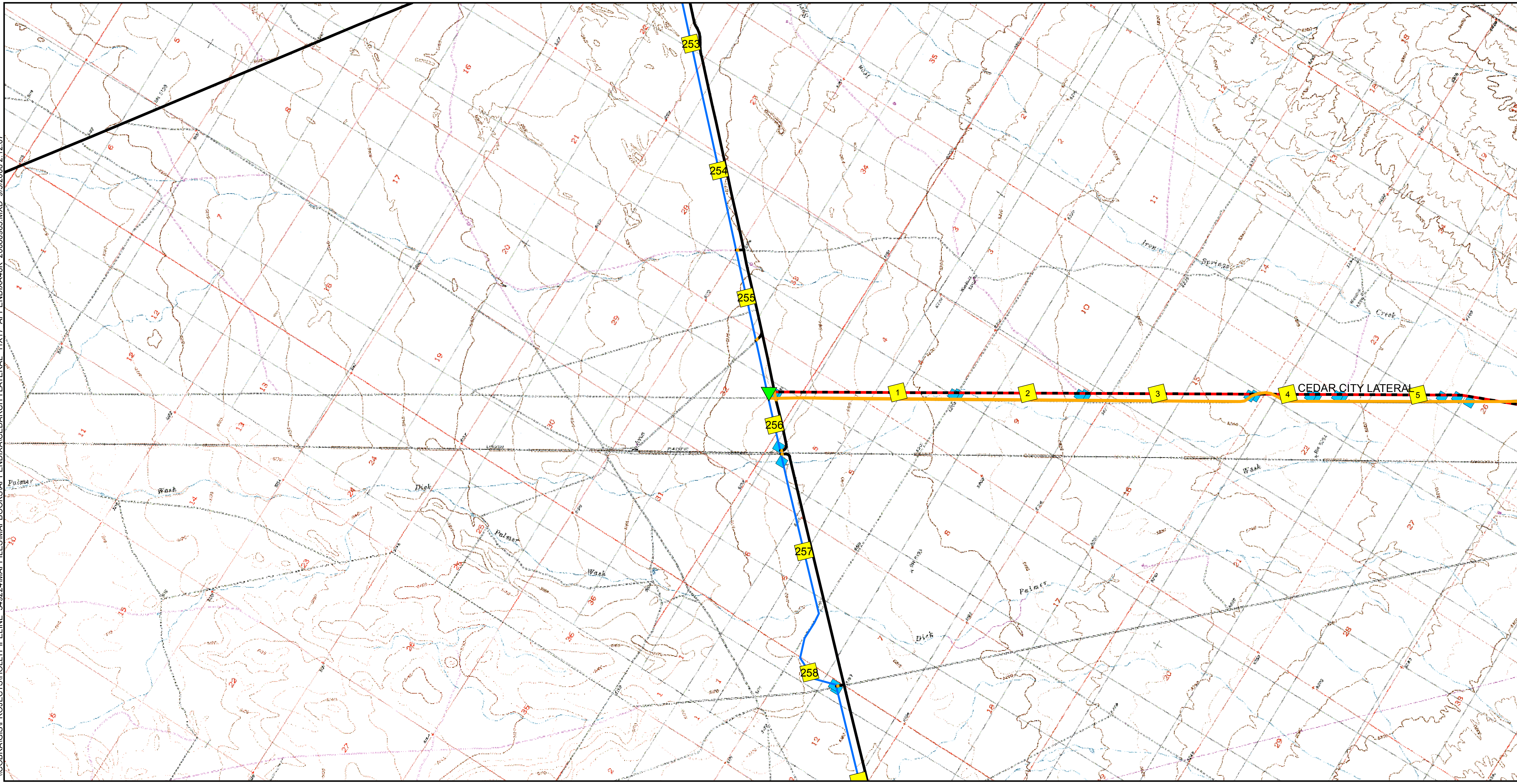

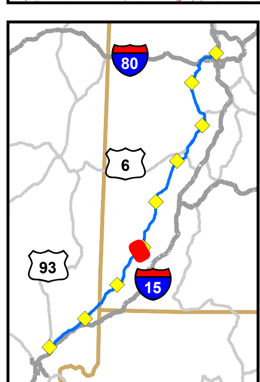

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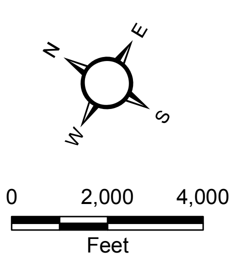

Legend

- Cedar City Lateral
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Terminal

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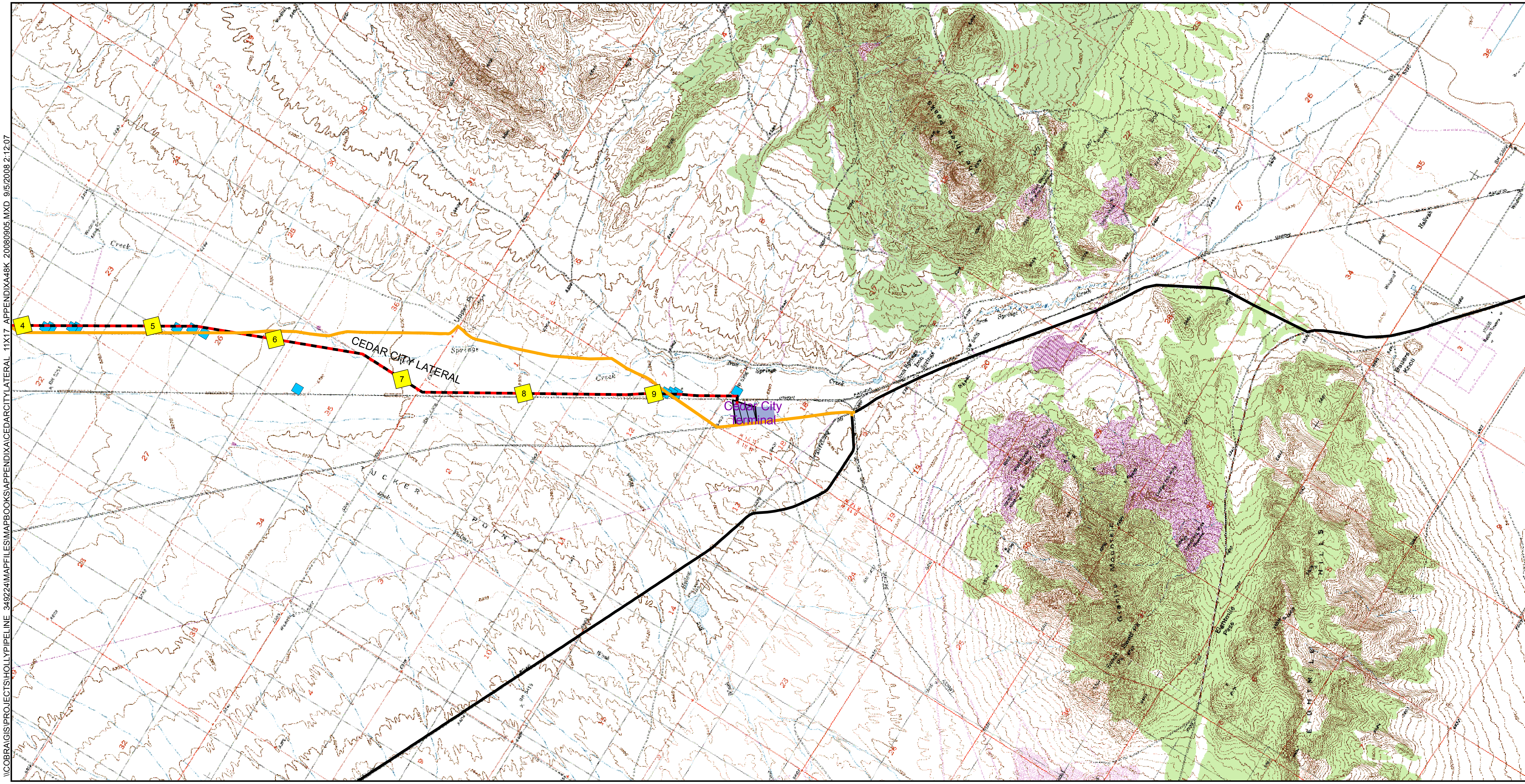

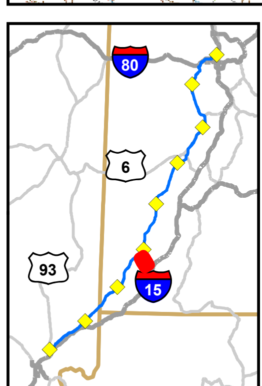

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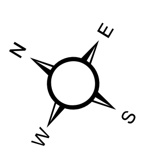

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Legend

- Cedar City Lateral
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Terminal

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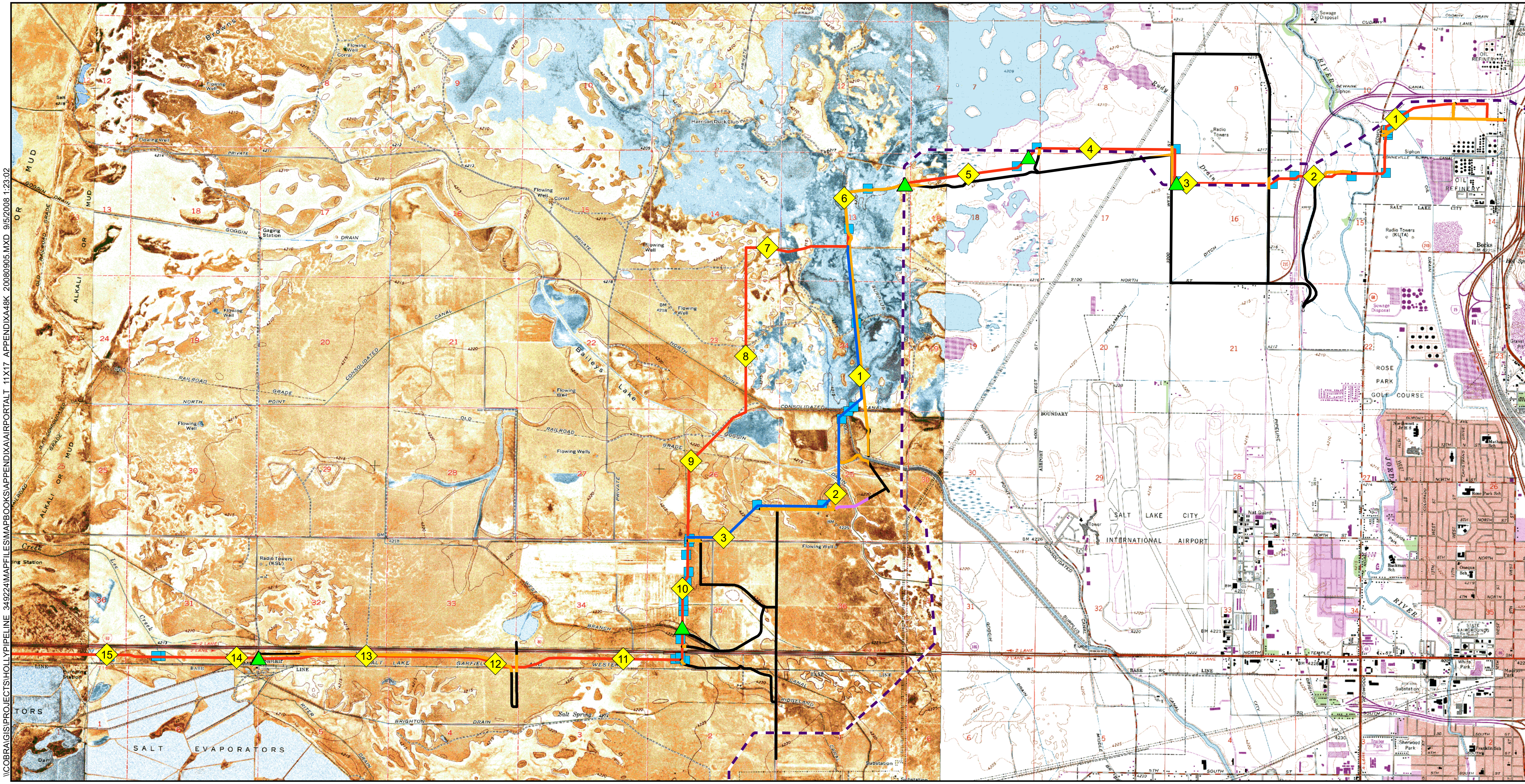
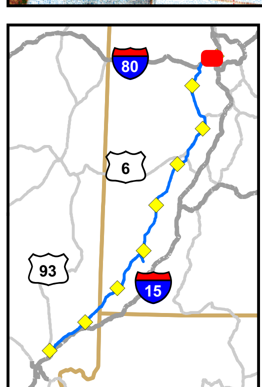
Appendix B
Airport Alternative
Mileposts 1-3





Key Map

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Legend

- Proposed Action Alignment
- Airport Alternative
- Mileposts
- Valves
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Terminal
- Kern River Alignment

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Salt Lake City, Utah to Las Vegas, Nevada
Airport Alternative

Sep 05, 2008

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Appendix B
Tooele County Alternative
Mileposts 1-14

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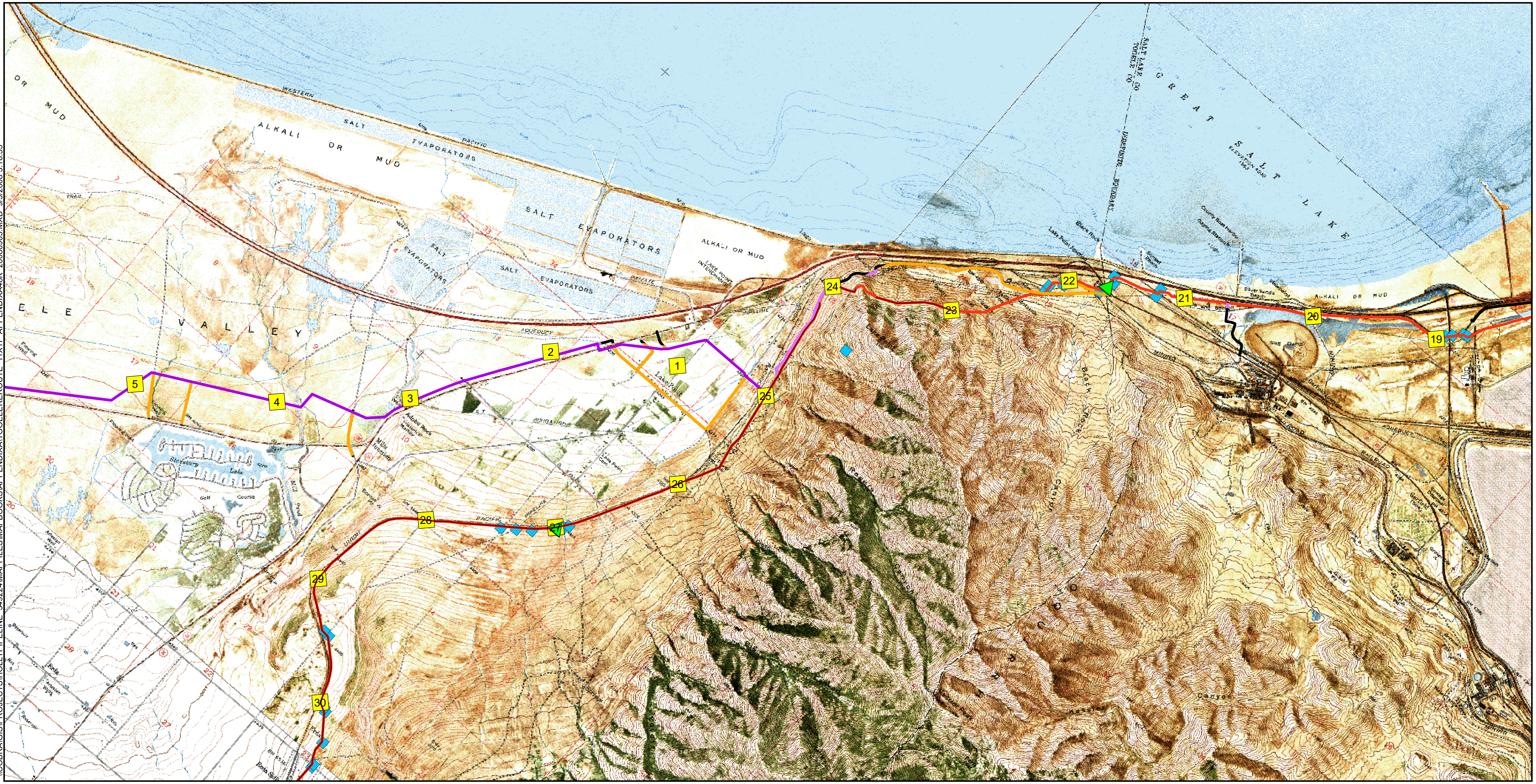

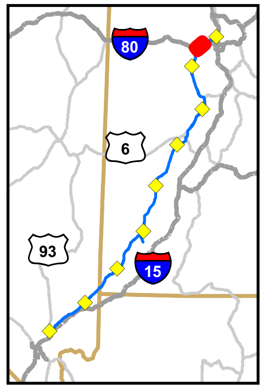

Key Map

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Legend

- Tooele County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved

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Salt Lake City, Utah to Las Vegas, Nevada
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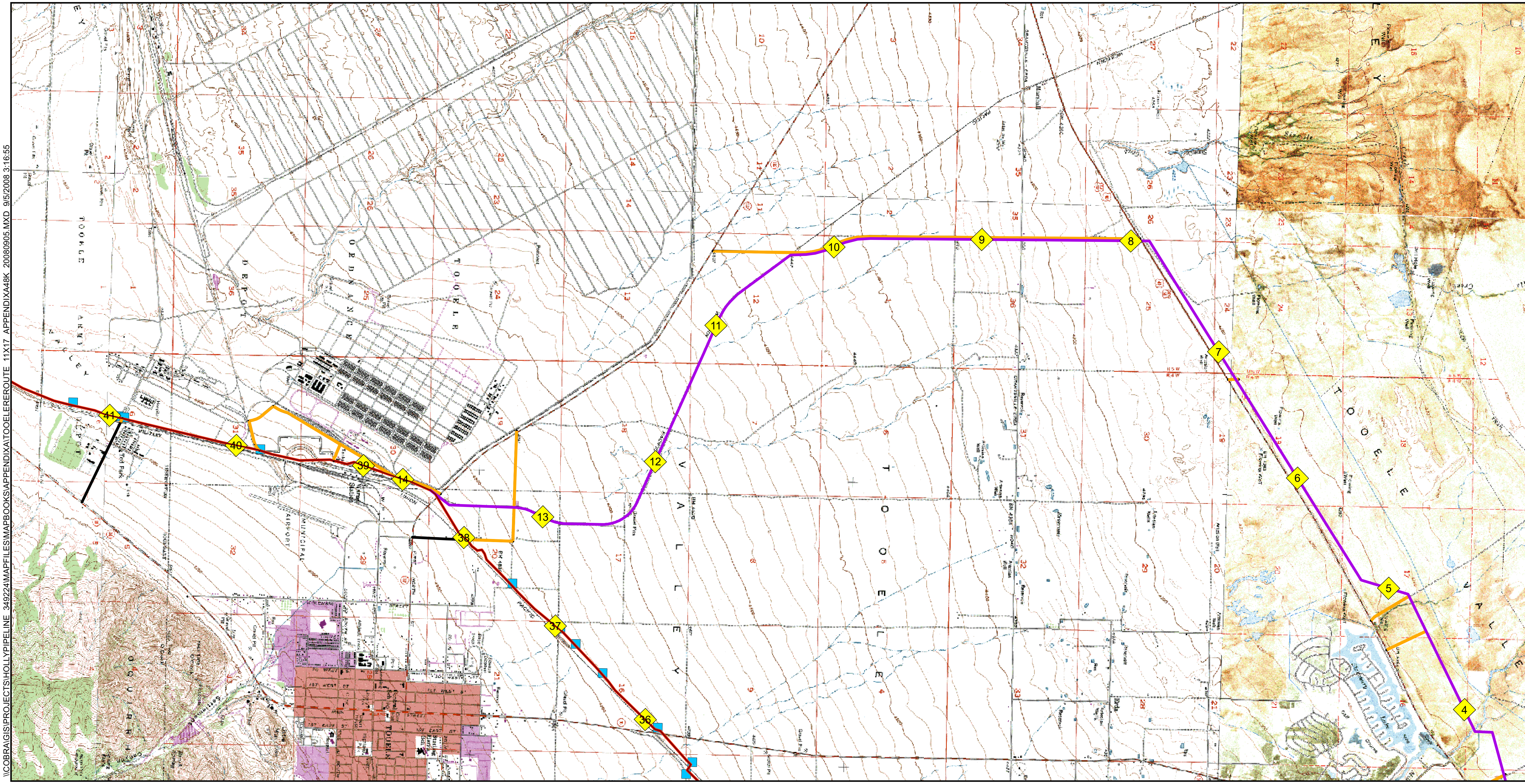
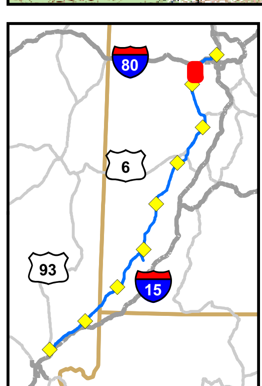
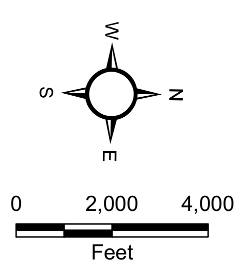




Key Map

Legend

- Tooele County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved



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Salt Lake City, Utah to Las Vegas, Nevada
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Appendix B

Rush Lake Alternative

Mileposts 1-3

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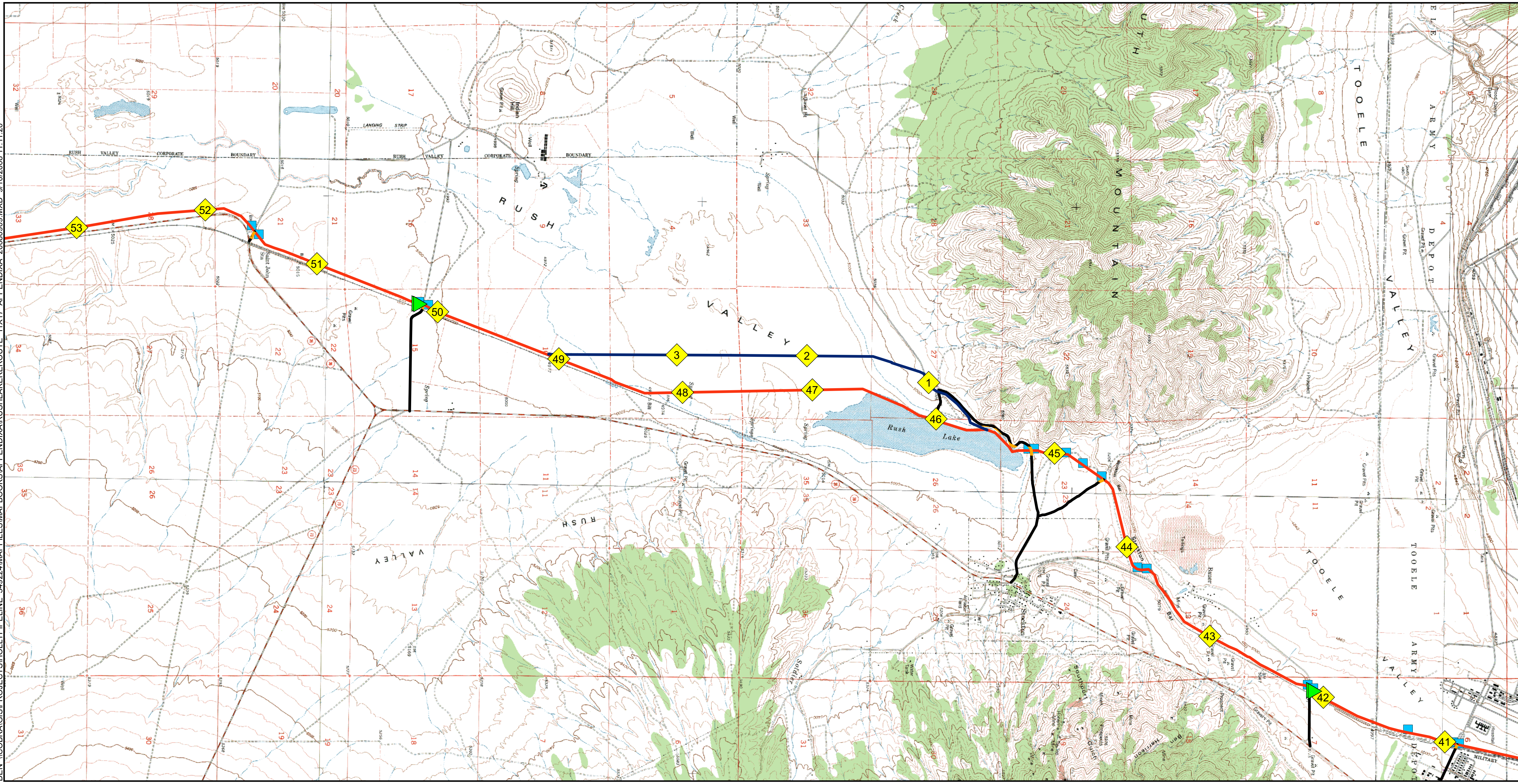

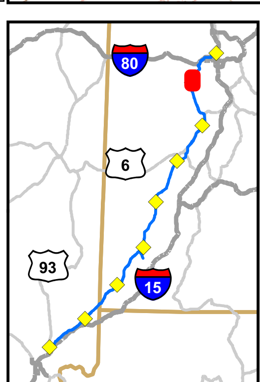

Key Map

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Legend

- Rush Lake Reroute
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved

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Rush Lake Reroute

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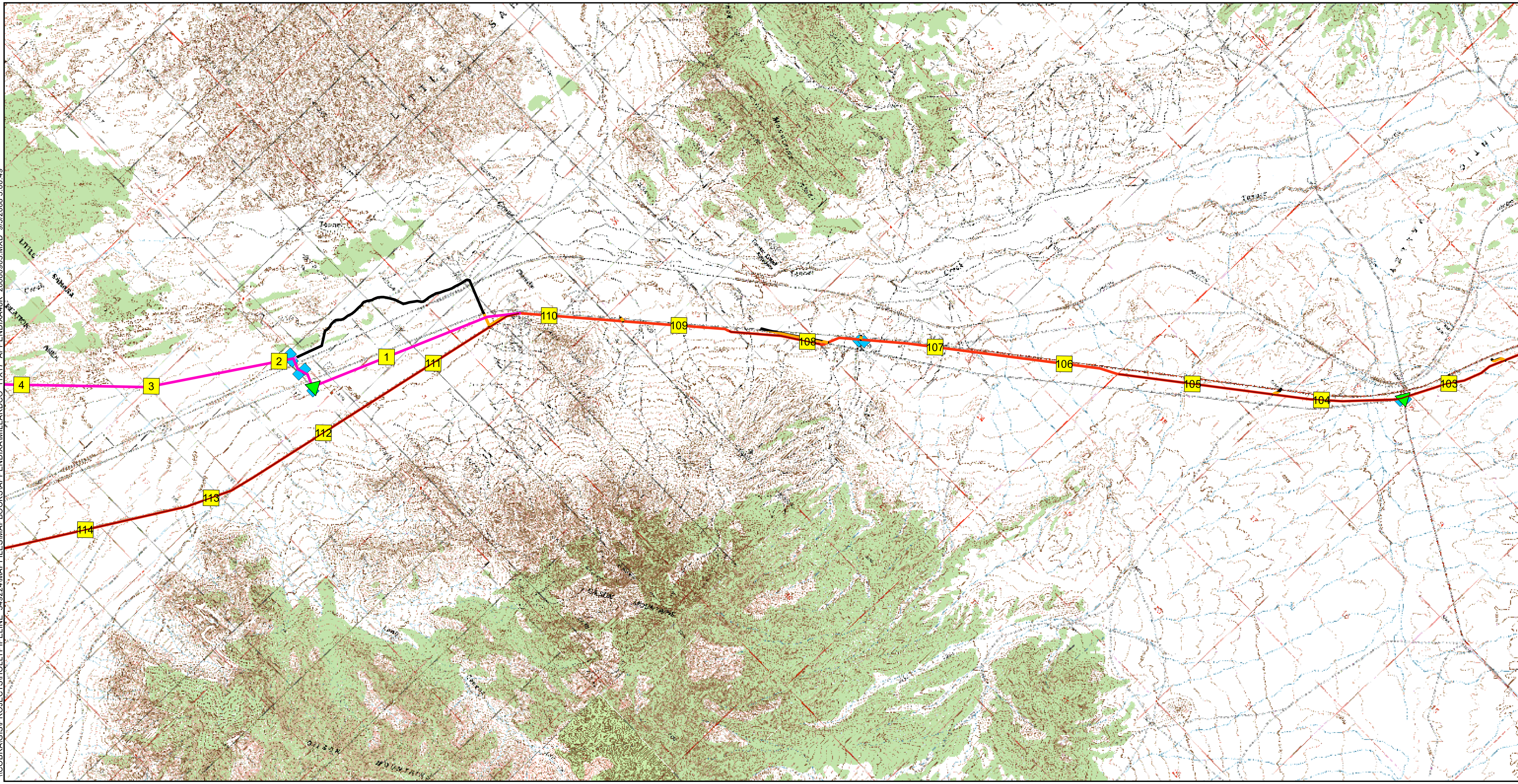
Appendix B
Millard County Alternative
Mileposts 1-63



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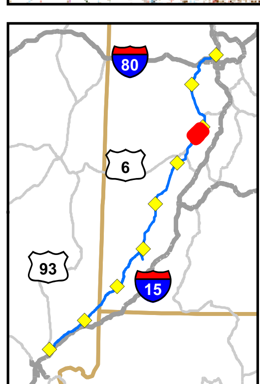

Key Map

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Legend

- Millard County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Kern River Alignment

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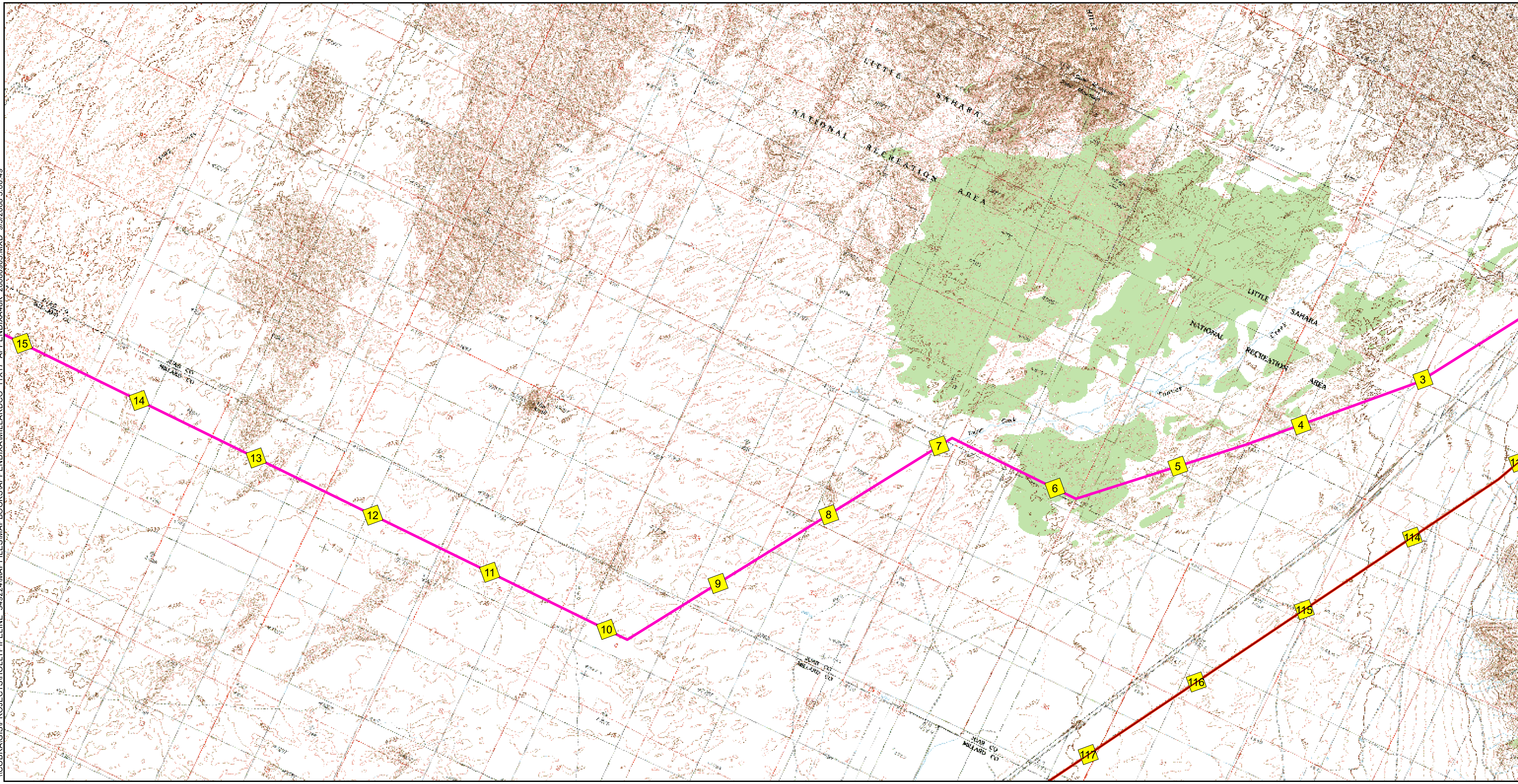

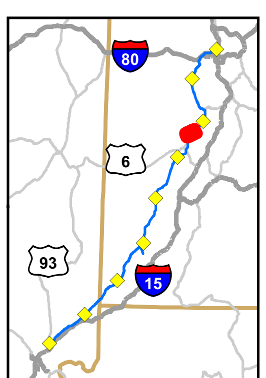

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- Millard County Alternative
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- Valves
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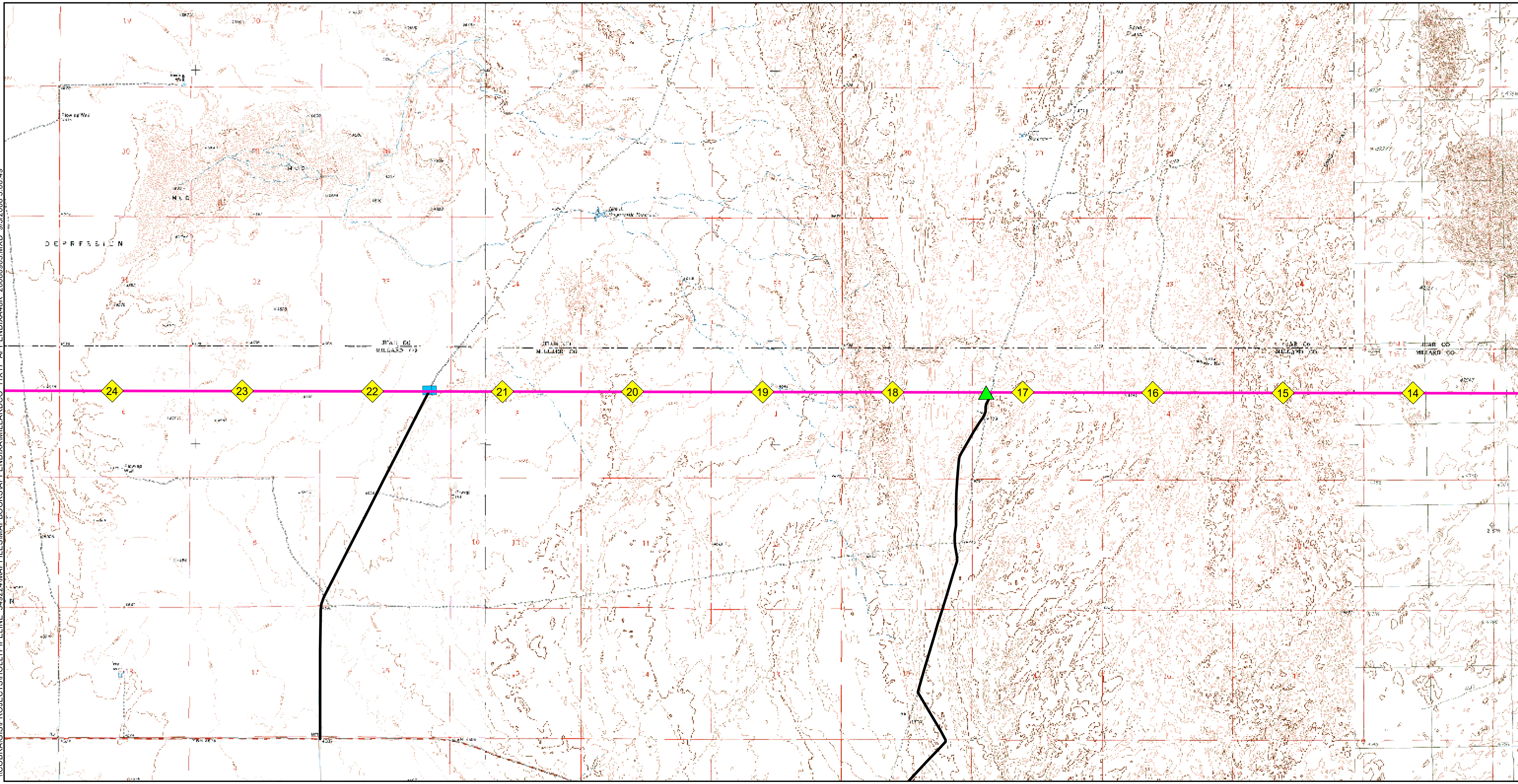

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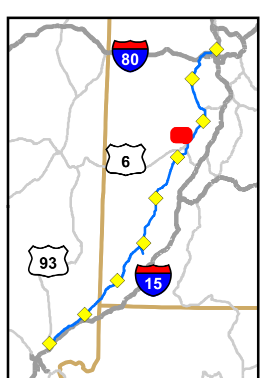

Key Map

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Legend

- Millard County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
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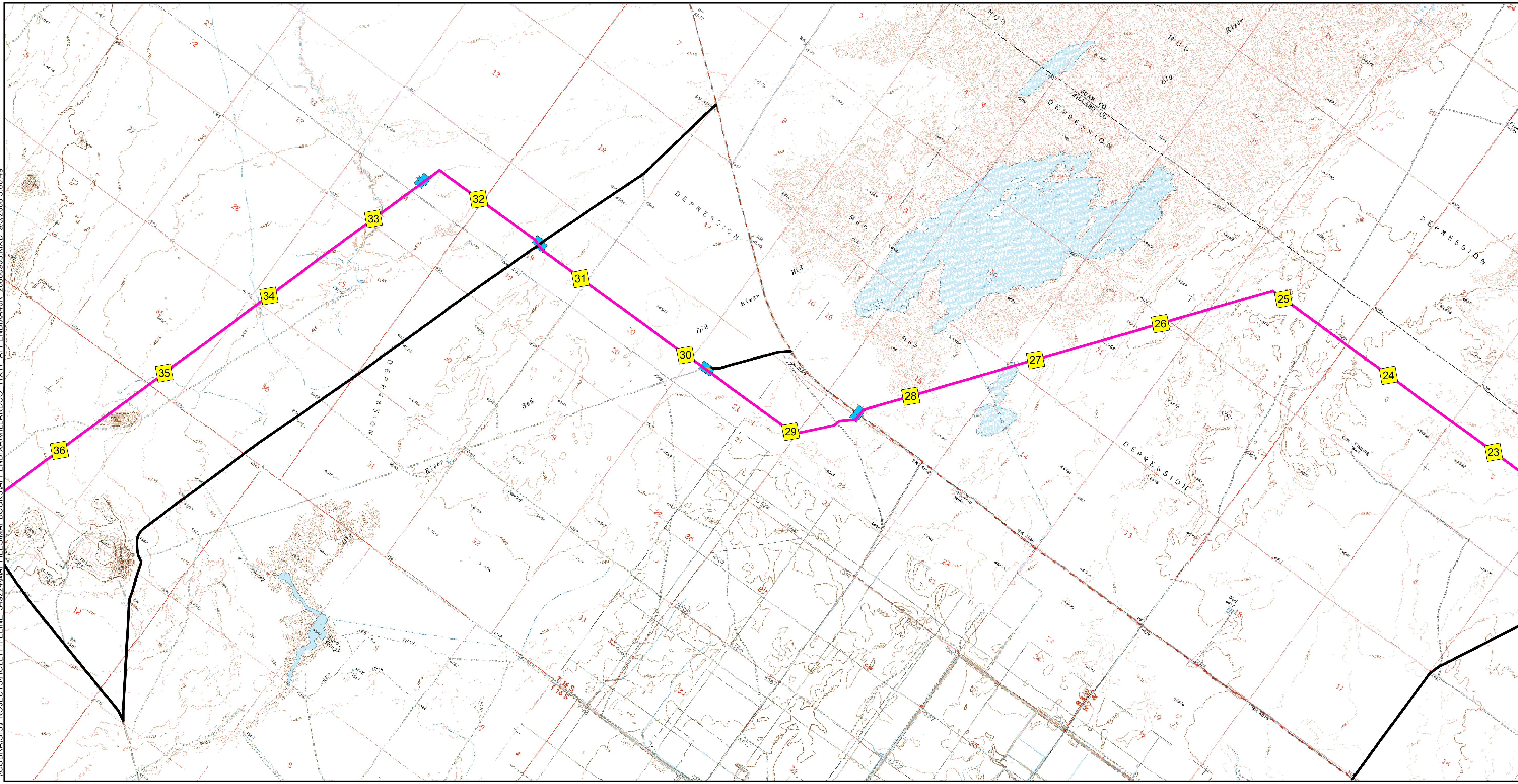

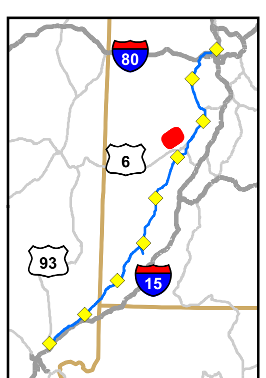

Key Map

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Legend

- Millard County Alternative
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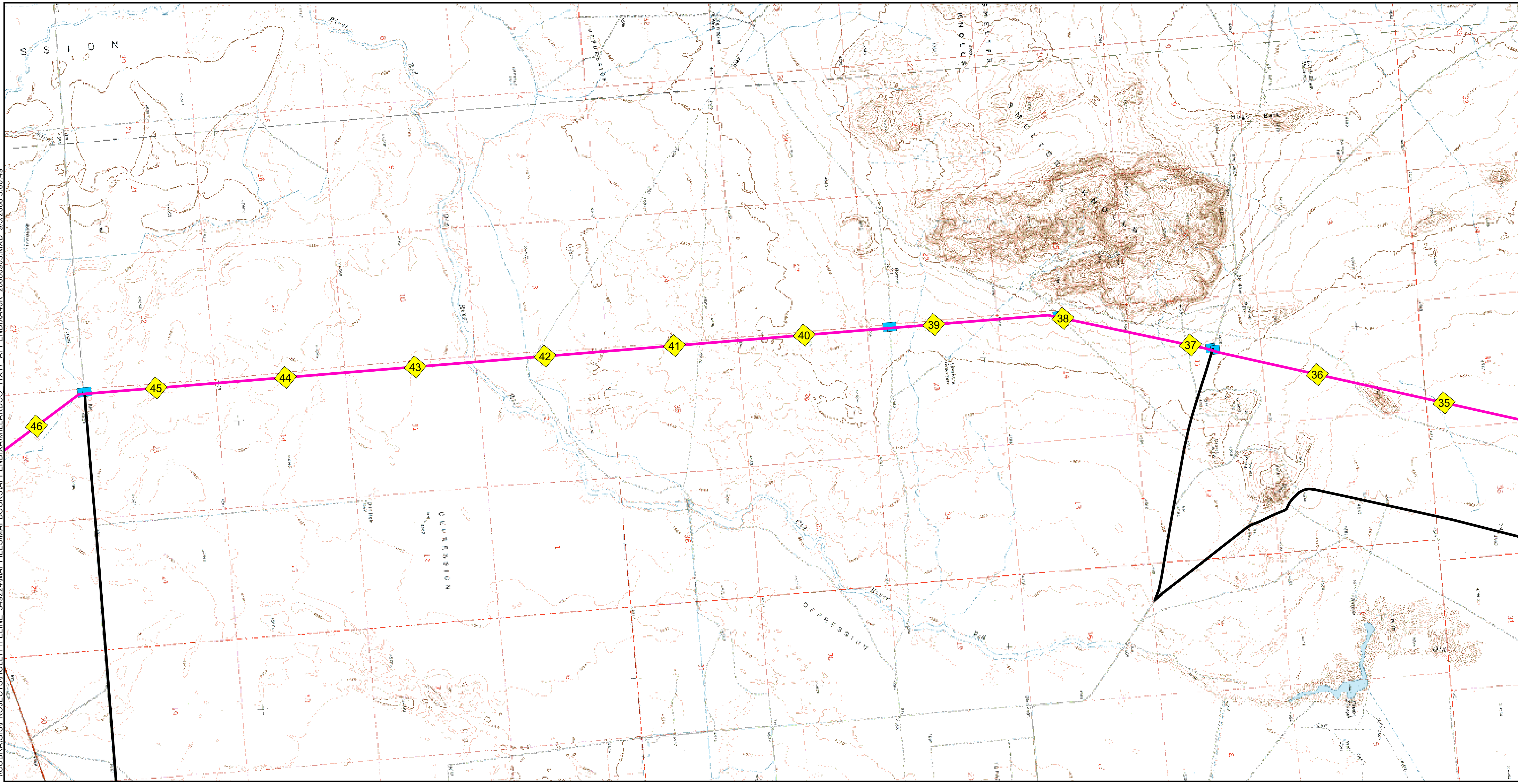
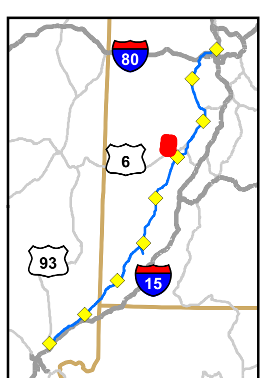
Millard County Reroute

Sep 05, 2008





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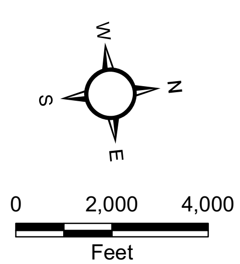

Legend

- Millard County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
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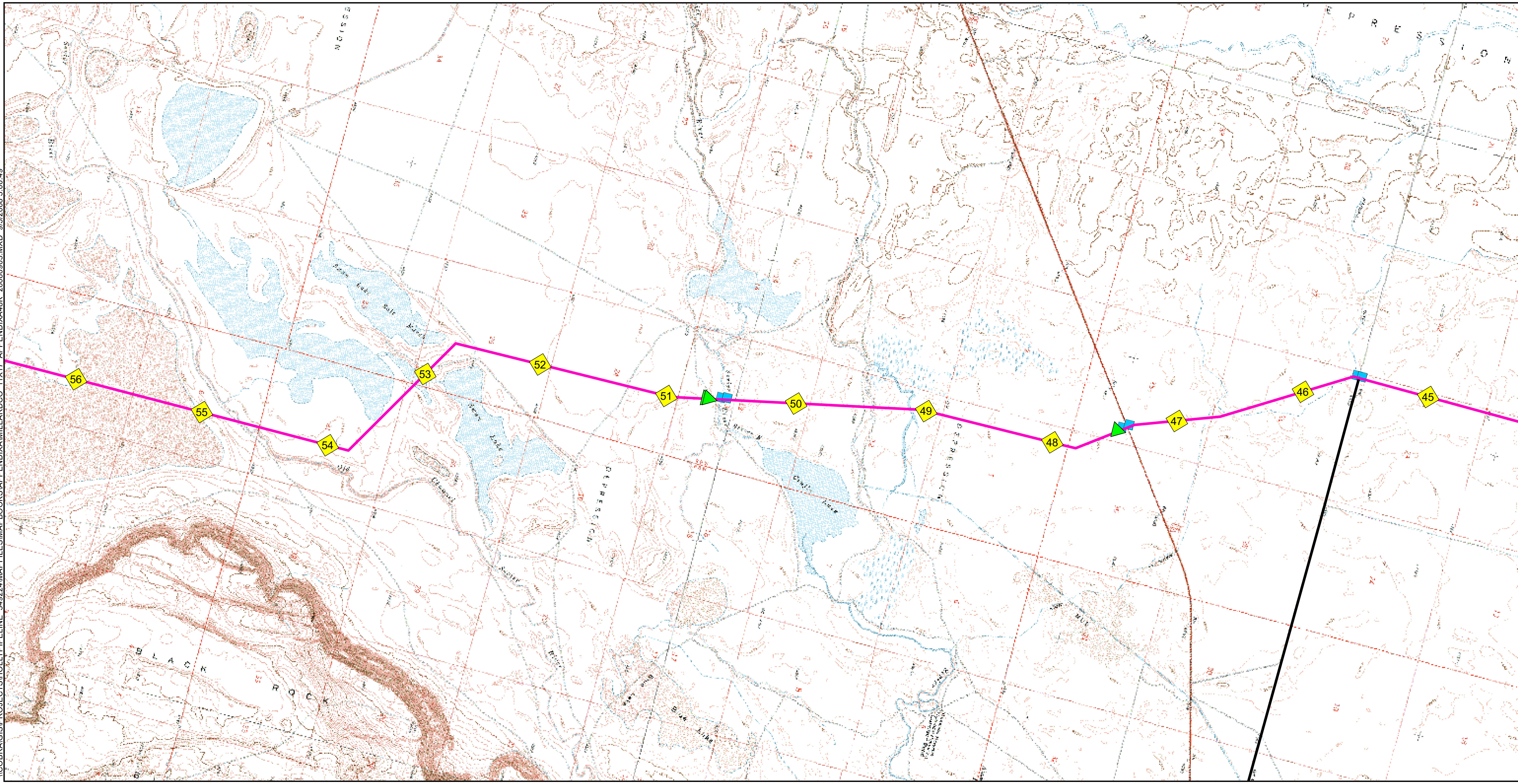

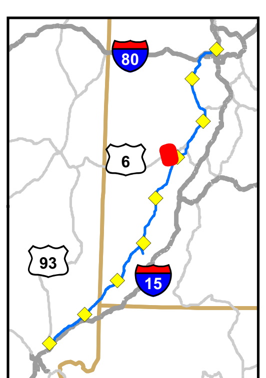

Key Map

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Feet

Legend

- Millard County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
- Pipeyard
- Kern River Alignment

UNEV PIPELINE, LLC

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Salt Lake City, Utah to Las Vegas, Nevada

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Millard County Reroute

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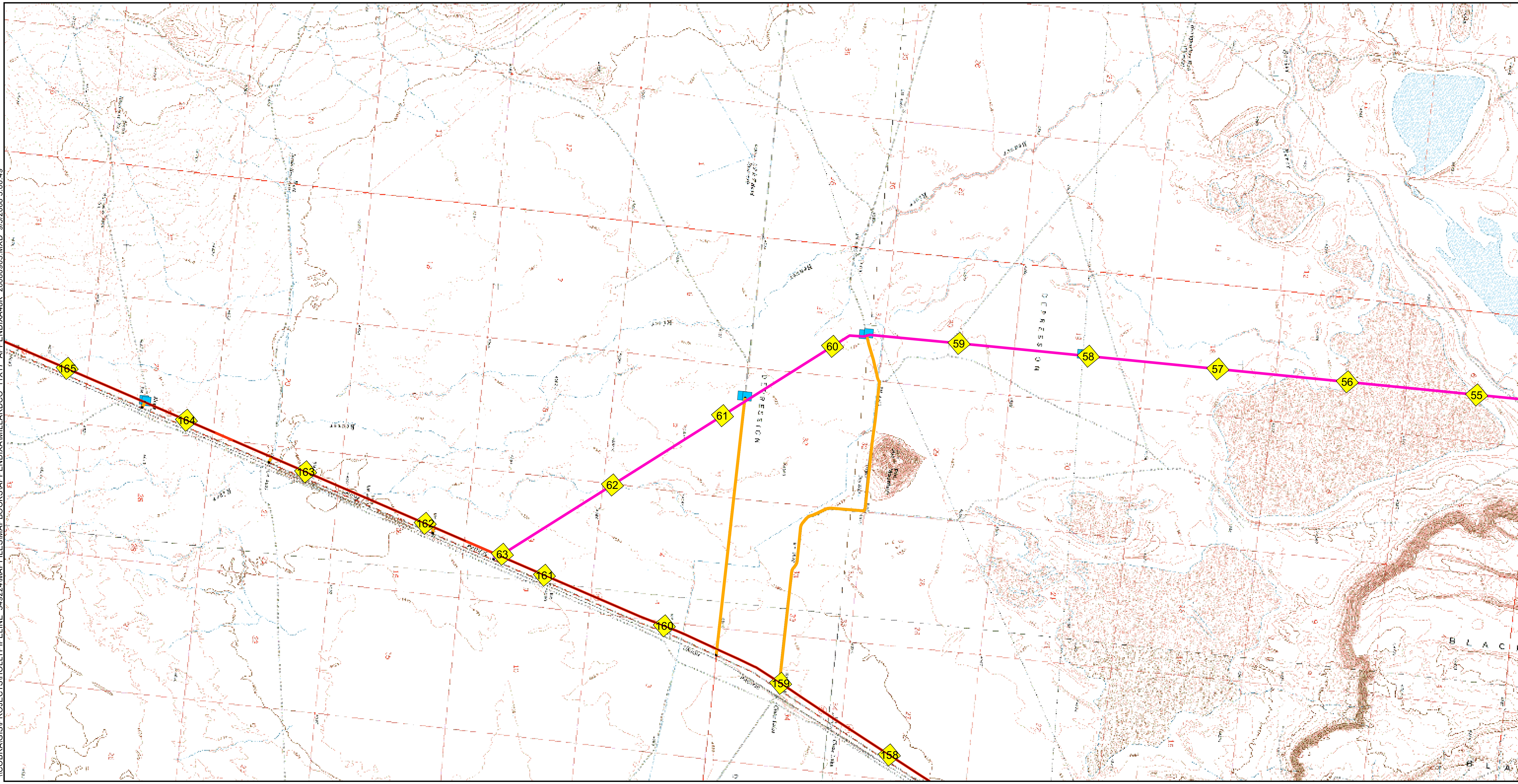

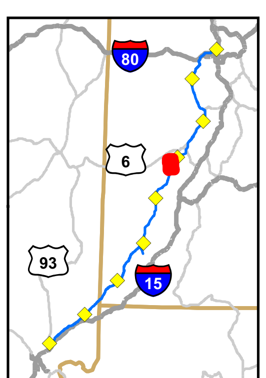

Key Map

0 2,000 4,000
Feet

Legend

- Millard County Alternative
- Proposed Action Alignment
- Valves
- Mileposts
- Additional Temporary Workspace
- Access Roads
- Surveyed Access Road
- Surveyed Access Road to be Improved
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Appendix C
Crossing Methods

Proposed Crossing Methods

MILEPOST	TYPE OF CROSSING	LENGTH (FEET)	CROSSING METHOD (BORE/CUT/ DRILL)
0.16	Chevron Private Road	33	Contractors Choice
0.61	Rail Road Private Spur	60	Contractors Choice
0.98	Canal	220	Slick Bore or Directional Drill
1.15	Cheveron Private Road	130	Slick Bore or Directional Drill
1.48	Redwood Road/Jordan River	800	Directional Drill
1.96	Frontage Road/Canal & I-215	1,110	Directional Drill
2.31	Road 2200	200	Slick Bore or Directional Drill
2.74	Canal	200	Slick Bore or Directional Drill
3.32	Road 3200 W	100	Slick Bore or Directional Drill
4.91	Wet Land (Duck Club)	5,683	Open Cut Excavation
5.73	Canal	250	Directional Drill
6.28	Canal	929	Directional Drill
6.82	Wet Land (Duck Club)	4,799	Open Cut Excavation
7.36	Canal	750	Directional Drill
7.60	Canal	1,100	Directional Drill
8.04	Unknown	898	Directional Drill
9.92	Road & Canal	264	Contractors Choice
10.18	RR Crossing	100	Slick Bore or Casing Bore
10.44	RR Crossing (2)	359	Slick Bore or Casing Bore
10.77	I-80 & Canal	1,100	Directional Drill
10.87	RR Crossing (2)	270	Slick Bore or Casing Bore
11.79	Unknown	1003	Directional Drill
12.15	Road 7200 (Tunnel)	795	Contractors Choice
14.92	Canal	465	Contractors Choice
15.31	Canal	150	Contractors Choice
16.15	Road	160	Slick Bore or Directional Drill
19.22	State Highway 202	100	Slick Bore or Directional Drill
20.41	Wet Land (Kennecott)	10,570	Open Cut Excavation
21.53	RR Crossing	125	Slick Bore or Casing Bore
22.00	Highway 201	361	Slick Bore or Directional Drill
22.56	Road	127	Slick Bore or Directional Drill
23.72	Kennecott Crossing	10,500	Open Cut / Blast Rock
26.06	Unknown	581	Directional Drill
26.29	Unknown	898	Directional Drill

MILEPOST	TYPE OF CROSSING	LENGTH (FEET)	CROSSING METHOD (BORE/CUT/ DRILL)
27.70	Foothills Dr.	60	Contractors Choice
29.77	County Road	185	Contractors Choice
30.36	Private Road	60	Contractors Choice
30.37	Private Road	60	Contractors Choice
30.82	Bates Canyon Road	60	Slick Bore or Directional Drill
32.00	Bryan Road	60	Contractors Choice
34.50	Droubay Road	292	Slick Bore or Directional Drill
35.06	Road E 2400 N	100	Slick Bore or Directional Drill
35.80	RR Crossing	150	Slick Bore or Casing Bore
36.13	State Highway 36	132	Slick Bore or Directional Drill
37.30	Road N 1000	111	Slick Bore or Directional Drill
38.29	Warburton Street	110	Slick Bore or Directional Drill
38.71	State Highway 112	229	Slick Bore or Casing Bore
39.92	Old Railroad Spur	150	Slick Bore or Directional Drill
40.16	RR Crossing	100	Slick Bore or Casing Bore
40.32	RR Crossing	100	Slick Bore or Casing Bore
41.22	Sunset Inn	100	Slick Bore or Directional Drill
42.45	Beaver Road	60	Slick Bore or Directional Drill
45.50	West Siver Road	60	Slick Bore or Directional Drill
48.91	County Road	80	Contractors Choice
50.44	Penny Road	60	Contractors Choice
51.87	Mendow Lane	109	Slick Bore or Directional Drill
54.01	Highway 199	78	Slick Bore or Directional Drill
59.37	State Highway 36	100	Slick Bore or Directional Drill
59.57	RR Crossing	150	Slick Bore or Casing Bore
64.90	Faust Road	60	Slick Bore or Directional Drill
69.73	Wash	60	Open Cut Excavation
70.51	Wash	60	Open Cut Excavation
70.77	Boulter Road	60	Contractors Choice
74.91	Black Rock Canyon Road	60	Contractors Choice
75.38	Jordan Ranch Road	60	Contractors Choice
77.33	Road	120	Contractors Choice
79.51	Road	60	Contractors Choice
85.18	Road	100	Contractors Choice
87.37	Highway 67	258	Slick Bore or Directional Drill
87.94	Highway 36	151	Slick Bore or Directional Drill

MILEPOST	TYPE OF CROSSING	LENGTH (FEET)	CROSSING METHOD (BORE/CUT/ DRILL)
101.61	Wash	100	Open Cut Excavation
102.52	Highway 6	400	Slick Bore or Directional Drill
103.69	Highway 273	120	Slick Bore or Directional Drill
107.03	Wash & Road	50	Contractors Choice
108.15	Road	64	Contractors Choice
119.15	Canal	120	Contractors Choice
120.20	RR Crossing	690	Slick Bore or Casing Bore
121.78	RR Crossing	200	Slick Bore or Casing Bore
122.05	Highway 6	152	Slick Bore or Directional Drill
126.25	County Road	60	Contractors Choice
130.22	Sevier River	1,200	Directional Drill
69.73	Wash	60	Open Cut Excavation
70.51	Wash	60	Open Cut Excavation
70.77	Boulter Road	60	Contractors Choice
74.91	Black Rock Canyon Road	60	Contractors Choice
134.26	Highway 125	144	Slick Bore or Directional Drill
135.69	Highway 50	105	Slick Bore or Directional Drill
139.45	W 4500 S Street	88	Slick Bore or Directional Drill
143.17	S 1000 E Street	60	Slick Bore or Directional Drill
149.57	Canal	140	Contractors Choice
151.05	& Highway 257	386	Directional Drill
153.79	Wash	60	Open Cut Excavation
159.33	W 16000 Street	60	Contractors Choice
159.88	W 16500 S Street	60	Contractors Choice
172.37	RR Crossing	327	Slick Bore or Casing Bore
174.12	Road	60	Contractors Choice
186.82	RR Crossing	600	Directional Drill
187.81	Wash	300	Open Cut Excavation
189.41	Headlight Canyon Road	60	Contractors Choice
193.21	Black Rock Road	60	Contractors Choice
193.44	Crystal Peak Road	60	Contractors Choice
194.47	Road	60	Contractors Choice
196.00	Black Rock Road	60	Contractors Choice
207.16	Road	60	Contractors Choice
210.18	Road	80	Contractors Choice
211.66	Trap Club Road	60	Contractors Choice

MILEPOST	TYPE OF CROSSING	LENGTH (FEET)	CROSSING METHOD (BORE/CUT/ DRILL)
211.97	Road	60	Slick Bore or Directional Drill
214.57	Highway 21	100	Slick Bore or Directional Drill
216.13	Pioche Road	60	Contractors Choice
216.77	Beryl Milford Road	60	Contractors Choice
224.89	Road	100	Contractors Choice
226.11	Laho County Road	60	Contractors Choice
229.32	Thermal Road	70	Contractors Choice
235.19	RR Crossing	385	Slick Bore or Casing Bore
241.69	Schoppmann Road	60	Contractors Choice
252.05	Lund Highway	60	Slick Bore or Directional Drill
256.54	RR Crossing	102	Slick Bore or Casing Bore
258.59	Avon Road	60	Contractors Choice
265.43	Antelope Road	70	Contractors Choice
273.54	Sand Springs Road	60	Contractors Choice
273.65	Road	60	Contractors Choice
273.85	Sand Springs Road	60	Contractors Choice
274.93	Highway 56	118	Slick Bore or Directional Drill
275.27	Road	69	Contractors Choice
275.35	600 E Street	234	Contractors Choice
275.77	Road	75	Contractors Choice
275.96	Pinto Creek Road	71	Contractors Choice
286.66	Pinto Road	71	Contractors Choice
289.15	Wash	60	Open Cut Excavation
290.68	Creek	60	Open Cut Excavation
291.59	Highway 18	80	Slick Bore or Directional Drill
296.79	Mongatsu Creek	800	Directional Drill
299.95	Moody Wash	1,000	Open Cut Excavation
300.72	Veyo Shoal Creek Road	60	Contractors Choice
308.80	Manganasa Wash	120	Contractors Choice
310.80	Manganasa County Road	200	Contractors Choice
312.22	Wash	300	Open Cut Excavation
312.64	Pahcoon Wash Road	60	Contractors Choice
314.53	Jackson Road	60	Contractors Choice
325.37	Lytle Ranch Road	60	Contractors Choice
327.73	Beaver Dam Wash	1,200	Open Cut Excavation
335.65	Road	60	Contractors Choice

MILEPOST	TYPE OF CROSSING	LENGTH (FEET)	CROSSING METHOD (BORE/CUT/ DRILL)
342.53	Toguop Wash	200	Open Cut Excavation
355.73	Carp Raod	60	Contractors Choice
370.5 (apx)	Meadow Valley Wash	Unknown	Slick Bore or Casing Bore
371.39	S Henrie Drive	60	Slick Bore or Directional Drill
371.92	Road	60	Contractors Choice
372.17	Highway 168	150	Slick Bore or Directional Drill
373.05	RR Crossing	200	Slick Bore or Casing Bore
373.49	Hidden Valley Road	60	Slick Bore or Directional Drill
373.91	Muddy River	1,000	Directional Drill
375.94	RR Crossing	206	Slick Bore or Casing Bore
387.79	Unknown	370	Directional Drill
397.38	Road	60	Contractors Choice
399.20	Highway 93	300	Slick Bore or Directional Drill

Appendix D
Best Management Practices and Mitigation Measures

Project-specific Best Management Practices and Mitigation Measures

Air

- Adhere to state regulatory standards.
- Include a provision in the construction contract to water down access roads and construction areas as needed.

Paleontology

- Conduct preconstruction paleontological survey of moderate to high paleontological sensitivity areas, and a paleontological reconnaissance of remainder of the ROW.
- Update mapping of the pipeline ROW to show sections that possess moderate or high paleontological sensitivity.
- Prepare a Paleontological Monitoring and Mitigation Plan (PRMMP) and include it in the Plan of Development.

Soil and Water

- Segregate and redistribute topsoil within the disturbance ROW on all public lands and on private lands as agreed upon with the land owner.
- Clean out existing culverts, if necessary, on roads within project area before operations in the spring and at the end of operations in the fall.
- Install and maintain drainage structures in roads to reduce concentration of water runoff. Road drainages would direct flow into stable areas of vegetation and cover.
- Install new culvert outfalls with either riprap or another form of energy dissipater, if applicable.
- If needed, gravel and/or install erosion structures on roads, where activities cross a drainage.
- To the extent feasible, schedule operations, construction, and ditch/road maintenance activities during periods when probabilities for rain and runoff are low. Equipment would not be operated when ground conditions are such that unacceptable soil compaction or displacement results.
- Dispose of excess material from boring methods offsite.
- Maintain roads in a manner that provides for water quality protection.

Vegetation

- Identify and flag staging area boundaries for heavy equipment.
- Avoid disturbance of riparian and wetland areas where practicable. Where these areas are disturbed, the proponent would restore or enhance the disturbed area.
- Clean off-road equipment (with power or high-pressure cleaning) before moving into construction area.

- Gravel and fill to be placed in relatively weed-free areas, which are at moderate or high ecological risk to weed invasion, must come from weed-free sources.
- Keep active road construction sites that are in relatively weed-free areas and are at moderate or high ecological risk to weed invasion closed to vehicles that are not involved with construction.
- Obtain agency guidance on and approval of seed mixes to be used for revegetation on public lands, as required by each agency.
- New road maintenance programs should include monitoring for noxious weeds along newly constructed maintenance roads. Weed infestations should be inventoried and scheduled for treatment during construction.

Wildlife

General Wildlife

- Earthen trench plugs, with ramps on either side, would be placed at maximum of 0.5-mile intervals (distance at the discretion of the BLM) along the trench and at well-defined livestock and wildlife trails intersected by the trench to provide a means for wildlife to escape if wildlife or livestock fall into the trench and also provide a bridge for other wildlife to cross the open trench. Pipeline inspectors, in conjunction with the agencies' compliance monitors, would reduce trench plug spacing (that is, add more plugs) if the proposed spacing is determined to be insufficient to facilitate animal escape from the trench (CH2MHill 2008c). The pipeline trench would be inspected by an agency-approved Biological Monitor on a regular basis during construction and immediately before backfilling to identify entrapped animals. Wildlife found in trenches during construction would be coaxed to the nearest ramp and either encouraged to exit the trench, removed by net, or trapped (if other methods are unsuccessful) (CH2MHill 2008c). These measures would reduce the number of wildlife individuals killed during construction. The length of open trench would be limited to approximately 3 miles within a given construction spread. Any length of trench may be open for a maximum of 10 days.
- An obligatory environmental training program would be implemented for all construction personnel prior to construction. This program would raise awareness of wildlife present (species recognition) and measures to avoid take during construction. The environmental program would be approved by the USFWS, BLM, UDWR, and NDOW. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction. All field workers would be instructed that activities must be confined to locations within the approved areas (CH2MHill 2008c). Wildlife species that would be specifically covered during the program include all special status species and migratory bird species of concern. A reporting system would be in place to facilitate the avoidance of wildlife by providing a direct communication with the Agency if an important species is observed by any construction worker.
- The pipeline project would follow the Spill Prevention and Control Plan that includes use of prevention and mitigation measures that would minimize the potential impact of a hazardous spill or leak during the construction of pipeline project facilities.

  All exceptions to seasonal stipulations and restrictions (that may be granted if no individuals are found during pre-construction surveys) would require written permission from the Agency before construction could proceed. An email communication would be sent to the USFWS and BLM after each segment of pre-construction survey during the restricted season with results of the survey and requesting permission to proceed with construction if no individuals were found. Permission to construct and any exceptions to the construction restrictions granted by the Agencies would be for a limited time, to be determined by the agency at the time permission is granted. Pre-construction surveys must be conducted again if the time limit has been exceeded.

Migratory birds - BMPs

- Migratory bird habitat within the disturbance area would be grubbed to the maximum extent practicable during winter prior to construction (beginning winter 2008-2009), when migratory birds are least likely to be present, to prevent migratory birds from using the habitat and being encountered during pre-construction surveys.
- In areas not cleared/grubbed of habitat, construction would be avoided during the prime nesting season (15 May to 15 July) to the maximum extent practicable, particularly in high-use migratory bird habitats such as wetland and riparian habitats and near occurrences of sensitive species, as well as other intact, high-quality habitats.
- Preconstruction surveys for migratory birds would be conducted by an agency-approved Biological Monitor, particularly during the prime nesting season, 15 May to 15 July, but the survey period should be adjusted for species and environmental conditions as some species nest as early as January or as late as October in some areas. Biological Monitors would be available during all adjusted dates. Sensitive species and migratory bird species of concern (PIF, BCC; listed in **Section 3.8.3.3**) would receive special emphasis during pre-construction surveys; however, all migratory birds would be protected. Any migratory bird nest found in the proposed disturbance area would be avoided until after birds have fledged, after which construction could continue. During the avoidance period, species-specific buffers and other BMPs would be implemented to avoid the loss of nest, eggs, and nestlings. A specific exception to this restriction may be granted by the BLM due to natural screening or other factors that may reduce noise impacts. If the Biological Monitor does not find migratory bird nests in the disturbance area during the adjusted nesting season, construction may proceed. Following survey clearance, grubbing of habitat could also occur at this time with BLM approval.
- Aerial pre-construction surveys would be conducted for raptors if construction activities occur during the breeding season (or adjusted season for certain species). Any active raptor nests found during pre-construction surveys within the USFWS-determined impact distance pertaining to each species (listed Romin and Muck 2002) would be avoided by similar measures as described for migratory birds, in that construction would be delayed until birds have fledged from the nest. Normal dates of incubation and nesting seasons for each species are listed in Romin and Muck (2002; see **Exhibit D-1**). Most raptors (with the exception of some Sensitive species; Section 4.9) require a 0.5 mile buffer from nests, within which construction may not occur without a specific exception from the BLM. Buffers may be reduced if natural screening or other factors reduce the likelihood of impacts from human disturbance, including noise.
- An email update would be sent to the USFWS and BLM after each segment of pre-construction survey during the nesting season with results of the survey, i.e., whether or not nests were encountered or nesting-related behavior of individual birds (such as nest defense, before a nest is present) and requesting permission to proceed with construction if no nests (or nesting behaviors) were found or observed. If the segment was cleared/grubbed of vegetation and nesting substrate outside the nesting season this would be reported in the update. Permission to construct and any exceptions to the construction restrictions granted by the Agencies would be for a limited time, to be determined by the agency at the time permission is granted. Pre-construction surveys must be conducted again if the time limit has been exceeded, which during the nesting season may generally be expected to be two to five days between surveys and the start of construction.

Exhibit D-1 Sensitive raptor species and USFWS-recommended maximum buffers and seasonal restrictions (i.e., nesting periods; Source: Romin and Muck/USFWS 2002).

Species	Maximum buffer (miles)	Maximum seasonal restriction
Bald eagle	1.0	1 Jan – 31 Aug
Golden eagle	0.5	1 Jan – 31 Aug
Northern goshawk	0.5	1 Mar – 15 Aug
Northern harrier	0.5	1 Apr – 15 Aug
Cooper's hawk	0.5	15 Mar – 31 Aug
Ferruginous hawk	0.5	1 Mar – 1 Aug
Red-tailed hawk	0.5	15 Mar – 15 Aug
Sharp-shinned hawk	0.5	15 Mar – 31 Aug
Swainson's hawk	0.5	1 Mar – 31 Aug
Turkey vulture	0.5	1 May – 15 Aug
California condor*	1.0	NONE
Peregrine falcon	1.0	1 Feb – 31 Aug
Prairie falcon	0.25	1 Apr – 31 Aug
Merlin	0.5	1 Apr – 31 Aug
American kestrel	NONE	1 Apr – 15 Aug
Osprey	0.5	1 Apr – 31 Aug
Burrowing owl	0.25	1 Mar – 31 Aug
Flammulated owl	0.25	1 Apr – 30 Sept
Short-eared owl	0.25	1 Mar – 1 Aug
Mexican spotted owl*	0.5	1 Mar – 31 Aug
Boreal owl	0.25	1 Feb – 31 July
Great horned owl	0.25	1 Dec – 31 Sept
Long-eared owl	0.25	1 Feb – 15 Aug
Northern saw-whet owl	0.25	1 Mar – 31 Aug
Northern pygmy owl	0.25	1 Apr – 1 Aug
Western screech owl	0.25	1 Mar – 15 Aug
Common barn owl	NONE	1 Feb – 15 Sept

*Presence would require further consultation with USFWS.

Migratory Birds – Mitigation

- A combination of habitat restoration and monetary compensation would be implemented to mitigate for migratory bird habitat loss and incidental take. The ratio of habitat loss, habitat restoration and the amount of monetary compensation would be determined on a site-specific basis in conjunction with the BLM and USFWS. Habitat may be conserved, improved, or restored on- or off-site with an emphasis on seeding and invasive species removal rather than more aggressive treatments (e.g., chaining of sagebrush). The duration of impacts to habitat would be taken into consideration such that a long-term impact to habitat (i.e., for a permanent structure) would require a larger spatial amount of habitat restoration than a short-term impact (i.e., a temporary removal of grasses or shrubs). Monetary compensation may be furnished to an Agency or a proxy third-party organization in the form of an escrow or similar account/fund to be used to acquire, restore, or manage migratory bird habitats, in an amount calculated directly from land values, fee title costs, easement costs, restoration costs, or fund administration costs in a manner agreeable to both USFWS, BLM, and Holly Energy.

Big Game Ranges - BMPs

- Construction restriction in mule deer, elk, pronghorn winter range (crucial or substantial) would be restricted between Nov 15 – Apr15; construction in mule deer and pronghorn fawning and elk calving habitat would be restricted between May 1 – July 1.

Aquatic Habitats – BMPs

- Hydrostatic testing would take place in compliance with guidelines and BMP's outlined in UDEQ's General Permit for Construction Dewater/Hydrostatic Testing. Velocity dissipation devices would be used at discharge locations to insure non-erosive velocity flow from the pipe to a water course so that the natural physical and biological characteristics and functions are maintained and protected.
- Open-cut crossings over wetlands and dry washes and intermittent or ephemeral streams would be performed when the amount of surface water present would be limited and preferably when the area is dry.
- Perennial streams would be crossed using HDD so that disturbance to live waters would be minimized. All holes and workspace would be outside of the jurisdictional area of the river. No riparian vegetation would be removed and no ground water would be pumped out of the bore hole as a result of HDD.
- In order to minimize the potential for introducing sediment to the aquatic system, a temporary sediment basin, or filter would be used to reduce sediment from in channel construction from being transported downstream or entering live water. In addition, sediment fences would be installed between other areas of disturbance outside the channel and the active channel. Sediment fences would be cleaned and inspected regularly to maintain function.
- Ground disturbance outside of the river channel would not occur during wet conditions (i.e., during or immediately following rain events).
- Immediately after construction, disturbed stream banks would be stabilized, using native rock riprap if necessary. Native riparian vegetation would be replanted dependent upon the surroundings and the ability of the area to support vegetation.
- The re-establishment of preconstruction contours and vegetation following construction would allow surface water paths to return to preconstruction conditions.
- Compliance with state-issued Section 401 water quality certifications or waivers
- Following the Section 404 Permit conditions, proposed wetland mitigation would be designed to minimize the area and duration of disturbance, reduce the disturbance of soils, and enhance restoration following construction. These measures would include, but would not be limited to, the following:
    - Limiting the width of the construction ROW in non-cultivated wetlands to 75 feet unless a wider ROW is expressly permitted
    - Limiting the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration activities
    - Limiting grading activities to directly over the trenchline, except where additional grading is necessary to ensure safety

- Using low ground weight construction equipment, or operating equipment off of timber riprap, prefabricated timber mats, or geotextile fabric overlain with gravel in saturated or standing water wetlands
- Installing trench breakers or sealing the trench bottom as needed to prevent draining of a wetland and to maintain original wetland hydrology
- Prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland boundary
- Consulting with the appropriate land management or state agencies to develop plans for revegetating wetlands and, where necessary, preventing the invasion or spread of undesirable exotic vegetation
- Limiting post-construction maintenance of vegetation within wetlands to removal of trees that are greater than 15 feet in height and are within 15 feet of the pipeline centerline, and maintenance of a 10-foot-wide strip of vegetation centered over the pipeline in herbaceous vegetation
- Monitoring the success of wetland revegetation annually for a period of 3 to 5 years after construction, and developing and implementing remedial revegetation plans for wetlands that are not successfully revegetated.

Special Status Species

Greater Sage-grouse - BMPs

- Surveys would be proposed to be conducted in the spring (April - May) of 2008, prior to construction. Protocol surveys agreeable by UDWR and the BLM would be conducted in potential brood habitat (UDWR) between MP 45.5 and MP 78.5 and between MP 85.5 and MP 118, including on State lands. Surveys would also be conducted at all historic lek locations following agency-recommended protocols within 2 miles of the proposed ROW, including on State lands. If breeding greater sage-grouse are found within the ROW, construction would be halted until critical breeding and brood rearing stages have been completed. No construction within occupied lekking/nesting/brooding habitat (UDWR) may occur between March 15 and July 15, without BLM exception (i.e., restriction can be waived if habitat is not suitable). Restriction would begin on March 1 within one mile of an active lek. Construction in wintering habitat (UDWR) may also be restricted (November – February), depending on habitat suitability, at the discretion of BLM or UDWR. All disturbed areas suitable for sage-grouse would be recontoured and reseeded immediately after construction according to guidelines outlined in the Restoration Plan (CH2MHill 2008c).
- Noise sources would be limited to 10 dBA above the natural ambient noise level (approximately 39 dBA), measured at the perimeter of a lek from March 1 to May 15. This stipulation would apply to all permanent structures, including pump stations and other facilities.

Pygmy Rabbit – BMPs and Mitigation

- In areas of sagebrush/sagebrush scrub, biological monitors familiar with pygmy rabbits and their sign would inspect the area prior to construction. In the event that a potential pygmy rabbit burrow is encountered during construction, construction would stop until UDWR and BLM determined an appropriate course of action to avoid impacts to the species (CH2MHill 2008c). Burrows would be avoided to the extent practicable within the 75-foot ROW.
- Monetary compensation to an agency or a proxy third-party organization into an escrow or similar account/fund to be used to acquire, restore, or manage pygmy rabbit habitats may be necessary to

mitigate for loss of pygmy rabbit habitat or burrows. Mitigation is to be determined at a later date by the USFWS.

Arizona Toad and Western Toad - BMPs

- To avoid impacts to amphibians and their habitats, the Muddy River and Magotsu Creek would be crossed using HDD (CH2MHill 2008c). Pre-construction surveys would target western toads within pinyon juniper habitat (MP 290-315) and particularly near potentially wet areas in the vicinity of pinyon juniper (Moody Wash at MP 298 and Magotsu Creek at MP 295) that may serve as breeding areas, summer range, or hibernacula sites. Moody Wash would be crossed when dry. If western toads were found during surveys a site evaluation by the appropriate agency would be necessary to determine the best way to conserve migration corridors for western toad around project disturbances.

Kit Fox - BMPs

- Any kit fox dens (identify by keyhole-shaped entrance) not in the immediate disturbance area would be preserved, i.e., flagged or fenced if active to prevent disturbance. Den status would be determined for all possible dens in the disturbance area and construction may be restricted within 0.25 mile of occupied dens between 1 Feb and 1 May (while young are den-dependent), or at the discretion of the BLM or UDWR. Dens occupied by adults only in the disturbance area would be cleared and entrances to dens would be blocked. Pipes and culverts would be inspected for kit foxes before burying, capping, or moving the structures.

Chuckwalla and Gila Monster - BMPs

- Species specific surveys were not conducted for the Gila monster although their habitat was noted adjacent to the ROW. This species potential habitat is encompassed within desert tortoise habitat and is assumed to be potentially present from MP 316 south to the project terminus. Authorized biologists would be instructed to remove chuckwalla or Gila monsters (see below) from the ROW when encountered during pre-construction surveys for desert tortoise and during construction monitoring. To further minimize impacts to these species all project proponent employees and its contractors working in the field would be required to complete a desert tortoise education program prior to reporting to the field. The desert tortoise education program would be expanded to include other target species, such as the Gila monster, and their protection. The program would be approved by the USFWS, BLM, UDWR, and NDOW. The project's expanded environmental training program would raise the awareness of construction personnel regarding the presence and protection of these species, and other special status species, during construction and would further reduce potential direct impacts from construction. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction. All field workers would be instructed that activities must be confined to locations within the approved areas (CH2MHill 2008c).
- To further minimize impacts on Gila monsters, the project proponent would:
    - Relocate individuals identified along the right-of-way using measures set forth by the NDOW, which include the use of long-handled instruments to coax an individual into an open bucket or box;
    - Submit a report to the USFWS, the BLM, and the NDOW following construction detailing the locations where Gila monsters were found and released;
    - Incorporate the following specific provisions into its construction environmental awareness program:
        - procedures to identify Gila monsters and distinguish them from other lizards such as chuckwallas and banded geckos;

- consequences of a bite resulting from carelessness or unnecessary harassment of Gila monsters; and
- protective measures for Gila monsters provided under Nevada state law (CH2MHill 2008c).

Other Sensitive Reptiles - BMPs

- Although species-specific mitigation would not be proposed for development, these species would be included in the project's environmental training program to raise the awareness of construction personnel regarding the presence and protection of special status species during construction. The environmental training would include directing construction personnel not to harm or harass these or any species of wildlife encountered during construction (CH2MHill 2008c).

Sensitive Plants – BMPs and Mitigation

- In coordination with the BLM, UDWR, and NDOW preconstruction surveys would be conducted for the target plant species and any other rare plants identified by the agency biologists. Pre-construction surveys would be conducted for targeted species from March through June 2008 depending on each species phenology. In general, for those species found at higher elevation (for example, pinyon penstemon and Franklin's penstemon) surveys would be conducted from May through June. For species found at lower elevations (for example, threecorner milkvetch and sticky buckwheat) surveys would be conducted from March through May. Surveys would be conducted by qualified botanists on the BLM's list of approved list of surveyors for these species. BLM mitigation guidelines would be followed if these species are found in the project area of disturbance. If individuals are identified within the ROW during preconstruction surveys, ripe seed would be collected from these individuals prior to construction. The collected seed would be distributed over the approximate area where the plants were originally located as part of the reclamation activities (CH2MHill 2008c).
- All salvageable cactus, yucca, and Joshua trees present in the project area of disturbance would be salvaged and transplanted using procedures similar to those described for the Kern River pipeline (FERC and CSLC 2002) and summarized in the following text. Prior to pipeline construction, cactus, yucca, and Joshua trees present in the area of disturbance would be identified, removed, heeled-in, and irrigated in areas outside of the construction ROW, and then transplanted back onto the ROW as part of restoration activities. Transplant sites would be located randomly along the ROW and/or at locations specified by the BLM. The north orientation of all cacti to be salvaged would be recorded and restored at the time of transplanting. Transplants would be watered at the time of initial planting, with a second watering occurring 1 to 2 weeks following transplanting. Time-release gels (for example, Dri-WaterTM) that hold and slowly release water over several months would be used to enhance the survival of transplanted succulent species (FERC and CSLC 2002). (CH2MHill 2008c)

Endangered, Threatened, or Candidate Species

A complete list of mitigation measures for Endangered, Threatened, or Candidate species that may occur in the disturbance area are contained in the Biological Assessment. Thus far mitigation measures (and BMPs) have been identified specifically for Utah prairie dog and Mojave desert tortoise. Pre-construction surveys would be conducted for Virgin River chub, Ute ladies' tresses, Shivwitz milkvetch, southwestern willow flycatcher, yellow-billed cuckoo, and California condor in conjunction with migratory bird surveys in appropriate habitat and during nesting/flowering seasons (as appropriate) for each species.

Utah Prairie Dog - BMPs

The following procedures in **Exhibit D-2** have been compiled to inform authorized users/owners/cooperators of the process to follow if their proposed maintenance activity would be in Utah prairie dog habitat. It should be noted that actions which might be denied under these procedures can be reanalyzed to see if the action could be authorized under different mitigation measures. If prairie dogs or their habitat might be impacted, the recommended stipulations to minimize take outlined below should be followed.

Exhibit D-2 Process to Follow for Projects within Utah Prairie Dog Habitat

Step Number	If this statement applies, proceed to the step number in the following column.	Step Number
1	Authorized user/owner/cooperator determines maintenance is necessary within Utah prairie dog habitat	2
2	Type of maintenance needed is determined:	
	Emergency repairs to public utilities (such as gas, power, or telecommunications lines) where there may be harm to human health & safety	3
	Maintenance of existing dirt/gravel road within existing disturbed area	4
	Non-ground disturbing activity	5
	Ground disturbing activity	13
3	Repair work is initiated and BLM is notified within 24 hours	8
4	Work is completed, no further action needed	
5a	Work would occur between November 1 and February 28	4
5b	Work would occur between March 1 and October 31	6
6a	Proposed work can be completed according to the stipulations for Non-ground Disturbing and Non-mechanized Ground Disturbing Activities	4
6b	Proposed work cannot be completed according to the above stipulations	7
7	BLM is notified of proposed noncompliance with justification for request and proposed measures to minimize and mitigate impacts	8
8	Qualified biologist conducts a clearance survey	9
9a	Survey finding of Absent (no animals or recent activity)	4
9b	Survey finding of Present (animals present)	10
10a	BLM makes a no effect determination for proposal	4
10b	BLM makes a may effect determination for proposal	11
10c	In emergency situations with a may effect determination, BLM initiates consultation with USFWS	12a
11a	BLM denies request	15
11b	BLM initiates consultation with the USFWS	12
12a	Project is approved by BLM and USFWS, and may require additional stipulations and mitigation	4
12b	Project is denied	15
13a	Non-mechanized disturbance (shovel, etc.)	5
13b	Mechanized disturbance is proposed which incorporates stipulations	14

STEP NUMBER	IF THIS STATEMENT APPLIES, PROCEED TO THE STEP NUMBER IN THE FOLLOWING COLUMN.	STEP NUMBER
	for ground disturbing, mechanized activities	
13c	Mechanical disturbance is proposed, but cannot be completed according to above stipulations	7
14	BLM is notified	16
15	Work is rescheduled	1
16	Qualified biologist conducts a clearance survey	17
17a	Survey finding of Absent (no animals or recent activity)	4
17b	Survey finding of Present (animals present)	18
18a	BLM concurs that disturbance would be minimal and that stipulations for Ground Disturbing, Mechanized Activities would be sufficient mitigation	4
18b	BLM estimates that disturbance, after hazing, may result in take of animals, estimated at ≤5	19
18c	BLM estimates that disturbance, after hazing, may result in take of animals, estimated at >5	11b
19	Area is lightly bladed for two days before digging to encourage dogs to move out	20
20	BLM determines that ≤5 dogs would be impacted	21
21	Projects continues with qualified biologist on site	22
22a	BLM records any take of animals	23
22b	Project halted immediately and USFWS notified if permit exceeded	12
23	Annual take of animals is quantified; summary report provided to USFWS	

Stipulations to Minimize Impacts

1. For BLM facilities: The Authorized Officer shall designate an individual as a contact representative who would be responsible for overseeing compliance with the stipulations contained in this list and providing coordination with the U.S. Fish & Wildlife Service. The representative would have the authority to halt activities which may be in violation of these stipulations.

For non-BLM facilities: The authorized user/owner/cooperator shall serve as a contact representative who would be accountable for overseeing compliance with the stipulations contained in this list and providing coordination with the BLM. The representative must halt activities which may be in violation of these stipulations.

2. All project employees shall be informed of the occurrence of the Utah prairie dog in the general area, and of the threatened status of the species. They shall be advised as to the definition of "take", and the potential penalties (up to $200,000 in fines and one year in

prison) for taking a species listed under the Endangered Species Act, and the stipulations included in the list.

3. Project related personnel shall not be permitted to have firearms or pets in their possession while on the project site. The rules on firearms and pets would be explained to all personnel involved with the project.

4. All vehicles shall stay on existing roads within colonies, except as stated in #7. Storage of equipment and materials shall not occur within ¼ mile of colonies. Vehicle maintenance shall not occur within these areas.

5. If the situation would require vehicles to travel cross country within Utah prairie dog colonies, burrows must be avoided. Vehicles shall not exceed a speed of 10 miles per hour (cross country) in occupied Utah prairie dog colonies.

6. Within colonies, precautions shall be taken to ensure that contamination of the site by fuels, motor oils, grease, etc. does not occur and that such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum based or other toxic materials shall be cleaned up and removed immediately.

7. Implementing these measures should minimize take of Utah prairie dogs from the maintenance of existing facilities by non-ground disturbing and non-mechanized activities in Iron and Beaver Counties. Any form of take that is not incidental to these activities is not authorized.

8. If a dead or injured Utah prairie dog is located, initial notification must be made to the Service's Division of Law Enforcement, Salt Lake City, Utah at telephone 801-625-5570 or to the Cedar City office of the Utah Division of Wildlife Resources at telephone number 435-865-6100. Instruction for proper handling and disposition of such specimens would be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. Maintenance of Existing Facilities

<u>Additional Stipulations for Maintenance of Existing Facilities and Non-ground Disturbing and Non-mechanized Ground Disturbing Activities</u>

1. The use of any herbicide or pesticide is not authorized.

2. Workers may not be onsite, continuously, within a colony for more than 8 hours within a 24 hour period.

3. Ground disturbing activities by hand methods (such as shovel, post hole digger, etc.) must avoid all burrows by at least 10 feet.

<u>Additional Stipulations for Ground Disturbing and Mechanized Ground Disturbing Activities</u>

1. Proposed ground disturbance is determined to be minimal and can be completed by buffering most burrows by at least 15 feet.

2. A qualified biologist is required to be on-site during all work within the colony. The biologist would have the authority to halt activities which may be in violation of these stipulations.

3. All work must be scheduled for initiation between April 1 and September 30.

Desert Tortoise – BMPs and Mitigation

<u>Construction</u>

The following mitigation measures would be followed during project construction in desert tortoise habitat:

- A Field Contact Representative (FCR) would be provided to be responsible for overseeing compliance with protective measures for the desert tortoise. The BLM and USFWS would approve the FCR(s), who may be authorized biologists, and must be on-site during all project activities. FCR(s) and authorized biologists would have authority to halt any activities that are in violation of the stipulations in the biological opinion for the project. The FCR(s) and authorized biologists would have a copy of all stipulations when work is being conducted on the site. The FCR(s) and authorized biologists would report to the project proponent and the BLM. All instances of non-compliance or incidental take would be reported. This should be accomplished by providing BLM oversight on all personnel actions (that is, hiring and dismissal) on the project site, at a minimum (CH2MHill 2008c).
- All proponent employees and its contractors working in the field would be required to complete a desert tortoise education program prior to reporting in the field. The program would be approved by the USFWS, BLM, and appropriate state agencies. At a minimum, the program would cover the distribution of the desert tortoise, general behavior and ecology of the desert tortoise, sensitivity to human activities, threats (including introduction of exotic plants and animals), legal protection, penalties for violations of federal and state laws, reporting requirements, and project measures in the Biological Opinion. All field workers would be instructed that activities must be confined to locations within the approved areas. In addition, the program would include fire prevention measures to be implemented by employees during project activities. The program would instruct participants to report all observations of desert tortoises and their sign during construction activities to a FCR. (CH2MHill 2008c)
- Existing routes of travel would be used to and from specific project sites. Any routes of travel that require construction or modification would have an authorized biologist survey the area for tortoises prior to modification or construction of the route. Cross-country travel by vehicles and equipment would be prohibited. Except on county-maintained roads, vehicle and equipment speed limits would not exceed 20 MPH within suitable desert tortoise habitat (CH2MHill 2008c).
- Whenever a vehicle or construction equipment is parked longer than 2 minutes within desert tortoise habitat, whether the engine is engaged or not, the ground around and underneath the vehicle would be inspected for desert tortoises prior to moving the vehicle. If a desert tortoise is observed, an authorized biologist would be contacted. If possible, the tortoise would be left to move on its own. If the tortoise does not move within 15 minutes, the tortoise would be removed and relocated by the authorized biologist in accordance with the tortoise handling procedures . (CH2MHill 2008c)
- An appropriate number of authorized biologists would be onsite to act as biological monitors, and be present during construction for the protection of desert tortoises. The names of all authorized biologists would be submitted to the BLM and USFWS for review and approval at least 30 days prior to initiation of any desert tortoise clearance surveys. Project activities would not begin until authorized biologists have been approved. Replacements of authorized biologists would require BLM and USFWS approval. Authorized biologists would be assigned to monitor each area of activity where conditions exist that may result in take of desert tortoise (for example, clearing, grading, lowering in pipe, backfilling, recontouring, and reclamation activities). An authorized biologist would be assigned to each piece/group of large equipment. Authorized biologists would be responsible for determining compliance with measures as defined by the Biological Opinion and other agreements. Authorized biologists would maintain a detailed record of all desert tortoises encountered during project surveys and monitoring. (CH2MHill 2008c)
- In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (USFWS 1992), an authorized desert tortoise biologist should possess a bachelor’s degree in biology, ecology, wildlife biology, herpetology, or closely related fields as

determined by the BLM and USFWS. The authorized biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist would have the ability to recognize and accurately record biological information (CH2MHill 2008c).

- Construction sites, staging areas, and access routes would be cleared by a qualified tortoise biologist before the start of construction. An authorized biologist(s) would survey the site for desert tortoises using survey techniques providing 100-percent coverage of the area proposed for disturbance. Transects would be no greater than 10 meters apart. If construction occurs during the desert tortoise active season (March 1 through October 31), or when temperatures and environmental conditions are conductive to tortoise activity as determined by an authorized biologist, two surveys would occur. The first survey would be conducted within 14 days prior to surface-disturbance; and the second survey would occur immediately before surface disturbance. During the inactive season (November 1 through February 28, except as noted above) when conditions are not conducive to tortoise activity as determined by an authorized biologist, one survey would occur within 72 hours of surface disturbance or up to 5 days in advance of disturbance if conditions are not favorable for tortoise activity (CH2MHill 2008c).

- All potential desert tortoise burrows found in the construction zone, whether occupied or not, would be excavated by an authorized biologist to allow removal of desert tortoises or desert tortoise eggs. Tortoises and nests found on the project area would be relocated by an authorized tortoise biologist in accordance with USFWS-approved protocol (Desert Tortoise Council 1994, revised 1999). Unoccupied burrows would be collapsed or blocked to prevent tortoise re-entry. All desert tortoise burrows and pallets that fall outside of but within 50 feet of the construction work area would be flagged for avoidance. All handling of desert tortoise and their eggs and excavation of burrows would be done by an authorized biologist in accordance with recommended protocol (Desert Tortoise Council, 1994, revised 1999). No stakes or flagging would be placed on the berm or in the mouth of a desert tortoise burrow. Desert tortoise burrows would not be marked in a manner that facilitates poaching. Avoidance flagging would be designed to be easily distinguished from access route or other flagging, and would be designed in consultation with experienced construction personnel and authorized biologists. All flagging would be removed following construction activities (CH2MHill 2008c).

- Tortoise excavated from burrows would be relocated to unoccupied natural or artificially constructed burrows immediately following excavation. The artificial or unoccupied natural burrows must occur 150 to 300 feet from the original burrow. Relocated tortoises would not be placed in existing occupied burrows. If an existing burrow that is similar in size, shape, and orientation to the original burrow is unavailable, the authorized biologist would construct one. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist would be allowed some judgment and discretion to ensure that survival of the desert tortoise is likely (CH2MHill 2008c).

- Desert tortoises that are found above-ground and need to be moved from harm's way would be placed in the shade of a shrub, from 150 to 300 feet from the point of encounter (CH2MHill 2008c).

- Procedures for handling tortoises would follow those described in *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1994, revised 1999). All tortoises would be handled using disposable surgical gloves. The gloves would be disposed of after handling each tortoise. Equipment or materials that contact desert tortoises would be sterilized, disposed of, or changed before contacting another tortoise. Desert tortoises would only be moved by an authorized biologist and solely for the purpose of moving the tortoises out of harm's way. The authorized biologist would document each tortoise encounter/handling with the following information, at a minimum: A narrative describing circumstances; vegetation type; dates of observations; conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released; maps; whether animals voided their bladders; and diagnostic markings (that is, identification numbers marked on lateral scutes) (CH2MHill 2008c).

- If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40 degrees Fahrenheit or greater than 90 degree Fahrenheit), they would be held overnight in a clean cardboard box. These tortoises would be kept in the care of the authorized biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes would be appropriately discarded after one use and never hold more than one tortoise (CH2MHill 2008c).
- If blasting is required in desert tortoise habitat, a biological monitor would be assigned to each blasting crew or area in which blasting would occur. Prior to any blast, a 200-foot area around the blast site would be surveyed for desert tortoises. Above-ground tortoises would be relocated at least 500 feet from the blast site. Tortoises in burrows within 50 feet of the blast site would be relocated at least 75 feet away from the blast site to an unoccupied existing or artificial burrow. Burrows located between 50 and 150 feet away from the blast site would be flagged and stuffed with newspaper prior to the blast. The newspaper would be removed immediately after the blast and burrows assessed for damage (CH2MHill 2008c).
- Any fuel or hazardous waste leaks or spills would be stopped/repaired immediately and cleaned up at the time of occurrence. The storage and handling of hazardous materials would be excluded from the construction zone in areas within 100 feet of active tortoise burrows and wash crossings. Any unused or leftover hazardous products would be properly disposed of off-site (CH2MHill 2008c).
- Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches above ground on the construction site for one or more nights would be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all structures may be capped before being stored on the construction site (CH2MHill 2008c).
- Water would be applied to the construction ROW for dust control and to the topsoil piles as necessary to prevent the loss of topsoil due to wind erosion. The applications of water to the construction ROW maybe reduced by adding a non-toxic, organic tackifier to the dust control water during the tortoise active season (generally March 1 to October 31). However, the effectiveness of tackifier is dependent on the structure and moisture holding capabilities of the soil. Frequently these soil properties can only be determined after the removal of the topsoil and application of water. A tackifier would be applied to segregated topsoil piles in areas designed as highly susceptible to wind erosion. During the desert tortoise active season, an authorized biologist would be assigned to patrol each area being watered. The biological monitor would patrol the area immediately after the water is applied and at approximate 60-minute intervals until the ground is no longer wet enough to attract tortoises (CH2MHill 2008c).
- Open pipeline trenches would be fenced with temporary tortoise-proof fencing or inspected by an authorized biologist periodically throughout and at the end of the day, and immediately prior to backfilling. Any tortoise that is found in a trench or excavation would be promptly removed by an authorized desert tortoise biologist in accordance with USFWS-approved protocol or alternative method approved by the USFWS if the biologist is not allowed to enter the trench for safety reasons. Tortoise escape ramps would be provided at maximum 1-mile intervals along the trench (CH2MHill 2008c).

- Coordination with the BLM would ensure that appropriate measures are implemented to minimize public access and use of the pipeline ROW following completion of the project. Such measures may include signs and substantial physical barriers, and rehabilitation actions that would make the ROW impassible to vehicles (CH2MHill 2008c).
- During the winter, modification of the number of monitors present may be requested, or other measures developed primarily to minimize effects to desert tortoise during periods of tortoise activity. In such cases, the authorized biologist must confirm that no desert tortoises are above ground or present within the construction zone, or anticipated to be active for a minimum of three days. Any modifications would require concurrence from the BLM and USFWS (CH2MHill 2008c).
- A trash abatement program would be initiated during the pre-construction phases of the project, and would continue though the duration of the project. Trash and food items would be contained in closed (raven-proof) containers and removed regularly (at least once a week) to reduce attractiveness to opportunistic predators such as ravens, coyotes, and feral dogs. Upon project completion, all construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes would be removed from the site and disposed of properly. Domestic dogs would be prohibited from the project site and site access. (CH2MHill 2008c)
- All pipeline marker signs within desert tortoise habitat would be fitted with “bird-be-gone” or similar bird repellent devices (CH2MHill 2008c).
- Special habitat features identified by an authorized biologist would be avoided to the greatest extent possible. Work area boundaries would be delineated by posting signs and flagging, erecting temporary fencing, or otherwise clearly marking in order to minimize surface disturbance associated with vehicle or equipment movement. The authorized biologists and FCR(s) would ensure compliance with this measure (CH2MHill 2008c).
- To the greatest extent possible, previously disturbed areas within the project sites would be used for temporary storage areas, laydown sites, and any other surface-disturbing activities. Specific routes of travel would be approved by the jurisdictional agency and marked prior to construction crew arrival. Efforts would be made to minimize impacts on vegetation and soils in all work areas (CH2MHill 2008c).
- Site-specific Reclamation Plans and a Noxious Weed Plan provided by resource agencies, including posting a reclamation bond with the BLM to cover additional reclamation actions if the first effort is not successful, would be implemented. The Noxious Weed Plan would include maintenance activities, and treatments to be implemented prior to construction if environmental conditions are not favorable for weeds to be present above-ground (for example, dormant). After construction, the ROW would be recontoured to match as closely as possible the contours of the area (CH2MHill 2008c).
- To compensate for desert tortoise habitat affected during construction, these effects would be offset through either an acceptable land acquisition or an assessed financial contribution, based on the final construction footprint. Compensation ratios and the number of acres affected by the proposed project are identified below. The acres identified below are estimates based on surveys conducted for the existing (first) Kern River pipeline, and proposed ROW and extra work areas. Therefore, these numbers, although expected to be fairly accurate, are only an approximation of actual acres requiring compensation in the various ratio categories:

  In Utah:

  - 3:1 where overlapping previously disturbed tortoise critical habitat for 72.7 acres total

- 1:1 for all non-critical habitat for 34.7 acres

In Nevada:

- 3:1 where overlapping previously disturbed tortoise critical habitat for 289.9 acres total
- 1:1 for all non-critical habitat for 297.5 acres (199.5 acres previously disturbed and 98 acres of new disturbance) (CH2MHill 2008c).

- Upon completion of construction, a thorough inspection of the site would be conducted by the FCR and authorized biologist to determine the extent of compliance with the conditions of USFWS's Biological Opinion, including agreements between the proponent and the agencies. Within 90 days of completion of project activities, the FCR and/or authorized biologist would submit a report to the BLM. The report would document the numbers and locations of desert tortoises encountered, their disposition, effectiveness of protective measures, practicality of protective measures, recommendations for future measures that allow for better protection or more workable implementation, and the number of acres disturbed (CH2MHill 2008c).
- A list of planned maintenance activities by name, category, location, and approximate start date would be submitted to the local BLM office. The list of activities would also be forwarded to the USFWS and state agencies. The agencies would have 30 days following receipt of the report to consider the Proposed Action. In the event of a rejection, the proponent would work with the agencies to resolve issues. Agency approval of the proposed list of projects is valid for one year after agency acceptance (CH2MHill 2008c).

These measures would be taken from MP 316 to the project terminus at MP 398 in Nevada (CH2MHill 2008c).

Operation and Maintenance Activities

The following measures would be proposed to minimize potential project effects on desert tortoises during pipeline operation and maintenance activities:

- *Maintenance Class I (or Routine).* Normal maintenance activities that do not result in new disturbance.
    - All proponent employees and its contractors involved with pipeline inspection and maintenance activities would be required to take a tortoise education program (described previously under Mitigation Recommendations for Construction Activities).
    - If desert tortoises or their burrows occur in the work area, appropriate measures described previously under Mitigation Recommendations for Construction Activities would be implemented.
    - Upon completion of each maintenance activity in the ROW, all used material and equipment would be removed from the site. This condition does not apply to fenced sites.
    - Routine road surface maintenance activities on existing access and/or patrol roads would be conducted during the inactive season of the desert tortoise, unless accompanied by authorized by an authorized biologist. Localized repair of major damage may take place throughout the year (CH2MHill 2008c).
- *Maintenance Class II.* Maintenance activities that result in surface disturbance during the inactive season of the desert tortoise (CH2MHill 2008c).
- *Maintenance Class III.* Maintenance activities that result in surface disturbance during the active season of the desert tortoise (CH2MHill 2008c).
- *Maintenance Class IV.* Maintenance activities that may extend outside the pipeline ROW.

- Appropriate measures for maintenance activities described previously under Mitigation Recommendations for Construction Activities, in addition to the measures below, would be implemented (CH2MHill 2008c).
- For Class III maintenance activities: The width of the disturbance area for any pipeline excavation project or construction of any above-ground facility would be determined prior to the onset of ground-disturbing activities. The work area would be restricted to the narrowest possible areas (CH2MHill 2008c).
- If activities may extend outside of any pipeline ROW in all or in part, BLM would be contacted; additional consultation may be required between the BLM and the USFWS (CH2MHill 2008c).

- *Maintenance Class V.* Emergency repairs.
    - For emergency situations involving a pipeline leak or spill or any other immediate safety hazard, the local BLM and USFWS offices would be notified within 48 hours. As a part of this emergency response, the BLM and USFWS may require specific measures to protect desert tortoises. During cleanup and repair, the agencies may also require measures to recover damaged habitats (CH2MHill 2008c).

Although desert tortoise may be observed above ground any time of the year, the distinction being made among the maintenance classes recognizes the difference in risk associated with causing surface disturbance within or outside of the active season of the desert tortoise. The active season is defined as approximately March 1 to November 1 (CH2MHill 2008c).

Land Use and Transportation

In roadways or in areas where pedestrian or vehicle traffic is present, provisions would be made to cover or barricade open trenches.

During construction, post traffic caution signs at critical locations.

Repair or replace damaged fences and livestock water supply pipelines.

Heavy equipment would be secured along the ROW consistent with jurisdictional requirements.

Cultural Resources

Conduct heritage surveys in consultation with the State Historic Preservation Office (SHPO) and locate areas to be avoided.

If heritage resource sites are discovered during construction and clearing, stop operations in the area immediately and contact appropriate agency.

Appendix E
Soils Tables

Soil Impacts: Proposed Action Alignment

TABLE A
Soil characteristics and limitations along the pipeline route.

State	Soil Map Unit	New Disturbance Area (acres)	Existing Disturbed Area (acres)	Soil Limitations [1]
Utah				
Pipeline				
SSURGO Soils Data				
	Abela gravelly loam, 2 to 8 percent slopes	41.27	0.00	R, SWI
	Abela very gravelly loam, 5 to 15 percent slopes	8.72	0.00	R
	Abraham loam, strongly saline	29.47	0.00	C, Sa, V
	Abraham silty clay loam, strongly saline	16.10	0.00	C, Sa, V
	Amtoft-Rock outcrop complex, 30 to 70 percent slopes (4)	7.76	0.00	Sh, R
	Amtoft-Rock outcrop complex, 30 to 70 percent slopes (AcF)	0.37	0.00	Sh, R, D, V
	Anco silty clay loam, strongly saline	50.77	0.00	C, Sa, V
	Annabella very gravelly loam, 2 to 15 percent slopes	4.79	13.80	R
	Antelope Springs loam, 0 to 2 percent slopes	5.69	1.56	none
	Arave-Saltair complex, 0 to 1 percent slopes	1.93	0.00	WaE, WiE, C, V
	Ashdown loam, 2 to 5 percent slopes	8.29	12.93	PI
	Badland, very steep	0.61	3.62	none
	Berent loamy fine sand, 0 to 10 percent slopes	1.68	1.29	D, V
	Beryl sandy loam, 2 to 5 percent slopes	12.97	0.00	D, V
	Birdow loam, 1 to 4 percent slopes	37.90	0.00	SWI
	Borvant cobbly loam, 2 to 8 percent slopes	28.94	0.00	Sh, R
	Borvant cobbly loam, 8 to 25 percent slopes	0.87	0.00	Sh, R
	Borvant gravelly loam, 2 to 15 percent slopes	17.01	0.00	Sh, R
	Bramwell silt loam, 0 to 2 percent slopes	22.21	0.00	C, Sa, SWI, V
	Broad, moist-Reywat, moist-Rock outcrop association, 30 to 60 percent slopes	8.37	0.00	Sh, R
	Bullion silt loam, 0 to 2 percent slopes	10.83	7.12	Sa, V
	Bullion-Antelope Springs complex, 0 to 2 percent slopes	39.93	0.00	none
	Calita loam, 2 to 4 percent slopes	4.75	0.00	PI

Calita loam, 4 to 8 percent slopes	6.88	0.00	PI
Cave very gravelly sandy loam, 7 to 30 percent slopes	13.36	85.55	WaE, WiE, Sh, D, V
Cave very gravelly sandy loam, low rainfall, 2 to 7 percent slopes	6.21	8.03	WaE, WiE, Sh, D, V
Checkett family-rock outcrop complex, 15 to 50 percent slopes	10.27	0.00	WiE, R, Sa, V
Checkett gravelly loam, 5 to 40 percent slopes	1.07	3.94	Sh, R
Chipman silty clay loam, 0 to 1 percent slopes	1.41	0.00	WaE, WiE, C, PI, V
Chuska-Checkett gravelly loams, 8 to 25 percent slopes	1.32	4.55	Sh
Curhollow very gravelly fine sandy loam, 2 to 10 percent slopes	0.33	13.13	WaE, WiE, Sh, D, V
Curhollow-Rock outcrop complex, 10 to 30 percent slopes	0.55	0.47	Sh
Deckerman fine sandy loam, 0 to 1 percent slopes	2.32	0.00	D, C, Sa, V
Dera-Dera sandy loam families association, 2 to 8 percent slopes	232.72	0.00	WiE, R, Sa, V
Dixie gravelly loam, 2 to 8 percent slopes	10.95	18.85	SWI
Donnardo stony loam, 2 to 8 percent slopes	6.04	0.00	R
Doyce loam, 2 to 4 percent slopes	6.32	0.00	PI
Doyce loam, 2 to 8 percent slopes	12.61	0.00	SWI
Doyce silt loam, loamy substratum, 2 to 4 percent slopes	3.51	0.00	PI
Dumps	3.72	0.00	none
Erda silt loam, 1 to 5 percent slopes	34.31	0.00	SWI
Eroded land-Shalet complex	3.68	36.41	WaE, WiE, Sh
Escalante sandy loam, 0 to 5 percent slopes	17.39	3.43	D, V, SWI
Escalante sandy loam, 1 to 5 percent slopes	11.12	1.41	D, V
Freedom silt loam, 0 to 2 percent slopes	3.05	0.00	PI
Freedom silt loam, 2 to 5 percent slopes	1.40	0.00	PI
Genola silt loam, 0 to 1 percent slopes	6.96	0.00	PI
Genola silt loam, 0 to 2 percent slopes	6.52	0.00	PI
Green River-Poganeab complex, 0 to 3 percent slopes	0.74	0.00	none
Hiko Peak gravelly loam, 2 to 15 percent slopes	5.62	0.00	R, SWI
Hiko Peak stony sandy loam, 4 to 8 percent slopes	19.20	0.00	R, D, V

Jericho gravelly fine sandy loam, 4 to 15 percent slopes	39.17	0.00	Sh, R, D, V
Jigsaw-Oakcity complex, 0 to 2 percent slopes	8.06	0.00	none
Jordan-Saltair complex, 0 to 1 percent slopes	13.59	0.00	WaE, WiE, C, Sa, V
Juab loam, 2 to 4 percent slopes	18.40	0.00	PI
Juab loam, 4 to 8 percent slopes	5.91	0.00	PI
Kapod stony loam, 5 to 30 percent slopes	44.76	0.00	R
Kudlac silt loam, 15 to 50 percent slopes	18.95	0.00	WaE, WiE
Lahontan silty clay loam, sandy subsoil variant	22.24	0.00	Sa, V
Lakewin gravelly loam, 1 to 5 percent slopes	56.37	0.00	R, SWI
Lasil silt loam, 0 to 2 percent slopes	20.11	0.00	WaE, WiE, C, V, SWI
Lasil-Goggin complex, 1 to 6 percent slopes	24.82	0.00	C, V
Leland fine sandy loam, 0 to 1 percent slopes	15.67	0.00	WaE, WiE, D, C, V
Lewiston loam, 0 to 1 percent slopes	2.32	0.00	WiE, R, C, PI
Linoyer very fine sandy loam, 0 to 1 percent slopes	10.74	0.00	D, V, PI
Linoyer very fine sandy loam, 1 to 2 percent slopes	6.29	0.00	D, V, PI
Linoyer very fine sandy loam, 2 to 5 percent slopes	25.23	0.00	D, V, PI
Linoyer very fine sandy loam, 5 to 10 percent slopes, eroded	30.10	0.00	D, V, SWI
Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes	8.76	0.00	Sh, R
Logan silt loam, 0 to 1 percent slopes	27.27	0.00	C, V
Magotsu-Pastura complex, 2 to 20 percent slopes	6.99	20.60	WaE, Sh, R, D, V
Manselo-Ashdown complex, 0 to 5 percent slopes	38.60	0.00	none
Mathis-Rock outcrop complex, 20 to 50 percent slopes	0.00	0.01	WaE, Sh, R
Medburn fine sandy loam, 2 to 4 percent slopes	17.63	0.00	D, V, PI
Medburn fine sandy loam, 2 to 8 percent slopes	8.50	0.00	D, V, SWI
Medburn fine sandy loam, saline, 2 to 4 percent slopes	4.00	0.00	D, Sa, V, SWI
Menefee-Rock outcrop complex, 25 to 60 percent slopes	1.44	10.58	WaE, Sh
Mespun fine sand, 0 to 10 percent slopes	0.47	1.42	D, V
Motoqua-Rock outcrop complex, 30 to 70 precent slopes	0.06	1.56	WaE, Sh, R
Oasis loam, 0 to 2 percent slopes	6.79	0.00	C, Sa, V

Orcky gravelly fine sandy loam, 4 to 15 percent slopes	0.64	0.00	D, V
Palma loamy fine sand, 1 to 5 percent slopes	0.88	4.48	D, V
Pastura-Esplin complex, 0 to 10 percent slopes	1.28	8.28	WaE, Sh
Payson-Warm Springs complex, 0 to 3 percent slopes	3.01	0.00	WaE, WiE, C, V
Pintailake-Eimarsh-Playas complex, 0 to 1 percent slopes	27.30	0.00	WaE, WiE, C, V
Pits	1.39	0.00	none
Playas (PM)	24.28	0.00	Sa, V
Playas (PU)	17.02	0.00	Sa, V
Poganeab silty clay loam, strongly saline	3.05	0.00	C, Sa, V
Riverwash	0.04	1.97	R
Rock land	1.06	8.10	R
Rough broken land	0.65	5.71	R
Saltair-Playas-Lasil complex, 0 to 1 percent slopes	34.04	0.00	Sa, V
Sanpete gravelly fine sandy loam, 15 to 40 percent slopes	1.75	0.00	R, D, V
Sanpete gravelly fine sandy loam, 4 to 15 percent slopes	7.40	0.00	R, D, V
Saxby-Rock outcrop-Checkett complex, 15 to 40 percent slopes	0.05	0.00	Sh, R, D, V
Scalade very fine sandy loam, moist, 2 to 5 percent slopes	3.41	0.00	Sh, D, V
Scalade-Jericho-Medburn association, 2 to 15 percent slopes	28.16	0.00	Sh
Sevy sandy loam, 0 to 2 percent slopes	3.59	4.13	D, V, SWI
Sevy sandy loam, 2 to 8 percent slopes	30.57	19.07	D, V
Sevy-Taylorsflat complex, 2 to 8 percent slopes	1.79	1.13	none
Shabliss very fine sandy loam, 2 to 5 percent slopes	30.05	0.00	Sh, D, V
Shabliss very fine sandy loam, moist, 2 to 5 percent slopes	4.67	0.00	Sh, D, V
Skumpah silt loam, 0 to 2 percent slopes	24.59	4.09	Sa, V
Skumpah silt loam, saline, 0 to 2 percent slopes	4.89	0.00	Sa, V
Stony colluvial land	0.23	0.00	R
Stony terrace escarpments	6.60	0.00	R, C, Sa, V
Taylorsflat loam, 0 to 2 percent slopes	15.79	9.08	SWI
Taylorsflat loam, 1 to 5 percent slopes	58.78	0.00	SWI
Taylorsflat loam, 2 to 5 percent slopes	1.24	1.29	none
Taylorsflat loam, saline, 0 to 3 percent slopes	79.26	0.00	Sa, V, SWI

Taylorsflat loam, saline, 0 to 5 percent slopes	7.91	2.18	Sa, V
Terminal silt loam, 0 to 1 percent slopes	14.33	0.00	Sh, C, V
Timpanogos loam, 1 to 3 percent slopes	2.99	0.00	WiE, PI
Timpie fine sandy loam, 0 to 2 percent slopes	53.39	0.00	D, V
Tobish very cobbly clay loam, 5 to 30 percent slopes	0.06	0.16	WaE, Sh, R
Toddler sandy clay loam	4.20	0.00	Sa, V
Tooele fine sandy loam, 0 to 5 percent slopes	13.49	0.00	D, V, SWI
Tooele fine sandy loam, saline, 0 to 5 percent slopes	13.58	0.00	D, Sa, V, SWI
Truesdale fine sandy loam, 2 to 4 percent slopes	19.55	0.00	Sh, D, V
Uvada silt loam	119.29	0.00	Sa, V
Uvada-Skumpah families association, 0 to 2 percent slopes	92.26	0.00	WiE, Sa, V
Uvada-Yenrab complex, 0 to 10 percent slopes	13.45	0.00	Sa, V
Veyo-Pastura complex, 1 to 10 percent slopes	4.10	8.29	WaE, Sh, R
Wales loam, 0 to 2 percent slopes	9.59	4.45	PI
Wales loam, dry, 2 to 4 percent slopes	14.88	0.00	PI
Wales sandy loam, 0 to 2 percent slopes	2.76	3.14	none
Wales very fine sandy loam, 0 to 2 percent slopes	11.84	11.01	D, V
Warm Springs fine sandy loam, 0 to 1 percent slopes	3.61	0.00	D, C, Sa, V, PI
Warm Springs fine sandy loam, saline, sodic, 0 to 1 percent slopes	2.31	0.00	D, C, Sa, V
Water (124)	1.40	0.00	none
Water (W)	0.11	0.00	none
Welring-Tortugas very gravelly loams, 20 to 70 percent slopes	0.00	2.60	WaE, Sh, R
Woodrow silty clay loam, saline, 0 to 2 percent slopes	2.79	2.71	Sa, V
Yenrab fine sand, undulating	18.36	0.00	D, V
Yenrab loamy fine sand, 0 to 10 percent slopes	30.77	0.00	D, V
Yenrab-Uvada complex, 0 to 10 percent slopes	1.48	0.00	D, V
Yuba silty clay loam	11.99	0.00	Sa, V
STATSGO Soils Data (fills gaps where SSURGO Soils Data is unavailable)			
Segura-Rock outcrop-Itca family-Cropper (s5563)	10.17	0.00	WaE, Sh
Tosser-Sitar-Hiko Peak (s8104)	5.24	0.00	none
Wye family-Sampson family-Pastorius family-Nehar family-	7.71	52.95	Sh

	Muzzler family-Mokiak family-Bernal family (s8180)			
	Mathis-Bond family (s8185)	12.72	53.70	WaE, Sh
	Pastura family-Magotsu-Curhollow (s8187)	1.26	26.16	WaE, Sh
	Garbo-Deerlodge family-Biblesprings (s8204)	265.34	0.00	none
	Wales-Taylorsflat-Sevy (s8206)	1.73	24.77	none
	Uvada-Manselo-Antelope Springs (s8212)	16.99	0.00	WaE, C, V
Nevada				
Pipeline				
SSURGO Soils Data				
	Alluvial land (Ad)	0.73	0.00	none
	Anthony fine sandy loam, gravelly substratum	2.46	2.27	D, V
	Arada fine sand, 2 to 8 percent slopes	6.26	10.39	D, V
	Arada fine sand, hardpan variant, 2 to 8 percent slopes	0.66	1.95	WaE, WiE, Sh, D, V
	Arizo fine sand, 0 to 2 percent slopes	0.61	1.37	D, V
	Arizo gravelly fine sand, 2 to 4 percent slopes	0.46	2.32	R, D, V
	Badland	19.48	43.47	D, V
	Bard gravelly fine sandy loam, 2 to 8 percent slopes	39.70	88.60	WaE, WiE, Sh, D, V
	Bard-Tonopah association, gently sloping	6.09	5.77	WaE, WiE, Sh, R
	Bracken gravelly fine sandy loam, 2 to 8 percent slopes	1.23	11.47	Sh, R, D
	Calico fine sandy loam, strongly saline	0.22	0.00	WaE, WiE, D, C, Sa, V
	Cave-Arizo association	1.60	3.34	WaE, WiE, Sh
	Colorock-Tonopah association, moderately sloping	24.13	8.67	WaE, WiE, Sh, R
	Flattop gravelly clay loam, 2 to 8 percent slopes	11.58	36.69	WaE, WiE, Sh
	Gila loam, strongly saline	6.49	0.00	Sa, V
	Grapevine loam	11.06	9.16	none
	Ireteba loam, overflow	6.99	5.27	none
	Knob Hill-Arizo association	0.43	1.38	R
	Mormon Mesa association	3.90	17.75	WaE, WiE, Sh, R
	Mormon Mesa fine sandy loam, 0 to 8 percent slopes	22.75	69.98	WaE, WiE, Sh, R, D, V
	Mormon Mesa-Naye-Dalian association	21.91	68.29	WaE, WiE, Sh, R
	Mormon Mesa-Tonopah-Arada association	5.14	15.34	WaE, WiE, Sh, R
	Pits, gravel	0.19	0.60	none
	Rockland-St. Thomas	6.02	6.40	WaE, WiE, Sh, R

association, very steep			
St. Thomas-Zeheme-Rock outcrop association	0.13	0.02	WaE, WiE, Sh, R
Tonopah gravelly sandy loam, 0 to 4 percent slopes	6.25	15.86	R, D, V
Tonopah very gravelly sandy loam, 4 to 15 percent slopes	0.63	0.31	D, V
Toquop fine sand, 0 to 2 percent slopes	1.84	0.00	D, V
Typic Torriorthents-Badland association	0.47	2.62	WaE, WiE
Virgin River silty clay	2.05	1.15	WaE, WiE, C, V
Virgin River silty clay, strongly saline	0.23	0.29	WaE, WiE, D, Sa, V

[1] WaE = water erosion potential; WiE = wind erosion potential; Sh = shallow soils; R = stony soils; D = droughty soils; C = compaction; Sa = saline soils; V = poor revegetation potential; PI = prime farmland if irrigated; SWI = farmland of statewide importance

Soil Impacts: Facilities

Table shows only above ground facilities.

TABLE B
Soil characteristics and limitations at aboveground facilities.

State	Soil Map Unit	New Disturbance Area (acres)	Existing Disturbed Area (acres)	Soil Limitations [1]
Utah				
Origin Pumping Station	Warm Springs fine sandy loam, 0 to 1 percent slopes	2.3	0.00	D, C, Sa, V, PI
Midpoint Pump Stations – MP 157.9	Uvada silt loam	9.98	0.00	Sa, V
Cedar City Lateral Take Off Location – MP 255.8	Bullion silt loam, 0 to 2 percent slopes	0.52	0.00	Sa, V
Cedar City Lateral Terminal Location – MP 255.8	Sevy-Taylorsflat complex, 2 to 8 percent slopes	18.22	0.00	none
	Woodrow silty clay loam, 0 to 2 percent slopes	8.34	0.00	WiE, SWI
Pressure Limiting Station	Dixie gravelly loam, 2 to 8 percent slopes	0.4	0.00	Sh, D, V
Pressure Reducing Station – MP 355.5	Flattop gravelly clay loam, 2 to 8 percent slopes	0.4	0.00	WaE, WiE, Sh
Nevada				

Las Vegas Terminal – MP 399.8	Colorock-Tonopah association, moderately sloping	38.74	1.24	WaE, WiE, Sh, R

[1] WaE = water erosion potential; WiE = wind erosion potential; Sh = shallow soils; R = stony soils; D = droughty soils; C = compaction; Sa = saline soils; V = poor revegetation potential; PI = prime farmland if irrigated; SWI = farmland of statewide importance; [2] Red Rock Knoll is the only facility that used STATSGO Soil data, all others were covered by SSURGO Soil data

Soil Impacts: Staging Areas

Table shows only staging areas.

TABLE C
Soil characteristics and limitations at aboveground facilities.

State	Soil Map Unit	New Disturbance Area (acres)	Existing Disturbed Area (acres)	Soil Limitations [1]
Utah				
I-215 – MP 0	Warm Springs fine sandy loam, 0 to 1 percent slopes	1.43	0.00	D, C, Sa, V, PI
I-80 A – MP 10.6	Lasil silt loam, 0 to 2 percent slopes	1.43	0.00	WaE, WiE, C, V, SWI
I-80 B – MP 10.8	Lasil silt loam, 0 to 2 percent slopes	1.43	0.00	WaE, WiE, C, V, SWI
Lake Point Junction – MP 21.8	Stony terrace escarpments	0.50	0.00	R, C, Sa, V
Faust Creek – MP 62.4	Scalade-Jericho-Medburn association, 2 to 15 percent slopes	1.40	0.00	Sh
State Hwy 148 – MP 103.6	Truesdale fine sandy loam, 2 to 4 percent slopes	1.45	0.00	Sh, D, V
State Hwy 125 – MP 134.2	Yenrab fine sand, undulating	1.40	0.00	D, V
Red Rock Knoll – MP 193	Dera-Dera sandy loam families association, 2 to 8 percent slopes	1.45	0.00	WiE, R, Sa, V
Lund Hwy – MP 251.7	Wales sandy loam, 0 to 2 percent slopes	1.45	0.00	none
Newcastle - MP 273.6	Dixie gravelly loam, 2 to 8 percent slopes	1.45	0.00	SWI
Montoqua Road – MP 312.3	Curhollow-Rock outcrop complex, 10 to 30 percent slopes	1.40	0.00	Sh
Nevada				
Mormon Mesa – MP 355.4	Flattop gravelly clay loam, 2 to 8 percent slopes	1.40	0.00	WaE, WiE, Sh
US Hwy 93 – MP 399.4	Flattop gravelly clay loam, 2 to 8 percent slopes	1.40	0.00	WaE, WiE, Sh

[1] WaE = water erosion potential; WiE = wind erosion potential; Sh = shallow soils; R = stony soils; D = droughty soils; C = compaction; Sa = saline soils; V = poor revegetation potential; PI = prime farmland if irrigated; SWI = farmland of statewide importance; [2] Red Rock Knoll is the only facility that used STATSGO Soil data, all others were covered by SSURGO Soil data

Soil Impacts: To Be Improved Access Roads

SOILS based on a 10-foot wide footprint of Access Roads categorized as "To Be Improved".

TABLE D
Soil characteristics and limitations along the pipeline route.

State	Soil Map Unit	New Disturbance Area (acres)	Existing Disturbed Area (acres)	Soil Limitations [1]
Utah				
Pipeline				
SSURGO Soils Data				
	Uvada silt loam	0.41	0.00	Sa, V
	Warm Springs fine sandy loam, 0 to 1 percent slopes	0.13	0.00	D, C, Sa, V, PI
	Lasil silt loam, 0 to 2 percent slopes	0.11	0.00	WaE, WiE, C, V, SWI
	Dixie gravelly loam, 2 to 8 percent slopes	0.38	0.00	SWI
	Dera-Dera sandy loam families association, 2 to 8 percent slopes	0.39	0.00	WiE, R, Sa, V
	Uvada silt loam	0.32	0.00	Sa, V
	Scalade-Jericho-Medburn association, 2 to 15 percent slopes	1.39	0.00	Sh
	Stony terrace escarpments	0.16	0.00	R, C, Sa, V

[1] WaE = water erosion potential; WiE = wind erosion potential; Sh = shallow soils; R = stony soils; D = droughty soils; C = compaction; Sa = saline soils; V = poor revegetation potential; PI = prime farmland if irrigated; SWI = farmland of statewide importance

Appendix F
Noxious Weed List

Federal Noxious Weeds List

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Aquatic/Wetland			
Mosquito fern	*Azolla pinnata*	Heartshape false pickerelweed	*Monochoria vaginalis*
Mediterranean strain	*Caulerpa taxifolia*	Ducklettuce	*Ottelia alismoides*
Anchored waterhyacinth	*Eichornia azurea*	Arrowhead	*Sagittaria sagittifolia*
Hydrilla	*Hydrilla verticillata*	Giant salvinia	*Salvinia auriculata*
Miramar weed	*Hygrophila polysperma*	Giant salvinia	*Salvinia biloba*
Water-spinach	*Ipomoea aquatica*	Giant salvinia	*Salvinia herzogii*
Moss	*Lagarosiphon major*	Giant salvinia	*Salvinia molesta*
Ambulia	*Limnophila sessiliflora*	Wetland nightshade	*Solanum tampicense*
Broadleaf paper bark tree	*Melaleuca quinquenervia*	Exotic bur-reed	*Sparganium erectum*
Arrowleaf false pickerelweed	*Monochoria hastata*		
Parasitic			
Aeginetia	*Aeginetia spp.*	Broomrape	*Orobanche spp.* (selected)
Alectra	*Alectra spp.*	Witchweeds	*Striga spp.*
Dodder	*Cuscuta spp.* (selected)		
Terrestrial			
Crofton weed	*Ageratina adenophora*	Prosopis	*Prosopis articulata*
Sessile joyweed	*Alternanthera sessilis*	Prosopis	*Prosopis caldenia*
Onionweed	*Asphodelus fistulosus*	Cusqui	*Prosopis calingastana*
Animated oat, wild oat	*Avena sterilis*	Prosopis	*Prosopis campestris*
Wild safflower	*Carthamus oxyacantha*	Prosopis	*Prosopis castellanosii*
Pilipiliula	*Chrysopogon aciculatus*	Prosopis	*Prosopis denudans*
Benghal dayflower	*Commelina benghalensis*	Prosopis	*Prosopis elata*
Common crupina	*Crupina vulgaris*	Syrian mesquite	*Prosopis farcta*
African couchgrass	*Digitaria scalarum*	Prosopis	*Prosopis ferox*
Velvet fingergrass	*Digitaria velutina*	Prosopis	*Prosopis fiebrigii*
Lightning weed	*Drymaria arenarioides*	Prosopis	*Prosopis hassleri*
Three-cornered jack	*Emex australis*	Prosopis	*Prosopis humilis*
Devil's thorn	*Galega officinalis*	Prosopis	*Prosopis kuntzei*
Giant hogweed	*Heracleum mantegazzianum*	Kiawe	*Prosopis pallida*
Homeria	*Homeria spp.*	Prosopis	*Prosopis palmeri*
Brazilian satintail	*Imperata brasiliensis*	Tornillo	*Prosopis reptans*
Cogongrass	*Imperata cylindrical*	Prosopis	*Prosopis rojasiana*
Murainograss	*Ischaemum rugosum*	Prosopis	*Prosopis ruizlealii*
Asian sprangletop	*Leptochloa chinensis*	Prosopis	*Prosopis ruscifolia*

African boxthorn	*Lycium ferocissimum*	Prosopis	*Prosopis sericantha*
Melastoma	*Melastoma malabathricum*	Argentine screwbean	*Prosopis strombulifera*
Mile-a-minute	*Mikania cordata*	Prosopis	*Prosopis torquata*
Giant sensitive plant	*Mimosa invisa*	Itchgrass	*Rottboellia cochinchinensis*
Catclaw mimosa	*Mimosa pigra*	Wild blackberry	*Rubus fruticosus*
Serrated tussock	*Nassella trichotoma*	Wild raspberry	*Rubus moluccanus*
Jointed prickly pear	*Opuntia aurantiaca*	Wild sugarcane	*Saccharum spontaneum*
Red rice	*Oryza longistaminata*	Wormleaf salsola	*Salsola spontaneum*
Red rice	*Oryza punctata*	South African ragwort	*Senecio inaequidens*
Red rice	*Oryza rufipogon*	Madagascar ragwort	*Senecio madagascariensis*
Kodo-millet	*Paspalum scrobiculatum*	Cattail grass	*Setaria pallide-fusca*
Kikuyugrass	*Pennisetum clandestinum*	Turkeyberry	*Solanum torvum*
African feathergrass	*Pennisetum macrourum*	Tropical soda apple	*Solanum viarum*
Missiongrass	*Pennisetum polystachion*	Winged false buttonweed	*Spermacoce alata*
Prosopis	*Prosopis alpataco*	Coat buttons	*Tridax procumbens*
Prosopis	*Prosopis argentina*	Liverseed grass	*Urochloa panicoides*

Source: http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/index.shtml

Utah Department of Agriculture Noxious Weeds List

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Bermudagrass[1]	*Cynodon dactylon*	Perennial pepperweed	*Lepidium latifolium*
Canada thistle	*Cirsium arvense*	Perennial sorghum	*Sorghum halepense L & Sorghum almum*
Diffuse knapweed	Centaurea diffusa	Purple loosestrife	*Lythrum salicaria L.*
Dyers woad	Isatis tinctoria L.	Quackgrass	*Agropyron repens*
Field bindweed (Wild Morning Glory)	Convolvulus arvensis	Russian knapweed	*Centaurea repens*
Hoary cress	Cardaria drabe	Scotch thistle	*Onopordum acanthium*
Johnsongrass	Sorghum halepense	Spotted knapweed	*Centaurea maculosa*
Leafy spurge	Euphorbia esula	Squarrose knapweed	*Centaurea squarrosa*
Medusahead	Taeniatherum caput-medusae	Yellow starthistle	*Centaurea solstitialis*
Musk thistle	Carduus mutans		

[1] Bermudagrass shall not be a noxious weed in Washington County and shall not be subject to provisions of the Utah Noxious Weed Act within the boundaries of the county.

Source: http://ag.utah.gov/plantind/nox_utah.html

Nevada Department of Agriculture Noxious Weeds List

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Category A Weeds[1]			
African rue	*Peganum harmala*	Leafy spurge	*Euphorbia esula*
Austrian fieldcress	*Rorippa austriaca*	Malta star thistle	*Centaurea melitensis*
Austrian peaweed	*Sphaerophysa salsula/ Swainsona salsula*	Mayweed chamomile	*Anthemis cotula*
Camelthorn	*Alhagi camelorum*	Mediterranean sage	*Salvia aethiopis*
Common crupina	*Crupina vulgaris*	Purple loosestrife	*Lythrum salicaria, L. virgatum*
Dalmation toadflax	*Linaria dalmatica*	Purple star thistle	*Centaurea calcitrapa*
Dyer's woad	*Isatis tinctoria*	Rush skeletonweed	*Chondrilla juncea*
Eurasian water-milfoil	*Myriophyllum spicatum*	Sow thistle	*Sonchus arvensis*
Giant reed	*Arundo donax*	Spotted knapweed	*Centaurea masculosa*
Giant salvinia	*Salvinia molesta*	Squarrose star thistle	*Centaurea virgata Lam. Var. squarrose*
Goats rue	*Galega officinalis*	Sulfur cinquefoil	*Potentilla recta*
Houndstongue	*Cynoglossum officinale*	Syrian bean caper	*Zygophyllum fabago*
Hydrilla	*Hydrilla verticillata*	Yellow star thistle	*Centaurea solstiltialis*
Iberian star thistle	*Centaurea iberica*	Yellow toadflax	*Linaria vulgaris*
Klamath weed	*Hypericum perforatum*		
Category B Weeds[2]			
Carolina horse-nettle	*Solanum carolinense*	Russian knapweed	*Acroptilon repens*
Diffuse knapweed	*Centaurea diffusa*	Scotch thistle	*Onopordum acanthium*
Medusahead	*Taeniatherum caput-medusae*	White horse-nettle	*Solanum elaeagnifolium*
Musk thistle	*Carduus nutans*		
Category C Weeds[3]			
Black henbane	*Hyoscyamus niger*	Perennial pepperweed	*Lepidium latifolium*
Canada thistle	*Cirsium arvense*	Poison hemlock	*Conium maculatum*
Green fountain grass	*Pennisetum setaceum*	Puncture vine	*Tribulus terrestris*
Hoary cress	*Cardaria draba*	Salt cedar (tamarisk)	*Tamarix ramosissima*
Johnson grass	*Sorghum halepense*	Water hemlock	*Cicuta maculata*

[1] Weeds not found or limited in distribution throughout the State; actively excluded from the State and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the State in all infestations.

[2] Weeds established in scattered populations in some counties of the State; actively excluded where possible; actively eradicated from nursery stock dealer premises; control required by the State in areas where populations are not well established or previously unknown to occur.

[3] Weeds currently established and generally widespread in many counties of the State; actively eradicated from nursery stock dealer premises; abatement at the discretion of the State quarantine officer.

Source: http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm

Table 3. BLM Invasive Weed Species of Concern

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Grasses			
Jointed goatgrass	*Aegilops cylindrica*	Veldt grass	*Ehrharta calycina*
European beachgrass	*Ammophila arenaria*	Quackgrass	*Elytrigia repens*
Giant reed	*Arundo donax*	Lehmann lovegrass	*Eragrostis lehmanniana*
Ripgut brome	*Bromus diandrus*	Matgrass	*Nardus stricta*
Japanese brome	*Bromus japonicus*	Wild proso millet	*Panicum miliaceum*
Red brome	*Bromus rubens*	Crimson fountain grass	*Pennisetum setaceum*
Downy brome	*Bromus tectorum*	Schismum	*Schismus arabicus*
Longspine sandbur	*Cenchrus longispinus*	Mediterranean grass	*Schismus barbatus*
Andean pampas grass	*Cortaderia jubata*	Johnsongrass	*Sorghum halepense*
Pampas grass	*Cortaderia selloana*	Medusa-head	*Taeniatherum caput-medusae*
Bermudagrass	*Cynodon dactylon*		
Forbs			
Russian knapweed	*Acroptilon repens*	Chicory	*Cichorium intybus*
Scentless chamomile	*Anthemis arvensis*	Bull thistle	*Cirsium vulgare*
Mayweed chamomile	*Anthemis cotula*	Chinese clematis	*Clematis orientalis*
Common burdock	*Arctium minus*	Poison hemlock	*Conium maculatum*
Bassia	*Bassia hyssopifolia*	Field bindweed	*Convolvulus arvensis*
Black mustard	*Brassica nigra*	Bristly hawkweed	*Crepis setosa*
Wild turnip	*Brassica tournefortii*	Common crupina	*Crupina vulgaris*
Mexican bird-of-paradise	*Caesalpinia gilliesii*	Artichoke thistle	*Cynara cardunculus*
Lens-podded whitetop	*Cardaria chalepensis*	Houndstongue	*Cynoglossum officinale*
Hoary cress	*Cardaria draba*	Foxglove	*Digitalis purpurea*
Hairy whitetop	*Cardaria pubescens*	Common teasel	*Dipsacus fullonum*
Plumeless thistle	*Carduus acanthoides*	Blueweed	*Echium vulgare*
Musk thistle	*Carduus nutans*	Brazillian waterweed	*Egeria densa*
Italian thistle	*Carduus pycnocephalus*	Water hyacinth	*Eichhornia crassipes*
Slender-flowered thistle	*Carduus teniflorus*	Australian fireweed	*Erechtites glomerata*
Hottentot fig	*Carpobrotus edulis*	Cypress spurge	*Euphorbia cyparissias*
Sea iceplant	*Carpobrotus chilensis*	Leafy spurge	*Euphorbia esula*
Distaff thistle	*Carthamus lantus*	Myrtle spurge	*Euphorbia myrsinites*
Common caraway	*Carum carvi*	Fennel	*Foeniculum vulgare*
Purple starthistle	*Centaurea calcitrapa*	Goat's rue	*Galega officinalis*
Cornflower	*Centaurea cyanus*	Baby's breath	*Gypsophila paniculata*
Diffuse knapweed	*Centaurea diffusa*	Halogeton	*Halogeton glomeratus*
Iberian starthistle	*Centaurea iberica*	Dames's rocket	*Hesperis matronalis*
Brown knapweed	*Centaurea jacea*	Orange hawkweed	*Hieracium aurantiacum*
Bighead knapweed	*Centaurea macrocephala*	Mouseear hawkweed	*Hieracium pilosella*
Spotted knapweed	*Centaurea maculosa*	Yellow hawkweed	*Hieracium pretense*
Malta starthistle	*Centaurea melitenisis*	Hydrilla	*Hydrilla verticillata*
Mountain cornflower	*Centaurea montana*	Black henbane	*Hyoscyamus niger*
Black knapweed	*Centaurea nigra*	Common St. Johnswort	*Hypericum perforatum*
Vochin knapweed	*Centaurea nigrescens*	Common catsear	*Hyposhaeris radicata*
Meadow knapweed	*Centaurea pratensis*	Dyer's woad	*Isatis tinctoria*
Squarrose knapweed	*Centaurea squarrosa*	Blue buttons	*Knautia arvensis*
Yellow starthistle	*Centaurea solstitialis*	Everlasting peavine	*Lathyrus latifolius*
Feather-headed knapweed	*Centaurea trichocephala*	Perennial pepperweed	*Lepidium latifolium*
Rush skeletonweed	*Chondrilla juncea*	Dalmation toadflax	*Linaria genistifolia spp. dalmatica*
Ox-eye daisy	*Chrysanthemum leucanthemum*		

Forbs (cont.)			
Yellow toadflax	*Linaria vulgaris*	Mediterranean sage	*Salvia aethiopsis*
Garden loosestrife	*Lysimachia vulgaris*	Bouncing bet	*Saponaria officinalis*
Purple loosestrife	*Lythrum salicaria*	Tansy ragwort	*Senecio jacobaea*
Wand loosestrife	*Lythrum virgatum*	German ivy	*Senecio mikanoides*
Chilean tarweed	*Madia sativa*	Bitter nightshade	*Solanum dulcamara*
Eurasian watermilfoil	*Myriophyllum spicatum*	Perennial sowthistle	*Sonchus arvensis*
Scotch thistle	*Onopordum acanthium*	Swainsonpea	*Sphaerophysa salsula*
Scotch thistle	*Onopordum taricum*	Common tansy	*Tanacetum vulgare*
African rue	*Peganum harmala*	Syrian bean caper	*Zygophyllum fabago*
Sulfur cinquefoil	*Potentilla recta*		
Shrubs and Trees			
Tree-of-heaven	*Ailanthus altissima*	Himalaya blackberry	*Rubus discolor*
Camelthorn	*Alhagi pseudalhagi*	Brazilian pepper	*Schinus terebrinthifolius*
Spanish broom	*Cytisus junceum*	Athel	*Tamarix aphylla*
French broom	*Cytisus monspessulanas*	Tamarisk	*Tamarix chinensis*
Scotch broom	*Cytisus scoparius*	French tamarisk	*Tamarix gallica*
Portuguese broom	*Cytisus striatus*	Small flower tamarisk	*Tamarix parviflora*
Russian olive	*Elaeagnus angustifolia*	Tamarisk	*Tamarix pentada*
Edible fig	*Ficus carica*	Salt cedar	*Tamarix ramosissima*
Himalaya bush cover	*Lespedeza cuneata*	Gorse	*Ulex europaeus*
Bridal veil broom	*Retama monosperma*	Siberian elm	*Ulmus pumila*

Source: http://www.blm.gov/co/st/en/BLM_Programs/botany/invasiweed.html

Appendix G
BLM Visual Contrast Rating Sheets

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: May 2007 – Photos 1, 2, 3, 4

District: Cedar City Field Office

Resource Area

Activity (program)

SECTION A. PROJECT INFORMATION

1. Project Name UNEV Pipeline Project	4. Location Township 1S	5. Location Sketch See Figure 5 showing the photo location
2. Key Observation Point 1	Range 4W	
3. VRM Class II	Section 25	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat or nearly flat terrain. No water bodies are evident.	Low-lying sparse vegetation typical of a desert landscape.	Electric transmission line alignments, railroad tracks, I-80, and rural residences to the west of the alignment.
LINE	A faint horizontal line is created by the railroad tracks in Photos 3 and 4.In Photo 1, a line is created where the ground surface meets the treed area.	The shrub vegetation appears as small clumps.	The electric transmission line structures appear to be shades of brown or black against the landscape backdrop.
COLOR	The general appearance of the area exhibits a light brown color. The treed area where the rural residences are located exhibits shades of green.	The vegetation appears as shades of light green, pale yellows, tans, and light brown.	The electric transmission line structures appear to be shades of brown or black against the landscape backdrop.
TEXTURE	Gravel, rock, and bare soil provide texture.	Grasses and low-lying shrubs make the ground surface texture appear uneven and random.	Minor effect on texture from the transmission line structures, railroad tracks, I-80, and rural residences.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Construction of the project would entail digging a trench for the proposed pipeline, resulting in piles of dirt being stockpiled, and thus, visible during construction. After construction is complete, the effect on visual resources in this area is expected to be minimal because the pipeline installation would occur upslope of the photo location and the nearby rural residences, resulting in limited views of the disturbed area. No effect on water bodies in this area would result.	Vegetation would be removed to install the pipeline. The pipeline corridor would be re-vegetated in most areas. After construction is complete, the effect on visual resources from vegetation removal in this area is expected to be minimal because the pipeline installation would occur upslope of the photo location and the nearby rural residences, resulting in limited views of the disturbed area.	No effect on form is expected from structures in this area.
LINE	A change to the landscape may be noticeable in this location due to pipeline trenching. Once vegetation is re-established along the pipeline alignment, the proposed pipeline is expected to be minimally noticeable, if at all.	Low visual change created by the clearing of vegetation due to the pipeline being located upslope of the photo location and the nearby rural residences.	No effect on line is expected from structures in this area.
COLOR	Trench digging would expose bare soil, resulting in shades of brown being visible along the proposed alignment. When the trench is re-filled, the bare soil would be visible until re-vegetated.	The light green, pale yellow, tan, and light brown vegetation would be removed at the start of pipeline construction. When pipeline installation is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	No effect on color is expected from structures in this area.

TEXTURE	Bare soil with some gravel (which would be exposed as the pipeline trench is dug) provide texture. The bare soils would provide texture.	A change in texture would occur due to vegetation removal for the proposed pipeline installation. When pipeline installation is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	No effect on texture is expected from structures in this area.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form			X				X					X	
	Line			X				X					X	
	Color			X				X					X	
	Texture			X				X					X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names | Date
Wendy Haydon/CH2M HILL
December 10, 2007

SECTION D. (Continued)

2. The proposed pipeline alignment in the area of KOP 1 would cross lands designated as Class II pursuant to the BLM's VRM Program. The proposed pipeline would be consistent with the Class II designation because it would allow changes to the landscape that can be seen but are not evident.

3. See Section 5.1.5 Mitigation Recommendations of the Technical Report.

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: May 2007 – Photo 9

District: Cedar City Field Office

Resource Area

Activity (program)

SECTION A. PROJECT INFORMATION

4. Project Name UNEV Pipeline Project	4. Location Township 36S	6. Location Sketch See Figure 5 showing the photo location
5. Key Observation Point 2	Range 15W	
6. VRM Class IV	Sections 10	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat or nearly flat terrain. No water bodies are evident.	Low-lying vegetation typical of a desert landscape.	Two electric transmission line alignments and two different structure designs.
LINE	The dirt road in the photo creates a noticeable line.	Typical desert vegetation for this area (relatively dense clusters of low-lying shrubs).	The electric transmission line structures provide vertical and horizontal lines against the backdrop of the sky.
COLOR	The general appearance of the area exhibits a grayish-green hue with tans, light brown, and gray.	The vegetation appears as shades of green, gray, tan, and brown.	The electric transmission line structures appear to be shades of brown or grayish-black against the backdrop of the sky.
TEX-TURE	The dirt road provides texture.	The low-lying shrubs make the ground surface texture appear uneven and random.	No effect on texture from the transmission line structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Construction of the project would entail digging a trench for the proposed pipeline, resulting in piles of dirt being stockpiled, and thus, visible during construction. After construction is complete, the effect on visual resources in this area is expected to be minimal, No effect on water bodies in this area would result.	Vegetation would be removed to install the pipeline. The pipeline corridor would be re-vegetated in most areas. After construction is complete and the vegetation is re-established, the effect on visual resources from vegetation removal is expected to be minimal.	No effect on form is expected from structures in this area.
LINE	A change in the landscape may be noticeable in this location due to pipeline trenching. Once vegetation is re-established along the pipeline alignment, the proposed pipeline is expected to be minimally noticeable, if at all.	Low visual change created by the clearing of vegetation due to the flat terrain, when viewed at ground level.	No effect on line is expected from structures in this area.
COLOR	Trench digging would expose bare soil, resulting in shades of brown being visible along the proposed alignment. When the trench is re-filled, the bare soil would be visible until re-vegetated.	The green, gray, tan, and brown vegetation would be removed at the start of pipeline construction. When pipeline construction is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	No effect on color is expected from structures in this area.

TEX-TURE	Bare soil with some gravel (which would be exposed as the pipeline trench is dug) provide texture. The bare soils would provide texture.	A change in texture would occur due to vegetation removal for the proposed pipeline installation. When pipeline installation is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	No effect on texture is expected from structures in this area.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST	FEATURES												
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form			X				X					X
	Line			X				X					X
	Color			X				X					X
	Texture			X				X					X

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

Wendy Haydon/CH2M HILL

December 10, 2007

SECTION D. (Continued)

2. The proposed pipeline alignment in the area of KOP 2 would cross lands designated as Class IV pursuant to the BLM's VRM Program. The proposed pipeline would be consistent with the Class IV designation because it would allow major modifications to the existing landscape character, i.e., changes to the landscape that may dominate the view.

3. See Section 5.1.5 Mitigation Recommendations of the Technical Report.

Form 8400-4 (September 1985) UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: May 2007 – Photo 11 District: Las Vegas Field Office Resource Area Activity (program)

SECTION A. PROJECT INFORMATION

7. Project Name UNEV Pipeline Project	4. Location Township 18S	7. Location Sketch See Figure 5 showing the photo location
8. Key Observation Point 3	Range 63E	
9. VRM Class III	Sections 3	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat or nearly flat terrain in the vicinity of the proposed pipeline alignment location. Hills are to the west and north.	Typical desert vegetation (minimal, consisting of grasses and low-lying shrubs) in the project area.	Electric transmission line alignment and U.S. 93. Not visible in the photo but in the vicinity are several other transmission lines and electric power plants.
LINE	U.S. 93 is a linear feature in Photo 11.	The shrub vegetation appears as small clumps.	The electric transmission line structures provide vertical and horizontal lines against the backdrop of the sky.
COLOR	The general appearance of the area exhibits hues of light brown, tan, and grey.	The vegetation appears as shades of light green, pale yellows, tans, and light brown.	The electric transmission line structures appear to be shades of brown or black against the landscape backdrop.
TEX-TURE	Gravel, rock, and bare soil provide texture.	Grasses and low-lying shrubs make the ground surface texture appear uneven and random.	No effect on texture from the transmission line structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Construction of the project would entail digging a trench for the proposed pipeline, resulting in piles of dirt being stockpiled, and thus, visible during construction. After construction is complete, the effect on visual resources in this area is expected to be minimal, No effect on water bodies in this area would result.	Vegetation would be removed to install the pipeline. The pipeline corridor would be re-vegetated in most areas. After construction is complete and the vegetation is re-established, the effect on visual resources from vegetation removal is expected to be minimal.	The pressure reduction station that would be constructed as part of the project would introduce a new form to the area. Due to the terrain in the area (nearby hills), this facility may not be visible from U.S. 93.
LINE	A change in the landscape may be noticeable in this location due to pipeline trenching. Once vegetation is re-established along the pipeline alignment, the proposed pipeline is expected to be minimally noticeable, if at all.	Low visual change created by the clearing of vegetation due to the flat terrain, when viewed at ground level.	The pressure reduction station that would be constructed as part of the project would introduce new lines to the area. Due to the terrain in the area (nearby hills), this facility may not be visible from U.S. 93.
COLOR	Trench digging would expose bare soil, resulting in shades of brown being visible along the proposed alignment. When the trench is re-filled, the bare soil would be visible until re-vegetated.	The green, gray, tan, and brown vegetation would be removed at the start of pipeline construction. When pipeline construction is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	The pressure reduction station that would be constructed as part of the project would introduce a new color to the area. It is anticipated that aboveground project facilities would be tinted a neutral finish (see Mitigation Section 5.1.3 of the Technical Report). Due to the terrain in the area (nearby hills), this facility may not be visible from U.S. 93.

TEX-TURE	Bare soil with some gravel (which would be exposed as the pipeline trench is dug) provide texture. The bare soils would provide texture.	A change in texture would occur due to vegetation removal for the proposed pipeline installation. When pipeline installation is complete, the alignment would be re-vegetated. As the vegetation becomes established and more mature, the alignment will become less visible.	The pressure reduction station that would be constructed as part of the project would introduce a new texture to the area. Due to the terrain in the area (nearby hills), this facility may not be visible from U.S. 93.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)
ELEMENTS	Form			X				X				X		Evaluator's Names / Date
	Line			X				X				X		Wendy Haydon/CH2M HILL
	Color			X				X				X		December 10, 2007
	Texture			X				X				X		

SECTION D. (Continued)

2. The proposed pipeline alignment in the area of KOP 3 would cross lands designated as Class III pursuant to BLM's VRM Program. The proposed pipeline would be consistent with the Class III designation because it would allow changes that are moderate; such changes may attract attention, but should not dominate the view.

3. See Section 5.1.5 Mitigation Recommendations of the Technical Report.