

**United States Department of the Interior
Bureau of Land Management**

**Environmental Assessment
for the
Northwest Garmesa Project
16 Inch Natural Gas Loop Line and Access Roads**

Grand Junction Field Office
2815 H Road
Grand Junction, Colorado 81506

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List of Acronyms and Abbreviations

| | |
|-------|---------------------------------------------|
| AO | Administrative Officer |
| bgs | Below Ground Surface |
| BLM | Bureau of Land Management |
| BMP | Best Management Practice |
| BTEX | Benzene, Toluene, Ethylbenzene, and Xylenes |
| CAA | Clean Air Act |
| CDOT | Colorado Department of Transportation |
| CDOW | Colorado Department of Wildlife |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| cfs | Cubic Feet Per Second |
| CO | Carbon Monoxide |
| dB | Decibel |
| dBA | Decibel (A-Weighted Scale) |
| EA | Environmental Assessment |
| EDR | Environmental Data Resources, Inc. |
| EIS | Environmental Impact Statement |
| EPA | U.S. Environmental Protection Agency |
| FEIS | Final Environmental Impact Statement |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| FLPMA | Federal Land Policy and Management Act |
| FONSI | Finding of No Significant Impact |
| GIS | Geographic Information System |
| GJFO | Grand Junction Field Office |
| Ldn | Day-Night Average Sound Pressure Level |
| LEP | Linear Extensibility Percent |
| Leq | Continuous A-Weighted Sound Pressure Level |
| Lmax | Maximum Sound Pressure Level |
| LOS | Level of Service |
| Lp | Sound Pressure Levels |
| MAC | Metcalf Archaeological Consultants, Inc. |

| | |
|------------------|----------------------------------------------------------|
| MBTA | Migratory Bird Treaty Act |
| MSA | Metropolitan Statistical Area |
| mscfh | Thousand Standard Cubic Feet Per Hour |
| MSL | Mean Sea Level |
| NAAQS | National Ambient Air Quality Standards |
| NCDS | National Compliance Database System |
| NDIS | Natural Diversity Information Source |
| NEPA | National Environmental Policy Act |
| NO ₂ | Nitrogen Dioxide |
| NO _x | Nitrogen Oxide |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| O ₂ | Oxygen |
| O ₃ | Ozone |
| OAHP | Colorado Office of Archaeology and Historic Preservation |
| PL | Public Law |
| PM ₁₀ | Particulate Matter of 10 Microns in Diameter or Smaller |
| PM ₂₅ | Particulate Matter of 25 Microns in Diameter or Smaller |
| POD | Plan of Development |
| PPV | Peak Particle Velocity |
| PSCo | Public Service Company of Colorado |
| psig | Pounds Per Square Inch Gauge |
| R&D | Research and Development |
| RMP | Resource Management Plan |
| ROW | Right-of-Way |
| SHPO | State Historic Preservation Office |
| SHS | Standard Habitat Site |
| SO ₂ | Sulfur Dioxide |
| SWMP | Stormwater Management Plan |
| TUP | Temporary Use Permit |
| USACE | U.S. Army Corps of Engineers |
| USC | United States Code |
| USDA | U.S. Department of Agriculture |

| | |
|-------|--------------------------------|
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Service |
| VOC | Volatile Organic Compound |
| VSI | Visibility Standard Index |

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1. INTRODUCTION

This Environmental Analysis has been initiated to evaluate the proposals of three different entities that require either Right-of-Way grant amendments or a new Right-of-Way grant that authorize the use of public land. The Northwest Garmesa 16-inch Natural Gas Loop Line Project (Proposed Action) involves the installation of approximately 4 miles of new high-pressure natural gas pipeline in Garfield County, Colorado, by Public Service Company of Colorado (PSCo) to transport natural gas to the area of Grand Junction, Colorado. The existing PSCo pipeline network is nearing capacity in the Grand Junction area from the increased consumption of natural gas as a result of rapid population growth. The primary expected public benefit of the project would be the continued reliable supply of natural gas to residential, government, retail, commercial, and industrial users in the Grand Junction area. Without additional system capacity, natural gas outages are expected to occur in the near future.

The project also requires the upgrades to temporary and permanent access roads that provide access to the pipeline and associated facilities. Changes to access roads #3 and #5 would affect High Lonesome Ranch, LLC (High Lonesome). High Lonesome owns the private property in the project area and holds the grazing leases. High Lonesome currently uses these two roads to access their private property. Use on these roads currently includes pickup trucks, cattle trailers, and tractors. The Right-of-Way (ROW) that would be affected if PSCo's application is approved under C 016292 for a meter station operated by William's Northwest Pipeline (Williams) at the Northwest Purchase Point. Under the proposed action access road #5 would be relocated to the south to increase visibility and to meet Colorado Department of Transportation safety requirements.

In compliance with the National Environmental Policy Act (NEPA), this Environmental Assessment (EA) analyzes the potential impacts to the human and natural environment that could result from implementation of the Proposed Action and the No Action alternatives. The U.S. Bureau of Land Management (BLM) Grand Junction Field Office (GJFO) is the lead agency for preparation of this EA.

Chapter 1 of this EA describes the decision to be made, the purpose and need for the Garmesa project and access road improvements, and BLM's lead agency role and the roles of cooperating and other participating agencies as well as addresses the relationship of the proposed action to other federal plans and programs.

LOCATION AND LEGAL DESCRIPTION:

Pipeline and Extra Workspace:

6th PM;

Township 7 South, Range 102 West;

Section 20 Lot 8;

Section 29 Lots 15, 28, and 30;

Section 31 Lot 1;

Section 32 E $\frac{1}{2}$ SE $\frac{1}{4}$.

Township 8 South, Range 102 West:

Section 5 Lots 6, 7, 14, 18, 28, 32, 33, 34, 39, W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$;

Section 8 Lots 5, 6, and 7.

Access Roads:

6th PM;

Township 7 South, Range 102 West;

Section 30 Lot 11; (Coal Mine Road)

Township 8 South, Range 102 West:

Section 5 Lots 18, 19, 20, and 21; (Mesa Road)

Section 6 Lots 23 and 24; (Mesa Road)

Section 7 Lots 17 and 18; (Garmesa Road)

Section 8 Lot 6, 9, 10, and 11; (Garmesa Road)

Garfield County, Colorado

The proposed project is located approximately 31 miles from Grand Junction in the Howard Canyon and Highline Lake USGS Quadrangles.

APPLICANTS:

Public Service Company of Colorado

550 15th Street, Ste. 700

Denver, Colorado 80202

High Lonesome Ranch, LLC

#11 Enterprises

PO Box 88

DeBeque, Colorado 81630

William's Northwest Pipeline

295 Chipeta Way

Salt Lake City, Utah 84108

1.1 Decision To Be Made

BLM will decide whether or not to authorize the proposed action which includes: grant amendments to the existing ROWs authorized under BLM Grant C 05006 and C 016292, a Temporary Use Permits for construction (C 05006-01), and a new Right-of-Way (COC 73709) grant to High Lonesome Ranch based on the analysis contained in this EA. BLM may choose to accept the actions as proposed, accept the project with modifications, or modify the proposed project by incorporating reasonable alternatives. Alternately, BLM may choose to deny the applications to the amendments, TUP, and new application, which would constitute the No Action Alternative. The finding associated with this EA may not constitute the final approval for the Proposed Action. It provides the BLM authorized officer with an analysis from which to base the final approval for the proposed ROW. If no significant impacts are identified and the proposed project is approved, BLM will issue a Finding of No Significant Impact (FONSI) for public lands crossed by the Proposed Action. If significant impacts are identified, the preparation of an Environmental Impact Statement (EIS) is required.

1.2 Purpose and Need

The purpose of this action is to respond to the Proposed Action as requested by PSCo, Williams, and High Lonesome, and to ensure that this use of public lands occurs in an environmentally responsible manner. The need for the action is established by the BLM's responsibility under the Federal Land Policy and Management Act of 1976 (FLPMA), which authorizes the use of public land for the public interest, and is consistent with the Energy Policy Act of 2005 (Public Law [PL] 109-58), which encourages energy efficiency and conservation, promotes alternative and renewable energy sources, reduces dependence on foreign sources of energy, and increases domestic production.

1.3 Government Agency Coordination

BLM is not the only agency that must issue approvals for the Proposed Action. A list of permits, approvals, and authorizing actions necessary to construct, operate, maintain, and abandon the Proposed Action is provided below:

- U.S. Army Corps of Engineers (USACE)—Nationwide Permit #12 for East Salt Creek
- Colorado Department of Transportation (CDOT)—permit for modifications to entry points of access road off of Colorado Highway 139
- Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division—permit for stormwater management
- Garfield County—administrative review approval
- State of Colorado—groundwater discharge permit if necessary
- Colorado Division of Wildlife – Potential winter construction in Critical Deer and Elk Winter Range

1.3.1 Lead, Cooperating, and Participating Agencies

1.3.1.1 Bureau of Land Management

1.3.1.1.1 Lead Agency

BLM is serving as the lead federal agency for preparing the EA in compliance with NEPA and the Council of Environmental Quality (CEQ) regulations implementing NEPA. The BLM lands crossed by the proposed project are managed by the GJFO.

This EA was prepared in conformance with the policy guidance provided in BLM's NEPA Handbook H-1790-1 (BLM 2008). The BLM NEPA Handbook provides instructions for compliance with the CEQ regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] §1500-1508) and Department of the Interior National Environmental Policy Act Procedures (516 DM 1-7) on NEPA compliance (USDOJ 2005).

1.3.1.1.2 Conformance with BLM's Existing Resource Management Plans

Policies for development and land use decisions are currently contained in the *Grand Junction Resource Area Resource Management Plan and Environmental Impact Statement* (BLM 1985) and the *Grand Junction Resource Area Resource Management Plan Record of Decision* (BLM 1987). Management activities and development projects selected and approved must be in conformance with the Resource Management Plan (RMP) to respond in a timely manner to requests for utility authorizations on public land while considering environmental, social, economic, and interagency concerns. Planned management actions include designation of corridors where utility companies are encouraged to route proposed projects.

1.3.1.2 Cooperating Agencies

Under the CEQ regulations, federal agencies responsible for preparing NEPA analyses and documentation may do so in cooperation with federal, state, and local governments and agencies with jurisdiction by law or special expertise (40 CFR 1501.6). No other federal agencies have been identified to participate in the preparation of this EA. BLM has generated a list of potential cooperating agencies and has initiated communication to determine which agencies were interested in participating on the Garmesa project as cooperating agencies.

1.3.1.3 Other Federal Agencies

At this time, no other federal agencies are participating in the project.

1.3.2 Federal and State Policies, Plans, and Programs

The EA is being prepared in accordance with NEPA, as amended (42 USC §§ 4321 to 4370e) and in compliance with all applicable regulations and laws passed subsequently, including CEQ

regulations 40 CFR 1500–1508, U.S. Department of Interior requirements (Department Manual 516, Environmental Quality [USDI 1980]), BLM Handbook H 1790 1 (BLM 1988a), Guidelines for Assessing and Documenting Cumulative Impacts [BLM 1994a], and Considering Cumulative Effects under the National Environmental Policy Act [CEQ 1997]. As the lead agency, BLM is responsible for analyses and documents that conform to NEPA, CEQ, and other pertinent federal laws and regulations.

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2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

PSCo has applied to amend their existing ROW grant C 05006 to allow for the construction, operation, and maintenance of a new 16 inch natural gas pipeline. High Lonesome Ranch has applied for a 30 year renewable ROW grant authorizing the use and maintenance of access roads #3 and #5. High Lonesome Ranch would use these roads year round and would maintain them as necessary with a grader. William's Northwest Pipeline has also applied to amend their ROW C 016292 to abandon their existing access to their meter station and use proposed access Road #5. Williams would use access Road #5 year round and would maintain the road as needed in the future. PSCo would construct and improve all access roads described in the following project description. William's and High Lonesome are only requesting authorization for the use and maintenance of the roads that have been requested. PSCo would perform all construction, improvements, and reclamation in association with construction of the proposed 16 inch pipeline. Herein the "Proposed Project" refers to the proposal from all three entities. A plan of development (POD) was submitted by PSCo in July 2008 detailing design, construction, and operational plans. The POD serves as the primary source of information for this chapter.

2.1.1 Project Location

This project is located approximately 31 miles from Grand Junction in Sections 20, 29, 31, and 32, Township 7 South, Range 102 West, and Sections 5 and 8, Township 8 South, Range 102 West, 6th Principal Meridian in Garfield County, Colorado (Figure 2-1).

2.1.2 Project Description

The new pipeline, which would commence at the Northwest Purchase Point (station 0+00) and extend south to the Garmesa Valve Set (215+80), is shown in Figure 2-2. East Salt Creek (station 17+88), the only perennial water feature crossed by the project, is shown in Figure 2-3. Several intermittent drainages of various sizes would also be spanned or open cut, the largest drainage being spanned is Munger Creek (station 29+78), shown in Figure 2-4.

The 21,623-foot-long pipeline would be located on a combination of Bureau of Land Management (BLM) land (11,938 feet) and private property (9,685 feet). The pipeline would extend from PSCo's existing Northwest Purchase Point, which would be moderately expanded, and existing Garmesa Valve Set, both of which are on BLM land. The new pipeline would be located 15 feet east of PSCo's existing 8-inch diameter natural gas pipeline and would parallel the existing pipeline. On BLM land, the existing pipeline's 50-foot-wide ROW under BLM Grant C 05006 would be amended to include the new pipeline. Likewise, the existing 49.5-foot-wide easement on private property would be redefined to include the new pipeline.

The region surrounding the project area is characterized by native vegetation with juniper trees in the hilly areas, large sagebrush and low lying plants along the valley floor, and areas of irrigated pasture. Elevations within the project area range from 5,100 feet above mean sea level (MSL) near the Garmesa Valve Set in the south to 5,300 feet in the north. The proposed pipeline would span East Salt Creek, a perennial water body, and cross approximately 17 other drainages.

The new permanent ROW centerline would be centered between both pipelines and covers approximately 11.01 acres on private lands and 13.70 acres on BLM lands. A 25-foot-wide temporary construction area would be needed along the eastern edge of the entire permanent pipeline ROW and would cover 5.91 acres on private lands and 7.02 acres on BLM lands. Four turnaround areas are also needed on BLM lands and would extend lengthwise and easterly from the outside edge of the temporary construction ROW. One Temporary Use Permit for two access roads (under the TUP for the extra workspace), two permanent ROW amendments, and one new road ROW are needed for the four existing roads, partially or completely located on public land covering 2.53 acres, for access to the project corridor. Figure 2.1 shows project facilities and stations. The total project area located on BLM lands is summarized as follows:

| | |
|----------------------------------------------------|-------------|
| Permanent amended Grant C 05006 pipeline ROW | 13.70 acres |
| Permanent amended Grant C 05006 access ROW | 2.04 acres |
| Permanent amended Grant C 016292 meter station ROW | 0.27 acres |
| Permanent new Grant COC 73709 access ROW | 0.17 acres |
| Temporary Construction ROW | 7.02 acres |
| Temporary Access ROW | 2.53 acres |

Use of these BLM ROWs would result in the following estimated ground disturbance:

| | |
|------------------------------------------------|-------------|
| Previously disturbed, not disturbed by project | 4.11 acres |
| Previously disturbed, disturbed by project | 14.16 acres |
| Previously undisturbed, disturbed by project | 7.02 acres |

2.1.3 Facility Design Factors

The new pipeline would be constructed of grade X-60, 16-inch welded-steel pipe with a 0.250-inch-thick wall. It would have specified minimum yield strength of 60,000 pounds per square inch gauge (psig), a design pressure of 1,219 psig, and a maximum allowable operating pressure of 1,172 psig. The designed depth of soil cover is anticipated to be 4 feet deep. Pumping or compressor stations are not proposed at this time, and sand and gravel are not required for pipeline construction. Pipeline bedding would consist of sifted native soils. Temporary equipment storage is planned for the disturbed area along the Garmesa Valve Set fence to the southwest. No permanent equipment storage areas are proposed.

Pipeline signage and cathodic protection would be placed within the pipeline ROW as required to meet applicable codes.

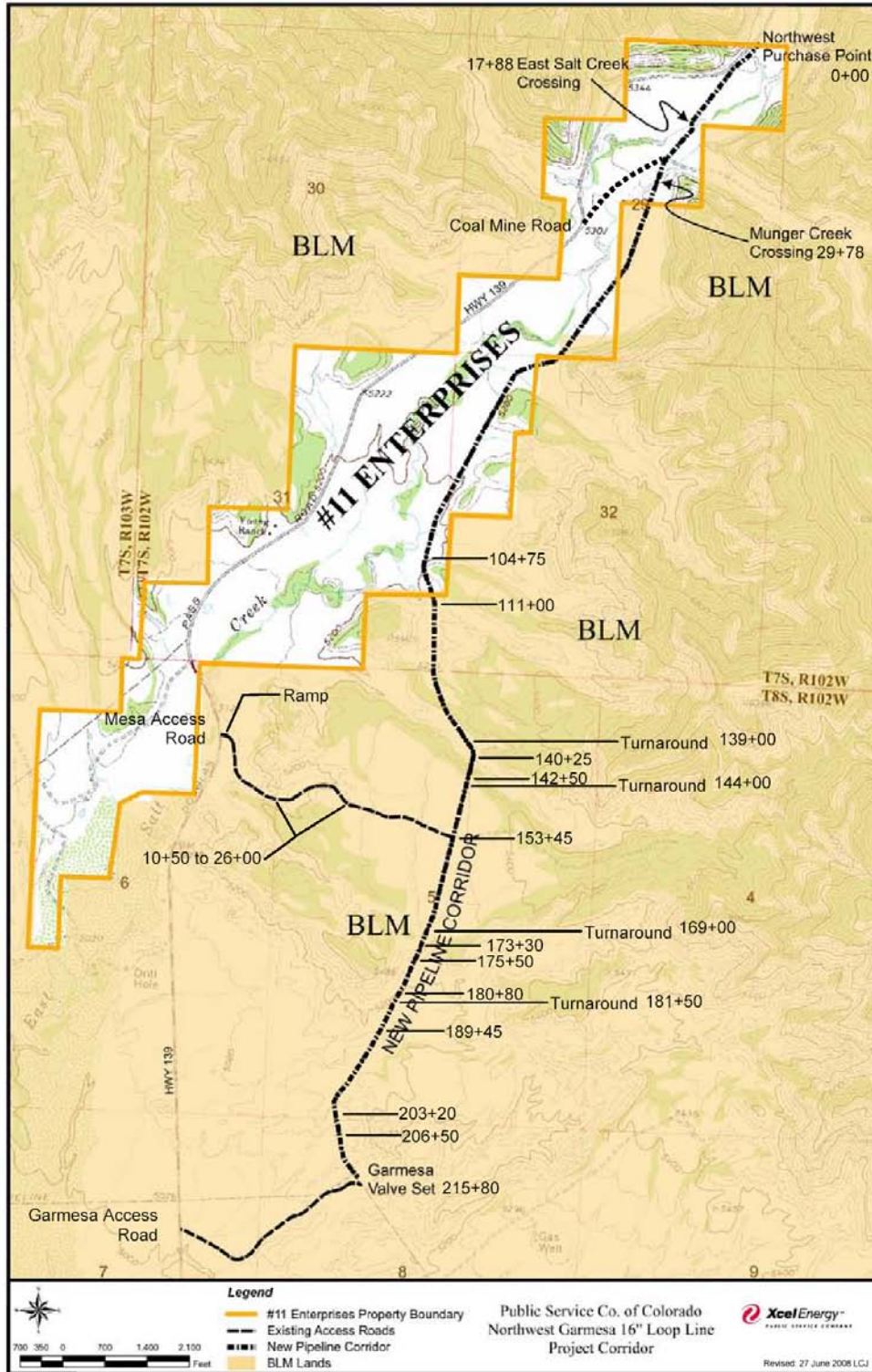


Figure 2-1: Project Area

Source: PSCo (2009)

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment



Figure 2-2: Northwest Purchase Point (0+00) and Garmesa Valve Set (215+80) Looking Southeast

Source: PSCo (2009)

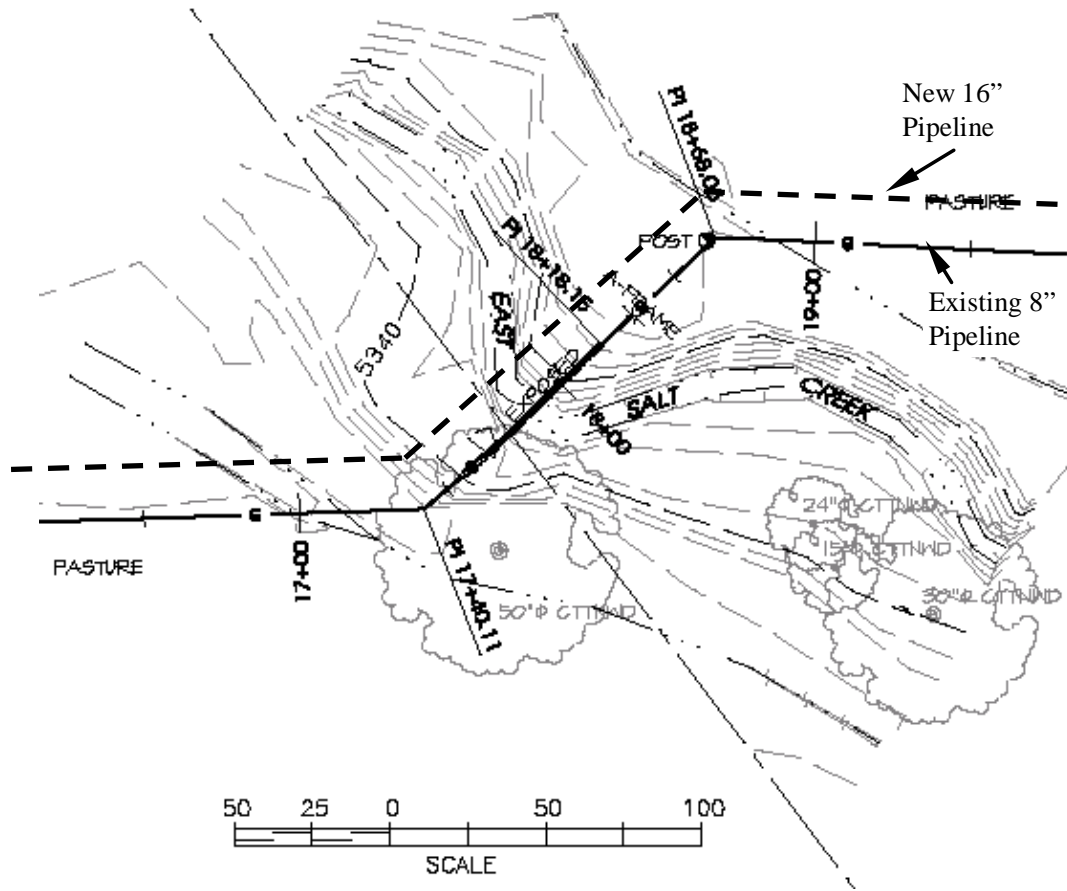


Figure 2-3: East Salt Creek Crossing (17+88)

Source: PSCo (2009)

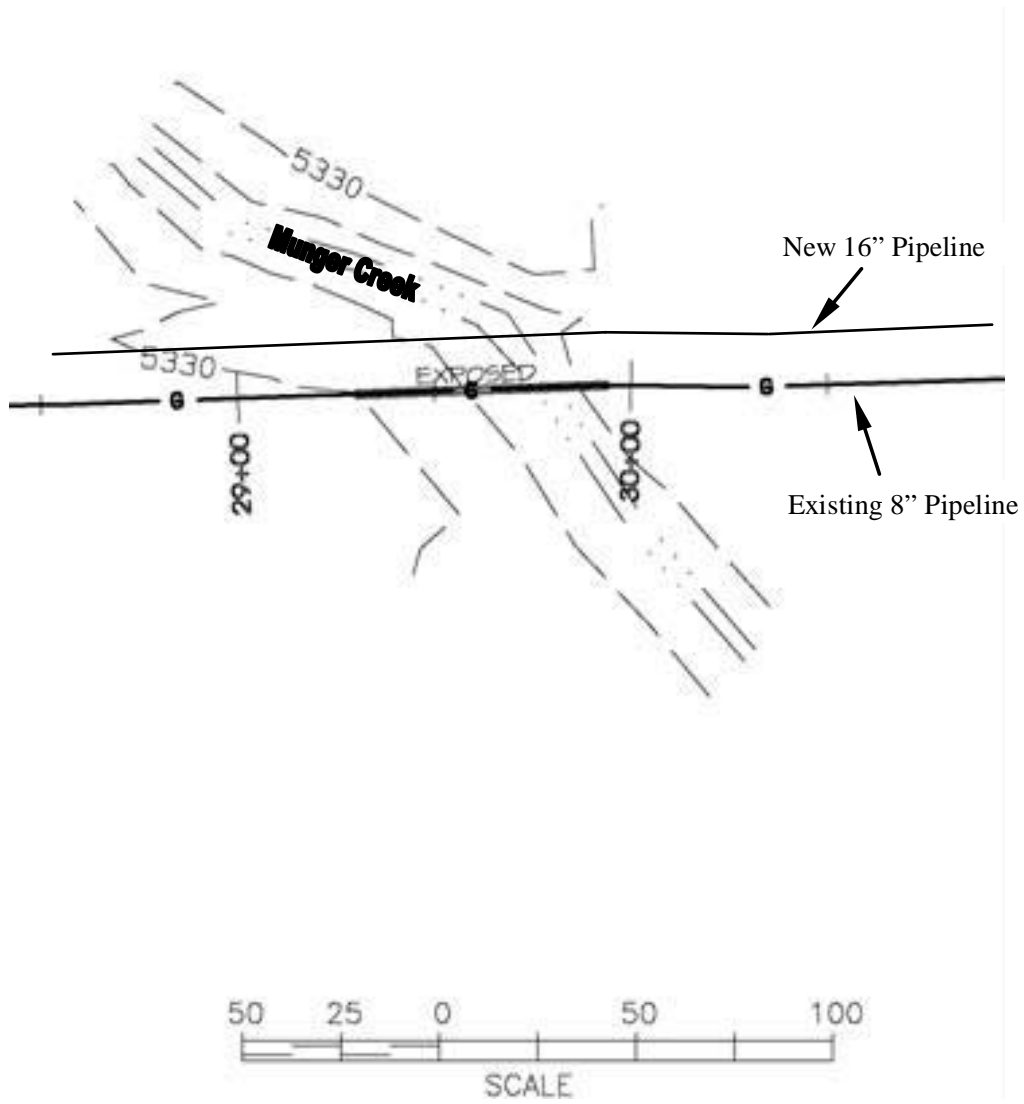


Figure 2-4: Munger Creek Crossing (29+78)

Source: PSCo (2009)

2.1.4 Mobilization and Schedule

The construction phase of the project, from mobilization to recontouring the corridor, is anticipated to take 10 to 12 weeks to complete. Revegetation would immediately follow recontouring activities depending on weather conditions.

At its peak, the construction of the project would include approximately three crews for an approximate total of 52 employees. Workers needed for construction would camp or stay in the Grand Junction area. An estimated 40 vehicles would be used that would include pickup trucks, welding rigs, excavators, backhoes, side booms, dozers, graders, and water trucks. Semi-trucks and dump trucks would also be used to transport material and equipment. Approximately 42,000 gallons of water would be used daily for dust suppression, weed control, and soil compaction. The source of this water is anticipated to be the town of Loma's municipal supply. Work would be performed from 7 a.m. to 5:30 p.m., 7 days a week during construction.

2.1.5 Access

Five different routes originating from Colorado Highway 139 are proposed to provide access to the project area. The northernmost access is just south of the Northwest Purchase Point, where a portion of the pipeline ROW is crossed by Colorado Highway 139 ROW. The other 4 access routes are shown in Figure 2-1 as Coal Mine Road, Access Road #3, Mesa Access Road, and Garmesa Access Road. Coal Mine Road is located entirely on private property and authorization for use would be negotiated with the landowner. Road #3 begins on BLM land and immediately crosses onto private land to the pipeline project area. The Mesa Access Road and Garmesa Access Road are located entirely on BLM lands. Authorization of Mesa Access Road and Garmesa Access Road would be via authorization under a Temporary Use Permit and an amendment to existing Grant C 05006 ROW, respectively.

Access road improvements and construction would not begin until after installation of design features, including perimeter controls (wattles, earthen berms, or silt fences) and wattles across small drainage features. Installation of temporary design features would be followed by clearing and grubbing of the pipeline corridor and access road improvements.

Improvements to the Mesa and Garmesa access roads would include grading and smoothing of the road surface and importing and spreading road base material. The road base would consist of the standard CDOT 0.75-inch road base: crushed road with its native fine material. An off-ramp will be installed at the intersection of the Mesa Access Road with Colorado Highway 139 to allow heavy vehicle access to the project site. The ramp would consist of asphalt in the CDOT ROW and unclassified fill material with gravel surfacing and be left in place following the completion of construction. No improvements would be made to Coal Mine Road. The Northwest Purchase Point access would be relocated. Minimal improvements would be made to temporary access roads, with increased improvements at their intersections with Highway 139.

Turnaround areas measuring 100 feet by 25 feet are proposed on BLM lands at stations 139+00, 144+00, 169+00, and 181+50. The turnaround areas would extend south and east from the eastern edge of the temporary construction area.

2.1.5.1 Access Roads

The Project would be accessed from five different locations along Colorado Highway 139. Certain improvements to these locations are required by CDOT to address safety concerns and are shown in Appendix A. Access locations 1, 2, 3, and 5 are located on BLM lands. The improvements differ depending on the location and would generally require expansion of the road intersection at Colorado Highway 139, the import of fill material, surfacing the improvements with road base and asphalt to the edge of the CDOT ROW, and right of way fence/gate adjustments. A ramp would need to be constructed at access location 2 to allow for safe egress and ingress to Colorado Highway 139.

Both the Mesa and Garmesa access roads (access 1 and access 2, respectively) would be improved to accommodate traffic during high rain/moisture periods. The middle 15 feet of the Garmesa Access Road (Figure 2-5) would be graded and smoothed from Colorado Highway 139 to the Garmesa Valve Set, with dips made at drainage crossings. The 3,442-foot-long travel surface would be crowned or sloped to minimize pooling. Drainage ditches would be installed along the edge of the travel surface if needed. This road is used by the public, and hunting traffic is anticipated during construction. A temporary closure of this road would occur while it is being improved to avoid conflicting uses. This temporary closure is expected to last several days. There are no known established recreational trails in the area.

The 4,478-foot-long Mesa Access Road (Figure 2-6) from Colorado Highway 139 to the project corridor would also be graded and surfaced similar to the Garmesa Access Road; however, the road base would be removed once the project recontouring activities have been completed. A new temporary ramp would be constructed off Colorado Highway 139 per CDOT permit requirements and specifications to accommodate the semi-trucks hauling the pipe sections. In the area between road stations 13+00 and 15+00, the previously used northern alignment would be used instead of the southern alignment. The drainage ditch between stations 10+50 and 26+00 would be cleared and reworked to prevent the stormwater runoff from crossing the travel surface and to accommodate shifting of the travel surface to the south by approximately 2 feet. This road is used by the public and traffic is anticipated during construction. A temporary closure of this road while it is being improved is proposed to avoid conflicting uses. This temporary closure is expected to last several days. Following construction, the area would be reclaimed per BLM direction.

Coal Mine Road (Access #4) is an improved dirt road that needs no additional work to support project traffic.



Garmesa Access Road from Highway 139



Garmesa Access Road from Valve Set

Figure 2-5: Garmesa Access Road

Source: PSCo (2009)

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment



Take-off Point from Highway 139



Road Conditions at 4+00



Road Conditions at 30+00



Area within 10+50 and 26+00

Figure 2-6: Mesa Access Road

Source: PSCo (2009)

The Northwest Purchase Point access (Access #5) would be relocated approximately 130 feet to the south and would require the temporary removal of up to 30 feet of barbed-wire fence along Colorado Highway 139 ROW. The existing Northwest Purchase Point access which is also currently used by William's Northwest Pipeline and High Lonesome Ranch, would be abandoned, ripped, and seeded after the access is relocated. The existing gate would be removed and the fence would be replaced across the entrance. The new access would be used exclusively used by PSCo, William's Northwest Pipeline, and High Lonesome Ranch, or their successors or assignees. Grading and construction outside of existing disturbed areas on existing roads would be necessary at the road intersections with Colorado Highway 139. These areas are identified in Appendix A and would be reseeded with a BLM-approved seed mix. All access points along Colorado Highway 139 would be used in accordance with CDOT regulations.

Turnaround areas along the construction corridor were selected because they are flat-lying areas. The only vegetation that would be cleared in these areas would be that necessary to allow for safe maneuvering of vehicles.

2.1.6 Staging Areas

Pipe and other materials would be staged along the pipeline corridor and at an additional designated material staging area at the southern end of the project next to the existing Garmesa Valve Set. Materials that would be uploaded and stored at the designated material staging area include pipe, fittings, water tanks, a dumpster, portable toilets, and other materials necessary for the installation of the pipeline.

Vehicle fueling would consist of vehicle-to-vehicle transfers along the pipeline with no bulk fuel storage on site. Fueling vehicles would be equipped with spill kits and fire extinguishers and personnel would be properly trained in spill prevention, control, and countermeasures. No vehicle maintenance would occur on site.

The work would generally start at the northern end of the project and progress south. Subsequent activities may be started before the previous activity has been completed along the entire project. As such, several of these work activities may be occurring simultaneously.

2.1.7 Pipeline Construction

The proposed construction of the pipeline would involve surveying the centerline, removing vegetation, removing and stockpiling topsoil, excavating a trench, laying pipe sections along the trench, welding the pipe, lowering the pipe into the trench, backfilling the trench, pressure testing the pipe with nitrogen, replacement of topsoil and topsoil stabilization, recontouring, and revegetation. Landowners would be compensated for easements and temporary effects from construction activities. Many of the activities would occur simultaneously along the entire length of the pipeline, so a substantial portion of the pipeline trench would remain open for up to 2 weeks. Figure 2-7 shows a cross section of the proposed typical construction corridor layout. Pipeline and cathodic protection would be located in the pipeline ROW.

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment

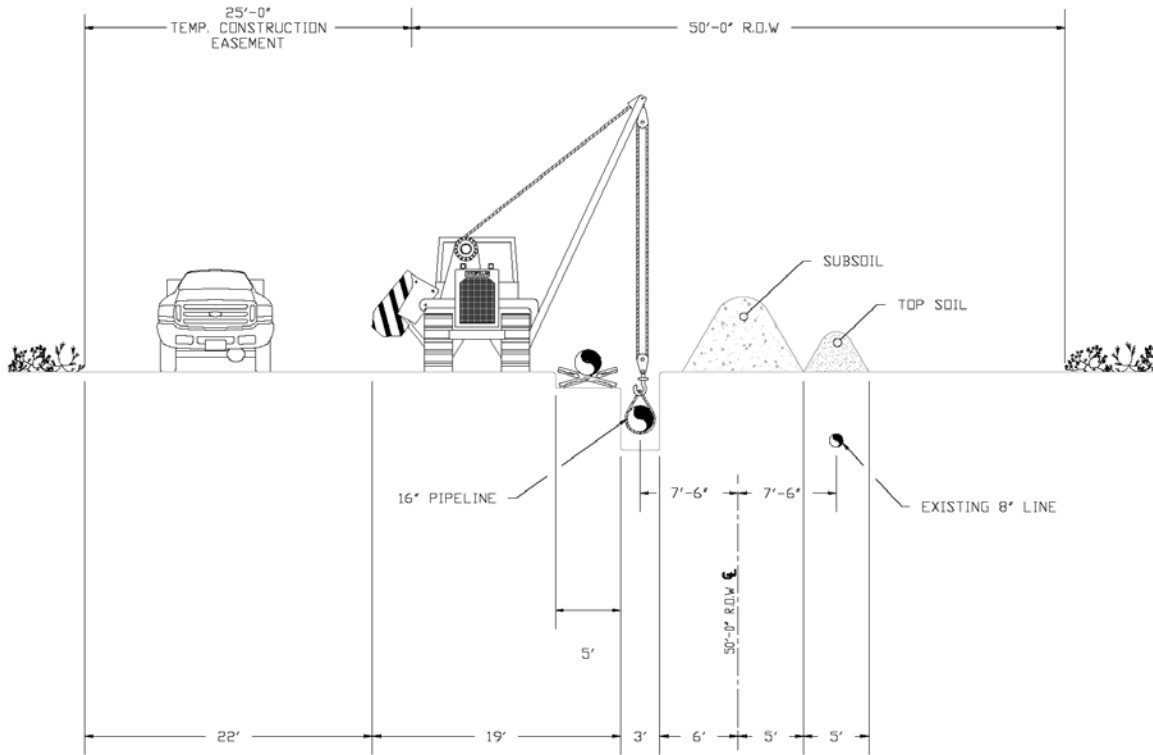


Figure 2-7: Typical Construction Corridor Layout

Source: PSCo (2009)

The centerline of the new 16-inch pipeline, the western edge of the ROW, and the eastern edge of the temporary construction area would be staked first. Best management practices (BMPs) as defined in the approved stormwater management plan (SWMP) would be implemented. During this phase of construction, upgrades to Mesa Access Road and Garmesa Access Road would be upgraded as discussed in the following section.

The area between the existing 8-inch pipeline centerline and the eastern edge of the temporary construction ROW would be cleared of vegetation. All reasonable effort would be made to preserve plant root balls during this stage.

Excavation for the pipeline trench could require mechanized and/or pneumatic equipment or hand methods. The trench would typically be 5.5 feet deep and 3 feet wide. The pipe would be welded while it was outside the trench then it would be lowered into the trench. Following backfill of the spoils and placement of topsoil, the new 16-inch pipeline would be pressure tested with nitrogen and would be released to the atmosphere. Recontouring would be performed within the construction corridor in accordance with the provisions of the SWMP.

Rubber-tired and track vehicles would be used in the construction area to perform the work. Improvements for existing roads in the project area are proposed to accommodate construction vehicles as described below. All other equipment used would be standard for pipeline construction and reclamation. Waste from construction activities would be collected, hauled away, and disposed of in an approved manner. A temporary construction staging area would be located in the previously disturbed area near the Garmesa Valve Set.

The project area would be graded to approximately level, saving as many plant root balls as possible, to provide a working surface for the excavation equipment, staged pipe, and stockpiles of topsoil and subsoil and to establish a roadway for vehicle access, which would be removed at the end of the project. This roadway would be used to haul pipe to be staged along the proposed trench line as well as general site access. This roadway would also include four 100-foot vehicle turnaround areas that extend 25 feet to the east from the eastern edge of the temporary construction area.

Where the pipeline route crosses small drainage features, a temporary swale would be installed to allow for continued water flow. Wattles would be placed at the downstream end of the swale to trap sediment.

Grading would be followed by excavation of an open trench, except in areas that will be crossed by aboveground spanning as described below. Topsoil and subsoil from trench excavation would be stockpiled separately along the open trench. Sections of pipe that have been staged along the open trench would be welded together and lowered into the trench. Upon completion of all 4 miles of pipeline installation, the trench would be backfilled and compacted with subsoil. During backfill and compaction, temporary swales would be restored as closely as possible to the original contour.

Aboveground spanning would be used to cross East Salt Creek and Munger Creek. An open trench would be dug to the edge of the drainage, where personnel will guide the spanned section

of pipe to the other side and weld it into place. Areas of aboveground spanning would be indicated on the site plans in the SWMP. Existing access road would be used for vehicle crossings during construction. Two other unnamed drainages located at stations 140+25 and 189+45 would be spanned or open.

Following trench backfill and compaction, the stockpiled topsoil would be spread over the disturbed area to begin the restoration and final stabilization process as detailed in Section 4 of this SWMP, Restoration and Final Stabilization. Construction of water bars and earthen berms, surface roughening, permanent seeding, mulching, and erosion control blanketing would be completed as part of the reclamation process.

Waste from construction activities would be collected, hauled away, and disposed of in an approved manner.

2.1.7.1 Termination Facilities

As a part of the project, both the Northwest Purchase Point and the Garmesa Valve Set would need to be expanded. The Northwest Purchase Point expansion consists of relocating the southern fence line approximately 15 feet to accommodate additional aboveground piping (Figure 2-8). New piping would be installed without a need to regrade the site. Disturbed areas would be revegetated.

The Garmesa Valve Set expansion consists of extending the northeastern fence line 4 feet to the north (Figure 2-9). The western fence line entry gates would be reconfigured to accommodate two 15-foot-wide vehicle gates and one gate for workers. The fence line expansion is needed to accommodate the new piping; the area does not require additional grading. Following construction, the existing eroded areas caused by the previous construction of the valve set and rectifier bed would be regraded and berms would be placed to redirect runoff to the south, following the natural drainage pattern. The staging area and other project disturbed areas would be regraded and revegetated.

2.1.7.2 Soil Stabilization and Revegetation

Design features would be used to minimize soil erosion during construction and would be defined in an approved SWMP. At a minimum, design features would consist of silt fencing, stabilizing fabrics, and fabricated stabilizing rolls to serve as drainage armoring along stream banks. Overland travel would avoid excessive disturbance to vegetation and soils. Where vegetation removal is necessary in the ROW, vegetation would be removed selectively to maximize, to the greatest extent possible, maintenance of native plant communities and habitats. All vegetation removed during construction would be disbursed on site, when appropriate, with the remainder transported off site. Sensitive plant surveys would be conducted prior to construction to identify the presence of these species in the proposed project area. These design features seek to control noxious weeds. Noxious weeds identified along the proposed project corridor would be treated through an integrated weed management plan and in consultation with BLM's weed specialist as described in the POD.

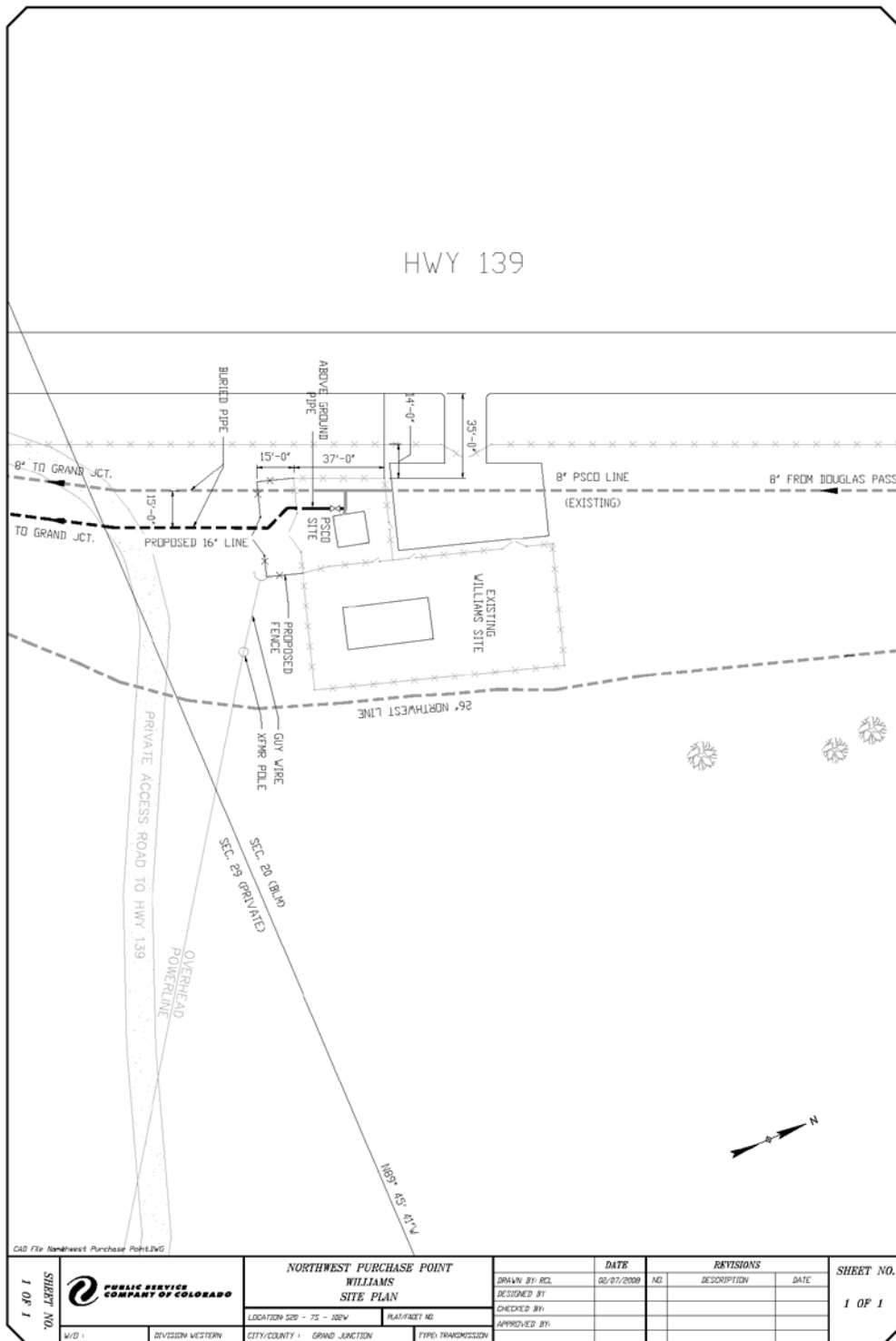


Figure 2-8: Northwest Purchase Point Expansion

Source: PSCo (2009)

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment

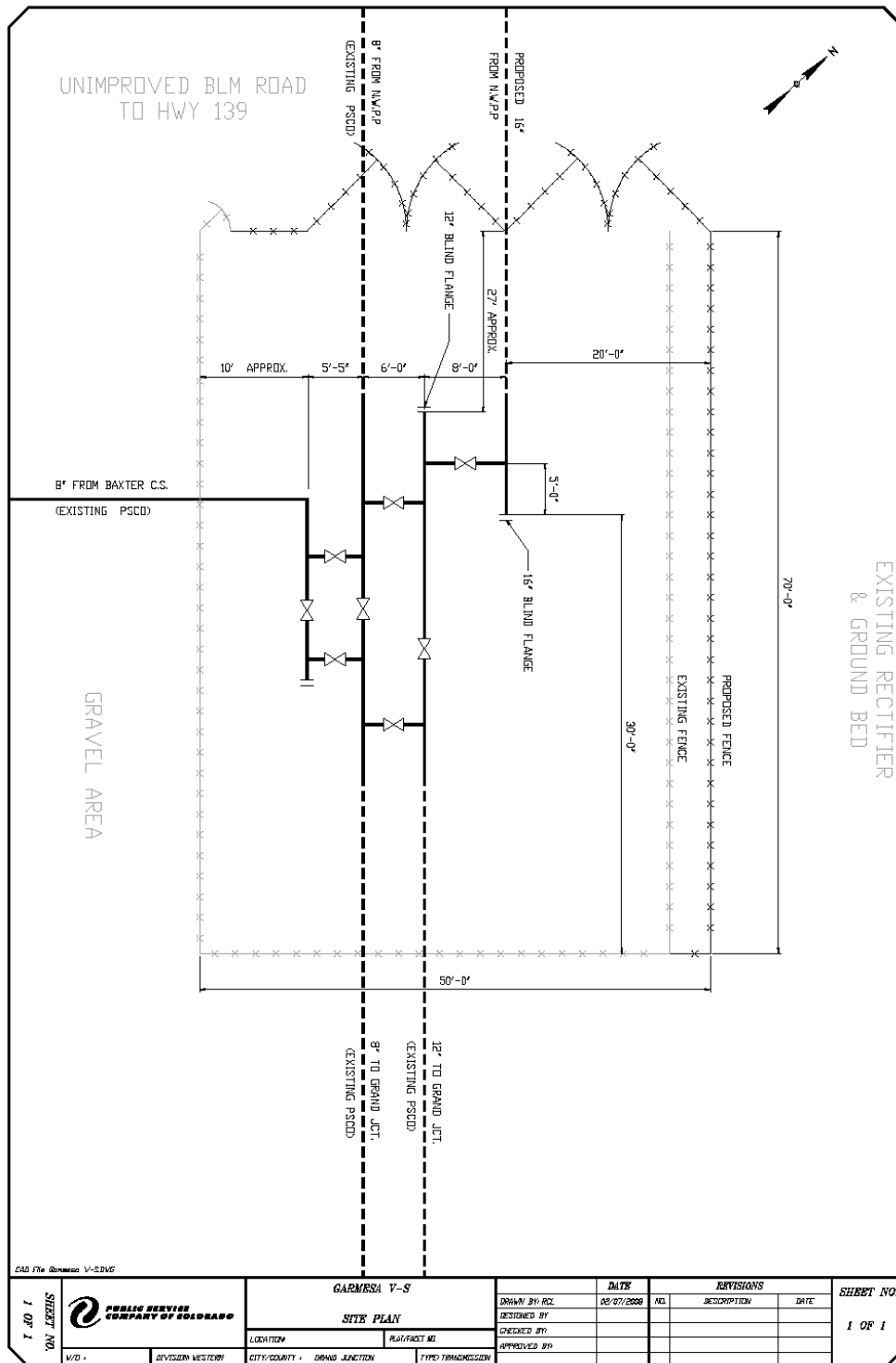


Figure 2-9: Garmesa Expansion

Source: PSCo (2009)

Soils compacted by construction equipment, including ruts and scars, would be loosened and recontoured to pre-construction conditions as much as possible following construction. Topsoil would be stockpiled during excavation and replaced post-construction to maximize successful revegetation efforts. Fertilization (where necessary) and revegetation would be performed using a BLM-approved seed mix and would occur simultaneously with project completion to the extent feasible. Mulching or netting may be necessary in some areas to promote the growth of the planted vegetation. PSCo would work with BLM to successfully implement the reclamation and revegetation plan.

2.1.7.3 Operation and Maintenance

The proposed project would be operated year-round, unmanned; the facilities would be subject to inspection and maintenance activities as outlined in the SWMP. The pipeline flow rate is expected to be approximately 1,250 thousand standard cubic feet per hour (mscfh) in the first year of operation. The pipeline would be designed to meet an ultimate demand flow rate of 4,000 mscfh to meet the projected growth in demand in the Grand Junction area.

2.1.7.4 Existing Pipeline and Facilities

The existing 8-inch pipeline would remain in operation and no other existing facilities would be removed. Existing roads would remain in place and access within the construction area would be recontoured to pre-construction grades.

2.1.7.5 Issues

2.1.7.5.1 East Salt Creek

The proposed project alignment would span several drainages. The only perennial drainage is East Salt Creek (station 17+88), which is located on private lands. The banks of the creek are lined with mature cottonwood trees, occasional tamarisk, rubber rabbitbrush, scattered sagebrush, and sticky seep willow shrubs. This drainage would be spanned with the new 16-inch pipeline, matching the type of construction of the existing 8-inch pipeline. The new span would have a minimum of 10 feet of clearance to the channel to provide the best protection to plant, animal, hydrological, and soil resources. The trench on either side of the channel would be constructed from both sides of the channel and would require the least amount of vegetation removal. No work would extend into the riparian wetland along the water edge. The spanning would not require any additional supporting appurtenances, and the existing support remnants for the 8-inch pipeline would be removed. The pipeline would be exposed, but its integrity would not be compromised, and color options for the pipeline coating would be investigated to provide visual screening. There is minimal risk that debris will wash down the channel and damage the pipeline. The existing pipeline has incurred no such damage over the past 45 years.

2.1.7.5.2 Mesa Crossing

The project alignment crosses a large mesa-like feature. The northern slope (stations 140+25 to 142+50) is steep and covered with juniper trees. Grading in the construction area could require

slope cutting and some degree of tree removal. The existing 8-inch pipeline is exposed along a substantial portion of this slope (Figure 2-10) and would be covered and reseeded during construction of the project. The top of the mesa is level and covered with large sagebrush. Access to this area would be through the Mesa Access Road and an existing two-track road that follows the existing 8-inch pipeline along the entire length of the Mesa Road.

At the base of the slope is an area of considerable natural erosion and erodible soils as shown in Figure 2-11. This area is between stations 175+30 and 180+80 (Figure 2-12). In this area, the existing 8-inch pipeline is exposed (Figure 2-13). To minimize disturbance in this area, the temporary construction corridor would be eliminated and the construction activities modified to stay within the existing 50-foot grant area and east of the 8-inch pipeline where feasible. An alternate route to the east and downhill of this slope was discussed to bypass these soils. The proposed mitigation along the proposed route would minimize the soil disturbance while taking advantage of the existing disturbance area created by the existing 8-inch pipeline. Figure 2-14 provides additional perspective of the remainder of the project corridor past station 197+75.

2.1.7.6 Other Drainage Crossings

Several other ephemeral and intermittent drainages would be crossed with the proposed Project alignment. The largest of these is Munger Creek (29+78) and is located on private lands. The other drainage crossings occur on BLM lands at pipeline stations 140+25 and 189+45, as shown (Figure 2-15). PSCo proposes to span Munger Creek. The pipeline crossing of Munger Creek would be shifted to the west of the 8-inch diameter pipeline to avoid a meander located on the east side of the 8-inch diameter pipeline, and minimize bank cutting during construction. Munger Creek would be accessed from the north and south via access roads #3, #4, and the pipeline route and vehicles would not drive across Munger Creek. The other two drainages located at stations 140+25 and 189+45 would be spanned or open cut with stove pipe construction techniques. The stovepipe construction technique that would be used to cross these drainages includes end hauling excavated soil and top soil away from the drainage to reduce construction widths. These two drainages would be open cut if authorized by the Army Corp of Engineers. Additional cuts to the banks of these drainages would be minimized and the existing access road would be used for vehicle crossings during construction. The approximate existing clearance of the 8-inch diameter pipe across each of the drainages is twelve, four, and seven feet, respectively.

2.1.7.7 Cultural Resources

A Class I Literature Review and a pre-construction Class III Cultural Survey would be performed before construction activities commence, to ensure that cultural resources that may be present in the project area are investigated. Inadvertent effects would be controlled by limited access to cultural resources, educating employees about the significance of cultural resources, and implementing a management policy restricting the casual collection of artifacts from the project area.



Figure 2-10: North Slope of Mesa (140+25 to 142+50)

Source: PSCo (2009)



Figure 2-11: South Slope of Mesa (173+30 to 175+50)

Source: PSCo (2009)

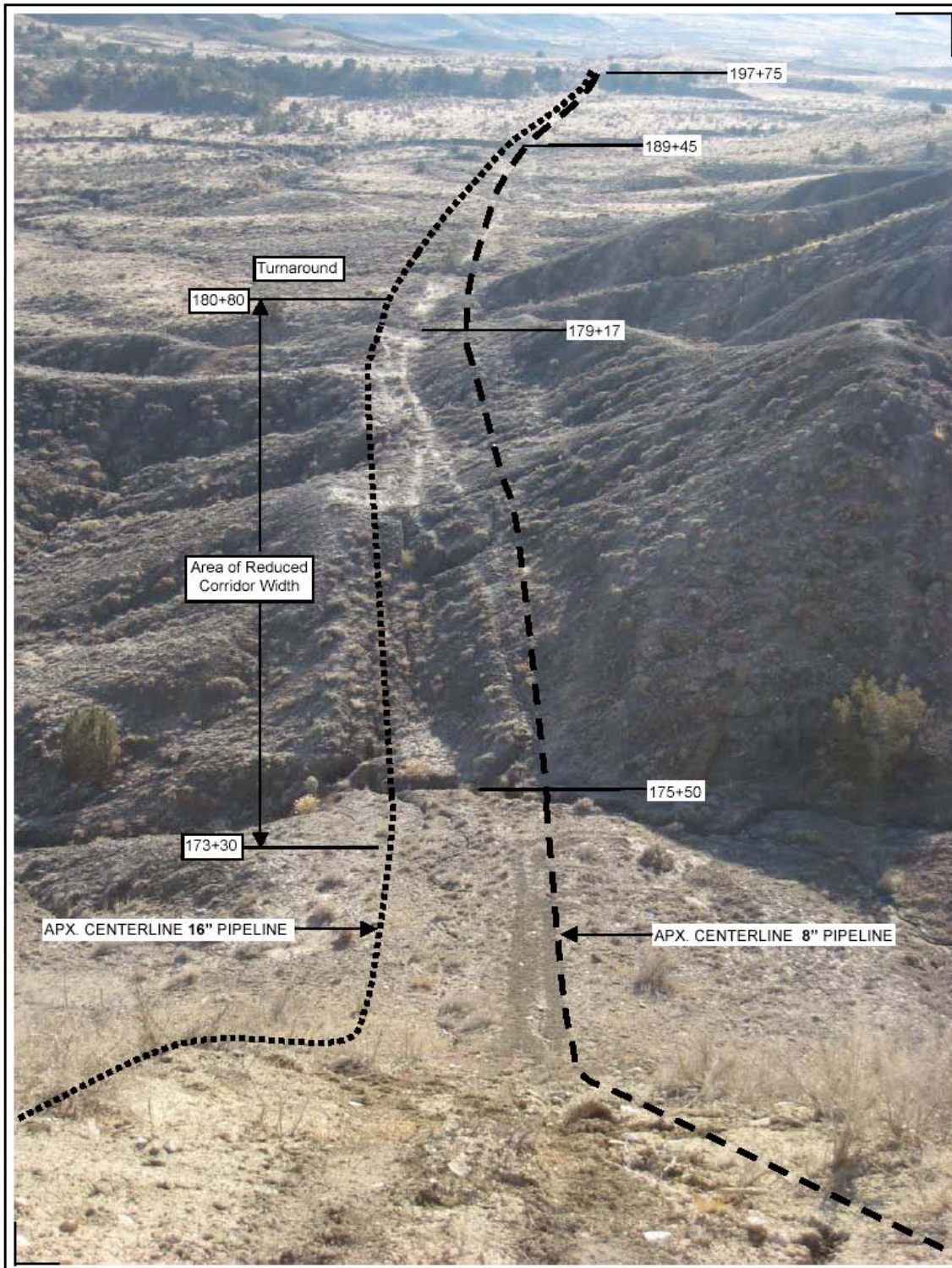
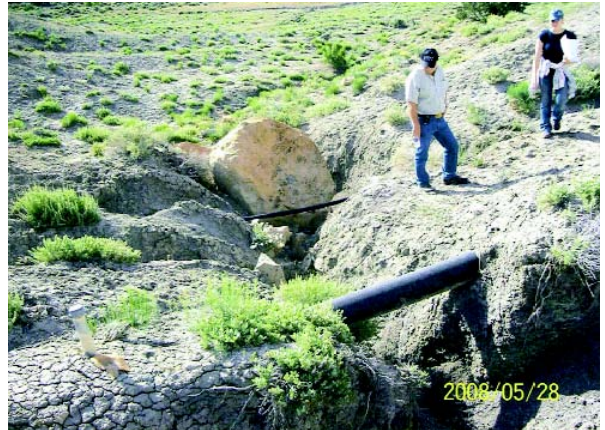


Figure 2-12: Looking South from Mesa (173+30)

Source: PSCo (2009)



175+50 Looking West



179+17 Looking East

Figure 2-13: Exposed 8-Inch Pipe South of Mesa

Source: PSCo (2009)



Figure 2-14: South View from 197+75

Source: PSCo (2009)



Munger Creek Crossing (29+78)



Ephemeral Drainage Crossing (140+25)



Ephemeral Drainage Crossing (189+45)

Figure 2-15: Ephemeral Drainage Crossings

Source: PSCo (2009)

2.2 No Action Alternative

The No Action Alternative assumes that the Proposed Action would not occur in the project area. There would be no extension of the existing ROW easement on BLM lands. This assumes that no trenching, traffic increase, or impacts related to surface disturbance (such as road or pipeline construction) would occur in the project area on the federal lands beyond that which is currently permitted or approved through previous NEPA decision documents.

2.3 Alternatives Considered But Not Carried Forward

Alternative routes both east and west of the existing pipeline were considered. Topography to the east is steeper than the area surrounding the existing pipeline and would require a new pipeline corridor and construction activity on previously undisturbed land. A new corridor to the west would align near Colorado Highway 139 and would require a longer pipeline, a new corridor, and new construction disturbances on BLM land. These alternatives would not maximize use of the existing BLM authorized ROW (C 05006) “corridor”, minimize disturbance to previously undisturbed land, and reduce project costs.

Two alternatives were considered and rejected in favor of spanning the creeks within the project area. Open cutting the East Salt Creek and Munger Creek would require the steep and highly erosive banks of the channels to be sloped back to accommodate trench and vehicle crossings. Creek flows resulting from storm events storm would need to be diverted during construction and sediment control installed. Following construction, the banks would have to be reconstructed. Reconstruction of these drainage banks would be problematic due to the sandy soils in East Salt Creek and Munger Creek. A USACE Nationwide Permit #12 would also be required for the work. This alternative was rejected due to the large potential of it negatively impacting water quality, bank stability, and other nearby resources. Successful stabilization and revegetation of these banks would be difficult to achieve following the level of disturbance that would result from open cutting the channels.

Boring under the deep channels of East Salt Creek and Munger Creek was also considered. Two bore pits would need to be constructed on each side of the channel. Due to the inflexibility of the 16-inch pipe, the bore would need to be greater than 500 feet long. Boring would require a substantial amount of slurry, consisting of water and bentonite clay, to lubricate the drilling. The slurry is typically retrieved by a vacuum truck. This slurry can be problematic given the soil conditions. If the slurry breached the ground surface and/or the channel, the sandy soils would offer little assistance, thus introducing sediment into the waterway and potentially affecting fish and plant resources. If the breaching occurred and could not be adequately rectified, another crossing option may have to be explored. In addition, excavation would have to occur close to the top of the banks to align the new pipeline with the existing pipeline. This work could result in compromising bank stability and function. This type of construction does not offer as much protection as spanning does for hydrology, soils, wetlands, and wildlife resources. Spanning

would reduce the amount of disturbance that would occur during construction in the stream channel and along the steep highly erosive stream banks.

2.4 Plan Conformance Review

The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Grand Junction Resource Management Plan (RMP)

Date Approved: January, 1987

Page or Decision Number: 2-29

Decision Language:

To respond, in a timely manner, to requests for utility authorizations on public land while considering environmental, social, economic, and interagency concerns, BLM lands within the Project Area are defined by a single emphasis area in the RMP/Record of Decision (ROD): "Gd-Emphasis on Land Disposal." Identify all tracts as sensitive to public utilities. Approve only ROW applications that would not unduly depreciate the tract's appraised values.

In January 1997, BLM-Colorado State Office approved the Standards for Public Land Health and amended all RMPs in the state. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands as follows:

- **Standard 1:** Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.
- **Standard 2:** Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.
- **Standard 3:** Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.
- **Standard 4:** Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by BLM and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.
- **Standard 5:** The water quality of all water bodies, including groundwater where applicable, located on or influenced by BLM lands will achieve or exceed the water quality standards established by the state of Colorado.

Because standards exist for each of these five categories, a finding must be made for each of them in an environmental analysis.

3. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

3.1 Introduction

This chapter provides a description of the human and natural environment resources that could be affected by the Proposed Action. This EA draws upon information compiled in the Grand Junction Resource Area RMP (BLM 1987) and the Grand Junction Resource Area RMP (BLM 1985).

BLM Manual H-1790-1 (BLM 1988) lists critical elements that must be addressed in NEPA analyses including:

- Air quality
- Cultural resources
- Environmental justice
- Farmlands
- Floodplains
- Invasive non-native species
- Migratory birds
- Native American religious concerns
- Threatened or endangered species
- Wastes (hazardous or solid)
- Water quality (surface and groundwater)
- Wetlands/riparian zones
- Wild and scenic rivers
- Designated wilderness

All of the aforementioned critical elements are addressed in this chapter (not necessarily in the order listed above). Each critical element is addressed in a level of detail commensurate with the degree of impact to the critical element or resource. Non-critical elements include land use and land ownership, agricultural resources, geology, transportation and access, recreation and wilderness, visual and aesthetic, socioeconomics, and public safety. Appendix B provides a list of the BMPs that have been proposed by the applicant to mitigate potential impacts to resources.

This project is located approximately 31 miles northwest from Grand Junction in Sections 20, 29, 31, and 32, Township 7 South, Range 102 West, and Sections 5 and 8, Township 8 South, Range 102 West, 6th Principal Meridian in Garfield County, Colorado (Figure 3-1).

The new pipeline, which would commence at the Northwest Purchase Point (station 0+00) and extend south to the Garmesa Valve Set (215+80), is shown in Figure 2-2. East Salt Creek (station 17+88), the only perennial water feature crossed by the project, is shown in Figure 2-3. Several

intermittent drainages of various sizes would also be spanned, the largest being Munger Creek (station 29+78). The 21,623-foot-long pipeline would be located on a combination of BLM land (11,938 feet) and private property (9,685 feet). The new pipeline would be located 15 feet east of PSCo's existing 8-inch-diameter natural gas pipeline and would parallel the existing pipeline.

The new permanent ROW centerline would be centered between both pipelines and cover approximately 11.01 acres on private lands and 13.70 acres on BLM lands. A 25-foot-wide temporary construction area would be needed along the eastern edge of the entire permanent pipeline ROW. Four turnaround areas are also needed on BLM lands and would extend lengthwise and to the east from the outside edge of the temporary construction ROW.

CRITICAL ELEMENTS

Critical elements considered under this EA are those resources that are anticipated to experience some level of impact should the Proposed Action be implemented. Each critical element is addressed in a level of detail commensurate with the degree of impact to the critical element or resource.

3.2 Air Quality

3.2.1 *Affected Environment*

The Clean Air Act (CAA), 42 USC 7401 et seq. as amended in 1977 and 1990, is the principal federal statute governing air pollution. The CAA empowered the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. These pollutants are called “criteria” air pollutants and include carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, particulate matter equal to or less than 10 microns in diameter (PM₁₀), and fine particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}). The NAAQS include primary standards designed to protect human health and secondary standards to protect public welfare, including visibility and damage to crops and vegetation.

Regions of the country that meet the NAAQS are considered “attainment” areas and regions that do not meet the NAAQS are designated as “nonattainment” areas. Certain rural parts of the country do not have extensive air quality monitoring networks, and these areas are considered “unclassifiable” and are presumed to be in attainment with the NAAQS. Garfield County falls into this category and is designated unclassifiable/attainment for all criteria air pollutants.

Principal sources of air pollutants in Garfield County include natural gas development and associated facilities, motor vehicles, wood stoves, unpaved roads, and controlled and uncontrolled burns (Colorado AQCC 2007). There are very few emission sources within the project study area and these would include vehicular travel on paved and unpaved roads, residences, oil and gas facilities, agricultural operations, and periodic controlled and uncontrolled burns. Based on the lack of local emission sources, air quality within the project study area is expected to be good

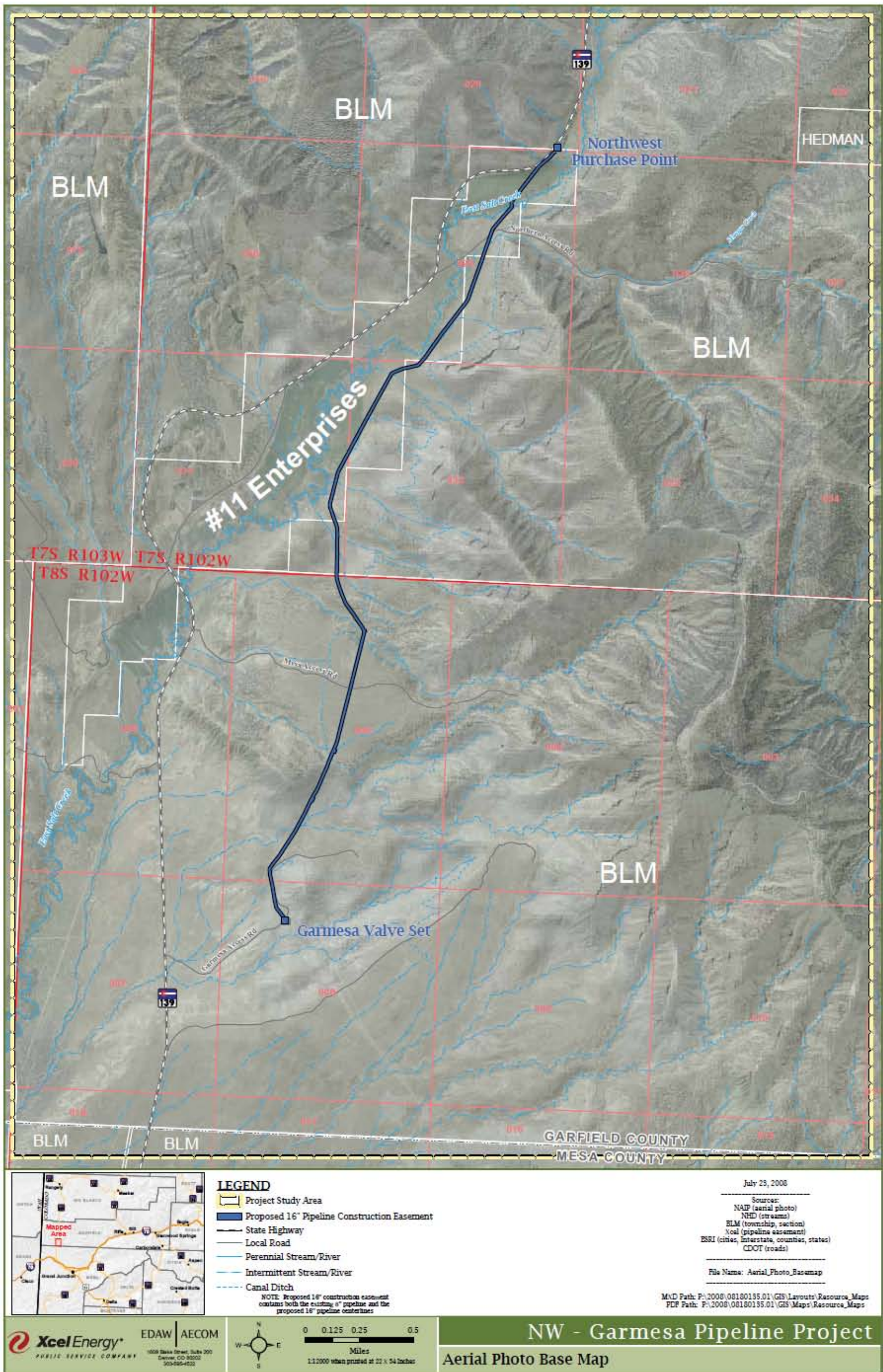


Figure 3-1 Aerial Photo Base Map

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In response to concerns about the impacts of oil and natural gas development on air quality and public health, the Garfield County Public Health Department and CDPHE conducted an ambient air quality monitoring study between June 2005 and May 2007 to evaluate the concentrations of PM₁₀ and volatile organic compounds (VOCs) in ambient air (Garfield County 2007). During the monitoring period, no exceedances of the PM₁₀ NAAQS were recorded. In general, the measured PM₁₀ concentrations were higher in urban areas than in rural areas, and the study found that approximately 65 percent of the particulate mass was from geologic material.

There are no federal standards for VOC concentrations in ambient air. In general, the study found that the levels of VOC concentrations detected were extremely low and that the highest VOC concentrations in Garfield County are similar to or sometimes higher than those measured in Grand Junction and Denver. The data appear to indicate that local VOC sources, such as oil and gas operations, may have an impact on local VOC concentrations in ambient air. Compounds that were detected in the highest concentrations were acetone and the BTEX group (benzene, toluene, ethylbenzene, and xylenes). The conclusions of a community health risk analysis conducted concurrently with the air quality monitoring study indicated that there is no health crisis in Garfield County, but that there are some trends that should continue to be monitored (Coons and Walker 2008).

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

The No Action Alternative would result in no additional air quality impacts in the project study area.

3.2.2.2 Proposed Action

Air quality impacts from the Proposed Action would primarily occur during the construction phase and would include both fugitive dust emissions and exhaust emissions. Fugitive dust emissions would result from excavation, mechanical movement of soil, and vehicular travel on unpaved roads and within the construction ROW. Emissions of fugitive dust are a function of several factors including soil moisture, the height from which excavated soil is dropped, wind speed, and vehicular speed on unpaved roads.

Exhaust emissions of nitrogen oxides, carbon monoxide, sulfur dioxide, VOCs, and PM₁₀ would be generated as a result of the operation of heavy-duty diesel construction equipment, worker vehicles, welding equipment, generators, and other types of construction equipment. Emissions from these types of mobile sources are a function of the number of hours operated, vehicle speed, vehicle type, and fuel burned.

The construction phase of the project is expected to take 10 to 12 weeks to complete. Air quality impacts would be short-term and would primarily occur in the immediate vicinity and downwind of construction activities. Fugitive dust would be the primary pollutant of concern, and

depending on soil moisture and wind conditions, periodic plumes of dust may be observed from excavation and earthmoving activities. Dust may also be generated from areas of exposed soil during high wind conditions. Given the current attainment status of the county and the relatively short duration of construction activities, construction of the project would not be expected to result in a degradation of local or regional air quality or result in any exceedances of the NAAQS.

There are no new compression facilities or other sources of air pollution directly associated with the Proposed Action, so aside from the potential for leaks of natural gas from valves and flanges at the Northwest Purchase Point or the Garmesa Valve Set, operation of the pipeline is not expected to result in any measurable impact on air quality within the project study area or Garfield County.

3.2.3 Mitigation Measures

To minimize the potential impacts of the project on air quality, the following mitigation measures are recommended:

- Vehicle speed on unpaved access roads would be limited to 15 miles per hour on unsurfaced roads and 25 mile per hour on graveled roads, except as posted otherwise on County and State Roads.
- In addition, the construction contractor should implement a carpooling or ride-sharing program to reduce the number of vehicular trips to the site.
- Construction activities would be curtailed during periods of high winds when excessive amounts of fugitive dust are being generated.
- Construction equipment would be maintained and tuned in accordance with manufacturer's specifications.
- When feasible and deemed necessary, fugitive dust in the active construction areas would be controlled with water spray or other stabilization methods.
- Areas of disturbance would be minimized and vehicle movement would be limited to existing access roads and the permanent and temporary construction ROW.
- Following construction, disturbed areas would be recontoured, stabilized, and revegetated within 30 days following the completion of construction.

3.3 Cultural Resources

3.3.1 Affected Environment

The prehistoric culture history of the project area and region has been synthesized by Reed and Metcalf (1999) and this synthesis is briefly summarized in the Class III archaeological report (GJFO BLM 5408-03) provided by Metcalf Archaeological Consultants, Inc. (MAC) (Scott 2008). Previous archaeological studies in the general vicinity have suggested regional occupation for as long as 10,000 years. The majority of finds in the area are primarily of the late Archaic, Formative (Fremont) and Numic (Ute) Eras. The cited report provides a more detailed description of the region's archaeology.

MAC performed an intensive (Class III) cultural resource inventory of the project area. A 200-foot-wide corridor was surveyed for cultural resources along the entire length of the proposed pipeline, access roads, and turnarounds. Two sites that were located in the file search of the project corridor, 5GF326, a survey marker of rocks, and 5GF1056, a historic dugout, were not relocated during this inventory. An additional site, 5GF743, was located just outside the project area and the site form was updated by the contractor. Site 5GF879 was relocated and reevaluated as part of the inventory. Additionally, one isolated find (5GF4250) and five sites were newly recorded in the corridor of this project: a new segment of a previously recorded historic ditch (5GF879), a segment of previously recorded historic telegraph line (5GF3889.2), a brush fence (5GF4243.1), a prehistoric stone circle site (5GF4244) and a newly recorded GLO survey marker (5GF4245).

Table 3-1 summarizes the findings, eligibility, and effects for the sites encountered during the inventory. Additional work has been required by the Colorado Department of Transportation to upgrade the road at six access points to the main project. Three of these areas being proposed for upgrade have not currently been inventoried for cultural resources. The BLM requires that these areas are surveyed and that prior to construction, appropriate avoidance through redesign, or data recovery will occur should cultural resources be discovered in these areas.

Table 3-1:
Summary of Cultural Resources

| Site Number | Eligibility | Eligibility Criteria | No Effect | No Adverse Effect |
|-------------|--------------|----------------------|-----------|------------------------|
| 5GF326 | Not eligible | "a-d" | X | |
| 5GF743 | Not eligible | "a-d" | X | |
| 5GF879 | Not eligible | "a-d" | X | |
| 5GF1056 | Not eligible | "a-d" | X | |
| 5GF3889.2 | Needs data | "d" | X | |
| 5GF4243.1 | Not eligible | "a-d" | X | |
| 5GF4244 | Eligible | "d" | | X: Avoided by redesign |
| 5GF4245 | Not eligible | "a-d" | X | |

3.3.2 Environmental Consequences

For this EA, an adverse effect to a cultural resource deemed eligible for inclusion on the National Register of Historic Places (NRHP) (as determined by BLM in consultation with the State Historic Preservation Office (SHPO) would be considered a significant impact under NEPA. An adverse effect under 36 CFR Section 800.9(b) is one that occurs when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that would qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the

property's location, design, setting, materials, workmanship, feeling, or association. All qualifying characteristics need to be considered, even those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP.

Adverse effects may include reasonable foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (36 CFR Section 800.9(b)(1)). For example, an adverse effect can result from the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features (36 CFR Section 800.9(b)(2)), or result in isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP.

3.3.2.1 No Action

No project-related impact on cultural resources would occur under the No Action Alternative.

3.3.2.2 Proposed Action

Anticipated construction of the Proposed Action is slated to begin in May 2009. Construction of the pipeline as currently proposed would have a direct, adverse, and permanent impact to the prehistoric stone circle (5GF4244) within the project area. To protect the resource, the BLM archaeologist would require that PSCo fence off and reroute around the site by following the mitigation measures below.

3.3.3 Mitigation Measures

No further work is recommended for either the historic ditch (5GF879) or the historic telegraph transmission line (5GF4243). Avoidance of the prehistoric site (5GF4244) by rerouting the pipeline would prevent damage to this eligible site. The BLM requires that the pipeline be rerouted and reflagged by a Colorado BLM-permitted archaeologist between approximately 1.5 and 2.0 miles from the southern terminus where the route would be shifted from the current proposed route to an existing two track road to the east of the site (5GF4244). Additionally, the permitted archeological consultant would confirm the reroute location avoids the site and be present to monitor the construction and removal of a temporary fence that would be built to ensure the avoidance of potential archeological subsurface features at site 5GF4244. A fieldwork authorization and pre-field meeting would be required between the BLM archaeologist and the permitted consultant prior to rerouting and monitoring. During the pre-field meeting with the consultant, exact field station locations would be provided.

The BLM would require that all additional adjustments to the project, including road upgrades, staging areas and any additional changes or reroutes not in the current cultural resource inventory area to be surveyed and that prior to construction, appropriate avoidance through redesign, or data recovery would occur should significant cultural resources be discovered in these areas. When avoidance is not feasible, BLM, in consultation with SHPO, the Ute Tribes, and the

proponent, would develop, or ensure that the proponent develops an appropriate treatment plan designed to lessen or mitigate project-related effects to historic properties. This plan would likely include evaluative testing and possibly data recovery through excavation. When data recovery is required as a condition of approval, BLM, in consultation with SHPO, must develop, or ensure that the proponent develops, a data recovery plan that is consistent with the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-37) and *Treatment of Historic Properties: A Handbook* (Advisory Council 1980).

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the proponent, or any person working on his behalf, on public or federal land should be immediately reported to BLM. The proponent is responsible for the education of employees about cultural resources and their protection.

The proponent should suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by BLM. An evaluation of the discovery would be made by BLM to determine appropriate actions to prevent the loss of significant cultural or scientific values. The proponent would be responsible for the cost of evaluation and any decision as to proper mitigation measures would be made by BLM after consulting with the proponent. Pursuant to 43 CFR 10.4(g) the proponent of this authorization should notify BLM, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), the proponent should stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by BLM.

3.4 Native American Religious Concerns

In general, the study area exhibits a high degree of disturbance from previous construction activities related to oil and gas development and grazing activities. Increased access associated with these activities has increased the susceptibility of Native American values to disturbance and damage from artifact collectors and vandals.

General annual project consultation has been conducted with tribes who traditionally used the GJFO area, the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, and Ute Indian Tribe of the Uintah & Ouray Reservation. Concerns identified included eradication of sage, impacts to medicinal plants, and general modern intervention in the natural processes. No traditional cultural properties, natural resources, or properties of a type previously identified as being of interest to local tribes were found during the cultural resources inventory of the project area or identified by consultation. There is no other known evidence that suggests that the project area holds special significance for Native Americans.

3.4.1 No Action

No project-related impacts on areas of Native American Religious concerns.

3.4.2 Proposed Action

Anticipated construction of the Proposed Action is anticipated to have no direct, adverse, or permanent impacts to areas of Native American religious concern.

3.4.3 Mitigation Measures

No environmental consequences are expected to cultural resources as a result of the Proposed Action, nor are any mitigation measures required. No additional Native American Indian consultation was conducted for the proposed project.

3.5 Special Status Species

3.5.1 Affected Environment

For purposes of the analysis of biological resources, the term “project area” would refer to the proposed pipeline construction ROW and the turn-around areas and material staging areas.

A Biological Survey Report was prepared in October 2008 that discusses special status species in the project area in detail. A summary of the special status species information follows.

3.5.1.1 Federally Listed Species

The U.S. Fish and Wildlife Service’s (USFWS) Threatened and Endangered Species List for Garfield County was evaluated to determine which species of federal concern have the potential to occur in the project area. These species are shown in Table 3-2. It was determined that only one federal species of concern has the potential to occur in the Garmesa project area; DeBeque phacelia (*Phacelia submutica*).

Phacelia submutica occurs in steep, dry, heavy clay soils associated with the Wasatch Formation. These soils typically have a high shrink-swell potential, so large cracks may result in the soil during some portion of the year. *Phacelia submutica* is characterized by a very diminutive rosette of reddish leaves and small cream-colored flowers. The plant flowers from late April through June.

Table 3-2:
Federally Listed and Candidate Species for Garfield and Mesa Counties, Colorado

| Scientific Name ¹ | Common Name ¹ | Status | Habitat | Suitable Habitat in Project Area |
|----------------------------------|--------------------------|------------|----------------------------------------------------------------------------------------------------------|----------------------------------|
| <i>Gila elegans</i> | Bonytail | Endangered | Colorado range: found in Colorado River at the Colorado/Utah border and in Cataract Canyon | No |
| <i>Lynx canadensis</i> | Canada lynx | Threatened | Mixed-coniferous forest | No |
| <i>Ptychocheilus lucius</i> | Colorado pikeminnow | Endangered | Green, Colorado, and Yampa River systems | No |
| <i>Phacelia submutica</i> | DeBeque phacelia | Candidate | Near town of De Beque, south of South Shale Ridge | Yes |
| <i>Gila cypha</i> | Humpback chub | Endangered | Limited range in Colorado River Basin | No |
| <i>Strix occidentalis lucida</i> | Mexican spotted owl | Threatened | Mixed-coniferous forest | No |
| <i>Penstemon debilis</i> | Parachute beardtongue | Candidate | Steep, south-facing slopes on thin shale fragments, 8,000–9,000 feet | No |
| <i>Xyrauchen texanus</i> | Razorback sucker | Endangered | Colorado River near Grand Junction | No |
| <i>Sclerocactus glaucus</i> | Colorado hookless cactus | Threatened | River benches, valley slopes, and rolling hills of the Duchesne River, Green River, and Mancos formation | No |
| <i>Coccyzus americanus</i> | Yellow-billed cuckoo | Candidate | Lowland riparian | No |

¹ Based on USFWS Colorado Field Office List (USFWS 2007).

A rare plant survey was conducted of the Garmesa pipeline project. The survey was completed on June 26, 2008. The survey involved walking transects over five steep hillsides in the project area that exhibited characteristics of habitat suitable for *Phacelia submutica*. These hillsides were steep and generally very sparsely vegetated. Two hillsides (the northernmost and southernmost of the five) do represent suitable habitat for this species. The survey did not document the occurrence of this candidate species in the project area. Results of this survey are discussed below in the Sensitive Plants section.

This project takes place within the Colorado River Basin and the four Colorado River listed species (Table 3-2) occur downstream of the project.

The Standard for Public Land Health—Standard 4 relates to special status, threatened, and endangered species (federal and state), and other plants and animals officially designated by BLM, and their habitats . It describes the conditions necessary to maintain or enhance special status species and their habitats by sustaining healthy native plant and animal communities.

3.5.1.2 BLM Sensitive Species

The BLM Sensitive Species List for the GJFO (BLM 2000) was evaluated to determine which species may occur within the project area. The GJFO list includes 5 mammals, 10 birds, 4 fish, 3 reptiles, 4 amphibians, 1 invertebrate, and 19 rare plants. These species are listed in Table 3-3 along with a habitat description and an assessment of whether suitable habitat may occur in the project area.

Table 3-3:
BLM Sensitive Species for GJFO

| Scientific Name | Common Name | Habitat Description ¹ | Suitable Habitat Present in Project Area |
|------------------------------------|--------------------------|-----------------------------------------------------------------------------|------------------------------------------|
| Mammals | | | |
| <i>Corynorhinus townsendii</i> | Townsend's big eared bat | Semi-desert shrubland, pinyon-juniper woodlands | Yes |
| <i>Euderma maculatum</i> | Spotted bat | Cliffs, pinyon-juniper woodlands, desert shrubland | Yes |
| <i>Myotis thysanodes</i> | Fringed myotis | Shrublands and pinyon-juniper woodlands | Yes |
| <i>Myotis yumanensis</i> | Yuma myotis | Shrublands and pinyon-juniper woodlands | Yes |
| <i>Nyctinomops macrotis</i> | Big free-tailed bat | Rocky canyons | Yes |
| <i>Vulpes macrotis</i> | Kit Fox | Desert, Grassland/herbaceous, Playa/salt flat, Savanna, Shrubland/chaparral | Yes |
| Birds | | | |
| <i>Accipiter gentilis</i> | Northern goshawk | Forest and during migration can be found in shrublands | No |
| <i>Athene cunicularia hypugaea</i> | Western burrowing owl | Short vegetation and presence of fresh prairie dog burrows | No, no prairie dog towns in project area |
| <i>Bucephala islandica</i> | Barrow's goldeneye | Reservoirs and rivers | No |
| <i>Buteo regalis</i> | Ferruginous hawk | Grasslands, semi-desert shrublands and rarely in pinyon-juniper woodlands | Yes |
| <i>Centrocercus minimus</i> | Gunnison sage grouse | Large expanses of sagebrush and riparian areas | No, outside range |

| Scientific Name | Common Name | Habitat Description ¹ | Suitable Habitat Present in Project Area |
|---------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------|
| <i>Centrocercus urophasianus</i> | Greater sage grouse | Large expanses of sagebrush | No, outside historic range |
| <i>Charadrius alexandrinus nivosus</i> | Western snowy plover | Playa lakes | No |
| <i>Charadrius montanus</i> | Mountain plover | Cropland/hedgerow, Desert, Grassland/herbaceous | Yes |
| <i>Chlidonius niger</i> | Black tern | Adjacent to larger bodies of open water | No |
| <i>Falco peregrinus</i> | Peregrine falcon | Cliff, Desert, Shrubland/chaparral | No |
| <i>Grus canadensis tabida</i> | Greater sandhill crane | Grassland/herbaceous, riparian shallow water | No |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | Adjacent to big or medium size rivers | No |
| <i>Numenius americanus</i> | Long-billed curlew | Shortgrass grasslands, fallow fields, and shrublands | Yes |
| <i>Chlidonius niger</i> | Black tern | Reservoirs and lakes | No |
| <i>Plegadis chihi</i> | White-faced ibis | Wet meadows, marsh edges, reservoir shorelines | No |
| <i>Pelecanus erythrorhynchos</i> | American white pelican | Large reservoirs | No |
| <i>Tympanuchus phasianellus columbianus</i> | Columbian sharp-tailed grouse | Grassland/herbaceous, Shrubland/chaparral | No |
| Fish | | | |
| <i>Catostomus discobolus</i> | Bluehead sucker | Occurs in streams and rivers in the Colorado River Basin | Yes, East Fork of Salt Creek |
| <i>Catostomus latipinnis</i> | Flannelmouth sucker | Medium to large streams in the Upper Colorado River Basin | Yes, East Fork of Salt Creek |
| <i>Gila robusta</i> | Roundtail chub | Historically known to occur in most medium to large tributaries of the Upper Colorado River Basin | Yes, East Fork of Salt Creek |
| <i>Oncorhynchus clarki pleuriticus</i> | Colorado River cutthroat | Upper Green and Colorado Rivers | No |
| Reptiles | | | |
| <i>Crotalus viridis concolor</i> | Midget faded rattlesnake | Rock outcrops in sagebrush deserts | Yes |
| <i>Gambelia wislizenii</i> | Longnose leopard lizard | Semi-desert shrublands with bare ground | Yes |

| Scientific Name | Common Name | Habitat Description ¹ | Suitable Habitat Present in Project Area |
|----------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <i>Lampropeltis triangulum taylori</i> | Milk snake | Canyons, pinyon, juniper woodlands, shortgrass prairie | Yes |
| Amphibians | | | |
| <i>Acris crepitans</i> | Northern cricket frog | Semipermanent ponds, reservoirs, and streams with marshy and muddy slopes | No |
| <i>Hyla arenicolor</i> | Canyon treefrog | Intermittent streams in deep, rocky canyons | Yes |
| <i>Rana pipiens</i> | Northern leopard frog | Wet meadows and the banks of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams | No |
| <i>Spea intermontana</i> | Great Basin spadefoot | Sagebrush and other desert shrublands | Yes |
| Invertebrates | | | |
| <i>Speyeria Nokomis nokamis</i> | Great Basin silverspot butterfly | Wetlands associated with flowing water (springs, seeps, wet meadows) | No |
| Plants | | | |
| <i>Amsonia jonesii</i> | Jones' bluestar | In dry, open areas with clay, sandy, or gravelly soils, in desert-steppe, rocky gorges and canyons. elev. 4,500–5,000 feet | No |
| <i>Astragalus debequaeus</i> | DeBeque milkvetch | Fine textured, seleniferous saline soils of the Wasatch Formation; elev. 5,100–6,400 feet | Yes |
| <i>Astragalus jejunus</i> | Starvling milkvetch | This species is found on dry hilltops, ridges and bluffs or river terraces of tuff, shale, sandstone, limestone, derived gumbo clay or cobblestones, at about elev. 5,800–7,400 feet; in sagebrush or sagebrush-juniper communities | Yes |
| <i>Astragalus linifolius</i> | Grand Junction milkvetch | Pinyon-juniper forest and sagebrush communities. Sandy clay soils or shales. Elev. 4,800–6,200 feet | Yes |
| <i>Astragalus musiniensis</i> | Ferron milkvetch | Gullied bluffs, knolls, benches, and open hillsides. Pinyon-juniper woodlands, desert scrub communities, mostly on shale or alluvium; elev. 4,700–7,000 feet | Yes |

| Scientific Name | Common Name | Habitat Description ¹ | Suitable Habitat Present in Project Area |
|--------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <i>Astragalus naturitensis</i> | Naturita milkvetch | Sandstone mesas, ledges, crevices and slopes in pinyon-juniper woodlands; elev. 5,000–7,000 feet | No |
| <i>Astragalus piscator</i> | Fisher Tower's milkvetch | Sandy, sometimes gypsiferous soils of valley benches and gullied foothills; elev. 4,300–5,600 feet | No |
| <i>Astragalus rafaensis</i> | San Rafael milkvetch | Gullied hills, washes and talus under cliffs; in seleniferous, clayey, silty or sandy soils; elev. 4,400–6,500 feet | No |
| <i>Cirsium perplexans</i> | Adobe thistle | Found almost exclusively on clay soils or "adobe hills" that are derived from shales of the Mancos or Wasatch formations. Associated plant communities have been described as pinyon-juniper woodlands, and sagebrush, saltbrush, and mixed shrublands | Yes |
| <i>Cryptantha osterhoutii</i> | Osterhout cryptantha | Dry barren sites in reddish purple decomposed sandstone at an elevation of 4,500-6,100 feet, or in dry sandy soil in the desert, in blackbrush, mixed desert shrub, oak brush, saltbush, and pinyon-juniper communities at elev. 5,000–6,600 feet | Yes |
| <i>Erigeron kachinensis</i> | Kachina daisy | Saline soils in alcoves and seeps in canyon walls; elev. 4,800–5,600 feet | No |
| <i>Eriogonum contortum</i> | Grand buckwheat | Mancos shale badlands with shadscale and other salt desert shrub communities; elev. 4,500–5,100 feet | Yes |
| <i>Frasera paniculata</i> | Tufted green gentian | Dry, often sandy habitats, in desert shrub and pinyon-juniper communities. Elev. 4,000–6,500 feet | No |
| <i>Gilia stenothysra</i> | Narrowstem gilia | Silty to gravelly loam soils derived from Green River Formation or Uinta Formation. In grassland, sagebrush, mtn. mahogany or pinyon-juniper woodland; elev. 5,000–6,000 feet | Yes |
| <i>Lesquerella parviflora</i> | Piceance bladderpod | Shale outcrops of the Green River Formation. On ledges and slopes of canyons in open areas; 6,000–8,600 feet | No |

| Scientific Name | Common Name | Habitat Description ¹ | Suitable Habitat Present in Project Area |
|--------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <i>Lomatium latilobum</i> | Canyonlands bisquitroot | On steep rocky talus and in cracks on sandstone slickrock | No |
| <i>Lygodesmia doloresensis</i> | Dolores River skeleton plant | In Dolores River Canyon from reddish purple sandy soil derived from the Cutler Formation or from sandy outwash slopes at the base of cliffs | No |
| <i>Mentzelia argillosa</i> | Arapien stickleaf | Steeply sloping and constantly moving talus or scree slopes of the Green River Formation shale in Colorado. It is frequently found with other oil shale endemics, notably <i>Astragalus lutosus</i> , <i>Thalictrum heliophilum</i> , <i>Penstemon debilis</i> , and <i>Festuca dasyclada</i> . It often grows on scree slopes with little or no other vegetation | No |
| <i>Mimulus eastwoodiae</i> | Eastwood monkey-flower | Hanging gardens on sandstone cliff faces with seeps | No |

¹ Habitat descriptions from Spackman et al. (1997).

Sensitive Wildlife. Of the 50 special status animal species listed in Table 3-3, only the blue-head sucker, flannelmouth sucker, roundtail chub and longnose leopard lizard have been documented in the project area. These fish species were recorded in East Salt Creek on June 10, 1998, in Township 8 South, Range 103 West. Suitable habitat for the five sensitive bat species occurs within, or in proximity to, the project area, although there are no historical or recent occurrences of bat species within the project area. Bat surveys were conducted in 2006, however only two bats were captured in survey efforts conducted along East Creek and neither were the sensitive species listed above. Given the extent of rock and cliff habitats in proximity to the project area, it is probable some of these bat species breed and forage in the vicinity of the project area. Kit fox habitat occurs along the southern end of the project area. Kit fox are a nocturnal species found in semi-desert shrublands and shadscale, greasewood, and sagebrush communities. Kit fox breed in late December through February. Pups are born in March and early April and would disperse from dens in August and September. According to the Wildlife Resource Information System (WRIS 1997), there have been kit fox sightings in the project vicinity, although no site-specific records are available. Burrows of size appropriate for kit fox were not observed within the project area during biological surveys. Habitat for the ferruginous hawk, mountain plover, and long-billed curlew occurs within the project area. Longnose leopard lizards have been recorded in the project area and suitable habitat is found throughout the project area for the longnose leopard lizard, Great Basin spadefoot, canyon tree frog and milk snake.

Sensitive Plants. Based on the results of the biological field survey work, potentially suitable habitat for 8 of the 19 BLM sensitive plant species is present in the project area. These species

include *Astragalus debequaeus*, *Astragalus jejunus*, *Astragalus linifolius*, *Astragalus musiniensis*, *Cirsium perplexans*, *Cryptantha osterhoutii*, *Eriogonum contortum*, and *Gilia stenothysra*. *Phacelia submutica* was previously discussed above in the Federally Listed Species section.

No previous or current occurrence for any of these sensitive species has been recorded within the project area. Based on elemental occurrence data and habitat assessment in the project area, it was determined that surveys needed to focus on two species, *Eriogonum contortum* and *Phacelia submutica*.

The rare plant survey was conducted for the project on June 26, 2008. *Eriogonum contortum* occurs in sparsely vegetated shale badlands, with shadscale and other species in salt desert shrub communities. The species is characterized as a very small woody shrub with revolute leaves and yellow flowers. The plant flowers May through August. In Colorado, *Eriogonum contortum* has been found in Mesa and Garfield counties, north of the Colorado River. The Colorado Natural Heritage Program has mapped an element occurrence for this species in Township 7 South, Range 102 West, Section 31. The pipeline project area crosses the southeastern edge of Section 31.

The survey team did not identify the presence of *Eriogonum contortum* within the project area. Habitat for this species is typically low angle desert in shale badlands at elevations up to 5,100 feet. Most of the project area lies above 5,200 feet. The survey team thoroughly surveyed the low angled desert shrublands within the project area and did not observe the plant. Five access roads, and a reroute in section 31 were identified after biological surveys were completed.

3.5.1.3 Migratory Birds

The project area occurs within a variety of vegetation community types that provide habitat for migratory birds. These community types include Wyoming big sagebrush, juniper woodlands, greasewood flats, disturbed agricultural pastures, and wetland/riparian communities. Migratory bird species that were observed within the project area that are likely nesting either within the project area or in proximity to the project area include sage sparrows (*Amphispiza belli*), lark sparrows (*Chondestes grammacus*), lazuli buntings (*Passerina amoena*), western kingbirds (*Tyrannus verticalis*), western meadowlarks (*Sturnella neglecta*), black-billed magpies (*Pica hudsonia*), brown-headed cowbirds (*Molothrus ater*), American robins (*Turdus migratorius*), mourning doves (*Zenaidura macroura*), yellow-breasted chats (*Icteria virens*), northern mockingbird (*Mimus polyglottos*), Brewer's sparrow (*Spizella breweri*), blue-gray gnatcatchers (*Polioptila caerulea*), and pinyon jays (*Gymnorhinus cyanocephalus*). One magpie nest was found in a juniper tree near the southern end of the pipeline. An inactive stick nest that appears to have been an owl nest was found within the project area near the pipeline crossing at East Salt Creek. The project area is bordered by large cliffs and rock outcroppings, particularly on the northern end of the project area. These cliffs and rocky habitats provide nesting and roosting habitats for a variety of raptor species.

Two raptor nests were previously documented in bluffs on east of the East Salt Creek Compressor Station Site, east of Colorado Highway 139 in 2007 (Hayden-Wing 2007). These nest sites were inactive in 2007 and no active nests were observed during the surveys conducted in 2008.

3.5.2 Environmental Consequences

3.5.2.1 No Action

Under the No Action Alternative, the Proposed Action and associated infrastructure would not be constructed. No additional impacts to biological resources are expected.

3.5.2.2 Proposed Action

3.5.2.2.1 Federally Listed Species

BMPs outline avoidance of ground-dwelling species to the greatest extent feasible during project construction. Mitigation for special status species includes erosion control measures, automatic shut-off valve on the gas pipeline, implementation of an invasive and noxious weed species management and monitoring plan, and revegetation with native species.

Standard BMPs would be used to minimize impacts on the steep hillside locations during pipeline construction. The temporarily impacted area would be revegetated using native vegetation suited to the GJFO's standard habitat site types. Extra care would be required to limit foot travel and heavy vehicle traffic on these surfaces to the greatest extent possible.

The only federal species of concern that was considered in the project area is the candidate species, DeBeque phacelia. Surveys were conducted outside the flowering/fruitletting period (late April to early June), so it is difficult to determine whether phacelia occupies the project area. All records suggest that phacelia does not occur in the project area. Phacelia is only known to occur in and around the DeBeque area. For this reason, the Proposed Action is expected to have no effect on the Debeque Phacelia.

Water would be used daily for dust suppression, weed control, and soil compaction at a rate of approximately 11 acre-feet for the life of the project. These depletions May Affect, are Likely to Adversely Affect the Colorado River fishes and BLM has determined that water use and associated depletions from the Colorado River system for this project were previously addressed in the Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin in Colorado (ES/GJ-6-CO-94-F-017). The Grand Junction field office will include the depletions associated with the subject project in its annual report to the BLM State Office. The proponent has paid a one-time depletion fee of \$201.19 (\$18.29 per acre-foot) to the National Fish and Wildlife Foundation.

3.5.2.2.2 *BLM Sensitive Species*

Sensitive Wildlife: The two BLM species that are known to occur in proximity to the project area are the flannel mouth sucker, the blue-head sucker, the roundtail chub and the longnose leopard lizard. The three fish species could be found in the project area during spawning periods in the spring and early summer, when run off is higher. The pipeline would be designed over East Salt Creek to minimize impacts to aquatic resources and the creek itself. Standard sediment control measures (silt fencing, straw wattles, etc.), along with reseeded of disturbed areas, and follow-up weed control should minimize any impacts to resident or downstream fisheries. Potential contamination of surface waters resulting from a leak in the pipeline or some other form of pipeline failure could result in adverse affects to sensitive fish species and other aquatic life. To mitigate impacts of pipeline failure, an automatic shut-off valve system would be included in the project design. Indirect impacts to aquatic habitat from project construction such as erosion and sedimentation would be mitigated through project design, BMPs, and mitigation measures outlined under the SWMP (URS 2008). Project design and BMPs would ensure the project results in minimal to no adverse impacts to sensitive fish species.

Ground-dwelling species such as the Great Basin spadefoot, longnose leopard lizard, milk snake and kit fox are at greater risk for direct impacts from heavy machinery and truck traffic, during project construction, than the sensitive bat species and other wildlife that occurs in the area. Other direct impacts include construction noise and increased human presence in the project area. These impacts may result in the temporary displacement of species that inhabit the project area. Construction noise and temporary loss of habitat may also result in adverse effects to breeding individuals in the project area. Impacts are expected to be temporary in nature and habitat would be restored upon completion of construction.

Construction of the pipeline as well as upgrades to access roads and the temporary creation of turnaround areas would result in temporary to long-term habitat loss and habitat fragmentation for all sensitive species that may occur in the area during project construction and until the project area has been successfully restored with native vegetative cover. The severity of these impacts depends on the length of time it would take to successfully revegetate the project area with native species. Given the existing extent of noxious and invasive weeds and the soil conditions on-site, revegetation efforts are expected to be difficult. Noxious weed management and monitoring of revegetation efforts would be critical to maintaining habitat for sensitive species that may occur in the project area.

Sensitive Plant Species: Surveys conducted in June 2008 did not document occurrences of sensitive plants within the project area. Impacts to the access roads cannot be completely determined at this time because the biologic surveys for these areas were not completed. Mitigation identified below would protect sensitive plants in these areas from potential impacts associated with this project. Direct effects to habitat may include clearing of surface vegetation along the pipeline ROW and the commensurate disturbance of project area soils. Indirect effects may include increase of invasive weed species in the construction footprint, compaction of soils

and erosion over cleared soil surfaces, all of which adversely affect native species establishment and/or reestablishment.

Finding on Public Land Health Standard 4 for Special Status Species:

The proposed project would not negatively impact special status species. Mitigation has been developed to ensure that land health standards for special status species would be met.

3.5.2.2.3 Migratory Birds

Potential impacts to migratory birds include habitat fragmentation, temporary and long-term loss of nesting and foraging habitats, incidental take of ground-nesting birds and their nests, nest failure due to increased human noise and presence within the construction ROW, and temporary displacement of species foraging in the area. Other indirect impacts include propagation of noxious weeds that would minimize forage, cover and nesting habitat for migratory birds.

3.5.3 Mitigation Measures

Mitigation for special status species includes erosion control measures, an automatic shut-off valve on the gas pipeline, implementation of an invasive and noxious weed species management and monitoring plan, and revegetation with native species. BMPs would outline avoidance of ground-dwelling species to the greatest extent feasible during project construction. Avian surveys would need to be conducted prior to ground-disturbing activities to ensure the project does not result in direct impacts to breeding birds protected under the Migratory Bird Treaty Act.

A Notice to Proceed should be issued before construction activities are allowed to begin in the areas that were not previously surveyed for special status species along the access roads and the reroute in the 6th PM, T. 7 S., R. 102 W., Section 31. Prior to construction (earth disturbing activities) in these specific sites, additional biological surveys and /or habitat assessments will be required to ensure that special status species are avoided or that impacts are minimized. Project modifications may be necessary at that time depending on biological survey results.

A qualified biological site monitor should be present during the initial clearing of the project area for construction to ensure impacts to sensitive reptiles, amphibians, and other fossorial species are minimized, including avoidance of potential den sites for kit fox where feasible.

Surface disturbance should not be allowed between February 2 and July 30 to prevent potential impacts to nesting raptors unless otherwise approved by the Grand Junction Field Office Manager. If vegetation removal can be planned and accomplished prior to February 2, then exception to this condition can be granted to allow work on the project during the closure period.

Surface disturbance should not be allowed between May 15 and July 15 to prevent potential taking of migratory birds and/or eggs unless otherwise approved by the Grand Junction Field Office Manager. If vegetation removal can be planned and accomplished prior to May 15, then exception to this condition can be granted to allow work on the project during the closure period.

If construction is to occur during the avian breeding season, raptor surveys would be conducted up to 0.5 mile from the proposed construction boundaries to ensure the project does not result in adverse effects to nesting raptors. If construction is to occur during the migratory bird breeding season, PSCo would also be required to conduct nesting surveys within the construction project area prior to any ground-disturbing activity. The avian breeding season varies based on species and length of seasons. Surveys would be conducted using USFWS standards and by qualified biologists. USFWS requests surveys are conducted no earlier than 72 hours prior to any ground-disturbing activity during the avian breeding season to ensure birds do not move into the project area in the interim. If an active nest is found within the construction project area, it will be avoided and buffered from disturbance until the chicks have fledged.

A noxious and invasive weed management and monitoring plan will be provided to PSCo to ensure that noxious weeds are treated within the project area both pre- and post-construction. The noxious weed management plan will be created according to standards and protocols found in the GJFO and Grand Valley Ranger District's Noxious and Invasive Weed Management Plan for Oil and Gas Operators (Grand Valley Ranger District 2007). Control of noxious weeds will minimize impacts to sensitive plants, wildlife, and migratory birds.

The pipeline would be designed over East Salt Creek to minimize impacts to sensitive aquatic resources and the creek itself. Standard sediment control measures (silt fencing, straw waddles, etc.), along with reseeded of disturbed areas, and follow-up weed control should minimize any impacts to resident or downstream fisheries. Project design and BMPs would ensure the project results in minimal to no adverse impacts to sensitive fish species. Finally, to mitigate impacts of pipeline failure, an automatic shut-off valve system would be included in the project design.

3.6 Vegetation

3.6.1 Affected Environment

The chart below shows the ecological sites and expected disturbance associated with the project.

| Ecological Site | Acres BLM | Acres PVT | BLM Acres Meeting Standards |
|----------------------------|-----------|-----------|-----------------------------|
| Foothill Swale | 10.58 | 6.0 | 0 |
| Pinyon/Juniper/Unspecified | 0 | 0.11 | NA |
| Loamy Saltdesert | 0 | 0.33 | NA |
| Loamy Saltdesert | 0.02 | 0 | 0 |
| Loamy Saltdesert | 2.46 | 0 | 0 |
| Badlands | 6.48 | 0 | 0 |
| Loamy Saltdesert | 7.16 | 0 | 0 |
| Loamy Saltdesert | 2.62 | 0 | 0 |
| | 29.32 | 6.44 | 0 |

3.6.1.1 Ecological Site: Foothills Swale

This site occurs in swales, valleys, alluvial bottomlands and other low-lying areas which receive runoff from adjacent uplands. This site is a valley grassland plant community with a rather sparse stand of shrubs. Principle species include; basin wildrye, streambank wheatgrass, western wheatgrass, basin big sagebrush, rubber rabbitbrush and fourwing saltbush. Currently this range site, consisting of 10.58 acres, does not meet public land health standards because of deviation from the principle species and dominance by noxious weed species (cheatgrass).

3.6.1.2 Ecological Site: Loamy Saltdesert

This site occupies the gently sloping to rolling uplands of the salt desert. This site is a mixed grass-shrubby vegetation. Potential native vegetation is Indian ricegrass, galleta, and needle-and-thread grass. Shrub species include shadscale saltbush, rabbitbrush, winterfat, and fourwing saltbush. Currently this range site, consisting of 12.26 acres, does not meet public land health standards because of a lack of native perennials and dominance by noxious weed species (cheatgrass).

3.6.1.3 Ecological Site: Badland

Badland site consisting of 6.48 acres has unspecified vegetation and is found on very steep, nearly barren ridges, hills, mountainsides, canyons. The parent material is highly calcareous residuum weathered from calcareous shale and/or gypsiferous residuum weathered from shale. This site meets land health standards.

3.6.1.4 Ecological Site: Pinyon/Juniper

The pinyon-juniper site is found on the private lands. The potential native vegetation is two needle pinyon, Utah juniper, saline wildrye, shadscale saltbush, Indian ricegrass, bluebunch wheatgrass, and western wheatgrass.

The Foothills Swale and Loamy Salt Desert currently do not meet land health standards. The contributing factor for not meeting standards is current and historic grazing and disturbance associated with the current pipeline right-of-way.

A field survey of vegetation in the project area was completed on July 3, 2008. Biologists walked the entire project area and, using global positioning systems, mapped the transition areas where each major vegetation community began and ended. In October 2008, a Biological Survey Report was prepared that discusses vegetation of the project area in detail. A summary of the vegetation information presented in this report follows.

The standard habitat site types for the GJFO are described in Table 3-2. Figure 3-2 shows the BLM standard habitat site (SHS) type locations found within the project area and provides a total estimated acreage for each type. The most abundant community type in the project area is an SHS type of greasewood uplands. This habitat or community type covers 10.68 acres of land in the project area.

Table 3-4:
Vegetation in the Project Area

| BLM SHS Type | Acreage of SHS Types in Project Area | Dominant Plant Species Observed in the SHS Types |
|-------------------------|---------------------------------------------|----------------------------------------------------------------------|
| Agricultural Lands | 3.80 | Alfalfa, jointed goatgrass, bindweed |
| Arid Grassland Terraces | 6.51 | Winterfat, cheatgrass, jointed goatgrass, whitetop, Russian knapweed |
| Arid Juniper Mesas | 1.66 | Utah juniper, big sagebrush |
| Disturbed Lands | 0.42 | Road surfaces |
| Greasewood Uplands | 10.68 | Greasewood, annual wheatgrass, wild buckwheat, whitetop |
| Greasewood Washes | 0.30 | Greasewood, rabbitbrush, bindweed, jointed goatgrass |
| Saltbush Benches | 2.12 | Broom snakeweed, shadscale |
| Saltbush Eroded Lands | 0.64 | Shadscale, spiny horsebrush |
| Sagebrush Mesas | 3.98 | Big sagebrush, shadscale |
| Sagebrush Valleys | 7.35 | Big sagebrush, hopsage, cheatgrass |
| Woodland Riparian | 0.15 | Plains cottonwood, coyote willow, greasewood |

The Standards for Public Land Health–Standard 3 cover healthy, productive plant and animal communities if native and other desirable species are maintained at viable population levels commensurate with species and habitat’s potential.

3.6.2 Environmental Consequences

3.6.2.1 No Action

Under the No Action Alternative, the Proposed Action and associated infrastructure would not be constructed. No additional impacts to biological resources are expected.

3.6.2.2 Proposed Action

The proposed action will create about 30 acres of new earthen disturbance on BLM lands. The principal impact to vegetation will be complete removal of vegetation along the pipeline route and the earthen disturbance associated with it. In terms of plant community composition, structure and function, the principal negative impact over the long term would occur if cheatgrass or noxious weeds are allowed to establish and proliferate on the disturbed areas. With proper reclamation of the pipeline there would be an increase in perennial species composition and cover. The Loamy Salt desert and Foothills Swale sites are expected to have adequate cover for erosion reduction in 5–8 years. On the pinyon-juniper site (Private) no trees are expected to

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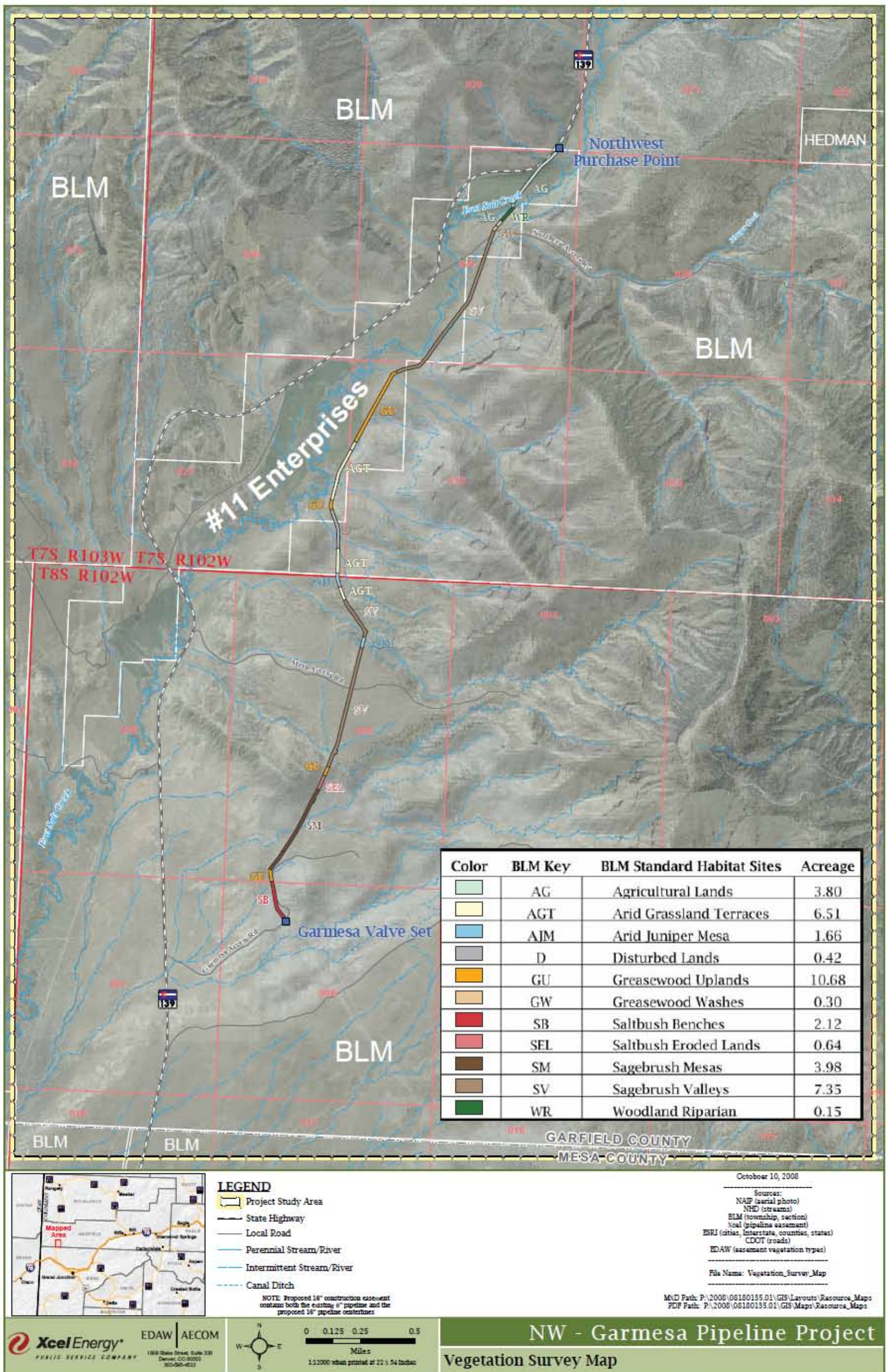


Figure 3-2 Vegetation Survey Map

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be disturbed. Seeding success is expected to be similar to that described above, and although this site is described as a pinyon-juniper site, it is very marginal and future encroachment by junipers is not expected. Reclamation of badland sites is expected to be difficult and for that reason jute matting is recommended to decrease erosion, improve moisture retention and provide an improved seed bed. This site may stabilize in 8–10 years.

Direct effects to the vegetation resource would include clearing of surface vegetation within the project area and the commensurate disturbance of project area soils. Indirect effects to vegetation may include increase of invasive weed species in the construction footprint, habitat fragmentation, compaction of soils and erosion over cleared soil surfaces, all of which adversely affect native species establishment and/or reestablishment.

3.6.3 Mitigation Measures

- The goal of rehabilitation shall be the permanent restoration of original site conditions and productive capability.
- The site shall be restored as nearly as possible to the original contour.
- Distribute topsoil evenly over the disturbed area, leaving the area with a rough surface texture to create seed microclimates and conserve moisture. Drill seed depth in compliance with the individual seed species recommendations. Broadcast seeding is to be at double the drill rate.
- Use seed that is certified and free of noxious weeds. Seed certification tags should be submitted to the authorized officer.
- Within the badlands site, following seeding, the slopes will be matted and staked with jute netting in accordance with manufactures recommendation.
- Recommended seed mix should include:

| Species/Variety | Pounds Pure Live Seed |
|---------------------------------|-----------------------|
| Western wheatgrass (Arriba) | 3 |
| Streambank wheatgrass (Sodar) | 2 |
| Thickspike wheatgrass (Critana) | 2 |
| Bottlebrush Squirreltail | 2 |
| Fourwing saltbush (Rincon) | 2 |

The proponent should disturb and remove only the minimum amount of soils and vegetation within the ROW necessary for the construction of structures and facilities.

Mitigation for vegetation includes erosion control measures, implementation of an invasive and noxious weed management plan, and revegetation with native species. A variety of seedbed preparation techniques may be evaluated for use, including ripping the disturbed soil surface. A monitoring plan would be implemented to ensure revegetation efforts meet BLM standards.

Standard BMPs would be used to minimize impacts to vegetation resources on the steep hillside locations during pipeline construction. The temporarily impacted area within the project area would be revegetated using native vegetation suited to the GJFO's standard habitat site types.

Finding on Public Land Health Standard 3 for Vegetation:

Construction of the proposed project would change the composition and cover of the vegetation communities in the project area, and may in many respects provide greater resource value (forage and soil protection) than the adjacent vegetation types. There would be no change in the vegetation standard for public lands; the site would continue to not meet the standard.

3.7 Invasive, Non-Native Species

3.7.1 Affected Environment

The study area was surveyed on July 3, 2008, to identify any noxious and invasive plant species that may occur in the project area. Table 3-5 lists the 10 state-listed species and the 6 species also listed on the Garfield County noxious weed list found in the study area. In October 2008, a Biological Survey Report was prepared that discusses invasive and non-native species present in the project area in detail. A summary of the invasive and non-native species information presented in this report follows.

Table 3-5:
Noxious Weeds Identified in the Project Area

| Species Scientific Name | Species Vernacular Name | State List | Garfield County List |
|-----------------------------|-------------------------|------------|----------------------|
| <i>Cardaria draba</i> | Hoary cress, whitetop | B | X |
| <i>Carduus nutans</i> | Musk thistle | B | X |
| <i>Erodium cicutarium</i> | Redstem filaree | B | |
| <i>Acroptilon repens</i> | Russian knapweed | B | X |
| <i>Tamarix ramosissima</i> | Tamarisk | B | X |
| <i>Cichorium intybus</i> | Chicory | C | X |
| <i>Bromus tectorum</i> | Downy brome | C | |
| <i>Convolvulus arvensis</i> | Field bindweed | C | |
| <i>Halogeton glomeratus</i> | Halogeton | C | |
| <i>Aegilops cylindrica</i> | Jointed goatgrass | C | X |

*Source: Colorado Department of Agriculture (2008) and Garfield County Noxious Weed List (2008b)

The Colorado Noxious Weed Act categories state noxious weeds into three lists: A, B, and C. No Colorado “A” list weeds were detected. Five species of Colorado “B” list weeds were detected. The “B” list weeds are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, develops and implements state noxious weed management plans designed to stop the continued spread of these species. The “C” List weed species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, would develop and implement state noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands. The goal of such plans is to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species.

During field surveys, biologists with EDAW recorded the presence and approximate density of noxious and invasive species within the proposed gas pipeline project area. Noxious weed populations with greater than 25 percent cover were mapped using the global positioning system (GPS) as polygons. Weeds that represented less than 25 percent cover within the project area were mapped as points. EDAW mapped three polygons of hoary cress totaling 0.23 acre and five other areas where hoary cress density was less than 25 percent (Figure 3-3). The team also recorded two polygons of Russian knapweed totaling 0.9 acre and one 0.5-acre polygon of tumble mustard. Noxious and invasive species were most prevalent on the northern portion of the project area on private lands.

Jointed goatgrass was prevalent in portions of the project area approximately 0.5 mile north of the Mesa Access Road. Cheatgrass and redstem filaree were also found in dense populations within this same area.

3.7.2 Environmental Consequences

3.7.2.1 No Action

Under the No Action Alternative, the Proposed Action would not be constructed and the existing conditions remain intact.

3.7.2.2 Proposed Action

Further propagation of noxious weeds within the Garmesa pipeline project area would result in short- and long-term, temporary and permanent impacts to native vegetation communities within the project area and adjacent properties. The impacts from noxious weeds in the project area would primarily be indirect in nature. These impacts would include competition with established and/or restored native plant species. This competition would be for resources including soil nutrients, water availability, and light. Additionally, noxious weeds can fragment habitat, resulting in the physical separation of a native plant population, potentially making gene flow more difficult. Noxious weeds can alter surface water flow, infiltration, and native species composition and reduce wildlife habitat.

3.7.3 Mitigation Measures

On the ROW, the proponent should monitor and control those noxious weeds that are on the state A and B lists. If chemical control is necessary, use of pesticides should comply with the applicable federal and state laws. Pesticides should be used only in accordance with their registered uses and within limitations imposed by BLM.

All construction equipment and vehicles should be washed prior to entering the project area, after passing through weed infested areas, and after leaving the project area to reduce the spread of noxious and invasive weeds.

A noxious and invasive weed management plan should be provided by PSCo to ensure that noxious weeds are treated within the project area both pre- and post-construction. The noxious weed management plan would be created according to standards and protocols found in the GJFO and Grand Valley Ranger District's Noxious and Invasive Weed Management Plan for Oil and Gas Operators (Grand Valley Ranger District 2007). The noxious weed management plan would be a condition of approval.

Information on recommended and required weed prevention measures can be found in the BLM GJFO and Grand Valley Ranger District's Noxious and Invasive Weed Management Plan for Oil and Gas Operators (Grand Valley Ranger District 2007).

3.8 Wetland and Riparian Communities

3.8.1 Affected Environment

In October 2008, a Biological Survey Report was prepared that assesses wetland and riparian communities of the project area in detail. A summary of the wetland and riparian information presented in this report follows.

Wetland and riparian communities were surveyed in the project area on July 3, 2008. The named surface water features in the project area include East Salt Creek and Munger Creek. East Salt Creek maintains a perennial flow and Munger Creek is intermittent. Given the presence of the surface water flow and the observance of some limited numbers of wetland plant species on the fringe of East Salt Creek, a wetland delineation effort was completed in the area where the new 16-inch gas pipeline is likely to span the creek. Data forms for the Arid West Supplement to the U.S. Army Corps of Engineers 1987 Wetlands Manual (USACE 1987) were used to guide wetland delineations in the project area.

The wetland delineation consisted of two sampling points (upland #1 or 1U and wetland #1 or 1W). Soil pits were dug at these two locations and where vegetation and hydrology indicators were evaluated. Results of the delineation determined that there is a very narrow fringe of wetland associated with the shoreline of East Salt Creek. Hydrophytic vegetation for sample point 1W included *Populus deltoides* in the tree stratum (Facultative wetland species) and

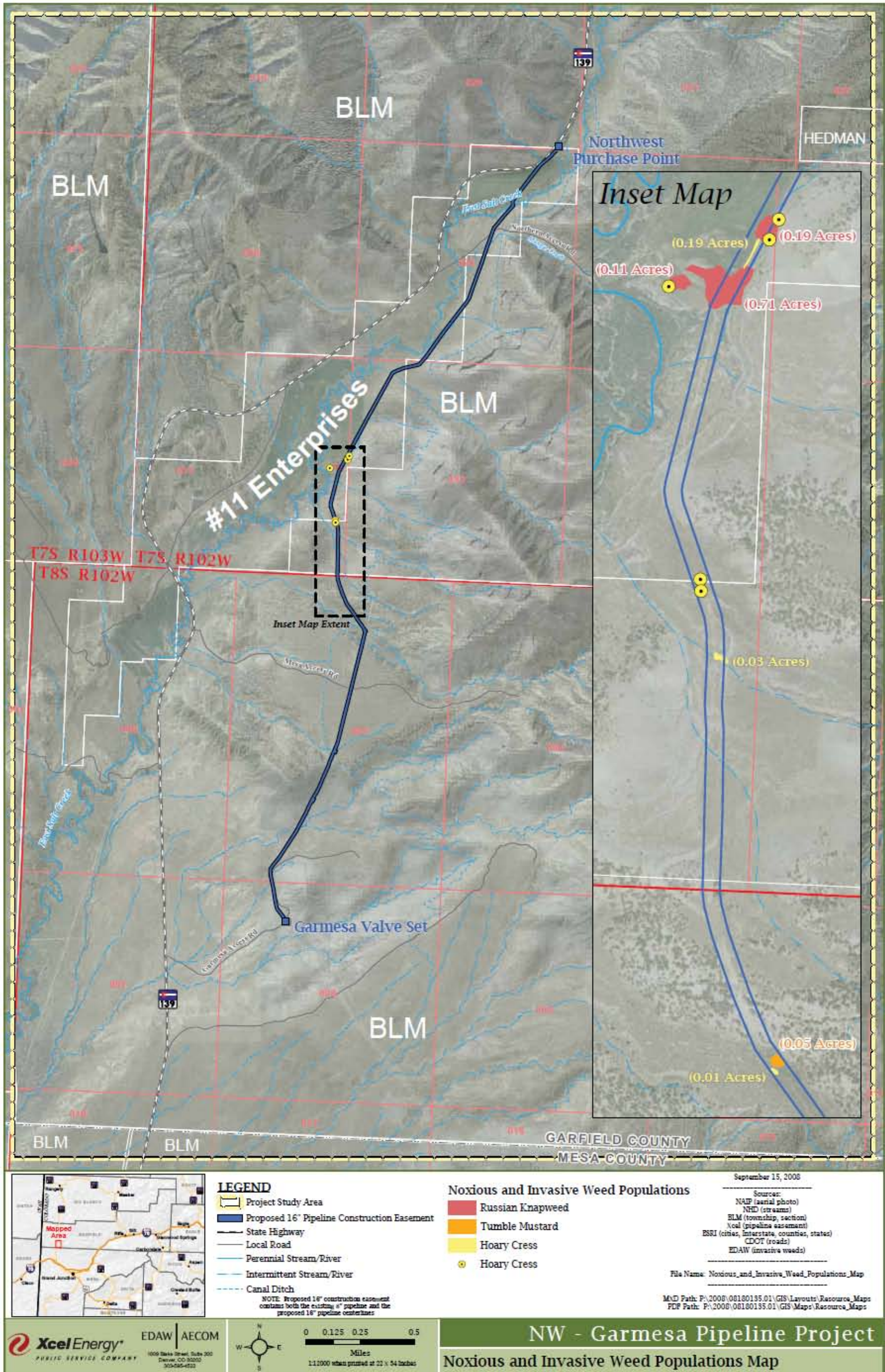


Figure 3-3 Noxious and Invasive Weed Populations Map

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Salix exigua in the sapling/shrub stratum (Obligate wetland species). Soils graded from silty clay to clay loam. These soils had evidence of oxidized root channels and a depleted matrix. The sampling point was within the capillary fringe of East Salt Creek and drift lines were present on vegetation. This wetland occurs on both sides of the creek and is less than 5 feet in width. Assuming a pipeline project-area width of 100 feet, the wetland fringe may cover 1,000 square feet or 0.02 acre.

No wetland delineation was undertaken on Munger Creek or other unnamed drainages in the project area given the absence of hydrophytic vegetation and hydric soils, the presence of very narrow channels, and the ephemeral nature of these features (dry at the time of survey).

The Standards for Public Land Health—Standard 2 cover riparian systems associated with both running and standing water. It describes the conditions necessary for proper function and the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods.

3.8.2 Environmental Consequences

3.8.2.1 No Action

Under the No Action Alternative, the Proposed Action would not be constructed and the existing conditions remain intact.

3.8.2.2 Proposed Action

Operator-committed design features include an automatic shut-off valve system as part of the project design. Erosion and sedimentation would be mitigated through project design, BMPs, and mitigation measures outlined under the SWMP (URS 2008). The project would avoid the removal of riparian species (e.g., cottonwoods) during project construction to the greatest extent feasible.

East Salt Creek and Munger Creek would be spanned during project construction. The wetlands and channel of East Salt Creek are narrow in size. The project would avoid direct impacts to wetland communities and surface waters during project construction. Under this strategy, impacts to surface water and wetlands should be minimal, assuming the prudent use of BMPs. These practices would focus on capture of soils and or sediments released during the burial of the pipeline near the channel sidewalls.

3.8.3 Mitigation Measures

To mitigate impacts of pipeline failure, an automatic shut-off valve system would be included in the project design. Erosion and sedimentation would be mitigated through project design, BMPs and mitigation measures outlined under the SWMP (URS 2008). Project design and BMPs would ensure the project results in minimal to no adverse impacts to wetland and riparian communities.

PSCo would avoid the removal of riparian species (e.g., cottonwoods) during project construction to the greatest extent feasible.

If temporary impacts were to occur, impacts would be less than 0.10 acre and would therefore not require a Section 404 permit or a Pre-Construction Notification for USACE.

Finding on Public Land Health Standard 2 for Wetlands:

This project complies with the Public Land Health Standard for wetlands and the proposed design features and mitigation would protect proper riparian function.

3.9 Wildlife

3.9.1 *Affected Environment*

In October 2008, a Biological Survey Report was prepared that discusses wildlife of the project area in detail. A summary of wildlife information presented in this report follows.

Prior to field surveys, information on wildlife within the Garmesa project area was collected through review of CDOW's geographic information systems (GIS) database, the Natural Diversity Information Source (NDIS), and review of BLM's existing resource data. The primary wildlife resources of concern for the Garmesa project area include the following:

- Big game severe winter range
- Possible habitat for BLM sensitive plant species
- BLM sensitive fish species

Eleven BLM standard habitat types were identified within the project area. These habitats are described in Table 3-4. Wildlife were observed in all of the habitats within the project area; however, avian and reptile species were most frequently observed in sagebrush valleys, greasewood uplands, and arid juniper woodlands.

CDOW has mapped the entire project area as severe winter range, winter concentration, and overall range for mule deer and elk (CDOW 1997). The project area also occurs in overall range for pronghorn. Field investigations conducted in July 2008 confirmed that big game occur in large numbers within and surrounding the project area during the winter. Mule deer and elk sign was observed throughout the project area. BLM and CDOW require that construction activities be completed by December 1 to mitigate impacts to wintering big game in the project area. No construction activities are permitted from December 1 through April 31, which is outside the construction schedule for the project.

Information on avian species in the project area was collected through surveys conducted by EDAW on July 7, 2008. The purpose of these surveys was to record the presence of avian species that may be nesting or foraging within the project area. The survey points were compared

with habitat types found within the project area. The highest density and diversity of birds were observed and heard in the juniper woodlands and sagebrush and sagebrush/greasewood mixed habitat types.

Species observed during July field surveys are shown in Table 3-6. What appears to be an inactive owl nest was observed within the project area at the crossing of East Salt Creek. The nest was found in a plains cottonwood (*Populus deltoides*) on the bank of the creek. According to a preliminary biological assessment completed for Xcel Energy's East Salt Creek Compressor Station by Hayden-Wing (2007), there were two inactive raptor nests identified on the bluffs on the west side of Highway 139, across from the compressor station. No raptors were observed in these areas at the time field surveys were conducted in July 2008.

Table 3-6:
Wildlife Observed within the Project Area in July 2008

| Scientific Name ^{1, 2} | Common Name ^{1, 2} | Habitat in Project Area |
|----------------------------------|-----------------------------|-------------------------------------------------------|
| Avian | | |
| <i>Amphispiza belli</i> | Sage sparrow | Sagebrush shrublands |
| <i>Chondestes grammacus</i> | Lark sparrow | Sagebrush and greasewood shrublands/juniper woodlands |
| <i>Spizella breweri</i> | Brewer's sparrow | Sagebrush shrublands |
| <i>Sturnella neglecta</i> | Western meadowlark | Sagebrush shrublands |
| <i>Tyrannus verticalis</i> | Western kingbird | Juniper woodlands |
| <i>Pica pica</i> | Black-billed magpie | Juniper woodlands, riparian, and shrublands |
| <i>Euphagus cyanocephalus</i> | Brewer's blackbird | Sagebrush shrublands |
| <i>Mimus polyglottos</i> | Northern mockingbird | Juniper woodlands/shrubland |
| <i>Molothrus ater</i> | Brown-headed cowbird | Shrublands and grasslands |
| <i>Passerina amoena</i> | Lazuli bunting | Woodland riparian |
| <i>Sialia currucoides</i> | Mountain bluebird | Sagebrush shrubland and juniper woodland |
| <i>Icteria virens</i> | Yellow-breasted chat | Greasewood/sagebrush shrubland |
| <i>Gymnorhinus cyanocephalus</i> | Pinyon jay | Juniper woodland |
| <i>Zenaidura macroura</i> | Mourning dove | Grasslands and shrubland |
| <i>Poliophtila caerulea</i> | Blue-gray gnatcatcher | Juniper woodland |
| <i>Alectoris chukar</i> | Chukar | Sagebrush/cheatgrass |
| Mammals | | |
| <i>Sylvilagus audubonii</i> | Desert cottontail | Shrubland and juniper woodland |
| <i>Canis latrans</i> | Coyote | All habitat within project area |

| Scientific Name ^{1, 2} | Common Name ^{1, 2} | Habitat in Project Area |
|---------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Lepus californicus</i> | Black-tailed jackrabbit | Sagebrush and greasewood shrubland |
| <i>Castor Canadensis</i> | Beaver | Forested riparian |
| <i>Lynx rufus</i> | Bobcat | Juniper woodland |
| <i>Odocoileus hemionus</i> | Mule deer | Shrubland |
| <i>Cervus elaphus</i> | American elk | Winters in sagebrush shrubland |
| Reptiles | | |
| <i>Uta stansburiana</i> | Side-blotched lizard | Semi-desert shrubland, juniper woodland |
| <i>Cnemidophorus tigris</i> | Western whiptail | Greasewood, sagebrush, rabbitbrush shrublands and juniper woodland on friable soils |
| <i>Phrynosoma hernandesi</i> | Short-horned lizard | Sagebrush, semi-desert shrubland, shale barrens, piñon-juniper woodland |
| <i>Crotaphytus collaris</i> | Collared lizard | Rocky canyons, slopes, and gullies; rocky ledges above cliffs; exposures of bedrock; and areas with scattered large rocks and sparse vegetation |
| Insects | | |
| <i>Pieris rapae</i> | Cabbage butterfly | All habitats in project area |
| <i>Acrididae</i> spp. | Grasshopper | All habitats in project area |
| Fish | | |
| <i>Catostomus discobolus</i> | Bluehead sucker | Headwater streams and large rivers with rocky substrates |
| <i>Castostomus latipinnis</i> | Flannel mouth sucker | Large streams and rivers in all habitat types |

¹ Based on USFWS Colorado Field Office List (USFWS 2007).

² Observation may have included the presence of wildlife sign such as scat or tracks.

Two magpie nests were observed within juniper woodland communities on the southern end of the proposed pipeline project area. A nesting population of blue-gray gnatcatchers was also observed within a juniper woodland community. Chukar (*Alectoris graeca*) droppings were observed within the project area in the sagebrush valley; however, no chukars were observed during field investigations conducted in July 2008. The entire project area is within overall range and adjacent to concentration areas for chukar (CDOW 1997).

The primary small mammal observed during field surveys was the desert cottontail (*Sylvilagus audubonii*). Coyote and what appeared to be bobcat (*Lynx rufus*) sign was also observed in the project area. The project area contains suitable habitat for other mammals such as mountain lions (*Felis concolor*) and kit fox (*Vulpes macrotis*). The project area contains burrows for a variety of fossorial species. Terrestrial wildlife observed during field surveys are shown above in Table 3-6.

The project area contains habitat for 13 or more species of reptiles and amphibians. Those observed during field investigations conducted in July 2008 are included in Table 3-6. Species not observed, but with suitable habitat within the project area according to Hammerson (1999), include the longnose leopard lizard (*Gambelia wislizenii*), sagebrush lizard (*Sceloporus graciosus*), plateau lizard (*Sceloporus elongata*), tree lizard (*Urosaurus ornatus*), Great Basin spadefoot (*Spea intermontana*), chorus frogs (*Pseudacris triseriata*), western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis catenifer*), striped whipsnake (*Masticophis taeniatus*), and racer (*Coluber constrictor*).

The project area contains dense populations of noxious and invasive plant species. Construction of the existing 8-inch pipeline has resulted in the spread of noxious weeds throughout and adjacent to the project area. Noxious weed propagation has reduced the quality of wildlife habitat in some of these areas, particularly on private property on the northern end of the project area.

The Standards for Public Land Health—Standard 3 relates to conditions needed to sustain healthy and productive plant and animal communities. Standard 3 also stipulates that these plant and animal communities are composed of native and/or other desirable species that are maintained at viable population levels commensurate with the species' and the habitat's potential.

3.9.2 Environmental Consequences

3.9.2.1 No Action

Under the No Action Alternative, the Proposed Action would not be constructed and the existing conditions would remain intact.

3.9.2.2 Proposed Action

The project area would be restored with native vegetation as outlined in Xcel Energy's Contractors Environmental Guidebook (URS 2008; Tables 3 and 5) to provide forage, cover, and breeding habitat for wildlife species. An integrated noxious weed management plan would be implemented for the project to minimize further spread of noxious weeds and impacts to native habitat. If approved, construction of the Proposed Action is estimated to begin in May 2009 and to be completed in early July, which would ensure that construction activities do not occur within big game severe winter range during the critical time periods (December 1 through April 31). Avoiding constructing activities during the construction restriction period would greatly reduce the amount of direct impacts to big game species. Construction noise and human presence may result in the temporary displacement of individual animals that inhabit the project area. Habitat loss is the primary concern for big game species within the project area. Construction of the pipeline would result in temporary removal of vegetation within the project ROW. These impacts would be mitigated through restoration and revegetation of the project area as described in the mitigation section below. Construction activities may result in the further spread and propagation of noxious weeds within the project area and adjacent lands. Increased weed densities would decrease native forage for mule deer, elk, and a variety of other wildlife. A noxious weed

management plan and revegetation plan implemented for the Proposed Action to mitigate this potential impact.

The project would result in the direct removal of nesting habitat for a variety of avian species, including the sage sparrow, lark sparrow, chukar, and others. Impacts to breeding birds were previously discussed under Special Status Species (Migratory Birds). Further propagation and spread of noxious weeds could affect avian habitat in a manner similar to that described for big game. Reclamation and revegetation measures as described below and Appendix B would mitigate this temporary impact.

Small mammals, reptiles, and amphibians may be incidentally taken during project construction. Construction crews would avoid small mammals and reptiles to the greatest extent feasible, whenever they are found within the construction ROW. Project construction is not expected to have a significant impact on small mammal, reptile or amphibian populations. Direct and indirect impacts to habitats would be similar to those described above for big game and avian species.

Finding on Public Land Health Standard 3 for Wildlife:

This project complies with the Public Land Health Standard for wildlife and the proposed design features and mitigation would protect proper functioning wildlife communities. This project would maintain conditions under Standard 3 for wildlife.

3.9.3 Mitigation Measures

Open trenches should be maintained in a safe condition, with escape ramps for wildlife placed at half-mile intervals along the open trench. Construction and maintenance activities deemed to be intensive in nature would not be allowed from December 1 to April 31 to protect big game winter habitat use.

Habitat restoration is critical to mitigating impacts to wildlife species. The project area would be restored with native vegetation as outlined in Xcel Energy's Contractors Environmental Guidebook (URS 2008; Tables 3 and 5). This vegetation would provide forage, cover, and breeding habitat for wildlife species that occur in the area. An integrated noxious weed management plan would be implemented for the project to minimize further spread of noxious weeds and impacts to native habitat. Mitigation includes ongoing monitoring of reclamation efforts to ensure the project reaches BLM's standard 70 percent survival rate.

The pipeline would be designed over East Salt Creek to minimize impacts to aquatic resources and the creek itself. Standard sediment control measures (silt fencing, straw waddles, etc.), along with reseeded of disturbed areas, and follow-up weed control should minimize any impacts to resident or downstream fisheries. Potential contamination of surface waters resulting from a leak in the pipeline or some other form of pipeline failure could result in adverse affects to fish species and other aquatic life. To mitigate impacts of pipeline failure, an automatic shut-off valve system would be included in the project design. Indirect impacts to aquatic habitat from project

construction such as erosion and sedimentation would be mitigated through project design, BMPs, and mitigation measures outlined under the SWMP (URS 2008). Project design and BMPs would ensure the project results in minimal to no adverse impacts to fish species.

3.10 Water Resources

3.10.1 Affected Environment

The project area is located within the south-trending East Salt Creek watershed, tributary of Salt Creek, tributary to the Colorado River (HUC code 14010005). In addition to the perennial East Salt Creek, the intermittent Munger Creek and numerous unnamed intermittent and ephemeral tributaries of East Salt Creek occur within the project area. See Figure 3-4 for a map of the water features within the project area.

Average precipitation contributes to the surface water sources in the study area. Climate in the southwestern portion of Garfield County is arid, with average annual precipitation ranging from 8 to 25 inches. Given the geology of the area, elevations and slope orientation are a major factor in precipitation capture (Garfield County 2002). The town of Fruita, the closest weather station to the study area, has average high and low temperatures of 66.9°F and 34.3°F, respectively. The rainy season occurs during mid-summer through fall, with August and October being the rainiest months. On average, annual snowfall is approximately 13.2 inches and annual precipitation is 8.81 inches (Western Regional Climate Center 2007).

3.10.1.1 Groundwater Resources

Based on available Colorado Division of Water Resources (2008) data, there are no significant aquifers or springs located within the project site area. The nearest springs are an unnamed cluster located near East Salt Creek, approximately 5 miles upstream of the project area.

3.10.1.2 Surface Water Resources

Surface water runoff within the project area flows into numerous unnamed drainages and one named intermittent drainage, Munger Creek, which flows into perennial East Salt Creek. East Salt Creek flows from its headwaters in the Book Cliffs south through the Grand Valley and into Salt Creek, which is a tributary of the Colorado River. There are no lakes, reservoirs, or other open expanses of water in the project area.

The Bookcliffs region, which extends across southern Garfield County and in which the project area is located, is characterized by numerous plateaus, canyons, and perennial, intermittent, and ephemeral streams. Of the 11 intermittent and ephemeral drainages and 2 canals that would be crossed by the pipeline in the project area, only one, Munger Creek, is named. Munger Creek, which enters the project area from the northeast, is the largest intermittent stream and serves as a tributary of East Salt Creek. The drainages that the pipeline would cross by spanning or trenching are identified on Figure 3-4.

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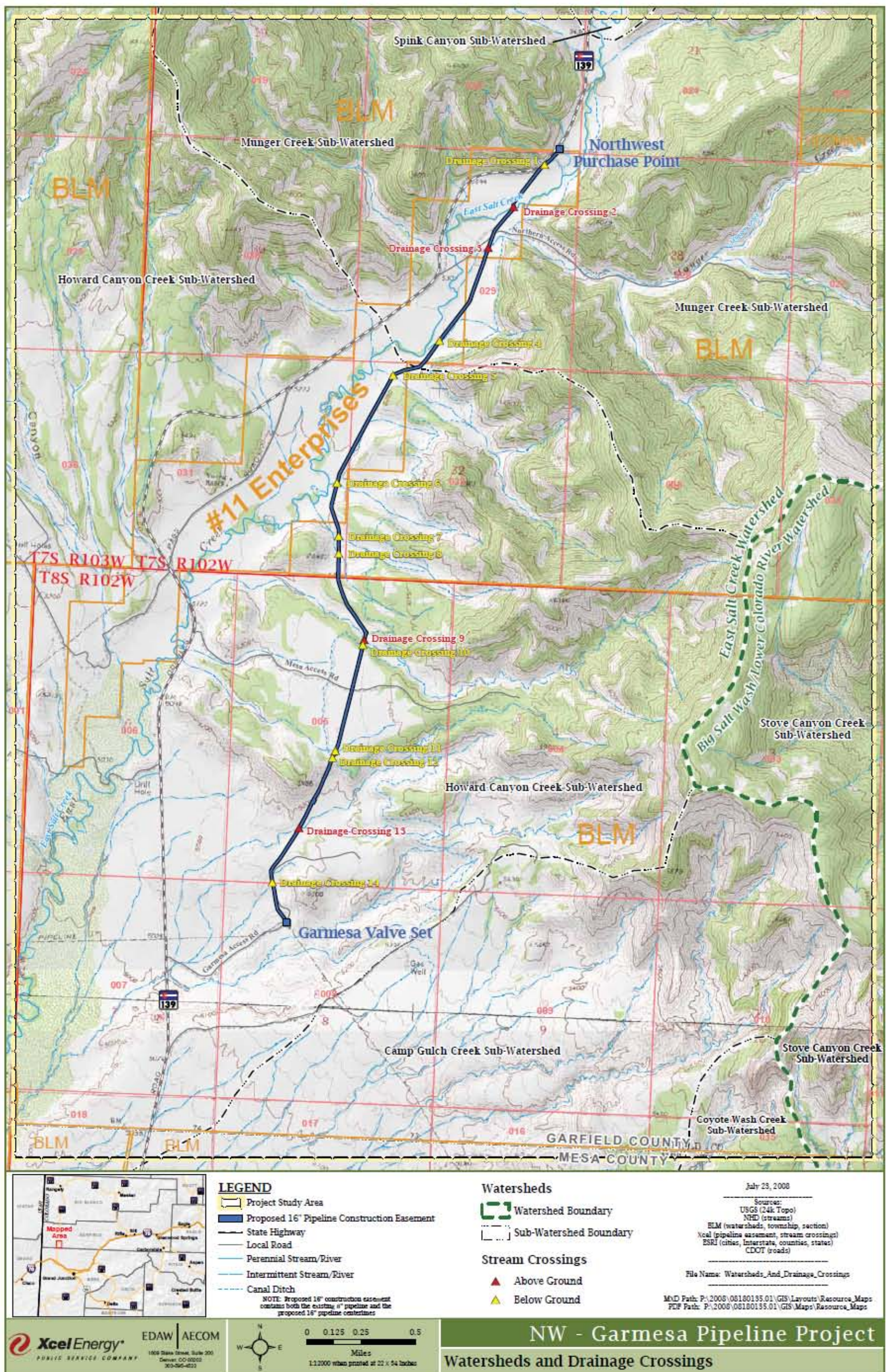


Figure 3-4 Watersheds and Drainage Crossings

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3.10.1.3 Floodplains

Floodplain mapping is not available for the project area, including the East Salt Creek valley, based on a search of Federal Emergency Management Agency (FEMA) mapping (FEMA 2008). Therefore, although 50- or 100-year floodplains may exist in the project area, they have not been mapped. It should be noted, however, that high flows in East Salt Creek have not damaged the existing aboveground 8-inch pipeline since its construction in 1952.

3.10.1.4 General Flow Characteristics and Water Quality Data

The most recent water quality data for East Salt Creek within proximity to the project area were taken from August 15, 1984, to September 11, 1995, above the Government Highline Canal at the following location: SE¹/₄SE¹/₄ Sec. 3, T9S, R103 W., 6th Principal Meridian as shown in Figure 3-5. Water quality readings were collected twice a year in late spring and summer. This station is located approximately 19.4 miles downstream from the proposed crossing site of the 16-inch pipeline across East Salt Creek. Over the course of the 11-year monitoring period, samples were taken between May and September. Table 3-7 lists the water quality data for East Salt Creek. The maximum and minimum flows for East Salt Creek were 34 cubic feet per second (cfs) and 0.25 cfs respectively, with the average daily flow being 4.2 cfs.

Table 3-7:
East Salt Creek Water Quality Data

| Characteristic | Units | Minimum | Maximum | Average |
|-----------------|-------|---------|---------|---------|
| Q | cfs | 0.25 | 34.20 | 4.2 |
| pH_L (pH lab) | SU | 7.60 | 8.50 | 8.0 |
| pH_F (pH field) | SU | 7.05 | 8.60 | 7.9 |
| Temperature | C | 12.0 | 27.0 | 20.9 |
| Conductivity_F | µS/cm | 1000 | 7200 | 3770 |
| Conductivity_L | µS/cm | 900 | 12000 | 4446 |
| Turbidity | NTU | 0.9 | 600.0 | 202.4 |
| Arsenic | µg/L | 0.0 | 0.0 | 0.0 |
| Barium | mg/L | 0.000 | 1.21 | 0.15 |
| Cadmium | µg/L | 0.0 | 9.4 | 0.6 |
| Chromium | µg/L | 0.0 | 5.0 | 0.8 |
| Fluoride | mg/L | 0.180 | 0.510 | 0.346 |
| Lead | µg/L | 0.0 | 55.0 | 3.7 |
| Mercury | µg/L | 0.00 | 0.14 | 0.02 |
| Nitrate | mg/L | 0.150 | 1.530 | 0.647 |
| Selenium | mg/L | 0.000 | 0.010 | 0.002 |

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment

| Characteristic | Units | Minimum | Maximum | Average |
|------------------|------------|---------|---------|---------|
| Silver | µg/L | 0.0 | 0.8 | 0.2 |
| Bicarbonate | mg/L | 100.0 | 577.0 | 325.3 |
| Carbonate | mg/L | 0.00 | 38.00 | 7.1 |
| Potassium | mg/L | 4.80 | 40.00 | 11.2 |
| Color | Co/Pt | 0.0 | 30.0 | 6.5 |
| Hardness | CaCO3 mg/L | 284 | 4550 | 1371 |
| Calcium | mg/L | 67.0 | 322.0 | 164.8 |
| Magnesium | mg/L | 2.00 | 911.00 | 221.1 |
| Sodium | mg/L | 56.50 | 1670.00 | 599.1 |
| Chloride | mg/L | 33.00 | 260.00 | 112.0 |
| Sulfate | mg/L | 350.0 | 5500.0 | 2163.1 |
| Phen_Alk | mg/L | 0.00 | 32.00 | 5.9 |
| Total_Alk | mg/L | 0.0 | 477.0 | 454.9 |
| Dissolved Solids | mg/L | 0 | 8200 | 3211.3 |
| Iron | µg/L | 0.0 | 420.0 | 85.0 |
| Manganese | mg/L | 0.000 | 0.443 | 0.087 |
| Copper | µg/L | 0.0 | 163.0 | 10.9 |
| Zinc | µg/L | 0.0 | 273.0 | 26.9 |
| Molybdenum | µg/L | 0.0 | 17.0 | 5.3 |
| Ammonia | mg/L | 0.000 | 1.530 | 0.424 |
| Phosphate | mg/L | 0.000 | 0.530 | 0.093 |
| Boron | mg/L | 0.000 | 0.472 | 0.163 |
| Aluminum | µg/L | 0.0 | 115.0 | 21.0 |

| | | | |
|-------|-----------------------------|-----------|-------------------------------|
| C | Celsius | NTU | nephelometric turbidity units |
| CaCO3 | calcium carbonate | Phen_Alk | phenol alkaline |
| cfs | cubic feet per second | SU | standard unit |
| Co/Pt | color unit | Total_Alk | total alkaline |
| F | Fahrenheit | | |
| mg/L | milligrams per liter | | |
| µg/L | micrograms per liter | | |
| µS/cm | microsiemens per centimeter | | |

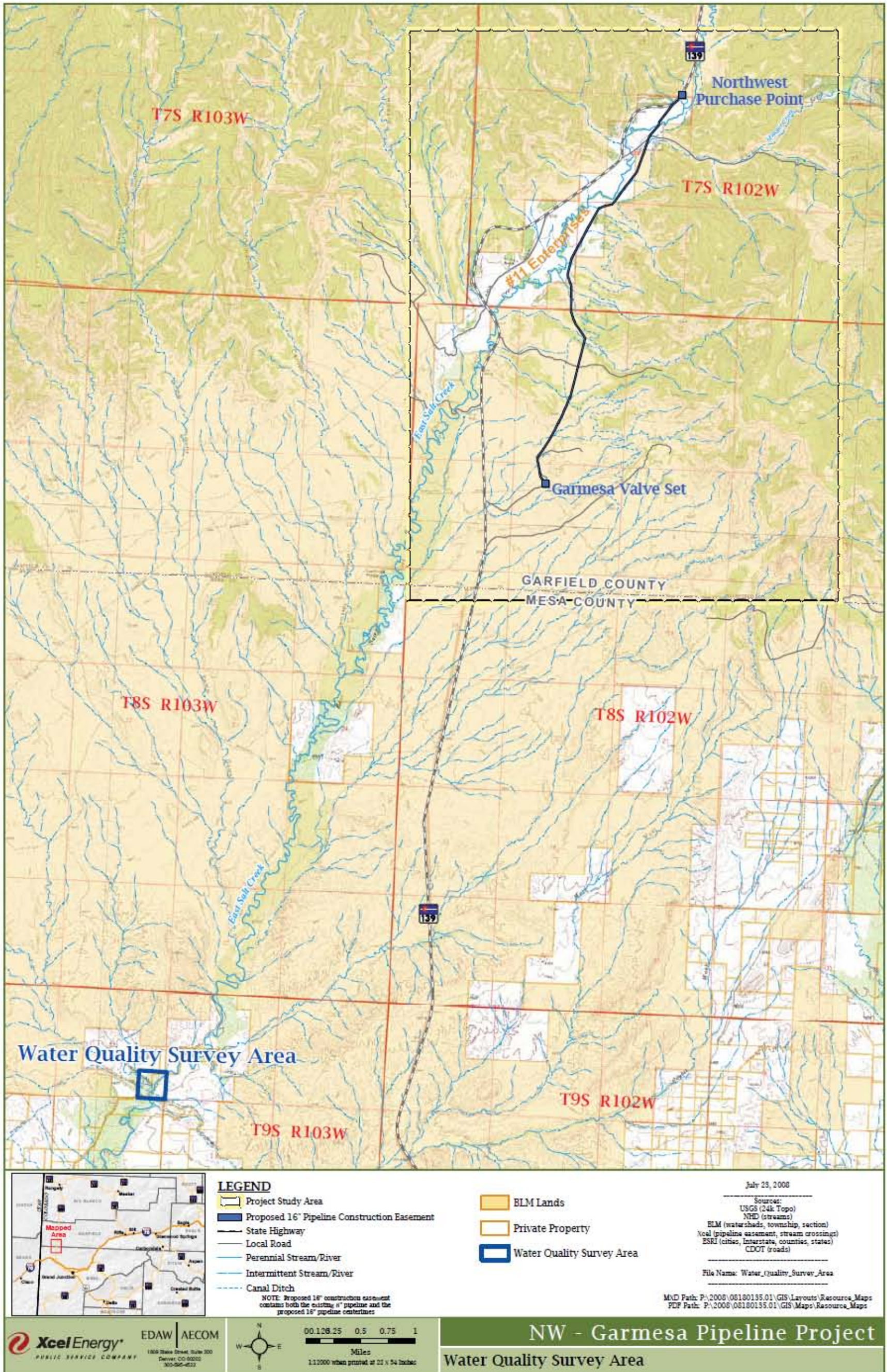


Figure 3-5 Water Quality Survey Area

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3.10.1.5 Stream Classification and Beneficial Uses

States have the primary responsibility for setting water quality standards under the federal Clean Water Act (CWA). Colorado's Water Quality Standards Program is a system based on protection of designated uses, also referred to as classifications. Specific uses (such as aquatic life, agriculture, and recreation) have been established by the CDPHE Water Quality Control Commission and water quality standards (numeric criteria) have been developed to protect those uses. The project area falls under segment 13b of the Lower Colorado River and is designated as "Use Protected." This segment is classified as suitable for aquatic life warm class level 2, recreational class 1a, and agriculture (CDPHE 2008b).

Surface water in the project area is primarily used for stock watering, aquatic and terrestrial life, and agriculture and industrial uses downstream. Stock tanks were observed during site visits.

3.10.1.6 Impairments

As a perennial tributary ultimately feeding the Colorado River from the north, East Salt Creek is listed by the CDPHE Water Quality Control Commission as impaired for selenium with a moderate priority for total daily maximum load (TMDL) development (CDPHE 2008c).

3.10.2 Environmental Consequences

3.10.2.1 No Action Alternative

The No Action alternative would not change existing conditions in the project area in relation to water resources. Potential new impacts from bank disturbance and erosion associated with stream spanning, trenching, and bank grading for pipeline and vehicular crossings would not occur. ROW widening in sensitive erodible soils would not occur. Existing erosion problems associated with the existing 8-inch pipeline and access roads would continue.

3.10.2.2 Proposed Action Alternative

There are no significant aquifers or springs located within the project site area. The nearest springs are an unnamed cluster located near East Salt Creek, approximately 5 miles upstream of the project area.

Public Land Health Standard 5 for Water Quality states that the water quality of all water bodies, including groundwater where applicable, located on, or influenced by BLM lands will achieve exceed the water quality standards established by the state of Colorado.

3.10.2.2.1 Project Termini

The Northwest Purchase Point would be expanded by approximately 15 feet to accommodate additional aboveground piping. This construction would not require the grading of the site, thus

erosion would not be anticipated. The expansion of the Garmesa Valve Set would require the northeasterly fence line to be extended to the north by 4 feet and the entry gates to be reconfigured to accommodate two 15-foot-wide vehicle gates and one pedestrian gate. This construction would require additional grading for relocation of the access road. The existing road and eroded areas caused by the previous construction of the valve set and rectifier bed would be ripped and seeded, and berms would be installed to redirect runoff towards the natural drainage south of the site.

3.10.2.2.2 Drainage Crossings

Three pipeline crossing alternatives were evaluated for drainages in the project area including trenching, directional boring, and spanning. Criteria considered consisted of impacts to vegetation and wetlands, impacts to channels and banks, and feasibility and cost. Vehicle crossings would be required for all drainage along the pipeline route for any of the three pipeline crossing options. These vehicle crossings would require sloping back stream banks and would be a sediment source to the receiving streams due to erosion, ponding, and saturation of the approaches.

Open cutting (trenching) channels would require the banks of the channel to be sloped back to accommodate the trench. If creek flows were present, they would need to be diverted during construction, with sediment controls installed. Following construction, the banks would be reconstructed to original contours as much as possible. Reconstruction and stabilization would be difficult for drainages that have deep and vertical banks, particularly East Salt Creek and Munger Creek. A USACE Nationwide Permit #12 would be required for the work. Trenching may be a good option for drainages with shorter sloped banks.

Directional boring under drainages would minimize impacts to stream banks if properly done, compared to the other two methods discussed. Boring would require two bore pits be constructed on each side of the channels. Due to the inflexibility of the 16-inch pipe, the bore would need to be greater than 500 feet long. Boring would require a slurry, consisting of water and bentonite clay, to lubricate the drilling. The slurry is typically retrieved by a vacuum truck. This slurry can be problematic given the soil conditions. If the slurry breached the ground surface and/or the channel, the sandy soils would offer little assistance, thus introducing sediment into the waterway and potentially affecting fish and plant resources. If the breaching occurred and could not be adequately rectified, another crossing option may have to be explored. In addition, excavation would have to occur close to the top of the banks to align the new pipeline with the existing pipeline. This work could result in compromising the bank.

For spanning, a trench would be constructed from both sides of the channel and would require the least amount of vegetation removal compared with the other two pipeline crossing methods. No work would extend into the riparian wetland along the water edge. The spanning would not require any additional supporting appurtenances and the existing support remnants for the 8-inch pipeline spanning East Salt Creek would be removed. Although it is possible that debris washing down the channel could damage the pipeline, the existing 8-inch pipeline has crossed the channel

for more than 45 years without being damaged by such debris. This, however, is not indicative of future events, particularly as the watershed becomes more developed over time, resulting in a flashier hydrograph (higher peak flows over a shorter duration). Earthwork would be required with the spanning crossing method, but it would be less than for other alternative crossing methods.

Of the drainages that would be crossed by the new 16-inch pipeline East Salt Creek and Munger Creek would be spanned in order to minimize potential environmental impacts (to vegetation, wetlands, or prominent channel/bank features) that would otherwise occur if open trenching or directional boring techniques would be used. Two unnamed drainages (#9 and #13) would be trenched if approved by the USACE, otherwise they would be spanned. These crossings are identified in Figure 3-4 and the measurements of these crossing listed in Table 3-8. Trenching methods would be used for all of the other drainages crossed by the proposed pipeline. Trenching is considered the best technique for these drainages that have smaller channels, less prominent banks, and intermittent or ephemeral flow patterns.

Table 3-8:
Drainage Crossing Measurements

| Drainage | Span Length (feet) | Span Height (feet) |
|--------------------------------------|-------------------------------|-------------------------------|
| Unnamed Drainage #1 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #2: East Salt Creek | 111 | 10+ |
| Unnamed Drainage #3: Munger Creek | 158 | 12 |
| Unnamed Drainage #4 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #5 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #6 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #7 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #8 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #9 | 74 or Trench | 4 or Trench |
| Unnamed Drainage #10 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #11 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #12 | N/A—Trench | N/A—Trench |
| Unnamed Drainage #13 | 117 or Trench | 7 or Trench |
| Unnamed Drainage #14 | N/A—Trench | N/A—Trench |

Potential impacts to water quality from pipeline spanning and trenching of drainage crossings include increased sediment loads and bank erosion and destabilization. Flood events have the potential to damage the exposed spanned pipeline and affect the channel if debris collects along the pipeline. If pipeline integrity were damaged along an exposed section, natural gas would enter the spanned creeks (East Salt Creek, Munger Creek, and drainages #9 and 13), affecting downstream aquatic life, agriculture, and other water users. These effects would be short-term during project construction and long-term over the lifetime of the pipeline.

3.10.2.2.3 Other Surface Disturbances

Potential impacts to water quality from other project surface disturbances (besides pipeline crossings) include increased sediment loads in area streams and drainages because of increased erosion from proposed construction activities and long-term erosion caused by disturbance to vegetation, ground contours, and ground cover. Potential impacts also include fuel spills, soil compaction, bank destabilization, and channel changes. Erosion and other protection measures would be implemented for both the Proposed Action and for the existing 8-inch pipeline as discussed in Section 3.11 and in Section 3.10.3 below. Surface disturbances associated with this project are anticipated to have minimal impacts to water quality with the implementation of protection measures. Implemented BMPs and SWMP practices would prevent any additional sediment from entering the surface or subsurface waters in the project area. No significant increase in impervious surface area would occur from the project. Permanent or temporary impacts to water resources as a result of construction or operation of this project would be minimized because specific construction and permanent BMPs would be implemented as described in the SWMP (URS 2008) and in the Mitigation Measures section below. The highest potential for water quality impacts would occur during construction, particularly the trenching and spanning of streams. Once reclamation, including recontouring and native seeding, was successfully implemented, sediment and other pollutant input into affected streams would decrease significantly. BMPs should be properly maintained and remain in place until stabilization occurred, at which point all BMP materials should be removed. The permanent impacts that could occur from the project would be related to the erosion from stream crossings (pipeline and vehicles) and from the erosion that would occur from the erosive hill on the south end of the mesa. BMPs would help with impacts from the construction phase, but they would not mitigate the permanent impacts.

The pipeline would be buried deep enough to avoid problems with irrigation ditches, canals, potential irrigation areas, existing pipelines and drainages. In rocky areas, a minimum cover of 24 inches would be provided. In areas adjacent to or crossing access roads, the pipeline would be buried with a minimum of 4 feet of cover in alluvial areas and 3 feet of cover in rocky areas, unless the road crossing is within a drainage.

One area of particular concern to water quality, in addition to the stream crossings, is a hilly area of highly erosive soils on the descent from the mesa, in the southwest quarter of Section 5. The existing eight-inch pipe is exposed in numerous locations along this segment, with extensive rilling and gully formation ongoing. Cutting into the hills on the west to accommodate the

proposed sixteen-inch pipe would exacerbate the existing erosion and create a larger disturbance footprint. Existing vegetation is sparse, soils are sugary, and reclamation along this segment would be extremely difficult. Sediment production, along with salinity and selenium levels, would be high in this section of route.

The proposed sixteen-inch natural gas pipeline would add to the pipeline infrastructure including crossings and access roads within the East Salt Creek watershed, which flows south across the Grand Valley to the Colorado River. Cumulative impacts to water quality at the landscape level include the primary and nationally significant pollutants of sediment, salinity, and selenium, to which this project would contribute to in the cumulative sense. This project adds to surface disturbance, soil erosion, weeds, habitat fragmentation, and other resource impacts that directly or indirectly negatively impacts water quality. To the extent that the existing erosion problems with the existing eight-inch pipeline are addressed by the proposed project, through reshaping, soil cover, and/or re-seeding, water quality would benefit.

Finding on Public Land Health Standard 3 for Water Quality:

Currently this stream segment is listed as impaired for selenium, signifying that pollution levels exceed the State standard for selenium. Thus Standard Five is not being achieved. Anthropogenic influences on selenium pollution are likely minor compared with the natural geologic and soil influence from the Mancos shale, however, cumulative surface disturbing activities contribute to the watershed level degradation.

3.10.3 Mitigation Measures

The proposed construction of the pipeline consists of surveying the centerline, removing vegetation, removing and stockpiling topsoil, excavating a trench, laying pipe sections along the trench, welding the pipe, lowering the pipe into the trench, backfilling the trench, pressure testing the pipe with nitrogen, replacing topsoil and topsoil stabilization, and recontouring. Following construction, the area would be revegetated where vegetation was removed, the drainage banks stabilized, and the areas that were altered during construction would be recontoured. Mitigation measures for erosion prevention and sedimentation control include erosion control blankets, soil compaction or soil ripping as appropriate and reseeded. These measures would minimize temporary and long-term impacts from the project.

The type and number of BMPs would vary by location based on the most likely impacts to the nearby water resources. Structural and nonstructural BMPs for erosion and sediment control are listed in Appendix B. Detailed explanations of these Operator Committed Design Features or BMPs, their installation, implementation, and maintenance specifications can be found in the Stormwater Management Plan (SWMP) (URS 2008), which was prepared for the project area in compliance with CDPHE Water Quality Control Division under the guidelines of the CWA. It provides in-depth discussion of stormwater management controls, restoration and final stabilization, inspections, maintenance, and SWMP requirements.

Site-specific mitigation measures to prevent erosion and sedimentation would be implemented at each drainage crossing. The SWMP would include control measures such as straw wattles, silt fences, earthen berms, temporary swales and grading, vegetative buffer strips, and dust control. To the greatest extent possible, construction crew activity to install and connect the pipeline segments would be limited within a 50-foot buffer surrounding East Salt Creek, Munger Creek, and other defined drainages. Implementation of BMPs would minimize erosion problems and potential sediment loading into drainages in the area.

Mitigation Measures:

- Berms and re-graded areas at the Project Termini should be seeded and mulched. Outlet protection (rock armoring) should be in place where stormwater would enter the drainage to minimize erosion and rilling.
- Soil erosion and rilling associated with or caused by the existing 8 inch pipeline would be repaired, with mineral and top soil and reseeded to cover exposed pipeline surfaces, during the construction of the 16-inch pipeline. Proper maintenance of both the 16 and 8 inch pipelines would be required to repair, prevent, and minimize soil erosion associated with the pipelines.
- Vehicle fueling would consist of vehicle-to-vehicle transfers along the pipeline with no bulk fuel storage on site. No refueling would occur within 100 feet of any stream or drainage, from perennial to ephemeral. Fueling vehicles would be equipped with spill kits and fire extinguishers and personnel would be properly trained in spill prevention, control, and countermeasures. No vehicle maintenance would occur on site. Waste from construction activities would be collected, hauled away, and disposed of in an approved manner.
- BMPs should be properly installed and maintained. They would be promptly removed after construction and successful reclamation and stabilization, in accordance with the Stormwater Management Plan.
- Culverts should be designed for the 25 year flood at a minimum. Culverts would be installed of the gauge, materials, diameter(s), and length(s) as indicated and approved by BLM. Culverts would be free of corrosion, dents, or other deleterious conditions. Culverts would be placed on channel bottoms on firm, uniform beds which have been shaped to accept them and aligned to minimize erosion. Backfill would be thoroughly compacted. No equipment would be routed over a culvert until backfill depth is adequate to protect the culverts.

3.11 Soils

3.11.1 Affected Environment

Soil types as shown in (Figure 3-6) in the project area are dominated by Panitchen loam (E in Figure 3-6), Mesa-Avalon complex (D in Figure 3-6), Badland (A in Figure 3-6), and Cameo fine sandy loam (B in Figure 3-6). Rock outcrop-Torriorthents complex soils also enter into the project area in a few locations. Project area soils are described in Appendix C based on Natural Resources Conservation Service (NRCS) soils mapping information (NRCS 2000) and summarized in Table 3-9.

Table 3-9:
Soil Types in the Project Area

| Soil Type | Slope | Available Water Capacity | Salinity | Drainage | Calcium Carbonate | Percentage in Project Area |
|-----------------------|--------|--------------------------|---------------------------|--------------|-------------------|----------------------------|
| Badland | 10–65% | Very low | NA | | NA | 15% |
| Cameo fine sandy loam | 1–6% | Moderate | Non to slightly | Well drained | 15% maximum | 11% |
| Mesa-Avalon Complex | 3–12% | | | | | 18% |
| Mesa | | Moderate | Very slight to moderate | Well drained | 40% maximum | |
| Avalon | | Moderate | Non to slightly | Well drained | 40% maximum | |
| Panitchen Loam | 1–6% | Moderate | Very slightly to slightly | Well drained | 15% maximum | 50% |
| Youngston Loam | 1–6% | High | Non to slightly | Well drained | 15% maximum | 6% |

The existing 8-inch pipeline and the ROW comprise 24.86 acres. Given the generally high water erosion hazards for the area soils, the sparse vegetation, and arid climate, there are numerous erosion problems associated with the existing pipeline. As the existing pipeline alignment leaves the East Salt Creek valley and begins to traverse BLM lands, the topography becomes hilly before dropping into a small valley. There are numerous locations in this area where the existing 8-inch pipeline is exposed. Water erosion has caused head-cutting in area drainages producing gullies leading to the exposure of the pipeline as shown in Figure 3-7. Figure 3-8 shows how the existing 8-inch pipeline has been exposed because of head-cutting.

Figure 3-9 shows exposure of the existing 8-inch pipeline where it traverses a hill or mesa. The photograph also documents that vegetation was not able to reestablish following the pipeline construction in this area.

Figure 3-10 shows the existing 8-inch pipeline exposed along a flat stretch of terrain near an ephemeral drainage crossing.

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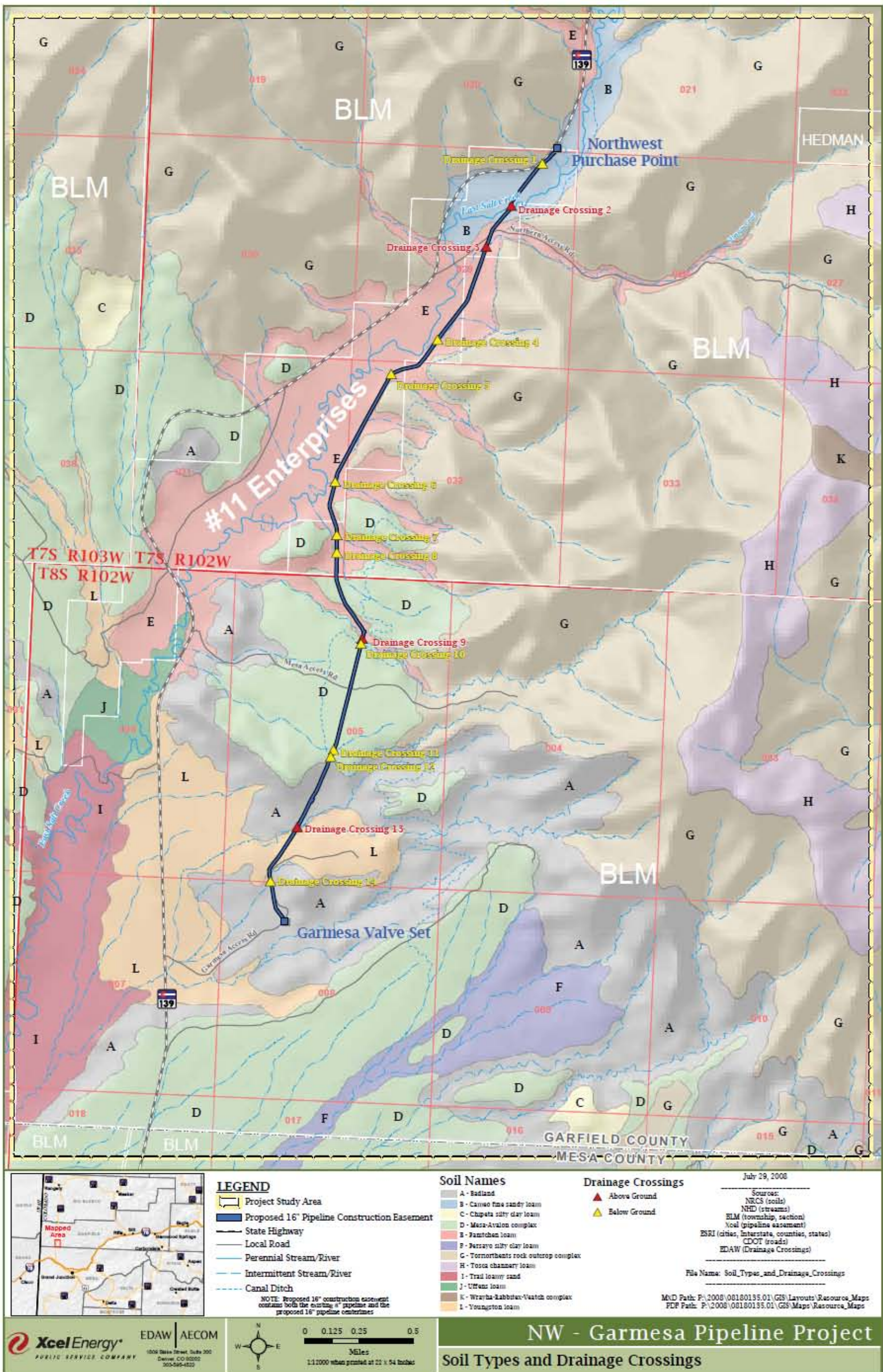


Figure 3-6 Soil Types and Drainage Crossings

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Figure 3-7: Exposure of the Existing 8-Inch Pipeline from Water Erosion



Figure 3-8: Headcutting and Gully Erosion in Drainage Areas—Existing 8-Inch Pipeline



Figure 3-9: Existing 8-inch Pipeline Exposure and Disturbed Area



Figure 3-10: Exposure of Existing 8-Inch Pipeline

In general, erosion problems are present in areas of all soil types in the project area. The erosion issues are primarily associated with drainage crossings, gully formation, and steep slopes. Areas of relatively flat terrain, however, can also be susceptible to pipeline exposure if native vegetation has not reestablished on the disturbed areas.

3.11.2 Environmental Consequences

3.11.2.1 No Action Alternative

Under the No Action Alternative, additional impacts to soils would not occur. The existing 8-inch pipeline would continue to be influenced by area erosive actions.

3.11.2.2 Proposed Action Alternative

Impacts to soils would be minimized because components of the Proposed Action would be located in previously disturbed areas associated with the existing 8-inch pipeline and be revegetated. Grading in the construction area could require slope cutting and some degree of tree removal. As appropriate, construction activities would be adjusted to provide reasonable bank protection.

The proposed pipeline construction ROW would encompass a total area of 42.21 acres. Grading and trenching in the construction corridor would require slope cutting and some degree of tree removal. Twelve drainages and two canals would be crossed by the proposed pipeline. The new permanent ROW centerline is proposed to be centered between the existing 8-inch and new 16-inch pipeline and covers 11.01 acres on private lands and 13.70 acres on BLM lands. A 25-foot wide temporary construction area is needed along the eastern edge of the entire permanent pipeline ROW and covers 5.91 acres on private lands and 7.02 acres on BLM lands. Four turnaround areas are also needed on BLM lands and would extend lengthwise and to the east from the outside edge of the temporary construction ROW. Two Temporary Use Permits, two permanent ROW amendments, and one new road ROW are needed for the four existing roads, partially or completely located on public land covering 2.53 acres, for access to the project corridor. The total project area located on BLM lands is summarized as follows:

| | |
|--------------------------------------------|-------------|
| Permanent amended grant 05006 pipeline ROW | 13.70 acres |
| Permanent amended grant 05006 access ROW | 2.04 acres |
| Temporary construction ROW | 7.02 acres |
| Temporary and Permanent access roads | 2.53 acres |

Use of these BLM ROWs result in the following estimated ground disturbance:

| | |
|------------------------------------------------|-------------|
| Previously disturbed, not disturbed by project | 4.11 acres |
| Previously disturbed, disturbed by project | 14.16 acres |
| Previously undisturbed, disturbed by project | 7.02 acres |

There are numerous areas of the project where headcutting is taking place in association with ephemeral drainages and as a result of gully formation in highly erosive soils. There is the possibility of the pipeline being exposed as a result of soil erosion following a large storm event with heavy intense rainfall. The portions of the pipeline with the highest potential for substantial erosion and head-cutting following surface disturbance are those found in the Badland soil type. If steep slopes are not properly compacted and reclaimed, then substantial erosion or slope failure could cause damage to the existing and proposed pipeline. Disturbing or removing vegetation can also contribute to additional soil instability and erosion problems and provide opportunities for invasive species. Erosion can also cause exposure of the pipeline along steep slopes as a result of storm events and lack of vegetative ground cover. Disturbance from the pipeline construction activities could expose soils to wind and water erosion. This disturbance could indirectly cause accelerated wind and water erosion, resulting in an undetermined loss of surface soils, thereby reducing soil and vegetation productivity.

Impacts to soil would be minimized because components of the Proposed Action would be located primarily in previously disturbed areas associated with the existing 8-inch pipeline. Also, the existing corridor generally avoids steep slopes wherever feasible. Minimizing disturbance on slopes greater than 40 percent is a BLM Soil Management Objective (BLM 1987). The 25-foot area on the western side of the existing 8-inch pipeline would not be disturbed by construction activities. The Proposed Action includes mitigation measures for the existing 8-inch pipeline, the proposed 16-inch pipeline, as well as access roads as described in the section below.

Grading in the construction area could require slope cutting and some degree of tree removal. The existing 8-inch pipeline is exposed along a substantial portion of this slope and would be covered and reseeded during construction of the project.

3.11.3 Mitigation Measures

The applicant should provide satisfactory reclamation of all sites disturbed by any surface disturbing activity. This would include installation of erosion control devices, surface recontouring, soil de-compaction, surface roughening, and re-seeded with a mix approved by BLM. All of the exposed sections of the existing 8-inch pipeline should be covered and revegetated during construction and reclamation of the proposed pipeline.

As part of the required reclamation, all disturbed areas should be seeded with a seed mixture suitable to specific site conditions. This mixture should be approved prior to reclamation by BLM AO. The seed mix should include native bunch grasses, forbs, and shrubs that are similar to natural conditions that best suit the soil types and early serial stage. Sterile annual grasses should be used at ½ the recommended seeding rate on steep highly erosive slopes and on any cut and fill slopes of roads. All seed mixtures should be certified to be weed-free. Certification and seed tags with application rates are for pure, live seed (PLS) should be submitted to the BLM AO within 30 days of seeding.

The seedbed should be prepared by contour cultivating and ripping the surface four to six inches deep. Seeding should occur within 24 hours of ripping the soil surface and replacing the top soil. Seeding should occur after September and before the soil is frozen. If seeding cannot be completed in the fall, then seeding should occur in the early spring after soils thaw and are dry enough to minimize compaction. All seed applied with a drill seed should be placed at the appropriate depth or on the surface if necessary. Where seed cannot be drilled or if directed by the AO broadcast seeding should be used. Broadcast application should be used at twice the recommended application rate. The seed bed should be prepared by surface ripping followed by the placement of topsoil, the scattering of shredded shrubs and trees, and the scattering of rocks prior to broadcast seeding. Surface rock that was removed during surface scrubbing and clearing shall be scattered back across the ROW to mimic natural conditions to the greatest extent possible. Disturbed portions of the ROW surface shall be left rough and not smoothed with pocking and dips/rises of 2 inches or greater to help facilitated seed germination and seedling survival. If seeding efforts are not determined to be successful by the AO, then soils should be seeded again at the appropriate time of year until successful revegetation is achieved.

Travel should be restricted on steep slopes and fragile highly erosive soils (i.e. badland) during wet conditions and limited to the greatest extent possible to reduce rutting and damage. When saturated soil conditions exist or soil rutting of 4 inches or greater occurs on or along the ROW, all activities should be halted until soil material dries out sufficiently before construction, reclamation, and maintenance activities proceed to reduce damage and erosion on the ROW. Construction and maintenance activities on the ROW during the winter should not be allowed without the approval of a winter construction plan.

Topsoil should be conserved and segregated from mineral soil during excavation and reused as cover on disturbed areas to facilitate re-growth of vegetation. Topsoil should only be used for reclamation and should not be used to bed or pad the pipe during backfilling. Specific mitigation measures to avoid and prevent soil erosion and preserve topsoil in the project area are included in the SWMP (URS 2008).

All of the appropriate mitigation measures such as BMPs should be in place prior to any earth-disturbing activity to reduce resource damage. The applicant should construct water bars, kicker dikes, or use the pocking technique to roughen the soil surface on steep slopes to reduce erosion. The water bars or dikes should be constructed across the full width of the disturbed area and removed following successful slope stabilization and revegetation. All disturbed areas should be recontoured to blend with the natural topography to the satisfaction of BLM within 30 days of project completion or cessation of construction activity. Additional BMPs could be included as determined by BLM. All BMPs should be removed once site stabilization and reclamation efforts have been deemed successful by the BLM AO.

Sixty days prior to termination of the ROW, the proponent should contact BLM to arrange a joint inspection of the ROW. A termination and rehabilitation plan shall be completed and submitted for approval following the inspection meeting. This plan should describe facility removal, recontouring, soil preparation and treatments, storm water BMP removal, and seeding. BLM

should approve the plan in writing prior to the proponent's commencement of any termination activities.

Finding on Public Land Health Standard 1 for Upland Soils:

This project complies with Standard 1 of the approved standards for public land health. No long-term cumulative impacts on soil health are anticipated from the Proposed Action. Use of the proposed mitigation measures identified below would substantially reduce short- and long-term impacts on soil health.

3.12 Environmental Justice

3.12.1 Affected Environment

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations (defined as those living below the poverty level). The environmental justice study area includes the county where the Proposed Action is located.

The study area examined three census block groups are located in southern Garfield County (see Table 3-10). According to the U.S. Census (2000), which is the most recent year for which population data by race are available, minorities comprise 17.2 percent of the population in the state of Colorado, 19 percent of the population in Garfield County, and 6.4 percent of the population in the immediate study area. According to the 2000 census, persons in poverty comprise 3 percent of the population in Colorado, 7.5 percent of the population in Garfield County, and 7.9 percent of the population in the immediate study area. The Colorado median household income in 2000 was \$47,230, the median income in Garfield County was \$47,016, and the average median income in the study area was \$40,131. There are no Indian reservations in or near the project area.

Table 3-10:
Minority and Poverty by Block Group (2000)

| County | Block Group Number | Total Population | Minority Population | Median Household Income | Number of People below Poverty Level | Poverty Percent | Minority Percent |
|--------------|--------------------|------------------|---------------------|-------------------------|--------------------------------------|-----------------|------------------|
| Garfield | 1540 | 1,150 | 161 | \$32,875 | 147 | 12.9 | 14.0 |
| Mesa | 2344 | 1,972 | 52 | \$39,602 | 107 | 5.4 | 2.6 |
| Mesa | 2346 | 1,283 | 70 | \$47,917 | 96 | 7.5 | 5.5 |
| Total | | 4,405 | 283 | \$40,131 | 350 | 7.9 | 6.4 |

Source: U.S. Census (2008)

3.12.2 Environmental Consequences

3.12.2.1 No Action Alternative

The No Action Alternative would not result in a disproportionately high and adverse human health or environmental impact on minority populations, low-income populations, or Indian tribes.

3.12.2.2 Proposed Action Alternative

EPA provides a framework for the identification and assessment of significance of environmental justice concerns. A two-step process defines significance criteria for concerns, either of which, if unmet, indicates that environmental justice effects are not likely to be present:

- Does the potentially affected community include minority and/or low-income populations?
- Are the environmental effects likely to fall disproportionately on minority and/or low income members of the community and/or tribal resources?

The racial composition of the population in Garfield County and for the block groups in the immediate project area contains a lower portion of minority populations and Indian tribes than Colorado as a whole. Although the immediate study area contains a somewhat higher portion of persons in poverty than Colorado as a whole, the percentage is comparable to the poverty percentage in Garfield County as a whole. Therefore, the Proposed Action would not result in a disproportionately high and adverse human health or environmental impact on minority populations, low-income populations, or Indian tribes.

3.12.3 Mitigation Measures

There are no mitigation measures identified for environmental justice.

3.13 Socioeconomics

3.13.1 Affected Environment

This section describes the social and economic characteristics of the study area, defined here as Garfield and Mesa counties, and the Grand Junction area in western Colorado. Grand Junction, located in Mesa County, was included in the analysis because it is the closest large city having many options in housing and basic services. Within Garfield County, the city of Rifle and the town of Parachute are the closest communities to the study area.

Social and economic impacts associated with the project may be caused by employment and spending related to construction and operation of the proposed project and through temporary effects to the local housing supply. This section focuses on the current and past levels of the following indicators: population, employment, income, and housing.

3.13.1.1 Population

The population trends for the study area are summarized in Table 3-11. Since 1990, the population for Garfield County has experienced a steady growth rate. In 2007, there were an estimated 53,631 residents in Garfield County, which has increased from its 2000 population of 43,791 by 18.3 percent. Between 1990 and 2000, the population in Garfield County increased dramatically by 32 percent. According to population forecasts conducted by the Colorado Division of Local Affairs (DOLA 2008), Garfield County is expected to reach 64,097 residents by 2010. The numbers of residents in Parachute and Rifle have also experienced large growth rates, increasing from 658 and 4,636 persons, respectively, in 1990 to respective 1,006 and 6,784 residents in 2000.

Table 3-11:
Study Area Population

| Area | 1990 | 2000 | 2010 ^a |
|-----------------|--------|---------|-------------------|
| Garfield County | 29,974 | 43,791 | 64,097 |
| Parachute | 658 | 1,006 | NA |
| Rifle | 4,636 | 6,784 | NA |
| Mesa County | 93,145 | 116,255 | 150,504 |
| Grand Junction | 29,034 | 41,986 | NA |

Source: U.S. Census (2008)

^a Estimated July (DOLA 2008)

NA Not available

Mesa County is the largest population and economic center in western Colorado. According to the Colorado Department of Local Affairs (DOLA 2008), 38 percent of the county's residents live in Grand Junction, the county seat as well as the region's largest city and employment hub for surrounding towns and counties. The city of Grand Junction grew by 44.6 percent from 1990 to 2000. State projections are not available for municipalities. According to the Grand Junction Area Chamber of Commerce (Grand Junction Visitor and Convention Bureau 2008b), the 2008 Mesa County population is 130,417 and the population of Grand Junction is 48,141

Most significantly, Mesa County has experienced growth beyond previous Colorado Division of Local Affairs state projections as a result of the greatly increased oil and gas development that is ongoing in the area. As described in the Purpose and Need section, this previously unexpected increase in population has precipitated the immediate need for the Proposed Action to serve local natural gas demands.

3.13.1.2 Employment and Income

In 2000, the unemployment rate in Mesa County was higher than the state average (see Table 3-12). By 2000, the county's unemployment rate (3.3 percent) fell below the national average (4.0 percent), but remained above the state average (2.7 percent). The town of Parachute has the lowest unemployment rate, with only 2.1 percent of its labor force not employed. In 2007, the median family income in Mesa County was \$49,800 (HUD 2007), up considerably from the 2000 median income. The average household income for Grand Junction is \$50,600 for 2008 (Grand Junction Visitor and Convention Bureau 2008b).

Table 3-12:
Study Area Employment and Income (2000)

| Area | Employment (in labor force) | Unemployment Rate (percent) | Median Household Income |
|-----------------|-----------------------------|-----------------------------|-------------------------|
| Garfield County | 23,562 | 2.7 | \$47,016 |
| Parachute | 479 | 2.1 | \$31,208 |
| Rifle | 3,678 | 3.0 | \$42,734 |
| Mesa County | 58,382 | 3.7 | \$35,864 |
| Grand Junction | 21,149 | 3.7 | \$33,152 |
| Colorado | 2,286,203 | 3.0 | \$47,230 |

Source: U.S. Census (2008)

3.13.1.3 Temporary Housing

Temporary housing in the study area consists of available vacant housing units, as well as, motels and campground facilities. Table 3-13 documents vacant housing according to the 2000 U.S. Census. Mesa County had 2,604 vacant units and the city of Grand Junction reported 919 of these. It is likely that the majority of vacant housing in Garfield County is centered in more populated areas beyond convenient driving distance of the study area.

Table 3-13:
Housing Occupancy

| Housing Type | Mesa County | | Garfield County | | Grand Junction | |
|-----------------------------------------------|-------------|---------|-----------------|---------|----------------|---------|
| | Units | Percent | Units | Percent | Units | Percent |
| Total housing units | 48,427 | 100.0 | 17,336 | 100.0 | 18,784 | 100.0 |
| Occupied housing units | 45,823 | 94.6 | 16,229 | 93.6 | 17,865 | 95.1 |
| Vacant housing units | 2,604 | 5.4 | 1,107 | 6.4 | 919 | 4.9 |
| For seasonal, recreational, or occasional use | 508 | 1.0 | 484 | 2.8 | 71 | 0.4 |

Source: U.S. Census 2000

Grand Junction has more than 35 motels listed in the Chamber of Commerce and in the Grand Junction Visitor and Convention Bureau directories, including numerous major chains. One commercial campground and two commercial RV parks are located in the general area (Grand Junction Visitor and Convention Bureau 2008a). There are two state parks (James M. Robb-Colorado River and Highline Lake) in the study area that include campground facilities.

Although the summer season is the primary tourist season in the study area, the fall season also draws tourists for various events. Information from the Grand Junction Visitor and Convention Bureau (2008a) indicates there are several summer events anticipated in the Grand Junction area during May and June.

3.13.1.4 Infrastructure and Community Services

The nearest public service facilities and retail opportunities are located in Grand Junction as are the two nearest hospitals—St. Mary’s Hospital and Community Hospital—and the Grand Junction Regional Airport. As the county seat, Grand Junction is the center of governmental activity in Mesa County. Restaurants in Grand Junction are numerous and include a wide variety of venues from fast food chains, lunch and dinner sit-down chains, to local establishments.

3.13.2 Environmental Consequences

3.13.2.1 No Action Alternative

With No Action, there would be no benefit to local businesses during project construction from worker spending or from spending for construction supplies and services. More significantly, without the Proposed Action, there would be no long-term benefit to the greater Grand Junction area from the additional natural gas service. There would be a projected negative impact due to insufficient natural gas supply during the cold winter conditions as described in the Purpose and Need section.

3.13.2.2 Proposed Action Alternative

The construction phase is anticipated to take 10 to 12 weeks and would be scheduled for completion prior to July 2009. At its peak, the construction is anticipated to include roughly three crews for an approximate total of 52 employees. Work would be performed from 7:00 a.m. to 5:30 p.m., seven days a week.

Social and economic concerns would be limited primarily to compensation to affected landowners for easements to support ROWs and any temporary effects to private property and BLM land resulting from construction activities. Workers needed to construct the proposed project are anticipated to camp at authorized facilities or use motel facilities in the Grand Junction area. Since construction would take place outside the peak summer tourist season, it is expected that sufficient temporary housing would be available in the Grand Junction area.

Temporary indirect benefits during construction would include local expenditures from construction workers for food and services, possible increased employment, and some local expenditure for construction materials and services. However, the time to construct the proposed project is limited and temporary effects to the local economy and to public services are expected

to be very minor, although there would be small benefits to the local economy. The Proposed Action would have an overall long-term beneficial impact to the greater Grand Junction area by providing necessary additional natural gas service to accommodate the growing population during especially cold winter conditions.

3.13.3 Mitigation Measures

There are no mitigation measures for socioeconomics.

3.14 Hazardous Materials

3.14.1 Environmental Consequences

Based on searches of available hazardous materials databases described below, no contaminated sites are indicated to be present in the proposed pipeline area. In addition, no observable evidence of contamination issues was found based on several site visits and field surveys performed during June and July 2008. A search of the EPA Envirofacts Multisystem (2008) did not yield any state or federal regulated facilities within 1 mile of the project corridor. This includes permitted discharges to water, hazardous waste handlers, Superfund sites, and air releases. The National Response Center ERNS database was also queried for spill incidents in Garfield County (NRC 2008). A summary of incidents on Colorado Highway 139 and associated with gas pipelines is provided in Table 3-14. The De Beque Compressor station building was destroyed by a fire in 1993 and an oil spill during tank filling was reported at the station in 1998. Other spills are related to tanker truck accidents on Colorado Highway 139. The only voluntary cleanup site listed on the CDPHE's Voluntary Cleanup Program list is located in Rifle (CDPHE 2008a).

3.14.2 Environmental Consequences

A Hazardous Materials Summary pursuant to BLM Instruction Memoranda Numbers WO-93-344 and CO-97-023, which require all NEPA documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed as a result of the proposed project (BLM 1998, 1997) is incorporated by reference and available upon request from BLM.

Soil contamination along the pipeline route could result from at least two sources: material spills during construction and trench excavation through existing contaminated areas. The proposed pipeline corridor is in a rural area and no existing contamination issues have been identified. Although exploratory oil and gas drilling has taken place near the project corridor, no existing wells are present in the area. No spill incidents are documented in association with the existing 8-inch pipeline or the Garmesa valve set. Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could impact soils. Temporary impacts associated with hazardous materials involve possible spills and effects to area soil, surface and groundwater during the construction phase of the Proposed Action. Long-term impacts from hazardous materials would be associated with spills and releases during operation and maintenance of the proposed project.

Table 3-14:
Spill Incidents—Colorado Highway 139 and Gas Pipeline Related

| Description of Incident | Type of Incident | Incident Cause | Incident Date/Time | Location | Suspected Responsible Company | Medium Affected | Material Name |
|----------------------------------------------------------------------------------------------------------------|------------------|--------------------|---------------------|-------------------------------|---------------------------------|-----------------|-----------------------------------|
| Tank Truck/Overturned | Mobile | Transport Accident | 12/15/1992 17:30 | Highway 139 | Monument Oil Co | Land | Gasoline: Automotive (4.23G PB/G) |
| Compressor Fire on an 8 inch Pipeline/unknown cause, under investigation. Compressor building was destroyed | Pipeline | Unknown | 8/5/1993 6:07 | De Beque Compressor Station | Rocky Mountain Natural Gas | Air | Natural Gas |
| Tractor Trailer/Truck rolled over on its side due to a jeep running into the drive tires of the tractor | Mobile | Transport Accident | 3/18/1998 12:00 | Highway 139 Milepost 39 | Wescourt Distributing | Unknown | |
| Compressor was filling a makeup tank and was left on, causing an overflow/tank capacity unknown | Fixed | Operator Error | 4/18/1998 10:00 | De Beque Compressor Station | KN Energy Inc. | Land | Oil, Misc: Lubricating |
| The caller is reporting a release of materials onto the ground from a storage tank due to a transport accident | Mobile | Transport Accident | 10/11/2007 15:00 | Highway 139 at Mile marker 32 | Benchmark Distribution Services | Land | LoSurf 300M |

Source: NRC 2008

3.14.3 Mitigation Measures

The proponent should comply with all applicable federal laws and regulations existing or hereafter enacted or promulgated. In any event, the proponent should comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601 et seq.) with regard to any toxic substances that are used, generated by or stored on the ROW or on facilities authorized under this ROW grant (see 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 should be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substances should be furnished to BLM concurrent with the filing of the reports to the involved federal agency or state government.

The SWMP (URS 2008) includes cleanup procedures designed to minimize soil contamination that could result from accidental spills or leaks of fluids from construction-related equipment or materials. If an unanticipated area of suspected contamination is encountered during construction, the construction contractor would implement the procedures set forth in the SWMP to minimize the spread of contamination and to ensure the health and safety of construction workers and the general public. If contaminated or suspect soils (e.g., hydrocarbon contamination) are identified during trenching operations, the contractor would contact the appropriate federal and/or state agency to determine necessary actions to comply with regulatory requirements.

NON-CRITICAL ELEMENTS

Non-critical elements include land use and land ownership, agricultural resources, geology, transportation and access, recreation and wilderness, visual and aesthetic resources, socioeconomics, public safety, and range management.

3.15 Land Use and Land Ownership

3.15.1 Affected Environment

Lands within the project study area include privately owned lands and public land managed by BLM. BLM lands in this area are generally leased for grazing and oil and gas exploration and production. The acreage of federal lands and privately owned lands within the project study area is presented in Table 3-15.

Table 3-15:
Land Ownership

| | Public Land | Private Land |
|------------|-------------|--------------|
| Acres | 13.7 | 11.01 |
| Percentage | 55 | 45 |

The Master Title Plats indicate the following land use authorizations in the area:

| Case Type | Facility Type | Authorization Holder |
|-----------|-------------------------|---------------------------------------|
| C 2966 | Natural Gas Pipeline | Colorado Department of Transportation |
| C 31078-A | Natural Gas Pipeline | Canyon Gas Resources LLC |
| C 74308 | Road | Diamond Operations Group LTD |
| C 35176 | Power Transmission Line | Grand Valley Power |
| C 36758 | Natural Gas Pipeline | Maralex |
| C 029008 | Natural Gas Pipeline | Public Service Company of Colorado |
| COC 46622 | Power Transmission Line | CenturyTel of Eagle |

The proposed natural gas pipeline would parallel the existing 8-inch natural gas pipeline authorized under C 05006 to PSCo. The access road to the Garmesa valve set at the south end of the project has an existing ROW granted to Diamond Operations Group LTD that was authorized in 1981 to access Federal Well 5-15. The access road to the North West Purchase Point has a ROW granted to William's Northwest Pipeline for a meter station. Access Road #3 currently has no authorized users but is being used by High Lonesome Ranch. A 2-inch natural gas pipeline authorized under C 36758 parallels the proposed pipeline from the south end of the project to the proposed mesa road access. This pipeline is located on the east side of the proposed pipeline and connects to the Maralex Coyote Wash 4-2A well.

The project study area is located in the western portion of Garfield County, in an area referred to as "Study Area Five" in the Garfield County Comprehensive Plan (Garfield County 2002). Land uses within the project study area consist primarily of agricultural use and grazing (Figure 3-11). These agricultural resources are discussed in the Agricultural Resources section.

The western portion of Garfield County is sparsely populated and, based on a review of Garfield County's 2000 Housing Density Map, there are estimated to be only four dwelling units in the project study area (Garfield County 2000).

There are no known established trails within the project study area (PSCo 2009); however, hunting has been an important recreational use within Study Area Five of Garfield County for decades and contributes significantly to the local economy (Garfield County 2002).

Zoning within the Garfield County portion of the project study area includes three principal zoning categories: Public Lands, Resource Lands, and Rural (Garfield County 2008a). All of the BLM-managed lands within the project study area are zoned "Public Lands," and the privately owned lands are zoned either "Rural" or "Resource Lands." The zoning within the project study area is shown on Figure 3-11.

The pipeline corridor crosses both Public Lands and Resource Lands. Pipelines are permitted by right within the Public Lands zone district. Pipelines within the Resource Lands zone district are a permitted use subject to administrative review by BLM.

3.15.2 Environmental Consequences

3.15.2.1 No Action Alternative

Under the No Action Alternative, there would be no new impacts on land use and existing authorized facilities. The existing 8-inch pipeline would continue to occupy the existing ROW.

3.15.2.2 Proposed Action

The Grand Junction RMP recommends using existing utility corridors for development of future utilities.

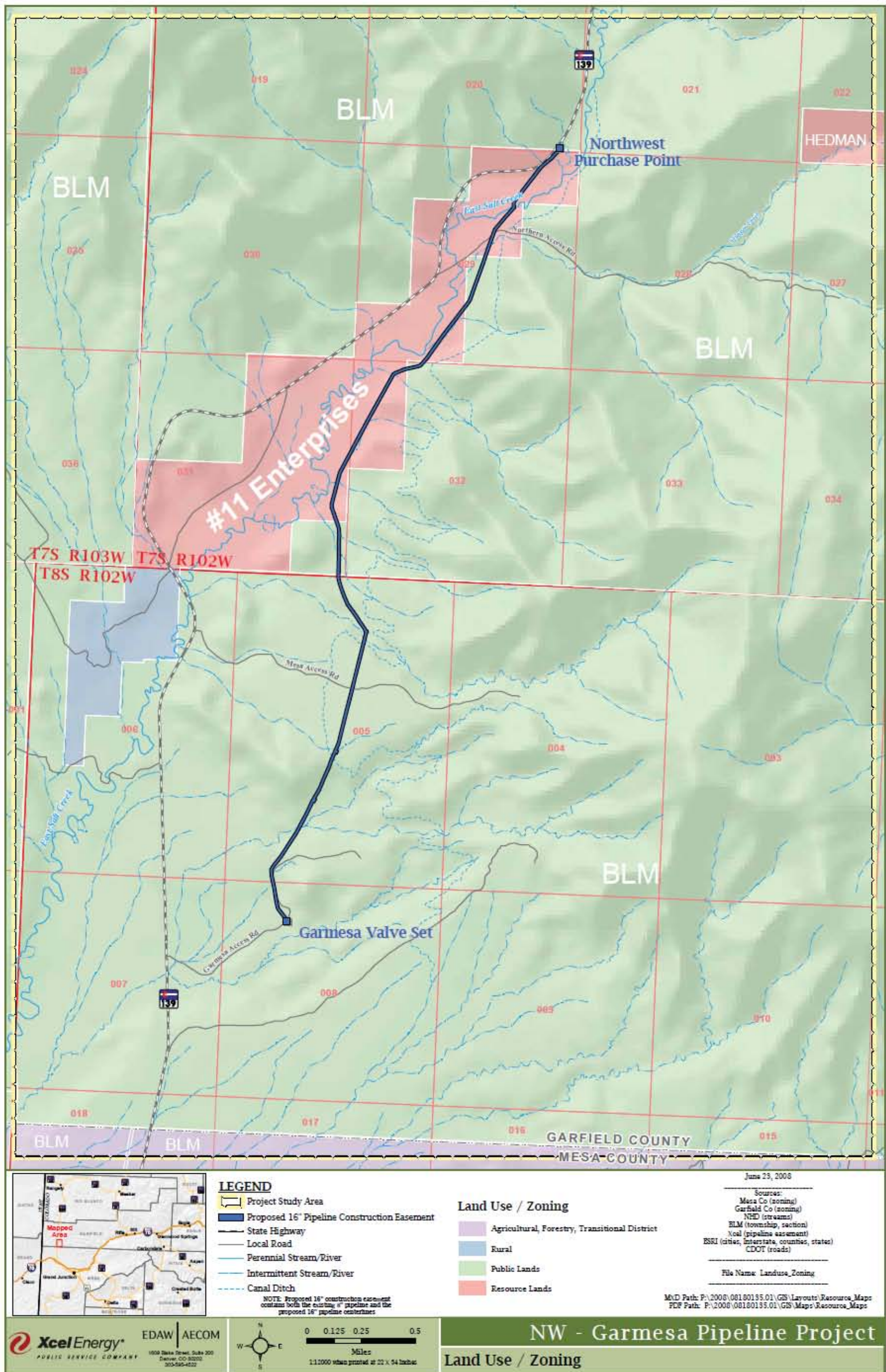


Figure 3-11 Land Use / Zoning

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The 21,623-foot-long pipeline would be located on a combination of BLM land (11,938 feet) and private property (9,685 feet). The new pipeline would be located 15 feet east of PSCo's existing 8-inch diameter natural gas pipeline and would parallel the existing pipeline within the 50-foot wide ROW. PSCo's pipeline ROW would need to be amended to include authorization to use the Access Road # 1 (Garmesa Road) and Access Road (5 Northwest Purchase Point) through the term of their grant as ancillary facilities to their pipeline. William's ROW (C 16292) would need to be amended to allow for the abandonment of their existing access road and construction, use, and maintenance of the proposed access road to the Northwest Purchase Point.

A 25-foot wide Temporary Use Permit (TUP) for construction would be required along the eastern edge of the existing pipeline ROW. A TUP would also need to be issued to PSCo for use of all access roads (#2 and #3) during construction. This temporary construction permit would impact 5.91 acres of private land and 7.02 acres of BLM land. Temporary equipment storage would be located at both termination facilities (Northwest Purchase Point and Garmesa Valve Set). No permanent equipment storage areas are proposed.

During construction, there would be temporary impacts on agricultural and grazing land within and along the pipeline ROW. Current uses would be precluded during the construction period and until vegetation is reestablished following construction.

Following construction, the construction ROW would be restored and reseeded as appropriate and approved by BLM. Access road entryways to Highway 139 would be reduced to the greatest extent possible and areas outside of the running surface and ditches would be reclaimed. There are not expected to be any permanent impacts on land use within either the temporary construction ROW or any new permanent impacts within the existing permanent ROW.

3.15.3 Mitigation Measures

To minimize impacts on land use, particularly during the construction period, the following mitigation measures are recommended:

- The construction contractor should limit the movement of heavy equipment to authorized access roads and the permanent and temporary construction ROW and permit areas. This would minimize impacts to public land and agricultural land outside of the established construction ROW.
- The construction contractor should work with BLM and private land owners to develop an acceptable reclamation plan. This plan should include restoration of the land surface to preconstruction conditions, revegetation as required on grazing land, and appropriate restoration of disturbed agricultural land.
- The proponent should construct, operate, maintain and reclaim the ROW and all temporary work areas in strict conformity with the submitted application, POD, and according to BLM Special and Standard Stipulations.

- Any relocation, additional construction, or use that is not in accord with the applications approved plans of development, should not be initiated without the prior written approval of BLM.
- Noncompliance with any of the stipulations should be grounds for an immediate temporary suspension of all activities.
- Copies of the ROW grant with the stipulations should be kept on site during construction and maintenance activities. All construction personnel should review the grant and stipulations before working on the ROWs.
- The proponent should notify all existing rights-of-way holders in the project area prior to beginning any surface disturbance or construction activities. The proponent should obtain an agreement with any existing ROW holders or other parties with authorized facilities that cross or are adjacent to those of the proponent to assure that no damage to an existing ROW or authorized facility would occur. The agreement(s) should be obtained prior to any use of the ROW or existing facility.
- The exterior boundaries of the construction and maintenance areas should be clearly flagged prior to any surface disturbing activities.
- The proponent should promptly remove and dispose of all waste caused by its activities. The term "waste" as used herein means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, ashes and equipment. No burning of trash, trees, brush, or any other material should be allowed.
- All existing authorized roads used for construction should be maintained in as good as, or in better than existing condition. This may include, but is not limited to, roadway surface repairs (blading the roadway), cleaning ditches and drainage facilities, and dust abatement. After construction, existing roads should be restored to meet or exceed conditions existing prior to construction. All road maintenance activities should be approved by BLM.
- The proponent should comply with all county regulations and permit requirements.
- Roads should be constructed and maintained to BLM road standards (BLM Manual Section 9113). All vehicle travel should be within the approved driving surface. A copy of the manual can be obtained from the BLM GJFO.
- No signs or advertising devices should be placed on the premises or on adjacent public lands, except those posted by or at the direction of BLM.
- The proponent should participate in the formation of a user's group association for the road if new ROWs are granted for use of the existing road. All new users would be required to join the association. The association's main purpose would be to ensure that all users would share in any proportionate costs and responsibilities including, but not limited to, road maintenance required under the terms, conditions and stipulations of the ROW grant. The proponent should participate in and cooperate with the development of a road maintenance agreement within the scope of the road user's group association. The agreement should be included in the association's charter or by-laws. A copy of the association's charter or by-laws should be submitted to BLM.
- Pipeline location warning signs should be installed within 5 days of construction completion. Each sign should be permanently marked with the ROW serial number and maintained as deemed necessary by BLM.

- The pipeline should be buried to provide a minimum cover of 36 inches through normal terrain. The pipeline would be buried deep enough to avoid problems with irrigation ditches, canals, potential irrigation areas, existing pipelines and drainages, as designated by BLM. In rocky areas, a minimum cover of 24 inches would be provided. In areas adjacent to or crossing access roads, the pipeline should be buried with a minimum of 4 feet of cover in alluvial areas and 3 feet of cover in rocky areas, unless the road crossing is in a drainage.

3.16 Range Management

3.16.1 Affected Environment

3.16.1.1 Grazing

Agricultural resources in the study area include grazing allotments on public and private land and limited agriculture on private land (Figure 3-12).

Three BLM grazing allotments occur within the study area (#16602, #16503, and #16501), but the existing easement and proposed construction easement are located entirely in allotment #16602 (East Salt) (Table 3-13). The length of proposed project that would occur in grazing allotment #16602 is approximately 4.1 miles. Approximately 37.6 acres of grazing allotment #16602 (less than 1 percent of the total allotment area) occur inside the project easements (the proposed construction easement and the existing pipeline easement) (Fowler 2008).

Table 3-16:
Grazing Allotment #16602 (East Salt) in Easements

| Allotment | Acreage of Grazing Land Affected | | |
|--------------|-----------------------------------------|------------------------------------|---------------|
| | Temporary Construction Easement (acres) | Existing Pipeline Easement (acres) | Total (acres) |
| Private Land | 5.9 | 10.9 | 16.8 |
| Public Land | 7.1 | 14.8 | 21.9 |
| Total | 13.0 | 25.7 | 38.7 |

Grazing allotment #16602 is permitted to #11 Enterprises, which currently leases grazing rights to one permittee for 546 cattle, and 6,028 animal unit months (AUMs).¹ This permit expires in September 2009. Cattle typically use the area of allotment located on public land in the winter and spring, beginning around December 1. Cattle may use the area of the allotment on private land owned by #11 Enterprises earlier in the fall season (Fowler 2008).

The quality of forage in the existing and proposed construction easements is generally poor with evidence of significant disturbance (Fowler 2008), with the exception of the irrigated hay pastures on private lands.

¹ AUM is a term used to describe forage allocations in grazing allotments. The technical definition of an AUM is “the amount of forage need to sustain one cow, five sheep, or five goats for a month (Nevada BLM 2008).”

3.16.1.2 Agriculture

The Farmland Protection Policy Act (FPPA) of 1981 is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that—to the extent possible—federal programs are administered to be compatible with state and local units of government and private programs and policies to protect farmland. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and farmland of statewide or local importance. Farmland subject to FPPA requirements does not have to be used actively for cropland (NRCS 2008).

Prime farmland is land that has the best combination of physical characteristics for producing food, feed, forage, fiber, and oil seed crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable levels of acidity or alkalinity, an acceptable content of salt and sodium, and few or no rocks. Prime farmland is not excessively erodible or saturated with water for a long period of time and it either does not flood frequently or is protected from flooding (USDA 1993).

There are 1,767 acres of prime farmland (if irrigated) in the study area, located mostly along the East Salt Creek drainage and along Colorado Highway 139 (Figure 3-13). No areas containing unique farmland or farmlands of statewide importance occur in the study area. Table 3-17 shows acreage and length of prime farmland (if irrigated) crossed, on public and private land, located inside project easements.

Table 3-17:
Prime Farmland (If Irrigated) in Project Study Area

| Allotment | Length along Proposed Pipeline (miles) | Acres in Proposed Temporary Construction + Permanent ROW/Easement (acres) |
|-------------------|----------------------------------------|---------------------------------------------------------------------------|
| Public Land (BLM) | 1.0 | 15.8 |
| Private Land | 1.8 | 9.2 |
| Total | 2.8 | 25.0 |

#11 Enterprises owns the private land in the project study area along East Salt Creek (Figure 3-13), some of which is prime farmland. The proposed pipeline and associated ROW and easements traverse irrigated pasture near the northern terminus of the proposed project, between East Salt Creek and Colorado Highway 139. The proposed pipeline and associated authorizations also pass irrigated pasture south of the Munger Creek proposed crossing, where the pasture is located in between the existing pipeline and East Salt Creek. The existing pipeline appears to run along the border of the southern irrigated pasture area.

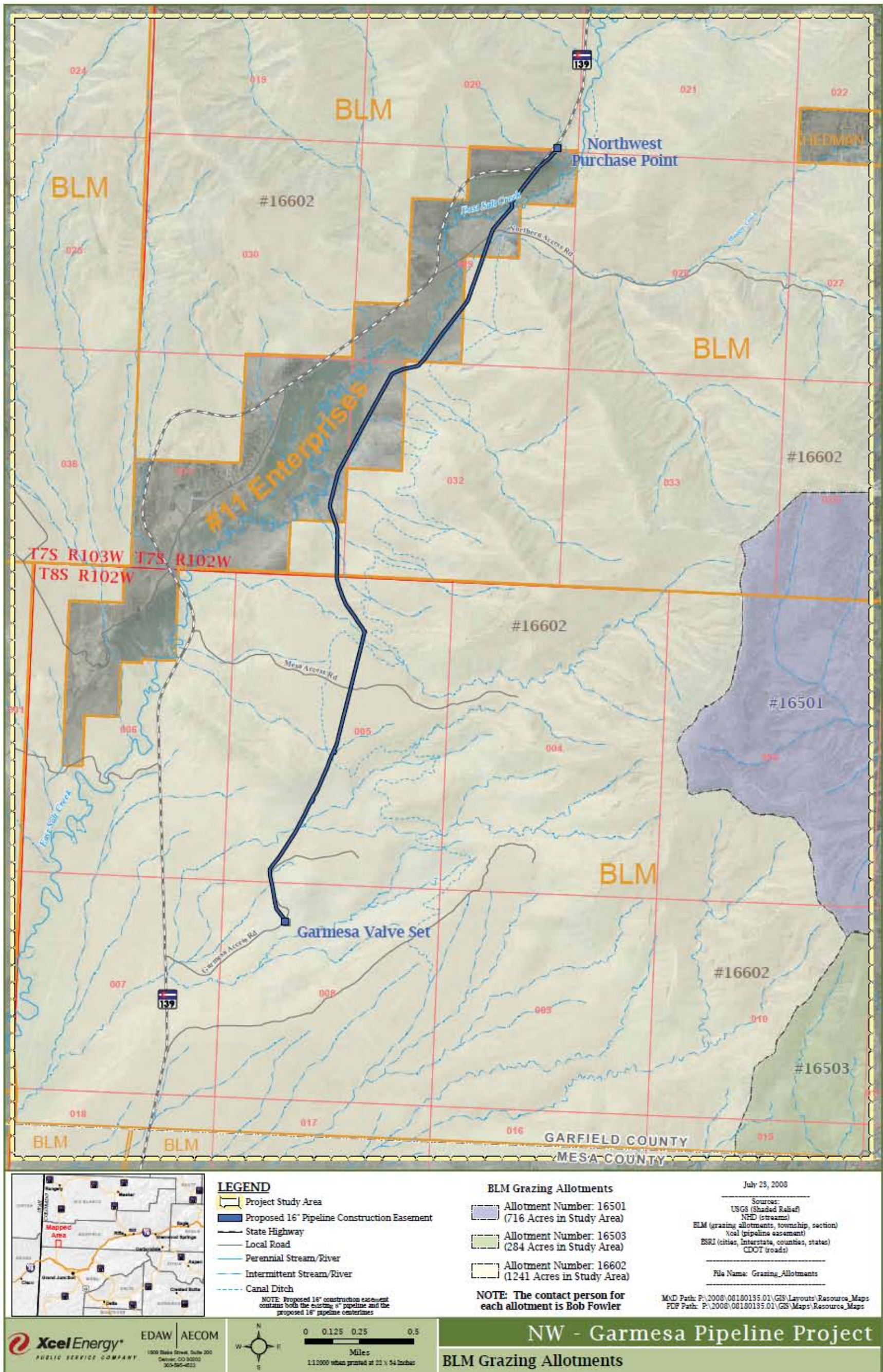


Figure 3-12 BLM Grazing Allotments

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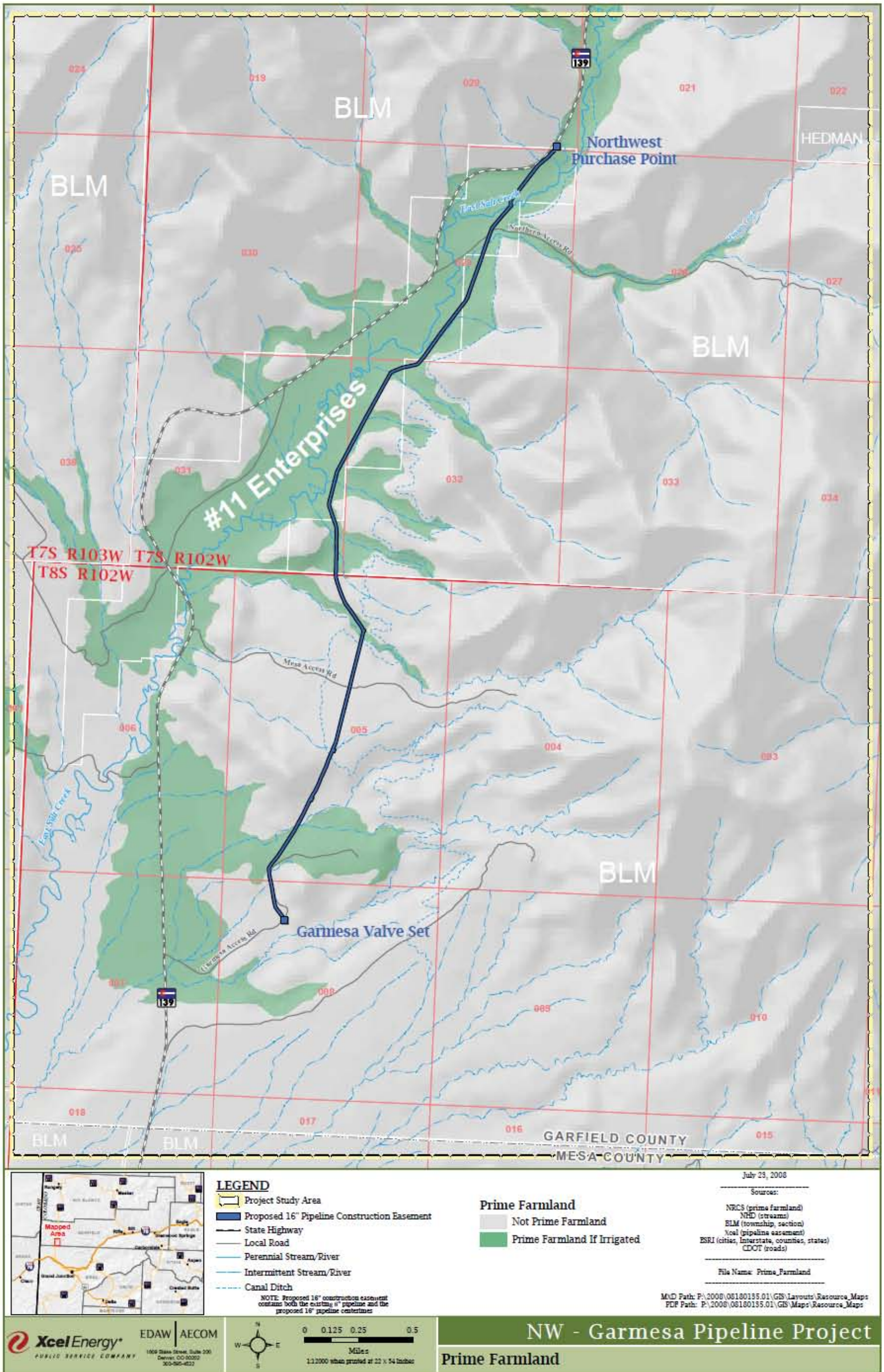


Figure 3-13 Prime Farmland

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3.16.2 Environmental Consequences

3.16.2.1 No Action Alternative

Under the No Action Alternative, there would be no effects to agricultural resources in the project study area.

3.16.2.2 Proposed Action Alternative

3.16.2.2.1 Grazing

The Proposed Action may cause temporary minor effects to grazing, largely due to trenching, vegetation removal, and associated construction activities. These effects include temporary fragmentation of grazing allotment #16602 because of trenching and a short-term decrease in grazing quality inside the project easements.

Trenching may temporarily fragment forage areas in allotment #16602, as the open trench and associated construction equipment and activities may act as a barrier to cattle movement between forage areas. Since construction is proposed to occur along the length of the project simultaneously, a substantial portion of the pipeline trench would be open for up to two weeks. Cattle in the vicinity would be at risk of falling or being trapped in open trenches during this time.

Effects associated with trenching would likely be minor. Cattle typically do not graze in the area in and around the existing and construction easements until after April (Fowler 2008), so construction may not coincide with the time cattle use forage in the construction easement. The exception to this is the private and with irrigated hay pasture. Cattle are likely to be concentrated on the private lands (Fowler 2008). Access to the pastures may be blocked during construction, but if construction begins in the south and proceeds north, it is anticipated that the cattle would be moved. All effects associated with trenching would be temporary, lasting only during the 10- to 12-week construction period.

Grazing would be temporarily disrupted in and around the 38 acres of grazing allotment #16602 that occur inside project easements during construction of the pipeline. Removal of vegetation in the proposed construction easement would decrease the quality of grazing in area inside the construction easement until successful revegetation occurs.

Effects associated with grazing disruption and quality of forage in the area would likely be minor, and short-term. Since cattle typically do not graze in the area found inside the existing and construction easements from December to early spring, construction may not coincide with the time cattle use forage in the project area. Second, existing forage is generally of poor quality with significant disturbance already, with the exception of irrigated hay pasture on private lands. Significant incremental reduction in quality would not occur as a result of this project.

Revegetation of disturbed areas inside the project easements may begin directly after the project's completion. Revegetation may not be immediately successful given soil qualities and desert conditions (Fowler 2008). Overall, reduction in quality of forage in the construction easement would not cause significant impact to grazing in allotment #16602 since the construction easement constitutes less than 1 percent of the total allotment acreage.

3.16.2.2 Agriculture

The Proposed Action would result in minor, short-term effects to the agricultural resources on these private lands, including 25 acres of prime farmland (if irrigated), due to removal of vegetation and disturbance associated with construction and trenching. Agricultural production and irrigation may be disrupted temporarily inside the construction easement.

Effects would be minor, given the small area of disturbance relative to the amount of prime farmland occurring within the larger project study area. Effects would be short-term, until revegetation is successful within disturbed areas inside the project easements. Revegetation may not be immediately successful given soil qualities and desert conditions in the area.

3.16.3 Mitigation Measures

Application of BMPs would result in minor and short-term impacts to agricultural lands and are listed in Appendix B.

3.17 Geology

3.17.1 Affected Environment

3.17.1.1 Geographic Setting

The geographic setting of the project is within an erosional area of the East Salt Creek drainage which trends north/south immediately west of the pipeline corridor. Elevations in the project area range from less than 5,400 feet in the north to less than 5,200 feet in the south.

The entire gas pipeline corridor, as shown in Figure 3-14, traverses the Mancos Shale with a few areas where it follows the edge of the East Salt Creek alluvium in the northern half of the project area. The steeper and more elevated Mount Garfield Formation and Sego Sandstone—part of the Mesa Verde Sandstone Group—surround the East Salt Creek drainage to the north and east. The geologic formations in this group are composed of shoreline sands deposited on beaches and bars that moved slowly westward and then eastward as the Cretaceous sea swept over the land and then later retreated (Chronic 1980). Erosion has formed the book cliffs where the harder Mesa Verde Group caps the towering palisades of the Mancos Shale.

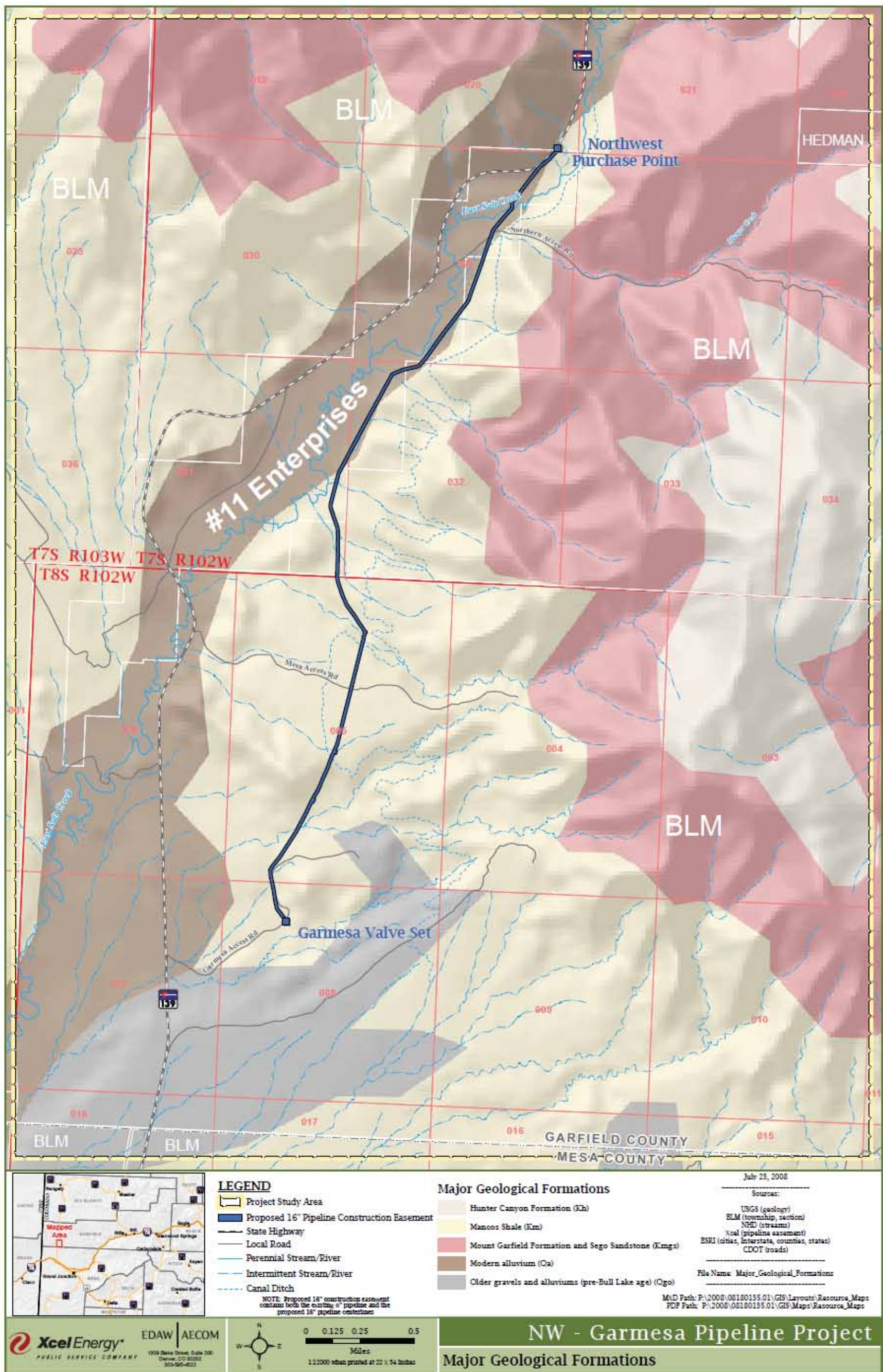


Figure 3-14 Major Geological Formations

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The Mancos Shale is gray shale, yellow where leached, and contains types of clay that swell when wet and shrink when dry. Such action brings about a loose soil that is so constantly eroding that it does not support much vegetation. Where it is not supported by Mesaverde caprock, the Mancos Shale erodes into hump-backed gray and yellow badlands or rounded hills as shown in Figure 3-15.

The nearest historical earthquake with a magnitude greater than 3 has an epicenter located about 20 miles southeast of the project vicinity (CGS 2007). There are no known or suspected geologically young faults (more recent than 2 million years) in proximity to the project area. The closest young fault is located west of Grand Junction.

3.17.1.2 Mining

Although the project area is surrounded by significant oil and gas and other minerals development, there is no ongoing mineral resources development in the project area. The proposed Red Cliff Mine, a coal mining facility, is located less than a mile from the Garmesa Valve Set. The McClane Canyon coal mine, approximately 9 miles east of the project area, has been conducting various exploration activities over the past 3 years. (The McClane Canyon coal mine is outside the analysis area overall.) A search of the Colorado Department of Natural Resources Division of Reclamation Mining and Safety database (CDNR 2008) indicated one mining operation in the vicinity of the project area. A terminated gravel surface mine was located in Section 6, Township 8 South, Range 102 West and most likely mined gravel in the East Salt Creek alluvial deposits. Oil and gas exploration and operations in the project vicinity are shown in Table D-1 in Appendix D. According to status information, all of the exploration wells, pits, and leases were abandoned.

3.17.1.3 Paleontology

Based on discussions with BLM (Gerwe 2008), the Wasatch formations is of greatest concern with respect to paleontological resources in the project area. If present in the project area, this formation would require performance of paleontological surveys prior to any surface-disturbing activities. However, this formation is not present in the vicinity of Proposed Action activities (see Figure 3-14). The pipeline corridor traverses the Mancos Shale Formation, which is classified as Class 3 (moderate or unknown potential for fossils) under the BLM Potential Fossil Yield Classification System and small areas of modern alluvium of East Salt Creek, which are classified as Class 2 (low potential for fossils). The Mancos Shale Formation has yielded scientifically significant fossils such as duck-billed dinosaurs, marine reptiles, and sharks. The modern alluvium has yielded modern bison. Because the Class 2 and Class 3 Formations do not have high to very high potential for yielding paleontological resources, paleontological surveys would not be required.



Figure 3-15: Mancos Shale Badlands Hill in Upper Right

3.17.2 Environmental Consequences

3.17.2.1 No Action Alternative

There would be no additional impacts to geologic resources under the No Action Alternative.

3.17.2.2 Proposed Action Alternative

No significant mineral resources or paleontological resources were identified in the project corridor and no effects to these resources are identified. The Proposed Action would require disturbance of area soils and trenching into eroded Mancos Shale deposits in some areas. Typical trench dimensions would be 3 feet wide and 5.5 feet deep. The total area of excavated soil and eroded Mancos Shale would be approximately 356,070 square feet. Potential impacts from the project would involve contributing to slope instability in badlands areas and increasing soil erosion problems.

3.17.3 Mitigation Measures

Although there are no specific protective measures or mitigation for geologic resources, there are for paleontologic resources in the project area. If any vertebrae fossils are discovered during construction, ground-disturbing activities in that area would halt while a BLM paleontology coordinator is contacted. If the BLM paleontology coordinator is unable to record and remove fossils from the site in a reasonable timeframe, the operator would hire a BLM-approved paleontologist to do so. Construction activities would be allowed to continue in other areas of the project not impacting the fossil site.

Mitigation measures for excavated and disturbed soils and eroded Mancos Shale are described in the soils and water resources sections. These mitigation measures would prevent erosion during and after construction and provide measures to stabilize susceptible soils such as in badlands topography and to revegetate disturbed areas.

3.18 Transportation and Access

3.18.1 Affected Environment

The transportation network in the project study area relies on Colorado Highway 139 as the only major north-south route providing regional access. Colorado Highway 139 is a two-lane minor arterial in fair to good condition with no truck restrictions. In the project study area, the highway's average annual daily load is 1,000 vehicles in the project study area, according to CDOT.

Five unpaved roads branch off Colorado Highway 139 and provide access to the pipeline corridor. The Garmesa Access Road (#1) takes travelers 0.65 mile from the highway to the Garmesa Valve Set (Figure 2-1). The Mesa Access Road (#2) is 0.86 mile long from the highway

to the central portion of the pipeline corridor (Figure 2-1). The Coal Mine Road (#3) crosses a small portion of public land and then crosses onto private land. The existing Northern Access Road (#5) is 0.31 mile long from the highway to the northern portion of the pipeline corridor. No county roads provide access to the pipeline corridor.

3.18.2 Environmental Consequences

3.18.2.1 No Action Alternative

Under the No Action Alternative, no impacts to transportation or access would occur as a result of the project.

3.18.2.2 Proposed Action

The Proposed Action would result in increased traffic along Colorado Highway 139 and the Garmesa, Mesa, and Northern access roads during the construction period. Portions of the access roads would be regraded to accommodate construction vehicles. Construction would result in temporary impacts related to construction traffic, and operation of the project would not alter existing traffic patterns or local access.

The entry ways of these access roads would be improved to meet CDOT safety requirements as described in Attachment A. Improvements would include widening the access points, paving the portion of the road in the CDOT ROW, adding a ramp, grading, and repairing existing ruts and eroded areas.

3.18.3 Mitigation Measures

The construction area adjacent to the pipeline would be recontoured to preconstruction grades and disturbed areas would be restored. If traffic is disrupted during construction then suitable traffic control measures would be implemented. Traffic control measures would include warning signs, barriers or flagmen unless otherwise approved by BLM. The proponent would implement dust abatement measures as needed or directed by the BLM authorized officer. No magnesium chloride would be applied to road surfaces. The proponent should reduce the running surface and disturbed areas along the access roads, especially the intersection areas with Highway 139 to the greatest extent possible. All disturbed areas outside of the road running surface and ditches should be ripped and seeded. All fill and ramp slopes should be seeded with native vegetation. All roads should be ditched, crowned, and resurfaced with gravel as necessary to repair rutting and reduce the potential for erosion. All gravel and other temporary improvements should be removed from temporary access roads and permanent access roads prior to termination of the ROW grants or TUP. Speed limits should be restricted to 15 miles per hour on unsurfaced access roads and 25 miles per hour on all graveled and paved roads in the immediate project area, with the exception of Highway 139.

3.19 Recreation and Wilderness

3.19.1 Affected Environment

Recreational use in the study area is governed by the BLM Colorado's GJFO's Recreation Resource Management Objectives (BLM 1987), which are to:

- Ensure the continued availability of outdoor recreational opportunities which the public seeks and which are not readily available from other public or private entities.
- Protect resources, meet legal requirements for visitor health and safety, and mitigate resource user conflicts.

The Grand Junction area offers diverse outdoor recreation opportunities. Major attractions include Colorado National Monument, McInnis Canyons National Recreation Area, and the Colorado River. Hiking, mountain biking, sightseeing, and riding off-highway vehicles (OHVs) are popular recreational activities.

The project study area is located in proximity to recreation and wilderness resources, including the North Fruita Desert Special Recreation Management Area (SRMA), hunting areas, Demaree Canyon Wilderness Study Area, the Dinosaur Diamond Scenic Byway, and nearby parks operated by Colorado State Parks (Figure 3-16).

3.19.1.1 North Fruita Desert SRMA

Approximately 4,000 acres of the North Fruita Desert SRMA are located in the southeastern portion of the project study area (Figure 3-17). The North Fruita Desert SRMA consists largely of trails systems for mountain biking, hiking, horseback riding, and riding OHVs. The predominant uses are OHV riding and mountain biking. The SRMA attracts approximately 50,000 total recreation visits each year. Visitation and camping levels peak in the spring and the fall, and decline in the winter and summer months. A primitive campground exists at the end of 18 Road, outside of the project study area. The only amenities at this campground are vault toilets: There are no utility hookups available for recreational vehicles (RVs).

The proposed pipeline ROW covers less than 17 acres in the North Fruita Desert SRMA, and the proposed project would cross less than 2 miles of the SRMA. The proposed project and easement would cross two administrative routes in the SRMA, and would not cross any designated recreational trails (BLM 2008b). Designated recreational trails are located in the southeastern corner of the project study area, which are accessed by the public from outside the study area. Bicycle emphasis areas, hiker/equestrian emphasis areas (designated as non-motorized, non-mechanized), motorized/OHV areas, and access routes to these areas are located outside the project study area. The North Fruita Desert SRMA Management Plan indicates that the project area is located in a "No New Trails Development" designation of the SRMA (BLM 2004).

3.19.1.2 Hunting

Hunting is permitted and may occur in the project study area. Severe winter range for elk and deer occurs in the Proposed Action ROW. The construction period (May through July 2008) falls outside hunting season for deer and elk (CDOW 2008b).

Actual hunting use inside the project study area has not been quantified but is anecdotally known to be light. Existing disturbances associated with the existing pipeline, Colorado Highway 139, and administrative routes within the project study area likely affect the quality of hunting in the project study area (Straley 2008).

3.19.1.3 Demaree Canyon WSA

The Demaree Canyon Wilderness Study Area (WSA) is located to the western side of Colorado Highway 139, outside of the study area. WSAs are roadless areas set aside by Congress to protect wilderness resources. Non-motorized activities are generally allowed in a WSA, including hiking, horseback riding, hunting, fishing, camping, and grazing. Biking is not allowed in a WSA (BLM 2007a).

3.19.1.4 Badger Wash ACEC

The Badger Wash Area of Critical Environmental Concern (ACEC) is located to the west of Colorado Highway 139, outside the study area (Figure 3-16). ACECs are geographical areas within lands managed by BLM requiring special measures to protect sensitive resources such as scenic, cultural, or wildlife resource values (BLM 2007a). The purpose of the Badger Wash ACEC is to protect a USGS Hydrologic Study Area and a BLM sensitive plant.

3.19.1.5 Dinosaur Diamond Scenic Byway

Colorado Highway 139, also known as Douglas Pass Road, runs north/south along the western side of the project study area (Figure 3-16). This road forms one side of the Dinosaur Diamond Scenic Byway, which was designated as a National Scenic Byway in 2002. The scenic byway provides a scenic touring route that connects dinosaur fossil-themed attractions in southeastern Utah, the Fruita area, and Dinosaur National Monument in Colorado's northwestern corner (CDOT 2008). Approximately 4 miles of the 95-mile section of the scenic byway between Fruita and Dinosaur occurs within the study area.

BLM has designated the Colorado Highway 139 corridor as a Visual Resource Management (VRM) Class III area that affords scenic resources in the corridor an intermediate degree of protection (BLM 1985). Protecting the scenic quality of the byway preserves its attractiveness as a recreational touring route. Visual resources, including the Colorado Highway 139 corridor, are discussed in-depth in the Visual and Aesthetic Resources section

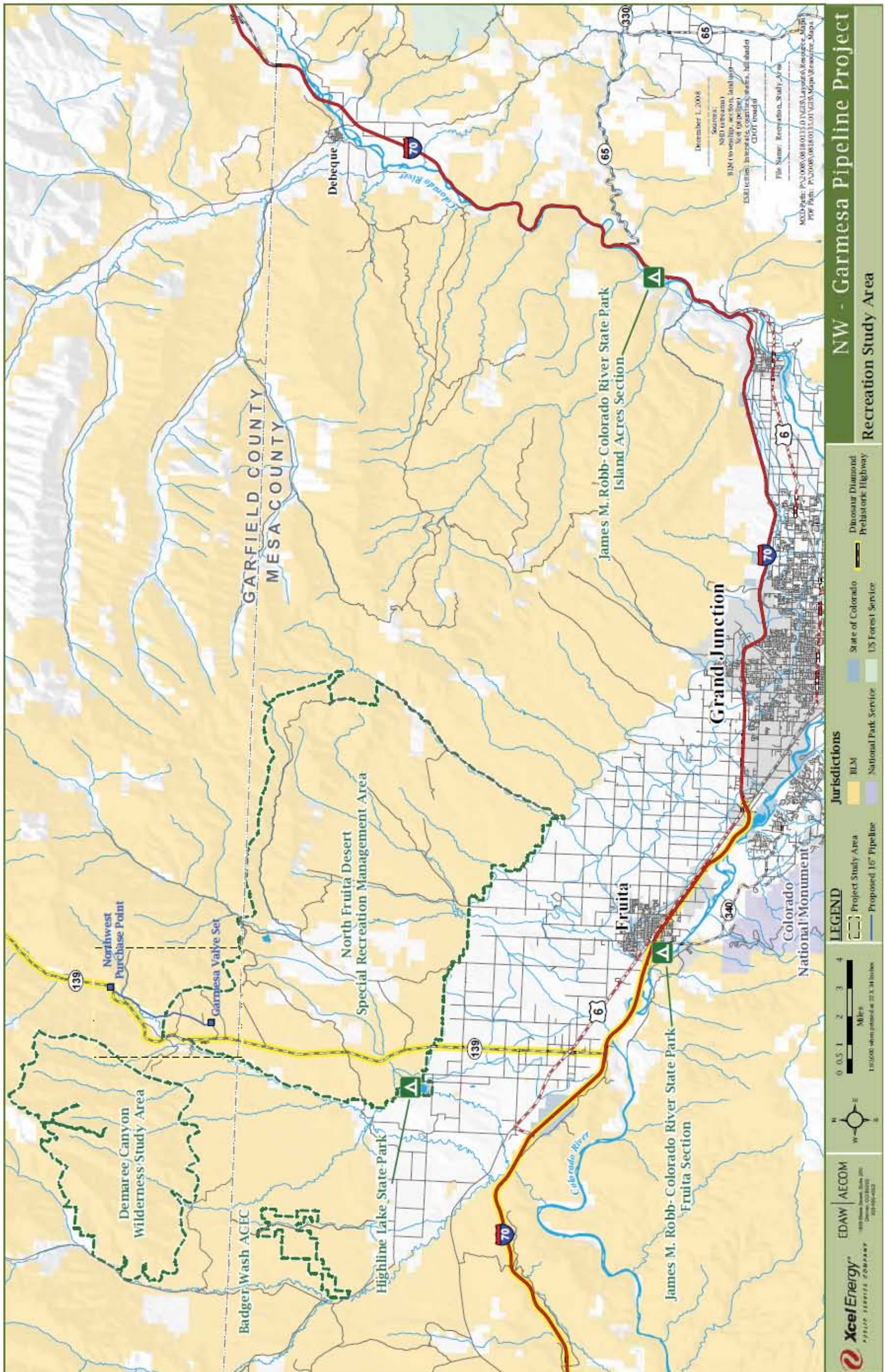


Figure 3-16 Recreation Study Area

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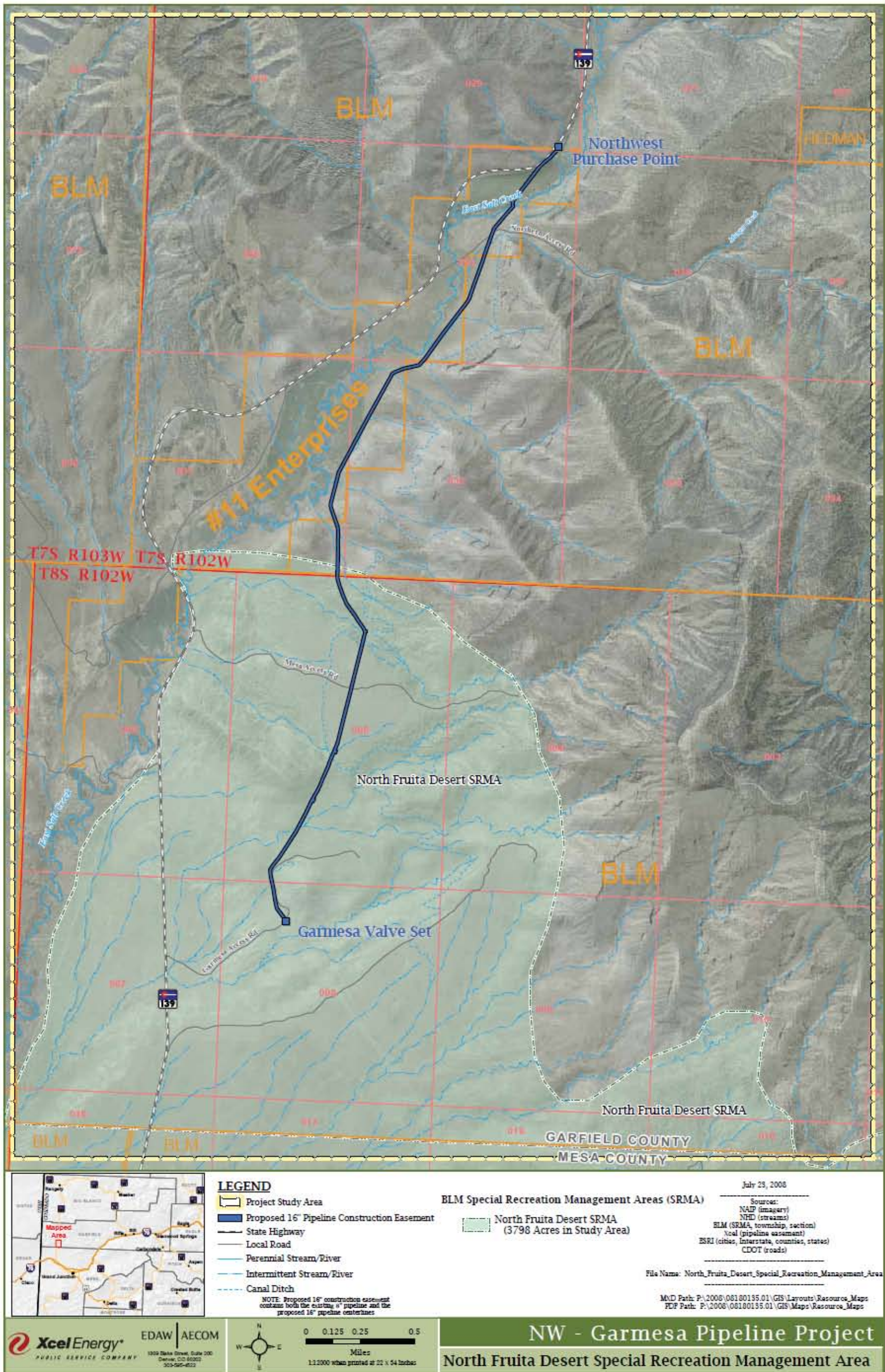


Figure 3-17 North Fruita Desert Special Recreation Management Area

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3.19.1.6 Camping

Construction workers employed to build the proposed project may opt to camp in the Grand Junction area during the 10 to 12 week construction period, anticipated to begin in May 2009 and through July 2009 (PSCo 2009). Nearby recreation areas that offer camping include the North Fruita Desert SRMA, Highline Lake State Park, and James M. Robb-Colorado River State Park (Figure 3-16).

Limited camping is available at the North Fruita Desert SRMA. A primitive campground exists at the end of 18 Road, outside of the project study area. The only amenities at this campground are vault toilets: There are no utility hookups available for RVs.

Highline Lake State Park is located less than 15 miles southeast of the project area and offers 31 camping sites, showers, and laundry facilities. No electrical hookups are available at the campsites, but water and dumping services are available (Colorado State Parks 2008). Campground occupancy was 38 percent in October 2007 and 14 percent in November 2007. These occupancy rates are significantly lower than typical summer occupancy rates: Campground occupancy during the week of July 7, 2008, was approximately 74 percent (Martinez 2008). Highline Lake State Park is approximately 10 miles away from the city of Fruita, which offers amenities such as fuel, grocery stores, restaurants, shops, and hotels.

James M. Robb-Colorado River State Park's Fruita Section is located in Fruita, approximately 20 miles southeast of the project area, and 0.5 mile south of I-70. The Fruita Section campground offers 22 full-hookup campsites (electric, water, and sewer) and 22 sites offering only electric hookups, in addition to tent camping, a swim beach, fishing, hot showers, and laundry facilities (Colorado State Parks 2008). Between March and October, the campground averages around 80 percent occupancy, and is typically full every weekend (Watson 2008).

The Fruita Section campground is within walking distance to shops and restaurants, and a short distance to recreation attractions such as Colorado National Monument, McInnis Canyons National Conservation Area, and local trail networks. The combination of amenities at James M. Robb-Colorado River State Park may make it a more attractive lodging option for construction workers compared to Highline Lake State Park, which does not offer electrical hookups.

The Island Acres Section of James M. Robb-Colorado River State Park also offers camping, but is located east of Grand Junction, approximately 45 driving miles from the project study area. It is therefore less likely that construction workers would use the Island Acres campground given the proximity of camping at Highline Lake State Park and at the Fruita Section campground.

3.19.2 Environmental Consequences

3.19.2.1 No Action Alternative

Under the No Action Alternative, there would be no effects on recreation or wilderness resources in the project study area.

3.19.2.2 Proposed Action Alternative

A reduction in the quality or quantity of recreation opportunities in the ROW or easement on private property as a result of the proposed natural gas pipeline project would constitute a direct effect on recreation. Because no designated recreation or wilderness resources occur inside the existing ROW or in the path of the proposed project, the project would have no direct effects on recreation or wilderness resources.

A reduction in the quality or quantity of recreation or wilderness resources outside the ROW would constitute an indirect effect. Indirect effects may occur if access to recreation or wilderness resources is disturbed, or if visitation changes at designated recreation sites or in wilderness study areas as a result of an influx of workers during the 10 to 12 week construction period.

The Proposed Action would likely have no effect on wilderness resources, recreational values in the North Fruita Desert SRMA, and on hunting in the project study area. Demaree Canyon WSA and the Badger Wash ACEC are located entirely outside of the project study area boundaries. Similarly, no designated recreation trails associated with the North Fruita Desert SRMA occur along the proposed project or inside the existing easement. Recreational trails associated with the North Fruita Desert SRMA in the southeastern portion of the project study area, and access points to them are located away from the Proposed Action and are not likely to be affected by the Proposed Action. The Proposed Action would not likely have measurable effects on hunting in the study area since hunting use is likely very light and already impacted by existing disturbances.

Effects to the Dinosaur Diamond Scenic Byway inside the project study area may occur where the proposed project and existing easement are visible from the highway. Views from the scenic byway may be affected during construction by the presence of construction crews and equipment and by alteration of the landscape from construction activities. Viewing distance and low viewing angles from Colorado Highway 139, however, would likely make the project virtually invisible to the casual observer from the highway and the scenic quality of the area is expected to improve after construction once the landscape is revegetated. Effects to the scenic byway, therefore, would likely be minor to negligible, especially considering the small percentage of the Fruita to Dinosaur segment of the Scenic Byway that occurs in the study area. The Visual and Aesthetic Resources section discusses potential effects to scenic resources along Colorado Highway 139 in depth.

Indirect effects to nearby recreation areas that offer camping are possible if construction workers use nearby campgrounds for lodging during the construction timeframe. Construction is proposed to occur in May through early July (PSCo 2009). For the purposes of this analysis, it is assumed that not all construction workers would choose to camp, and those that do are most likely to stay at campgrounds that offer RV parking with electrical hookups that are close to amenities and that are near the project site. Therefore, Highline Lake State Park and James M. Robb-Colorado River State Park's Fruita Section are assumed to be the most likely campgrounds to receive use from construction workers. James M. Robb-Colorado River State Park's Island Acres Section would be less attractive because it is much farther from the project site, and campsites at the North Fruita Desert SRMA do not offer RV sites with electrical hookups. These two areas, therefore, are not likely to experience any effects from the Proposed Action.

Effects on Highline Lake State Park and James M. Robb-Colorado River State Park's Fruita Section would occur if the number of campsites available to the public was reduced. It is expected that such effects as a result of the Proposed Action would be minor to negligible for several reasons. First, the workforce is expected to total 52 workers at peak construction, and it is assumed that not all of these workers would choose to camp. Second, project construction is scheduled to occur between May and early July, when campground occupancy by the general public at state park campgrounds is beginning to increase but would not have reached the height of summer season. Effects may be more pronounced at James M. Robb-Colorado River State Park's Fruita Section given that the campground is full nearly every weekend into the month of October. The increased revenue from workers camping during the construction period may provide a financial benefit to the two state parks in terms of increased revenue.

3.19.3 Mitigation Measures

The project is not anticipated to impact recreation use in the project area. BMPs are noted in Appendix B.

3.20 Visual and Aesthetic Resources

3.20.1 Affected Environment

The visual resources are managed in accordance with the Grand Junction Resource Area RMP (BLM 1985). The planned management actions, as outlined by the RMP, are to adopt the VRM class and modify, relocate, mitigate, or deny proposed projects that conflict with the objectives of these classes (BLM 1985). VRM classes are described in Appendix E.

The proposed project is located in the west-central portion of Colorado, north of Grand Junction and Fruita. The landscape in this area is characterized as gentle rolling hills and wide open valleys. The Proposed Action would span one perennial stream, East Salt Creek, and one large intermittent drainage named Munger Creek. The landscape is susceptible to erosion damage and head-cutting due to the character of the sandy soils in the region. The landscape in this area

allows for long viewing distances and the general point of reference would be Colorado Highway 139, also called Douglas Pass Road.

The existing 8-inch pipeline has been in place for 45 years and the ROW has naturally revegetated. The Proposed Action would be virtually invisible to the casual observer due to the viewing distance from Colorado Highway 139 coupled with the low viewing angle. There are no residences within the southern portion of the project ROW, and one residence on the private ranch in the north portion of the project area. The proposed PSCo ROW centerline would be centered between the existing 8-inch pipeline and the proposed pipeline, and would cover 11.01 acres on private land and 13.70 acres on BLM land (Figure 3-18). A 25-foot-wide TUP for construction would be needed along the east edge of the entire proposed permanent pipeline ROW and would cover 5.91 acres on private lands and 7.02 acres on BLM land. Two temporary access roads and two permanent access roads would also be needed to be authorized to PSCO, William's and High Lonesome as requested, on BLM lands and covering 2.53 acres, for access to the project corridor. The estimated ground disturbance in acres would be 25.29 acres on BLM land and 16.92 acres on private land.

The East Salk Creek banks are lined with mature plains cottonwood trees, occasional tamarisk, rubber rabbitbrush, scattered big sagebrush, and sticky seepwillow shrubs. The vegetation near Munger Creek includes more xeric species than those present at the crossing of East Salt Creek; examples include big sagebrush and greasewood. The level valley and slopes in the project area contain mostly desert shrubs and sparse xeric vegetation. The project area also includes irrigated pasture, herbaceous plant species, scattered pinyon and juniper trees, big sagebrush, shadscale, four-wing saltbush, and in some places noxious weed invasion by whitetop (*Cardaria draba*). The only wetland areas are a thin riparian corridor along East Salt Creek.

The project area is located mostly within Mesa County, with topography that is characterized by broad, flat plateaus accented by deep ravines and canyons. Along the southern portion of the route, there is loose erosive soil with hump-backed gray and yellow badlands that only supports sparse vegetation.

The man-made landscape in the project area contains one state highway, Colorado Highway 139 (also known as Douglas Pass Road) and three local roads. There are several residences on the east side of Colorado Highway 139. On the northern portion of the route, the land is developed as irrigated agricultural and grazing land.

The contrast rating system is a systematic process used by BLM to analyze potential visual impact of proposed projects. It uses the principal that the degree to which an activity affects the visual quality of a landscape depends on the visual contrast created between the project and an existing landscape (BLM 2007b). The majority of the project area is defined as a BLM VRM Class III area (Stark 2008). The management objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape 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.

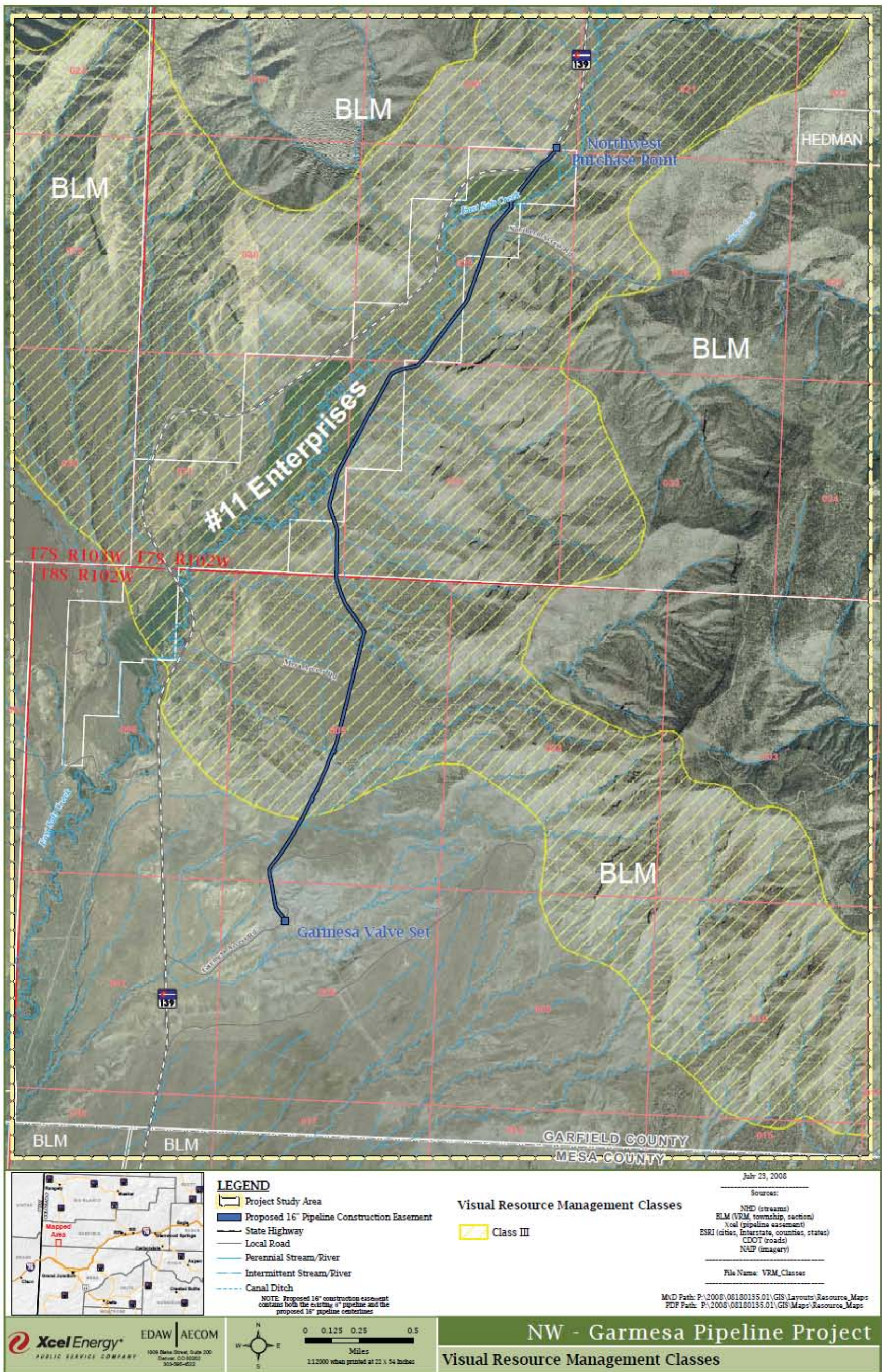


Figure 3-18 Visual Resource Management Classes

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The key observation point is Colorado Highway 139. Colorado Highway 139 causes the VRM Class III designation in the project area. The project would begin at the Northwest Purchase Point, less than 0.25 mile east of Colorado Highway 139 and increases its distance from the highway viewshed as it aligns southeast. The Proposed Action maintains a distance of 0.5 mile or greater for the remainder of the proposed ROW.

3.20.2 Environmental Consequences

Some areas of previous disturbance contain the noxious weed whitetop. On BLM land in the project area, the topography is hilly before dropping into a small valley. The vegetative cover in this area generally is native vegetation with pinyon and juniper trees in the hilly areas and large sagebrush and low-lying plants along the valley floor. Vegetative cover is denser in riparian areas.

3.20.2.1 No Action Alternative

There would be no direct, indirect, or cumulative impacts to visual resources under the No Action Alternative.

3.20.2.2 Proposed Action

The direct visual effects from construction of the Proposed Action would be moderate and short term from the primarily from the removal of vegetation and surface clearing, as well as the presence of construction equipment. The proposed excavation area would be cleared of vegetation. Excavation of the trenches would require mechanized and/or pneumatic equipment, blasting, or hand tools. The pipeline would be placed in an existing ROW 15 feet east of the existing 8-inch natural gas pipeline and buried beneath sifted native soils at a depth of 5.5 feet deep and 3 feet wide. The excavated topsoils would vary in color from light yellow-brown to light red-brown, and would be stockpiled during construction and placed back on top of the disturbed surface during reclamation activities.

Construction of the project would require an adjoining 25-foot temporary construction area that would require additional surface disturbance and removal of established vegetation. Temporary equipment storage would be located at the existing termination facilities, the Northwest Purchase Point, and the Garmesa Valve Set. The existing termination facilities would each have their fence lines expanded 15 to 20 feet and graded; all disturbed areas would be revegetated. The grading of access roads in the project area would temporarily increase contrasts in color due to the exposure of buried soil. Expansion and increased slope cuts along existing roads would have a long-term impact on the form of the landscape. Existing roads would remain in place and access within the construction area would be recontoured to preconstruction grades. Visual impacts along roads would remain high until vegetation becomes reestablished. The construction phases would last three to four weeks, with revegetation efforts anticipated immediately after completion of construction.

Removal of vegetation soil disturbance during construction and trenching of the pipeline through drainages would cause moderate long-term direct visual effects. The pipeline would span two large drainages and would be exposed near the southern end of the proposed project.

Construction of the proposed pipeline would require a minimum 10-foot disturbance around East Salt Creek that would include the removal of vegetation. Munger Creek would be crossed in a similar fashion as East Salt Creek. The banks of the drainages would be reconstructed as close as possible to natural conditions following the completion of the project construction.

At approximately 2.65 miles south from the northern end of the route, the pipeline alignment would cross a large mesa-like feature. The northern slope of this feature is steep and covered with pinyon and juniper trees. Grading in the construction area would likely require slope cutting and removal of some trees. The existing 8-inch pipeline is exposed along a substantial portion of this slope and would be covered and reseeded during construction of the project. Contrasts in line and color along the top of the mesa where the topography is flat and covered with large sagebrush would be higher than in areas dominated by grasses and forbs. It would take longer for these contrasts to disappear due to the amount of time that it takes for sagebrush to become reestablished. Access to this area would come from the Mesa Access Road and an existing two-track road that follows the existing 8-inch pipeline along the entire length on the mesa. The southern slope of the mesa has little vegetative cover and care would be taken to minimize disturbance. Post-construction mitigation would immediately follow trench backfill. At the base of the slope is an area of considerable natural erosion and poor soils. In this area, the existing 8-inch pipeline is exposed in places. To minimize disturbance, the proponent would eliminate the temporary construction corridor and modify construction activities to stay within the existing 50-foot grant area and east of the 8-inch pipeline, where feasible.

The indirect effects, post-construction visual scarring, would last until the ROW is revegetated. The disturbed soils above the buried pipeline would be replanted with a BLM-approved seed mix and monitored annually until 70 percent revegetation of seeded species is achieved. Once revegetation has been achieved, only minor indirect visual impact from pipeline construction would be perceptible in the irrigated pastureland characterized by a band of disturbed soils and new vegetation where the pipeline has been buried.

After successful reclamation, the visual effects of the project would include minimal post-construction scarring of the ground and the aboveground drainage crossings. Observers would be able to see the pipeline at all spanning locations and a small mound of extra soil above the pipeline trench where extra soil has been placed to mitigate for soil subsidence. These areas would have moderate long-term direct visual effects based on the contrast ratings analysis provided in the Manual H-8410-1, Visual Resource Inventory (BLM 2007b).

The cumulative impacts of the proposed 16-inch pipeline would include surface disturbance and removal of vegetation. Longer term impacts that would last greater than 5 years would result from the removal of large vegetation such as trees and large shrubs. During construction, exposed sections of the existing 8-inch pipeline would be covered with backfill and the ROW revegetated.

In areas where the proposed pipeline spans a creek or drainage, the cumulative impacts would be direct, moderate, and long-term. The Proposed Action would add another larger pipeline to the existing 8-inch pipeline ROW that would also span creeks and drainages. The existing line on the landscape would become heavier, darker, and more visible from the construction of the proposed pipeline. However, from the point of reference, Colorado Highway 139, the areas where the pipelines span the creeks or drainages are not highly visible due to the viewing distance and low viewing angle. The pipelines would span East Salt Creek on private property and, therefore, be visible by a viewer in a close proximity.

The Northwest Purchase Point and the Garmesa Valve Set would be expanded slightly in acreage and sustain a short-term direct effect to visual resources as a result of the presence of construction equipment. The fence surrounding the Northwest Purchase Point facility would be moved 15 feet on the southern edge to accommodate proposed aboveground piping. The Garmesa Valve Set expansion would include expanding the northeastern fence line by 4 feet. The existing disturbance, from the construction of the valve set and rectifier bed, would be regraded and a berm would be placed to direct runoff towards the natural drainage located to the south of the site. Furthermore, the staging area and other project-disturbed areas would also be regraded and revegetated.

The Proposed Action meets the VRM Class III objectives by partially retaining the existing character of the landscape. The proposed change to the characteristic landscape would not dominate the view of the casual observer, and incur only minor to moderate long-term impacts. The proposed changes would blend into the basic colors and lines found in the predominant natural features of the characteristic landscape. Once revegetation has been achieved, the Proposed Action and the existing 8-inch pipeline would blend into the natural landscape from the point of reference, Colorado Highway 139.

3.20.3 Mitigation Measures

Successful implementation of the measures in the mitigation plan would minimize effects on visual resources from construction and operation of the Proposed Action. Construction work areas would be restored as near as possible to preconstruction contours and revegetated. Once revegetation has been completed, there would be no significant alteration to the landscape of the region. The following mitigation measures would be used in the construction, operation, and reclamation phases of the project.

- Waste from construction activities would be collected, hauled away, and disposed in an approved manner. A temporary construction staging area would be located in the previously disturbed area near the Garmesa Valve Set.
- The disturbed area of buried pipeline would be revegetated with an approved mix of native seeds.
- Revegetation should occur immediately after construction or in the spring and monitored annually until 70 percent revegetation has been achieved.
- Construction equipment should be confined to existing access roads.

- The pipeline should be painted with a non-reflective Shale-Green color that would blend into the natural environment of the surrounding landscape or another color as determined by BLM.
- All disturbed areas would be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrasts associated with the surface disturbance so that the project area would fit into the natural landscape as much as possible.
- Any large rocks that are placed back on the surface should be placed with the previously exposed and weathered surface up.
- Construction activities would generate dust and a limited amount of equipment emissions. Standard dust suppression measures, such as water application and minimizing vegetation removal, would be implemented and all vehicle exhaust equipment would be maintained in good working order. PSCo would also adhere to required dust suppression requirements in applicable permits, and state and local regulations.

3.21 Public Safety

3.21.1 Affected Environment

3.21.2 Affected Environment

Since February 9, 1970, 49 CFR Part 191 has required all operators of transmission and gathering systems to notify the U.S. Department of Transportation (DOT) of any reportable incident and to submit a report within 20 days. During the reporting period (1970 to present), more than 6,000 service incidents were reported over the more than 300,000 total miles of natural gas transmission and gathering systems nationwide (PHMSA 2008). The dominant incident cause is outside forces, constituting more than 54 percent of all service incidents. Outside forces incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Human error in equipment usage was responsible for approximately 75 percent of outside forces incidents. Data from 1986 through the present indicate that the portion of incidents caused by outside forces has decreased significantly. There are no documented incidences of pipeline ruptures or leakage along the existing 8-inch pipeline.

The frequency of service incidents is strongly dependent on pipeline age. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. New pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements.

3.21.3 Environmental Consequences

The proponent should comply with applicable state standards for public health and safety, environmental protection and siting, construction, operation and maintenance, if these state standards are more stringent than federal standards for similar projects.

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture. Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an ignition temperature of 1,000°F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

Service incident data include pipeline failures of all magnitudes with widely varying consequences. Approximately two-thirds of these incidents were classified as leaks, and the remaining third classified as ruptures, implying a more serious failure. Approximately 5 nationwide fatalities result from service incidents per year, with 2 to 3 of these attributed to nonemployees (general public). Trends indicate that these fatality numbers are decreasing. The number of average public fatalities per year is relatively small considering the more than 300,000 miles of transmission and gathering lines in service nationwide. Furthermore, the fatality rate is approximately two orders of magnitude (100 times) lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on approximately 301,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline.

3.21.4 Mitigation Measures

DOT is mandated to provide pipeline safety under Title 49, USC Chapter 601. The Pipeline and Hazardous Materials Safety Administration's (PHMSA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

The pipeline and aboveground facilities associated with the Proposed Action should be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety

Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- Receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters
- Establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response
- Emergency shutdown of system and safe restoration of service
- Making personnel, equipment, tools, and materials available at the scene of an emergency
- Protecting people first, making them safe from actual or potential hazards, and then property

3.22 Fire and Fuels

3.22.1 *Affected Environment*

High concentrations of dense fine fuels occur in some portions of the project area. Areas with high concentrations cheatgrass and other dense annual grasses have a higher potential for large intense fires. Heavily grazed areas in the project area tend to have decreased fuel loading with more fuel breaks. Existing roads found in the project area provide fire breaks and access routes to fire fighters.

3.22.2 *Environmental Consequences*

There is a possibility of a wildland fire starting due to construction activity. The Proposed Action would involve cutting vegetation. From a fuels management perspective it is important that large concentrations of cut vegetation such as piles or windrows is avoided. Control of weeds especially, cheat grass is also essential to fuels management. It is essential that the site is revegetated in order to get desirable plant species established and to avoid establishment of cheat grass.

3.22.2.1 **No Action Alternative**

No project-related impact on cheatgrass and other dense annual grasses would occur under the No Action Alternative.

3.22.2.2 Proposed Action

Anticipated construction of the Proposed Action is slated to begin in May 2009. With construction of the pipeline, there is a possibility of a wildland fire starting due to construction activity. The Proposed Action would involve cutting vegetation. From a fuels management perspective it is important that large concentrations of cut vegetation such as piles or windrows is avoided.

3.22.3 Mitigation Measures

Welding, acetylene or other torch, with open flame, should be operated in an area barren or cleared of all flammable materials at least ten feet on all sides from equipment. Internal combustion engines should be equipped with an approved spark arrestor which meets either:

- a. Department of Agriculture, Forest Service Standard 5100-1a; or
- b. Appropriate Society of Automotive Engineers (SAE) recommended practice J335 (b) and J350 (a).

Disturbed soils should be revegetated with natural plants that immediately following the completion of construction to help reduce invasion of introduced annual grasses.

Vegetation removed from the ROW would not be placed in piles or windrows. All cut vegetation shall either be removed completely from the site or chipped and scattered on site.

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4. CUMULATIVE IMPACTS SUMMARY

4.1 Introduction

This chapter describes environmental consequences that would result from the construction, operation, and maintenance of the Proposed Action. The impact analysis focuses on potential direct, indirect, and cumulative impacts on project area resources that were described in *Affected Environment*. Direct and indirect effects of the Proposed Action, together with mitigation measures that would avoid, reduce, rectify, or compensate for certain adverse effects, are discussed by project area resource in the sections above. Effects of implementing the No Action Alternative also are described in each of these sections.

Red Cliff Mine facility and an associated rail spur line, a 69-kilovolt (kV) transmission line, realignment of County Road 10, and a new overpass for County Road M.8 are among the projects analyzed for cumulative effects and discussed below.

4.2 Assumptions and Assessment Guidelines

Assumptions and assessment guidelines for specific resources are summarized in the appropriate resource topics. Common assumptions that were followed during the preparation of this EA include the following:

- Environmental resource data have been developed and analyzed to the level of detail necessary to understand potential impacts and to distinguish station effects (both beneficial and adverse) between the Proposed Action and the No Action Alternative.
- Measures described in Appendix B are an integral part of the Proposed Action and the No Action Alternative.
- Any mitigation measures committed to by PSCo would be implemented.

As required for the granting of ROWs by BLM, PODs would be finalized for the alternative selected for implementation. Prior to construction, a Construction, Operation, and Maintenance Plan would be prepared that details the methods and procedures to be used in the construction of station features. The Construction, Operation, and Maintenance Plan would incorporate site-specific stipulations, terms, and conditions in order to satisfy all station-related construction requirements, as well as operational, maintenance, and restoration requirements associated with lands administered by the GJFO where station features would be located.

Each resource topic area includes a discussion of impacts, specifically duration. Impact duration considers whether the impact would be temporary or occur in the short term or long term. Although the period definition depends upon resource recovery times, temporary often refers to less than 1 year, short term to 1 to 5 years, and long term to more than 6 years. Short-term impacts are those that, within a short period of time, would no longer be detectable as the

resource returns to its pre-disturbance condition or appearance. Long-term impacts refer to a change in a resource or its condition that is expected to persist for a longer period of time.

4.3 Incomplete and/or Unavailable Information

The regulations at 43 CFR 1502.22 mandate that agencies evaluating reasonably foreseeable significant adverse effects on the human environment in an EA must identify potentially incomplete or unavailable information. Potentially incomplete or limited information was available for many of the projects considered in the cumulative impact analysis. This necessitated a broad qualitative analysis and characterization of possible cumulative effects as opposed to a site-specific quantitative assessment.

The limited data available for some aspects of future projects was not such that the ability to make a reasoned choice among alternatives would be compromised.

4.4 Cumulative Impacts

This section addresses potential cumulative impacts that would result from the effects of the Proposed Action when combined with the effects of other past, present, and reasonably foreseeable future actions. Reasonably foreseeable actions include those future actions that have been sufficiently defined to be: (1) relevant to potential impacts; (2) within the project area of influence; and (3) of a magnitude that could potentially result in a significant cumulative impact. Four projects have been identified whose effects may extend across a broad range of resources assessed in this document and possibly result in cumulative impacts on those resources. Descriptions of these actions are presented below.

4.4.1 *Description of Actions Considered for Cumulative Analysis*

Four actions were considered in the cumulative impact analysis. They include the Red Cliff Mine facility and an associated rail spur line, a 69-kV transmission line, a realignment of County Road 10, and a new overpass for County Road M.8. All of these projects are within approximately 10 miles of the proposed Garmesa pipeline project.

The proposed Red Cliff Mine is located approximately 11 miles north of Mack and Loma, Colorado, and 1.5 miles east of Colorado Highway 139. It is located in Sections 3, 9, 10, 16, 20, and 21 of Township 8 South and Range 102 West. The Garmesa Valve Set is located less than 1 mile from Red Cliff Mine Project facilities. CAM-Colorado, LLC (CAM), is proposing a new portal and numerous associated facilities to extract coal from federal coal leases C 0125515 and C 0125516 and several potential new federal leases and a small amount of private coal.

On September 28, 2005, CAM filed an ROW application with BLM for facilities associated with the proposed Red Cliff Mine: roads, a water pipeline, coal stockpile and waste disposal areas, a coal preparation plant, the mine portal, other administrative and operations facilities, and a

railroad spur line. On February 10, 2006, CAM submitted a land use application to BLM for other facilities supporting the proposed coal mine project.

The Red Cliff Mine expects to mine approximately 6 to 8 million tons of coal per year using both room-and-pillar and long-wall mining techniques from the Cameo Seam. A neighboring mine, the McClane Canyon Mine, currently mines 280,000 tons of coal per year. The McClane Canyon Mine provides an average of 230 truckloads of coal per week to Xcel Energy's Cameo power plant. The Red Cliff Mine proposes to continue supplying coal to Xcel following the closure of the McClane Canyon Mine.

As part of the Red Cliff Mine, CAM is proposing to load the coal onto rail cars at the mine site and ship it to consumers. To accomplish this, a new railroad spur line is proposed to connect the aboveground mine facilities in Township 8 South Range 102 West Section 16 to the existing Union Pacific Railroad line near Mack, Colorado, in Township 9 South Range 103 West Section 34. The proposed railroad line would cross approximately 9.5 miles of federal land, and include one crossing of Colorado Highway 139 and approximately 5 miles of private land.

Approximately 14 miles of 69-kV transmission line is proposed to connect the Red Cliff Replace project in T8S R102W S16 with the Xcel Energy Uintah Substation in Township 10 South Range 102 West Section 12.

As part of the Red Cliff Mine project, realignment of a section of Mesa County Road 10 and construction of a new overpass of Mesa County Road M.8 is proposed. The realignment of Mesa County Road 10 is approximately 0.5 mile long in Township 9 South Range 103 West Section 22. The proposed overpass of Mesa County Road M.8 over the new rail spur is 2,250 feet long and 35 feet high in Township 9 South Range 103 West Section 34.

The timing of impacts associated with construction of the mine, rail spur, transmission line, and road realignments are currently unknown. For the purpose of analyzing cumulative impacts associated with the Garmesa pipeline project, it is assumed that all impacts would be concurrent with the Garmesa pipeline project construction impacts in spring and summer 2009.

4.4.2 Results of Cumulative Analysis

4.4.2.1 Air Quality

The cumulative impacts geographic analysis area for air quality for the Proposed Action consists of Garfield and Mesa counties. Air quality impacts from the Proposed Action would occur during the construction phase and would primarily include short-term fugitive dust emissions and exhaust emissions in the immediate vicinity and downwind of construction activities. The other identified projects would be similar to the short-term impacts associated with the Proposed Action in magnitude and temporal scale. Together these impacts would be additive in nature. The design features and mitigation measures addressed in Chapter 2 and by resource section in

Chapter 3 ensure no long-term impacts associated with the construction and operation of the Proposed Action.

4.4.2.2 Cultural Resources

The cumulative impacts geographic analysis area for cultural resources for the Proposed Action consists of Garfield and Mesa counties. Construction of the pipeline could have a direct, adverse, and permanent impact to a prehistoric stone circle within the project area. The impacts from construction and operation of the Red Cliff Mine and associated facilities, the 69-kV transmission line, the realignment of County Road 10, and the new overpass could add to the loss of irreplaceable cultural resources in the area. Rerouting the section of the pipeline and other design and mitigation features ensure that no permanent, adverse impacts occur as a result of construction and operation of the Proposed Action.

4.4.2.3 Biological Resources

The anticipated construction of the Red Cliff Mine, a rail spur, county road realignment and a new county road overpass would increase habitat fragmentation in the project area, would result in direct loss of nesting and foraging habitats; increase risk for contamination of surface waters that provide habitat for sensitive fish species; and increase noxious weed populations, which would increase fire risk, reduce forage production, and reduce native plant composition. Construction and creation of non-permeable surfaces may also increase soil compaction, sedimentation and erosion. Similar biological resources are anticipated to be impacted across the Red Cliff Project and the Proposed Action, although the cumulative impacts from the Proposed Action would be localized and minimized.

4.4.2.4 Water Resources

The cumulative impacts geographic analysis area for water resources for the Proposed Action consists of Garfield and Mesa counties. Temporary increases of sediment loads in area streams and drainages due to increased erosion from proposed construction activities and long-term erosion caused by disturbance to vegetation, ground contours, and ground cover may occur. Project surface disturbance would add to the sediment impacts to water quality from the Red Cliff project, natural gas development, utility corridors and pipelines, road, and other surface-disturbing activities within the East Salt Creek watershed and, more regionally, the upper Colorado River basin. Sediment, salinity, and selenium are key local and regional water quality issues, which could be impacted by projects such as this when examined cumulatively. Design features and mitigation measures addressed in Chapter 2 and by resource section in Chapter 3 would ensure that such adverse impacts from construction and operation of the Proposed Action would be minimized.

4.4.2.5 Soils

The cumulative impacts geographic analysis area for soils for the Proposed Action consists of Garfield and Mesa counties. Construction of the new pipeline would result in temporary disturbance of approximately 16 acres due to trenching and vehicle traffic. Similar short-term impacts could contribute cumulatively from construction and operation of the Red Cliff Mine. Design features and mitigation measures addressed in Chapter 2 and by resource section in Chapter 3 would ensure that such adverse impacts from construction and operation of the Proposed Action would be minimized.

4.5 Mitigation Measures Committed to by PSCo

The following is a list of mitigation measures that were proposed and committed to by PSCo to reduce short-term impacts that may be associated with the Proposed Action.

4.5.1 Air Quality

- Other measures to minimize dust emissions would include graveling of roadways, limitation of vehicle speeds on roadways, and minimization of duration that areas are disturbed.
- Vehicles would use existing access roads to and from the project site.
- Mobile emissions are functions of hours of operation, vehicle speed, vehicle type, and fuel burned. Vehicles speed would be limited within the project area.

4.5.2 Cultural Resources

- PSCo would minimize visual effects from construction disturbance through erosion control practices, reclamation, vegetation, and coordination with BLM.

Avoidance of the prehistoric stone circle (5GF2444) is recommended. If avoidance is not feasible, BLM in consultation with SHPO, the Indian Tribes, the proponent, and interested persons, should develop, or ensure that the proponent develops, a recovery plan.

- When data recovery is required as a condition of approval, BLM, in consultation with the SHPO, should develop, or ensure that proponent develops, a data recovery plan that is consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-37) and Treatment of Historic Properties: A Handbook (Advisory Council 1980).

4.5.3 Biological Resources

- Indirect impacts to aquatic habitat from project construction such as erosion and sedimentation would be mitigated through project design, BMPs and mitigation measures outlined under the SWMP (URS 2008).

- Temporary habitat loss from project construction would be mitigated through restoration and reclamation activities previously discussed.
- Mitigation for special status species includes erosion control measures, implementation of a noxious weed management plan, and revegetation with native species. BMPs would outline avoidance of ground-dwelling species to the greatest extent feasible during project construction. Any changes in the project that result in deviations from the original alignment, and/or additional work space outside of the surveyed area would require biological surveys and/or habitat assessments. Depending on the need for additional surveys and the results, project modifications may be necessary to avoid or minimize impacts to special status species.
- Increased weed densities would decrease native forage for mule deer and elk. A noxious weed management plan and revegetation plan implemented for the Proposed Action to mitigate this potential impact.
- Construction of the pipeline would result in temporary removal of vegetation within the project ROW. These impacts would be mitigated through restoration and revegetation of the ROW.
- Construction crews would avoid small mammals and reptiles to the greatest extent feasible, whenever they are found within the construction ROW.
- The project area would be restored with native vegetation as outlined in PSCo Contractors Environmental Guidebook.
- Sagebrush rootballs would be maintained to the greatest extent feasible during project construction to facilitate regeneration.
- Mitigation includes ongoing monitoring of reclamation efforts to ensure the project reaches BLM's standard 70-percent survival rate.
- Construction equipment would be confined to access roads, and measures to avoid bringing in noxious weeds would be taken.

4.5.4 *Water Resources*

- To the greatest extent possible construction crew activity to install and connect the pipeline segments would be limited within a 50-foot buffer surrounding East Salt Creek and any other drainage with surface water.
- Care would be taken to minimize disturbance on the southern slope of the mesa by East Salt Creek, where there is little vegetative cover.

4.5.5 *Soils*

- Locating the new pipeline parallel to the existing pipeline minimizes disturbance to previously undisturbed land.

- Permanent mitigation measures for erosion prevention and sedimentation control include erosion control blankets, soil compaction and reseeded. These measures would limit any permanent impacts from the project.
- Specific mitigation measures to avoid and prevent soil erosion and preserve topsoil in the project area are included in the SWMP (URS 2008). These mitigation measures generally focus on topsoil handling, construction, restoration and final stabilization, and monitoring and maintenance activities.
- If sensitive species were found, PSCo would work with BLM to ensure protection of the population or to conduct acceptable mitigation.
- Waste from construction activities would be collected, hauled away, and disposed in an approved manner.

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6. CONSULTATION AND COORDINATION

The key team members who conducted the environmental analyses and prepared the Environmental Assessment are listed below.

Interdisciplinary Review

| Name | Title | Area of Responsibility |
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| Alissa Leavitt-Reynolds | Archaeologist | Cultural Resources, Native American Religious Concerns |
| Michelle Bailey | Outdoor Recreation Planner | Access & Transportation, VRM, Wilderness, and ACECs |
| Chris Ham | Outdoor Recreation Supervisor | Recreation, Wilderness, ACECs |
| Matt McGrath | Interpretive Specialist | Wild & Scenic Rivers, NCA |
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| Scott Gerwe | Geologist | Geology, Paleontology, Groundwater |
| Alan Kraus | Hazard Materials Specialist | Hazardous Materials |
| Heidi Plank | Wildlife Biologist | Migratory Bird Treaty Act, T&E Species, Terrestrial & Aquatic Wildlife |
| Anna Lincoln | Ecologist | Range, Land Health Assessment, T&E Plant Species |
| Bob Fowler | Range Management Specialist | Vegetation, Range, Riparian, Floodplains |
| Matt Anderson | Environmental Coordinator | Air Quality, Environmental Justice, Prime & Unique Farmlands, Environmental Coordinator |
| Janny Choy | Hydrologist | Water Quality, Hydrology, Water Rights |
| Jacob Martin | Natural Resource Specialist | Range, Forestry |
| Mark Taber | Range Management Specialist | Invasive, Non-Native Species (Weeds) |
| Angie Foster Doug Paul | Fire Ecologist Natural Resource Specialist | Fire Ecology, Fuels Management |

Environmental Assessment Preparation

| Name | Title | Area of Responsibility |
|---------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|
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| Diana Leiker, EDAW | Natural Resource Specialist | Biology |
| Steve Yarbrough, EDAW | Natural Resource Specialist | Biology |
| Ashli Gornall, EDAW | Natural Resource Specialist | Biology |
| Jared Wiedmeyer, EDAW | Visualization Specialist | Visual |
| Jennifer Chester, EDAW | GIS Coordinator | GIS Review |
| Teresa Kacprowicz, EDAW | Communications Manager | Technical Editing/ Document Production |
| Matt Cummings, EDAW | Environmental Planner | Water Resources |
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| Rachel Miller, EDAW | Senior Environmental Planner | Environmental Justice, Soils, Socioeconomics, Hazardous Materials and Public Safety |
| Libby Kaiser | Planner | Transportation and Access |
| Tara Low, EDAW | Environmental Planner | Range Management, Recreation and Wilderness |
| Stephanie Myers, EDAW | Environmental Planner | Visual and Aesthetic Resources |
| John Scott, Metcalf Archaeological Consultants, Inc. | Principal Investigator | Cultural Resources |

Appendix A: Northwest–Garmesa 16” Loop Line Plan of Development

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**PUBLIC SERVICE COMPANY OF COLORADO
NORTHWEST – GARMESA 16” LOOP LINE**

PLAN OF DEVELOPMENT – FINAL

March 12, 2009

1. Project Purpose and Need

This document provides Public Service Company of Colorado’s (PSCo’s) plan of development for the proposed new natural gas Northwest – Garmesa 16” Loop Line (Project) in western Garfield County, Colorado. Specifically, PSCo proposes the installation of a buried 16” diameter welded steel transmission pipeline for the transport of high pressure natural gas to the Grand Junction, Colorado area. The existing PSCo pipeline network is nearing critical capacity in the Grand Junction area from the increased consumption of natural gas due to rapid unexpected population growth and loss of other gas supplies. The primary expected public benefit of the Project is the continued reliable supply of natural gas to residential, government, retail, commercial, and industrial users in the Grand Junction area. Without additional system capacity, natural gas outages are expected to occur in the near future. To avert this potential outage, PSCo is pursuing a May 1, 2009 construction start date.

The 21,623-foot long pipeline would be located on a combination of Bureau of Land Management (BLM) land (11, 938 feet) and private property (9,685 feet). The pipeline would extend from PSCo’s existing Northwest Purchase Point, which would be moderately expanded, and existing Garmesa Valve Set, both of which are on BLM land. The new pipeline would be located 15 feet east of PSCo’s existing 8” diameter natural gas pipeline and would parallel the existing pipeline. On BLM land, the existing pipeline’s 50-foot wide easement under BLM Grant No. C-05006 would be amended to include the new pipeline. Likewise, the existing 49.5-foot wide easement on private property would be redefined to include the new pipeline.

PSCo considered alternative routes both east and west of the existing pipeline. Topography to the east is steeper than the area surrounding the existing pipeline and would require a new pipeline corridor and construction activity on previously undisturbed land. A new corridor to the west would align near Colorado Highway 139 and would require a longer pipeline, a new corridor, and construction disturbances on BLM land. These alternatives were not selected in order to maximize use of the existing BLM Grant No. C-05006 corridor, to minimize disturbance to previously undisturbed land, and to reduce Project costs.

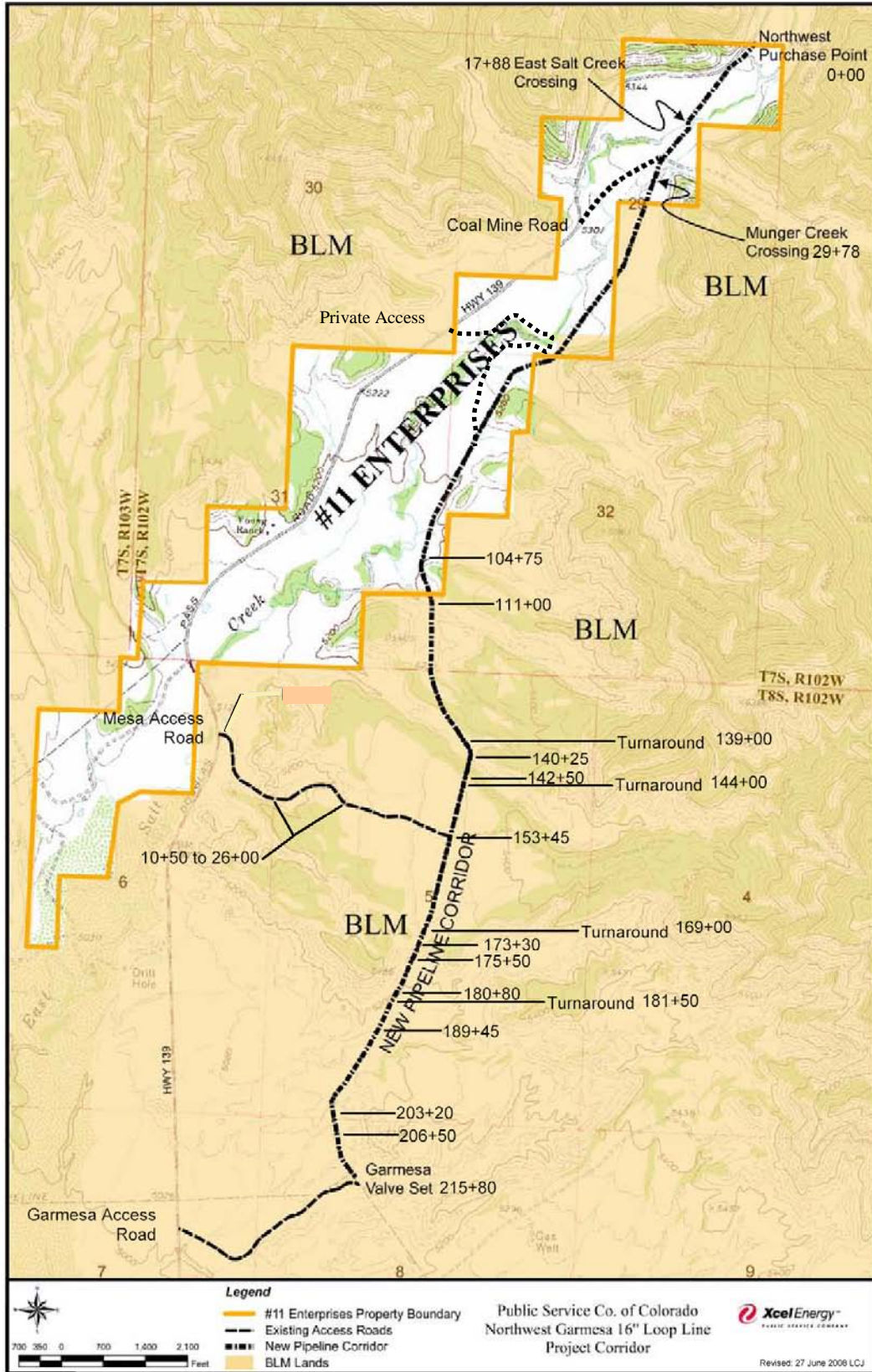


FIGURE 1 – Project Area

2. Right-of-way Location

This Project is be located in Sections 20, 29, 31 and 32, Township 7 South, Range 102 West and Sections 5 and 8, Township 8 South, Range 102 West, 6th Principal Meridian in Garfield County, Colorado. The new permanent right-of-way centerline is centered between both pipelines, and covers 11.01 acres on private lands and 13.70 acres on BLM lands. A 25-foot wide temporary construction right-of-way is needed along the east edge of the entire permanent pipeline right-of-way and covers 5.91 acres on private lands and 7.02 acres on BLM lands. Four turnaround areas are also needed on BLM lands and would extend lengthwise and easterly from the outside edge of the temporary construction right-of-way. Two temporary access roads (#2 and #3) are needed for construction. Two permanent access roads on BLM lands, covering 2.53 acres, need to be authorized for access to the Northwest Purchase Point and the Garmesa Valve Set. The total Project area located on BLM lands is summarized as follows:

- | | |
|-------------------------------------------------------|-------------|
| • Permanent amended Grant 05006 pipeline right-of-way | 13.70 acres |
| • Permanent amended Grant 05006 access right-of-way | 2.04 acres |
| • Temporary Construction Right-of-Way | 7.02 acres |
| • Temporary Access Right-of-Way | 2.53 acres |

Use of these BLM rights-of-way result in the following estimated ground disturbance:

- | | |
|--------------------------------------------------|------------|
| • Previously disturbed, not disturbed by Project | 4.11 acres |
| • Previously disturbed, disturbed by Project | 9.59 acres |
| • Previously undisturbed, disturbed by Project | 7.02 acres |

Figure 1 is a vicinity map showing the Project corridor, access roads, turnaround areas and other areas of interest and their stationing information. Legal descriptions of the pipeline, temporary construction, access rights-of-way and the turnaround areas are provided in Appendix A.

The new pipeline would commence at the Northwest Purchase Point (0+00) and extend southerly to the Garmesa Valve Set (215+80) and are shown on Figure 2. East Salt Creek (17+88) is the only perennial water feature crossed by the Project, shown in Figure 3. Several intermittent drainages of various sizes would also be crossed, the largest being Munger Creek (29+78), shown in Figure 4.

3. Facility Design Factors

The new pipeline would be constructed of grade X-60, 16" welded steel pipe with a 0.250-inch thick wall. It would have a specified minimum yield strength of 60,000 pounds per square inch gauge (psig), a design pressure of 1,219 psig, and a maximum allowable operating pressure of 1,172 psig. The designed depth of soil cover is four feet deep. Pumping or compressor stations are not proposed at this time, and sand

and gravel are not required for pipeline construction. Pipeline bedding would consist of sifted native soils. Temporary equipment storage is planned for disturbed area along the southwesterly Garmesa Valve Set fence. No permanent equipment storage areas are proposed.



NORTHWEST PURCHASE POINT (0+00)

GARMESA VALVE SET (215+80) LOOKING SE

FIGURE 2 – NW Purchase Point and Garmesa Valve Set

Pipeline signage and cathodic protection would be placed within the pipeline right-of-way as required to meet applicable codes.

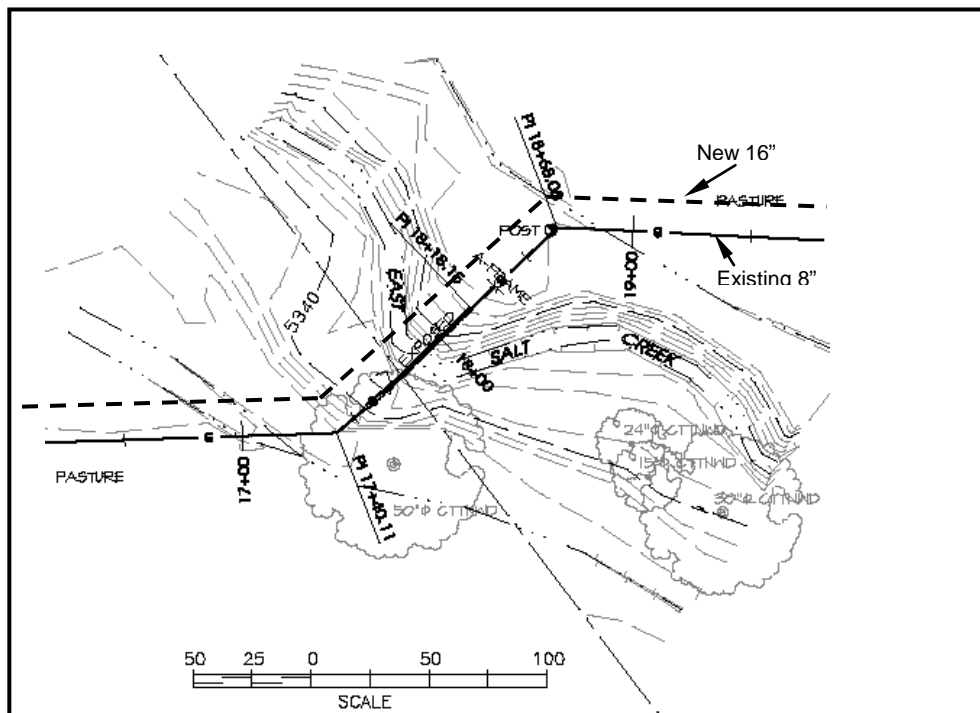


FIGURE 3- East Salt Creek Crossing (17+88)

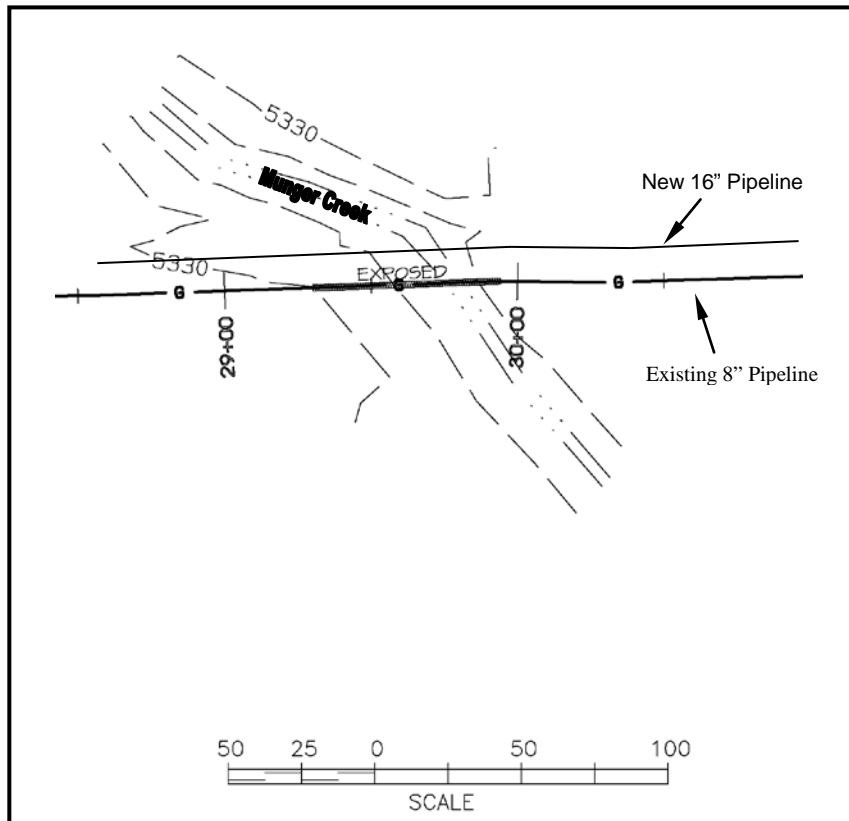


FIGURE 4 – Munger Creek Crossing (29+78)

4. Additional Components of the Right-of-Way

Proposed access to the Project Corridor is from five different routes originating from HWY 139. The northernmost access is just south of the Northwest Purchase Point, where a portion of the permanent pipeline right-of-way is crossed by HWY 139 right-of-way. The other four access routes are shown on Figure 1 as Coal Mine Road, unnamed road #3, Mesa, and Garmesa Access Roads. The Coal Mine Road access route is located entirely on private property and authorization for use would be negotiated with the landowner. The unnamed road begins on BLM land and immediately crosses onto private land to the pipeline project area. The Mesa and Garmesa Access Roads are located entirely on BLM lands. PSCo proposes the authorization of these two routes via a Temporary Use Permit and an amendment to existing Grant 05-006 right-of-way, respectively.

Turnaround areas measuring 100' x 25' are proposed on BLM lands at stationings 139+00, 144+00, 169+00 and 181+50. They would extend lengthwise and easterly from the east edge of the temporary construction right-of-way.

5. Government Agency Coordination

PSCo would acquire the following approvals:

Colorado Department of Transportation for work and access within State HWY 139 right-of-way.

Colorado Department of Public Health and Environment

- Water Quality Control Division - Stormwater Management Permit
- Air Pollution Control Division - Air Pollutant Emissions Notice and Application for Const. Permit

Garfield County administrative review approval

State of Colorado groundwater discharge permit, if necessary

U.S. Army Corps of Engineers Nationwide Permits, as needed

6. Construction Activities

The proposed construction of the pipeline consists of surveying the centerline, removing vegetation, removing and stockpiling topsoil, excavating a trench, laying pipe sections along the trench, welding the pipe, lowering the pipe into the trench, backfilling the trench, pressure testing the pipe with nitrogen, replacement of topsoil and topsoil stabilization, recontouring and revegetation. Many of the activities would occur simultaneously, resulting in a substantial portion of the pipeline trench being open for up to two weeks. Figure 5 shows a cross section of the proposed typical construction corridor layout.

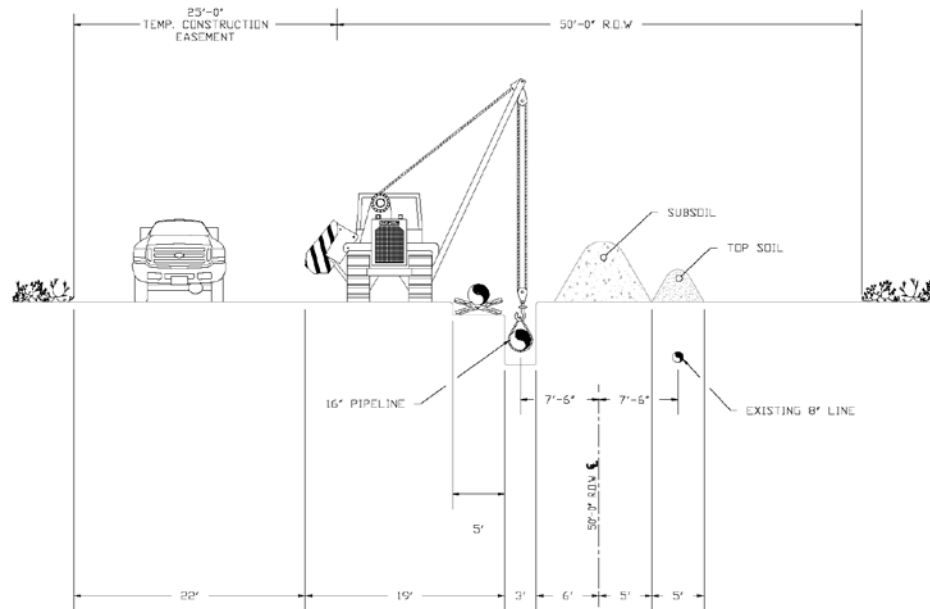


FIGURE 5 – Typical Construction Corridor Layout

Schedule - The construction phase of the Project, from mobilization to recontouring the corridor, is anticipated to take ten to twelve weeks to complete. Revegetation would immediately follow recontouring activities.

At its peak, the construction of the Project would include approximately three crews for an approximate total of 52 employees. An estimated 40 vehicles would be utilized that include pick-up trucks, welding rigs, excavators, backhoes, side booms, dozers, graders and water trucks. Semi trucks and dump trucks would also be used to transport material and equipment. Approximately 42,000 gallons of water would be used daily for dust suppression, weed control, and soil compaction. PSCo anticipates the source of this water to be by the Town of Loma's municipal supply. Work would be performed from 7 a.m. to 5:30 p.m., seven days a week during construction.

Pipeline - Staking of the centerline of the new 16" pipeline, the west edge of the right-of-way, and the east edge of the temporary construction area would occur first. Crews then would establish best management practices (BMPs), as defined in the approved stormwater management plan. During this time work would be performed to the Mesa and Garmesa Access Roads.

The area between the existing 8" pipeline centerline and the east edge of the temporary construction right-of-way would be cleared of vegetation. All reasonable effort would be made to preserve plant root balls during this stage.

Excavation of trenches could require mechanized and/or pneumatic equipment, or hand methods. The trench would typically be 5.5 feet deep and three feet wide. The pipe

would be welded outside the trench then lowered into the trench. Following backfill of the spoils and topsoil, the new 16" pipeline would be pressure tested with nitrogen.

Recontouring would be performed within the construction corridor, per recommendations in the stormwater management plan. As discussed earlier, revegetation would occur as soon as is practicable and as approved by the BLM.

Rubber-tired and track vehicles would be used in the construction area to perform the work. All or portions of existing roads are proposed to be re-graded to accommodate construction vehicles. All other equipment used would be standard for pipeline construction and reclamation. Waste from construction activities would be collected, hauled away, and disposed of in an approved manner. A temporary construction staging area would be located in the previously disturbed area near the Garmesa Valve Set.

Access Roads – The Project would be accessed from five different locations along HWY 139. Certain improvements to these locations are required by the Colorado Department of Transportation to address safety concerns and are shown in Appendix B. Access locations 1, 2, 3, and 5 are located on BLM lands. The improvements differ depending on the location and would generally require expansion of the road intersection at HWY 139, the import of fill material, surfacing the improvements with asphalt and road base, and right of way fence/gate adjustments. A small ramp would need to be constructed at access location 2 to allow for safe egress and ingress to HWY 139. Dimensions of the access improvements are as follows:

- Access 1 (Garmesa Road) – The improvement length is 148 feet, with varying widths ranging from twenty five feet near HWY 139, tapering to zero feet. The permanent access road use area is twenty four feet wide for the entire road length to PSCo's Garmesa facility.
- Access 2 (Mesa Road) – The improvement length is 100 feet, with varying widths ranging from fifty feet near HWY 139, tapering to twelve feet. The temporary access road use area is twenty four feet wide for the entire road length to the project corridor.
- Access 3 – The improvement length is 122 feet, with varying widths ranging from seventy two feet at HWY 139, tapering to twenty four feet. The temporary access road use area beyond the improvements is fifty seven feet long by twenty four feet wide.
- Access 5 (NW Purchase Point) – The improvement length is seventy eight feet, extending northerly, with varying widths ranging from seventy two feet at HWY 139, tapering to thirty five feet. An additional improvement length of twenty feet extends southerly, with a width of forty feet.

PSCo also proposes improving both the Mesa and Garmesa Access Roads (access' 1 and 2, respectively) to accommodate construction traffic. The middle fifteen feet of the Garmesa Access Road, see Figure 6, would be graded and smoothed, from HWY 139 to the Garmesa Valve Set, with dips made at drainage crossings. The 3,442 foot long

travel surface would be crowned or sloped to minimize pooling. Drainage ditches would be installed along the edge of the travel surface, if needed. This road is used by the public and PSCo proposes a temporary closure of this road, while improving the road, to avoid conflicting uses. This temporary closure is expected to last several days.

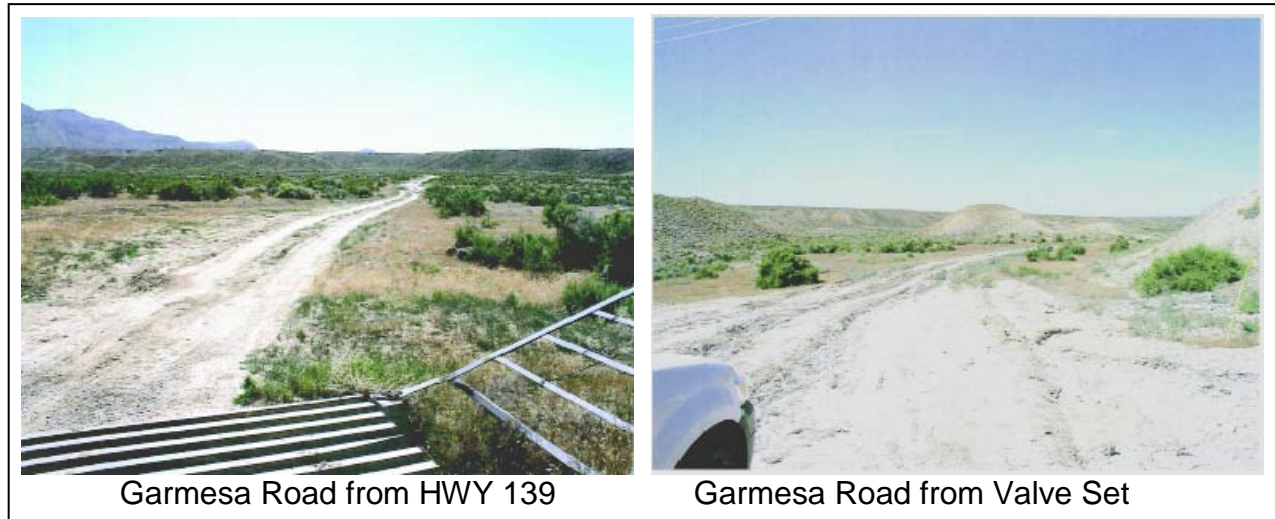


FIGURE 6 – Garmesa Road Condition

A portion of the 4,478 foot long Mesa Access Road, see Figure 7, from HWY 139 to the Project corridor, is also proposed to be graded similar to the Garmesa Access Road. The stretch between 10+50 and 26+00 would have its southerly drainage ditch cleared and reworked to prevent the stormwater run-off from crossing the travel surface and to accommodate shifting of the travel surface southerly by approximately five feet. Following Project construction, the area would be reclaimed per direction from the BLM. This road is used by the public and PSCo proposes a temporary closure of this road, while improving the road, to avoid conflicting uses. This temporary closure is expected to last several days.

The Coal Mine Road is an improved dirt road that needs no additional work to support Project traffic. The Northwest Purchase Point access would be relocated approximately 130 feet south along HWY 139, as required by CDOT, to improve visibility, and may require the temporary removal of up to thirty feet of HWY 139 right-of-way barbed wire fence. The existing Northwest Purchase Point access, which is also currently used by Williams Pipeline Company, and the private access approximately 150 feet south, would be abandoned, scored and revegetated. The existing gates would be removed and the fence would be replaced across the entrances. The new access would be used exclusively by PSCo, Williams Pipeline, and #11 Enterprises, or their successors or assigns. All access points along HWY 139 would be used in accordance with CDOT regulations.

Turnaround areas along the construction corridor were selected because of their level characteristic. Only selected vegetation clearing is proposed, that would allow for vehicle maneuvering.

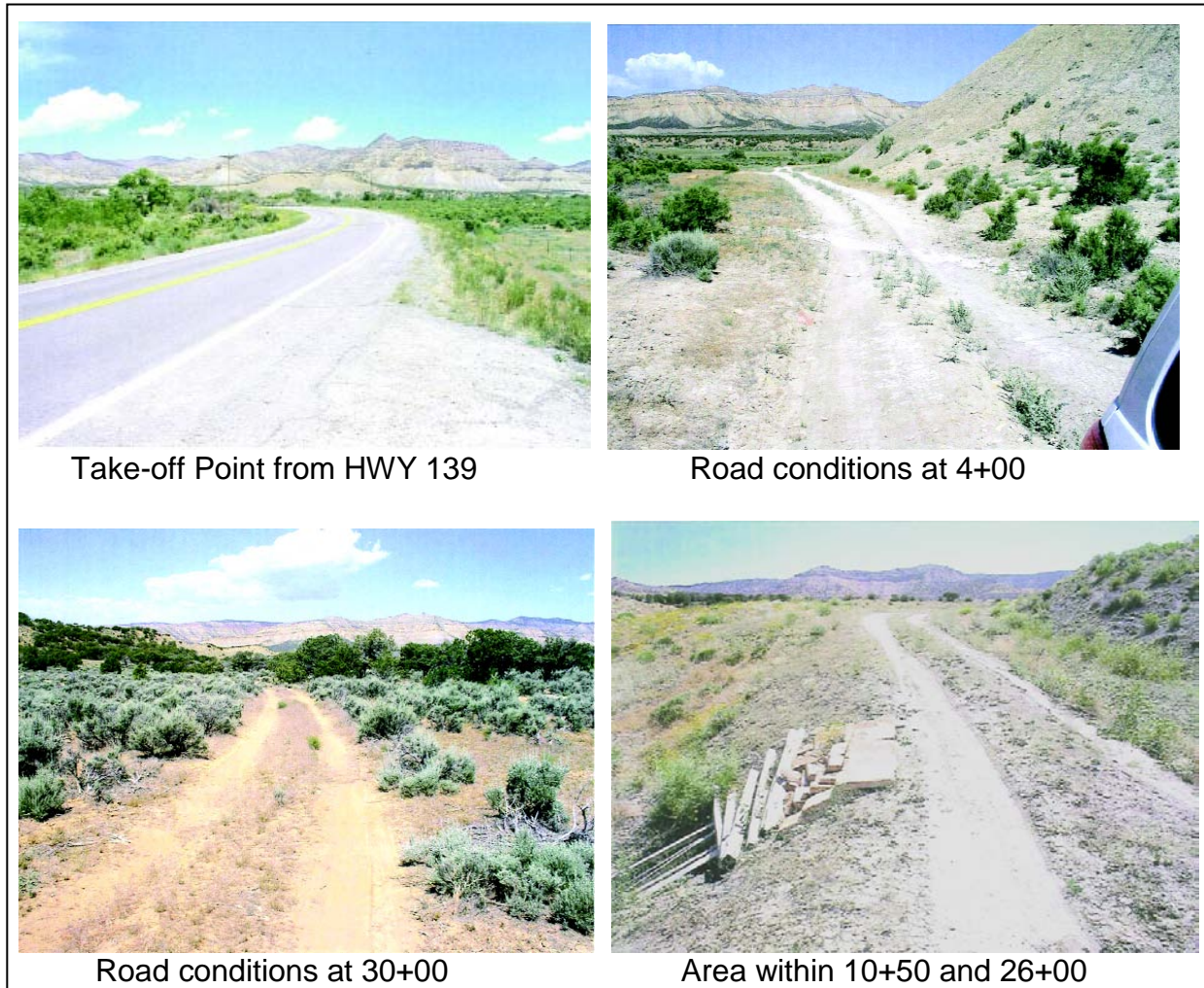


FIGURE 7 – Mesa Road

Termination Facilities - The Northwest Purchase Point expansion consists of relocating the south fence line approximately 15 feet to accommodate additional above-ground piping (Figure 8). New piping would be installed without a need to regrade the site. Disturbed areas would be revegetated.

The Garmesa Valve Set expansion consists of extending the northeasterly fence line four feet to the north (Figure 8). The west fence line entry gates would be reconfigured to accommodate two 15-foot wide vehicle gates and one gate for workers. The fence line expansion is needed to accommodate the new piping and the area does not require additional grading. Following construction, the existing eroded areas caused by the previous construction of the valve set and rectifier bed would be regraded and berm

placement would be utilized to redirect runoff towards the natural drainage south of the site. Furthermore, the staging area and other Project disturbed areas would be regraded and revegetated.

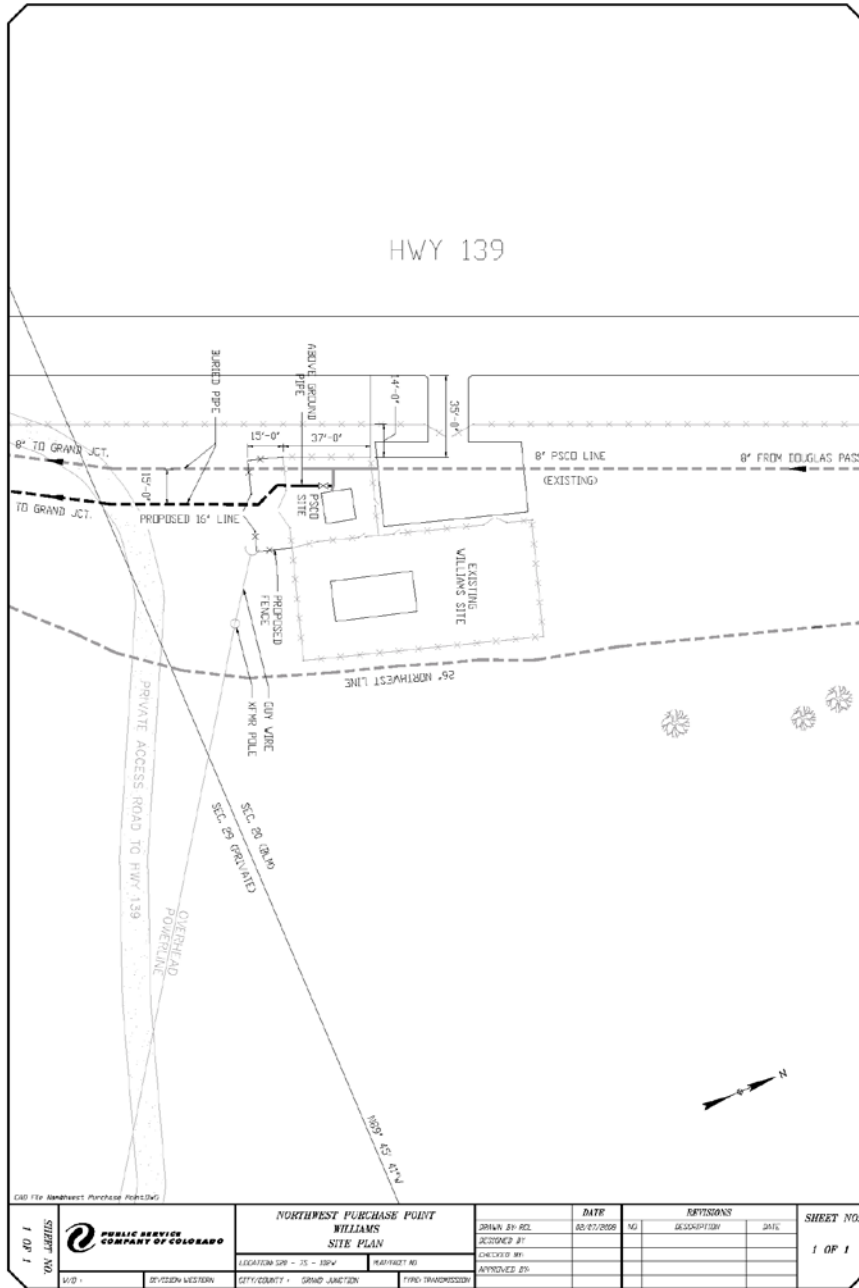


FIGURE 8 – Northwest Purchase Expansion

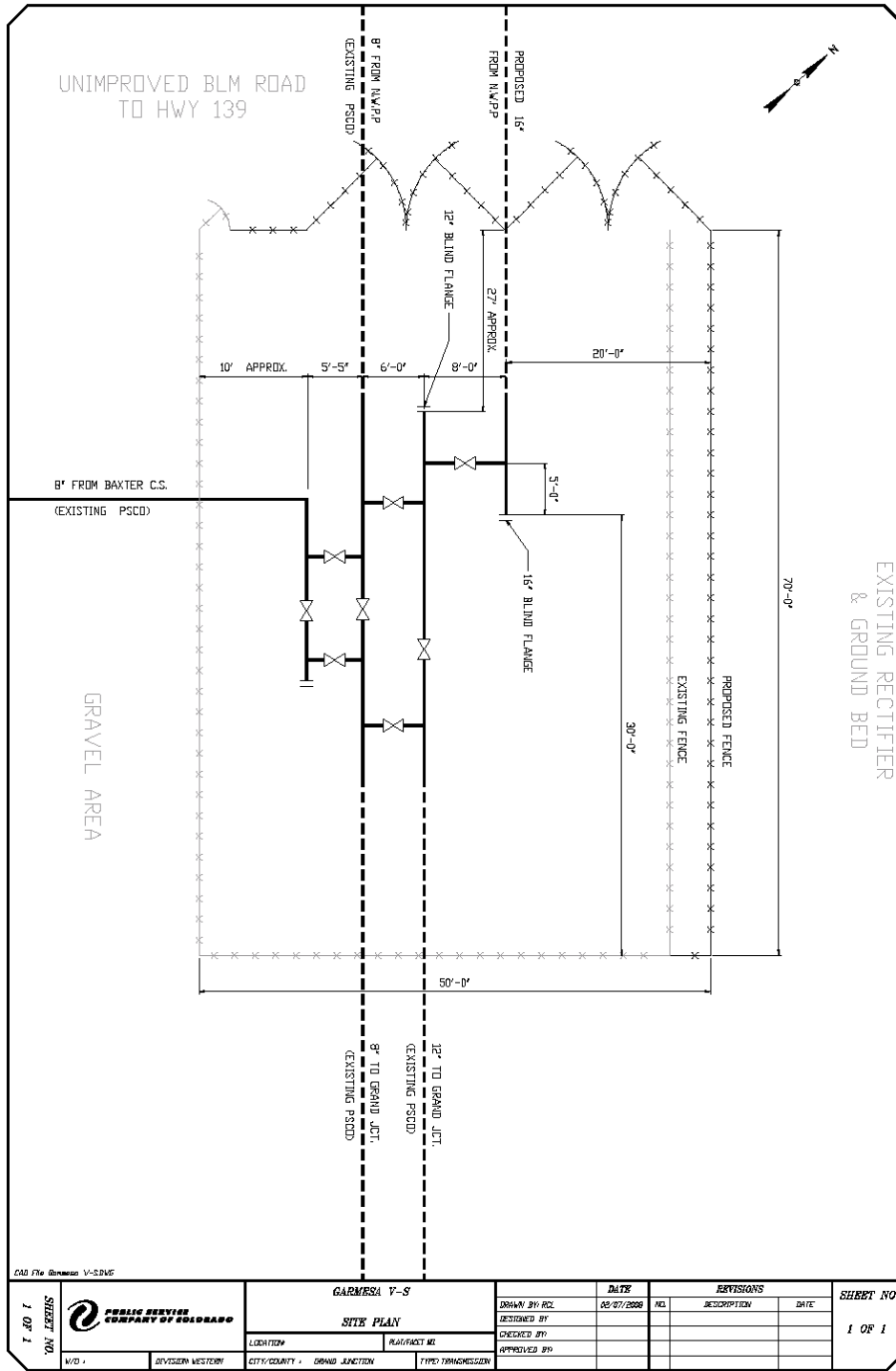


Figure 9 – Garmesa Expansion

7. Operation and Maintenance

The proposed pipeline would be operated year-round. Facilities would be unmanned but would be subject to inspection and maintenance activities. The pipeline flow rate is expected to be approximately 1,250 thousand standard cubic feet per hour (mscfh) in the first year of operation. The pipeline would be designed to meet an ultimate demand flow rate of 4,000 mscfh to meet the projected growth in demand in the Grand Junction area.

8. Resource Values and Environmental Concerns

East Salt Creek – The proposed Project alignment would cross several drainages. The only perennial drainage is East Salt Creek (17+88), Figure 10, and is located on private lands. The banks of the creek are lined with mature cottonwood trees, occasional tamarisk, rubber rabbitbrush, scattered sagebrush, and sticky seep willow shrubs. PSCo proposes spanning this drainage with the new 16" pipeline, matching the type of construction of the existing 8" pipeline. The new span would have a minimum of ten feet clearance to the channel. PSCo feels that this construction method ensures the least amount of surface disturbance. The trench would be constructed from both sides of the channel and would require the least amount of vegetation removal. No work would extend into the riparian wetland along the water edge. PSCo recognizes that the pipeline would be exposed and is confident that the attractive nuisance does not pose a risk to the pipeline integrity. PSCo would explore color options, if available, for the pipeline coating that may help provide visual screening. The spanning would not require any additional supporting appurtenances and the existing support remnants for the 8" pipeline spanning would be removed. PSCo also feels that there is minimal risk of debris washing down the channel and damaging the pipeline. This is evidenced by the fact that the 8" pipeline has crossed the channel for over 45 years without being damaged by such debris.



FIGURE 10 – East Salt Creek Crossing

Other Drainage Crossings – Several other ephemeral and intermittent drainages would be crossed with the proposed Project alignment. The largest of these is Munger Creek (29+78) and is located on private lands. The other drainage crossings occur on BLM lands at pipeline stations 140+25 and 189+45, as shown on Figure 11. PSCo also proposes to span Munger Creek, thus matching the 8" pipeline construction. The pipeline crossing of Munger Creek would be shifted to the west of the 8" pipeline to avoid a meander located on the east side of the 8" pipeline, and minimize bank cutting during construction. Munger Creek would be accessed from the north and south via access roads #3 and #4, and vehicles would not drive across Munger Creek. The other two drainages located at stations 140+25 and 189+45 would be open cut with stove pipe construction techniques. The stovepipe construction technique that would be used to cross these drainages includes end hauling excavated soil and top soil to reduce construction widths. Additional cuts to the banks of these drainages would be minimized and the existing access road would be used for vehicle crossings during construction. The approximate existing clearance of the 8" pipe across each of the drainages is twelve, four, and seven feet, respectively.



FIGURE 11 – Ephemeral Drainage Crossings

As the Project alignment leaves the East Salt Creek valley and onto BLM lands, the topography becomes hilly before dropping into a small valley. The vegetative cover in this area is generally native vegetation with pinyon and juniper trees in the hilly areas, and large sagebrush and low lying plants along the valley floor. Grading in the construction corridor could require slope cutting and some degree of tree removal. There are locations in this area where the existing 8" pipeline is exposed. PSCo proposes to cover these exposed sections and revegetate. The exception to this is at pipeline stationing 111+00, shown on Figure 12. Do to the amount of dirt required to cover this section, PSCo proposes to leave the 8" pipeline exposed, and adjust construction activities to provide reasonable bank protection.



FIGURE 12 – 8" Pipeline Exposure (111+00)

Mesa Issues - The Project alignment crosses a large mesa-like feature. The north slope (140+25 to 142+50) is steep and covered with pinyon and juniper trees. Grading in the construction area could require slope cutting and some degree of tree removal. The existing 8" pipeline is exposed along a substantial portion of this slope, see Figure 13, and would be covered and reseeded during construction of the Project. The top of the mesa is level and covered with large sagebrush. Access to this area would come from the Mesa Access Road and an existing two track road follows the existing 8" pipeline along the entire length on the Mesa.



FIGURE 13 – NORTH SLOPE OF MESA (140+25 to 142+50)

The south slope of the mesa (173+30 to 175+50) has little vegetative cover, see Figure 14, and care would be taken to minimize disturbance. Post construction BMP's would be installed immediately following trench backfill.



FIGURE 14 – South Slope of Mesa (173+30 to 175+50)

At the base of the slope, is an area of considerable natural erosion and poor soils, see Figure 15. This area is between pipeline stationing 175+30 and 180+80. In this area the existing 8" pipeline is exposed in places, as shown in Figure 16. To minimize disturbance in this area, PSCo is proposing to eliminate the temporary construction corridor and modify construction activities to stay within the existing 50' Grant area and east of the 8" pipeline, where feasible.

An alternate route to the east and downhill of the natural erosion was discussed to bypass the sensitive soils. PSCo feels that the proposed mitigation along the proposed route minimizes the soil disturbance while taking advantage of the disturbance area created by the existing 8" pipeline.

Figure 17 provides additional perspective of the remainder of the Project corridor past pipeline stationing 197+75.

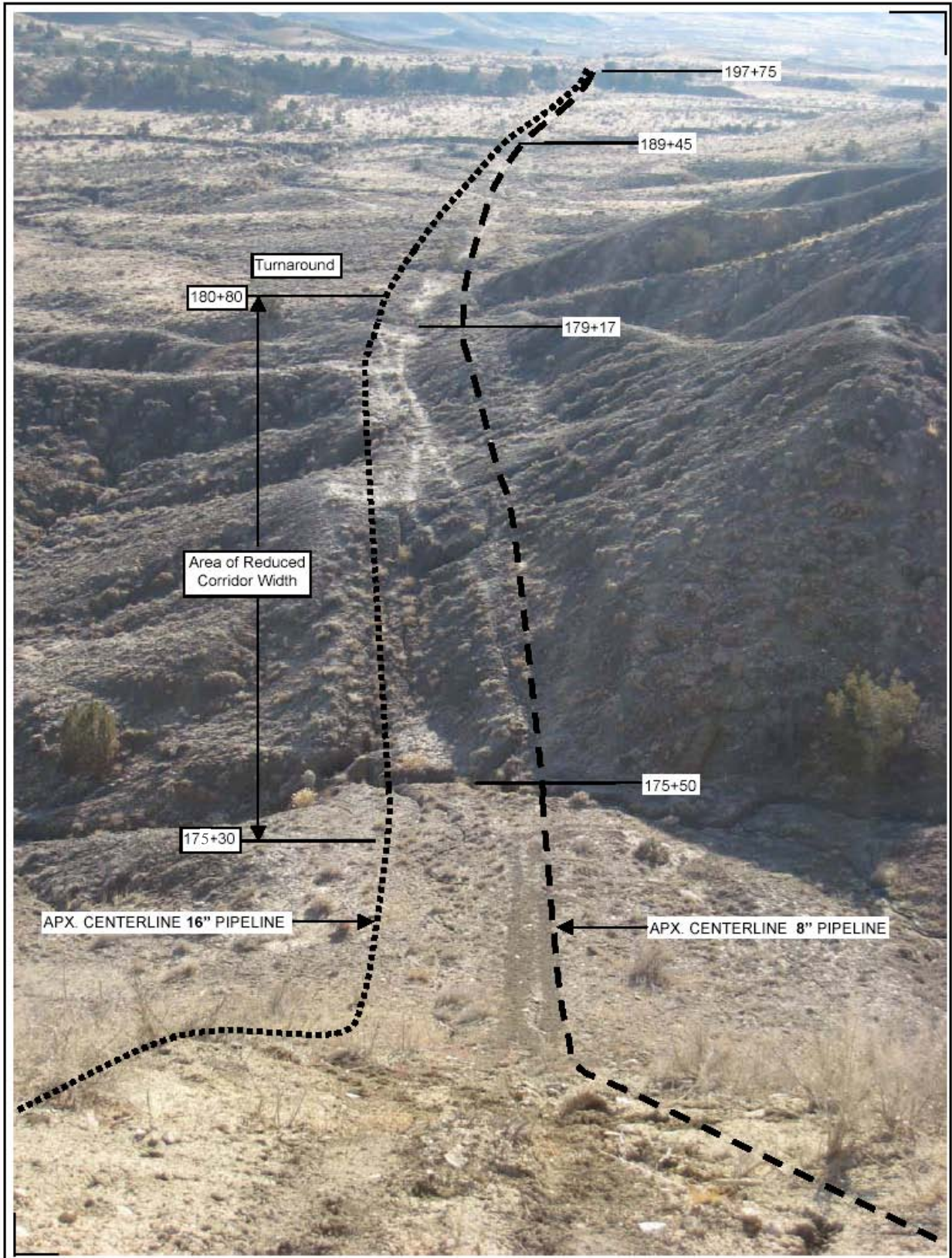


FIGURE 15 – Looking south from Mesa (173+30)



FIGURE 16 – Exposed 8" Pipe South of Mesa



FIGURE 17 – South View From 197+75

Other Resource Considerations – Construction activities would generate dust and a limited amount of equipment emissions. Standard dust suppression measures, such as

water application and minimizing vegetation removal, would be implemented and all vehicle exhaust equipment would be maintained in good working order. PSCo would also adhere to required dust suppression requirements in applicable permits, and state and local regulations.

Regarding visual effects, the pipeline would be buried, and the facilities to be enlarged are existing facilities. PSCo would minimize impacts to visual resources through erosion control practices, reclamation, revegetation, and coordination with BLM.

The proposed pipeline would be located in a rural area with sparse population. Social and economic concerns in the Project area largely would be limited to compensation to affected landowners for easements to support rights-of-way and any temporary effects to private property and BLM land resulting from construction activities. Workers needed to construct the proposed pipeline are anticipated to camp or use motel facilities in the Grand Junction area. PSCo would work with the landowner and the BLM to assure minimal affects to grazing operations.

A cultural resources Class 1 literature and State Historic Preservation Office (SHPO) survey would be conducted for the proposed pipeline corridor to determine if previously recorded historical or archaeological sites exist in the Project area. The work would be conducted by a local cultural resource consultant. Documentation would include discussion of any historic properties that may be affected by the proposed Project and alternatives, and the methods used to identify them. Cultural resource findings are not anticipated. Prior to construction, however, a more detailed Class 3 cultural resources survey would be conducted to physically identify cultural sites or artifacts in the proposed pipeline corridor area of potential effects (APE). In addition, inadvertent effects to cultural resources would be controlled by limiting access to cultural resources, educating employees about the significance of cultural resources, and implementing a management policy restricting the causal collection of artifacts from the Project area.

9. Soil Stabilization and Revegetation

BMPs would be used to minimize soil erosion during construction. The BMPs would be defined in an approved stormwater management plan. At a minimum, BMPs would consist of silt fencing, stabilizing fabrics, and fabricated stabilizing rolls to serve as drainage armoring along stream banks. Overland travel would avoid excessive disturbance to vegetation and soils. Where vegetation removal was necessary in the right-of-way, vegetation would be removed selectively to maximize, to the greatest extent possible, maintenance of native plant communities and habitats. All vegetation removed during construction would be disbursed on-site, when appropriate, with the remainder transported off-site. Sensitive plant surveys would be conducted prior to construction to identify the presence of these species in the proposed Project area. If a sensitive plant species was found, PSCo would work with BLM to ensure protection of the plant population or to conduct acceptable mitigation.

Soils compacted by construction equipment, including ruts and scars, would be loosened and recontoured to pre-construction contours as much as possible following construction. Topsoil would be stockpiled during excavation and replaced post-construction to maximize successful revegetation efforts. Fertilization (where necessary) and revegetation would be performed using a BLM-approved seed mix and would occur to the extent feasible simultaneously with Project completion in portions of the proposed Project area. Mulching or netting may be necessary in some areas to promote revegetative growth. PSCo would work with BLM to successfully implement the reclamation and revegetation plan.

No new access roads would be constructed for the Project. Minimal grading and construction outside of existing disturbed areas on existing roads would be necessary at the road intersections with HWY 139. These areas would be reseeded with a BLM-approved seed mix.

10. Control of Noxious Weeds

Disturbance to previously undisturbed areas creates the potential to introduce noxious weed species. Noxious weeds introduced during construction of a Project typically come from vehicles, improper treatment of equipment, and non-certified seed mixes. Noxious weeds also can be introduced from non-construction related sources, such as wildlife, wind dispersal, and livestock. Existing weed species were observed during reconnaissance of the proposed Project area in April 2008, notably whitetop and tamarisk.

Noxious weed populations identified along the proposed pipeline corridor would be treated through an integrated weed management plan and in consultation with BLM's weed specialist. The following BMPs also would be used:

- Large concentrations of seed-bearing noxious weeds would be treated prior to movement of construction equipment through these areas into relatively weed-free areas;
- Off-road equipment would be washed after exposure to weed-infested areas to prevent the spread of noxious weeds from site to site;
- Revegetation would be used to minimize establishment of noxious weeds; and
- Revegetative seed mixes would be BLM-approved and certified weed-free.

11. Termination and Restoration

The existing pipeline would remain in operation and no other existing facilities would be removed. Existing roads would remain in place and access within the construction area would be recontoured to pre-construction grades. Recontouring of the construction area to pre-construction contours, as much as possible, would be performed following

construction. Topsoil would be stockpiled during excavation and replaced post-construction to maximize successful revegetation efforts. Reseeding would be performed using BLM approved seed mixtures either immediately following recontouring activities or early Spring 2009, as determined by the BLM.

APPENDIX B

Project Legal Descriptions on BLM Lands

LOCATION AND LEGAL DESCRIPTION:

Sixth PM

Township 7 South, Range 102 West:

SE1/4, SE1/4, Sec. 20, T7S, R102W
NW1/4, SE1/4, Sec. 29, T7S, R102W
SE1/4, SE1/4, Sec. 29, T7S, R102W
SW1/4, SE1/4, Sec. 29, T7S, R102W
SE1/4, SE1/4, Sec. 32, T7S, R102W
SE1/4, SE1/4, Sec. 31, T7S, R102W

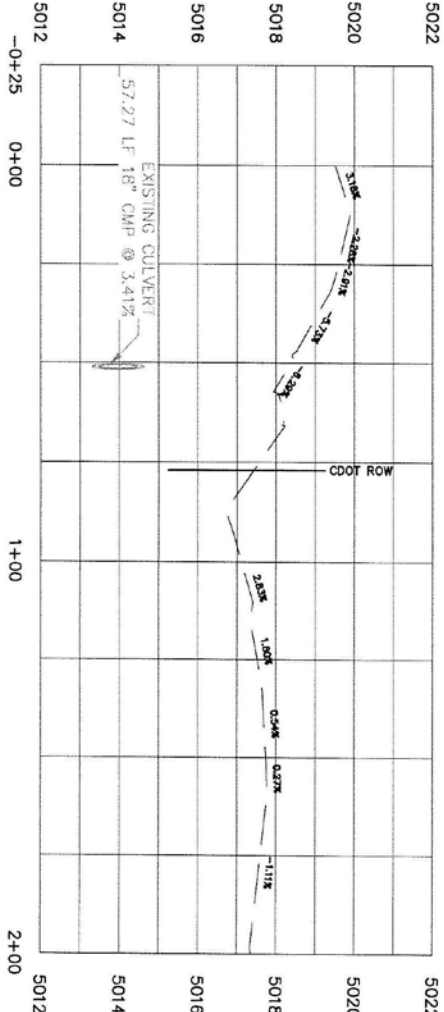
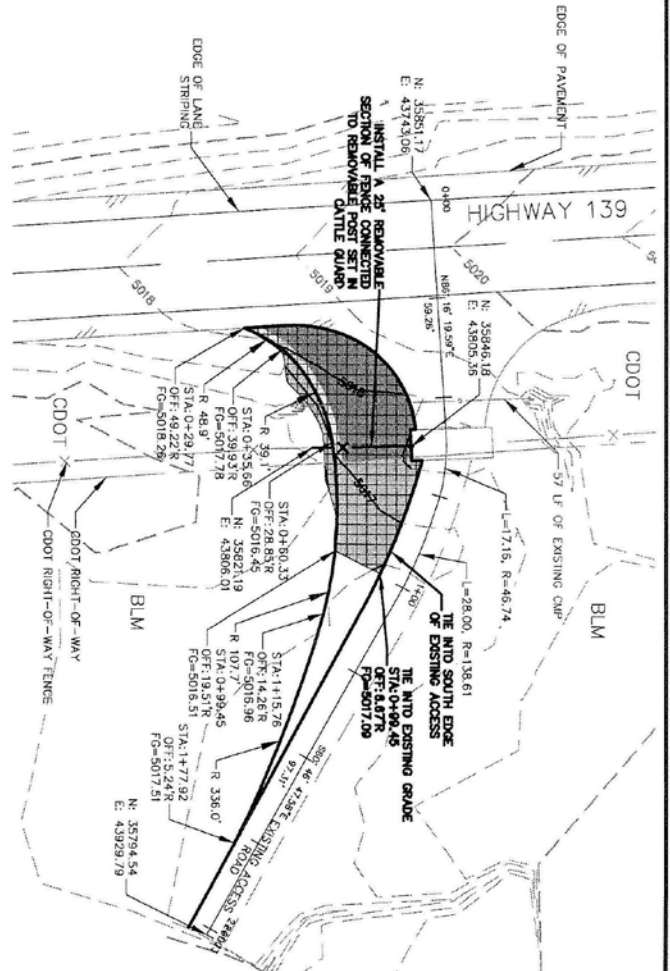
Township 8 South, Range 102 West:

NE1/4, NW1/4, Sec. 5, T8S, R102W
NW1/4, NE1/4, Sec. 5, T8S, R102W
SW1/4, NE1/4, Sec. 5, T8S, R102W
SE1/4, NW1/4, Sec. 5, T8S, R102W
NE1/4, SW1/4, Sec. 5, T8S, R102W
SE1/4, SW1/4, Sec. 5, T8S, R102W
SW1/4, SW1/4, Sec. 5, T8S, R102W
NW1/4, NW1/4, Sec. 8, T8S, R102W
NE1/4, NW1/4, Sec. 8, T8S, R102W

Garfield County, Colorado

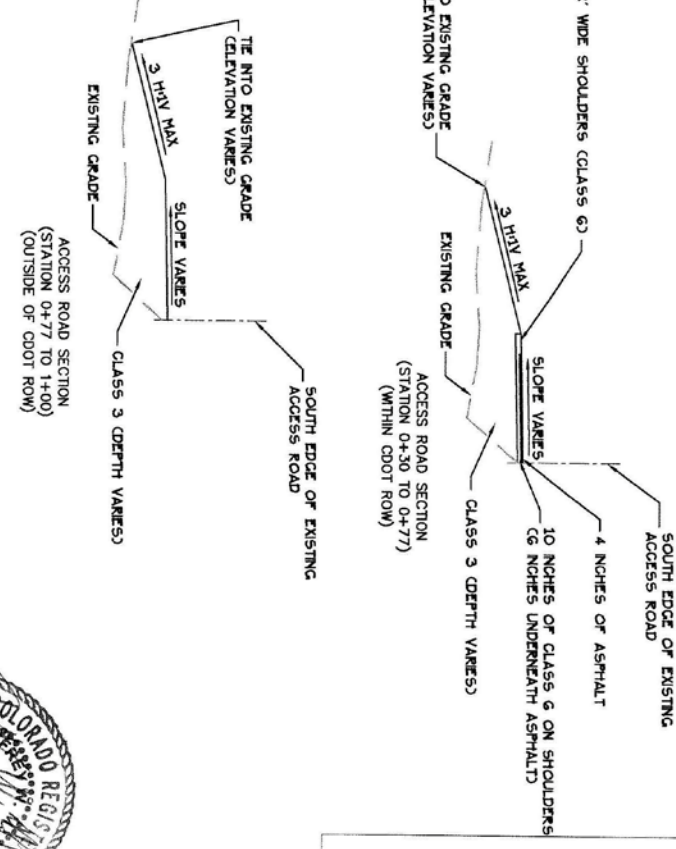
APPENDIX C

CDOT Access Improvement Designs



- NOTES:
1. ACCESS #1 LOCATION IS APPROXIMATELY 150 FT NORTH OF STATE HIGHWAY 139 MILE MARKER 14.
 2. MAXIMUM SIDE SLOPES FOR ACCESS ROAD ARE 3 HORIZONTAL TO 1 VERTICAL.
 3. WITHIN THE CDOT ROW (STATION 00+30 TO STATION 00+77), APPROXIMATELY 16 TONS OF ASPHALT, 15 CY OF CLASS 6, AND 2 CY OF CLASS 3 ARE REQUIRED TO CONSTRUCT THE ACCESS FROM STATE HIGHWAY 139. IT IS ALSO REQUIRED THAT APPROXIMATELY 9 CY OF NATIVE MATERIAL BE REMOVED (OUT FROM WITHIN THE CDOT ROW, IN ADDITION, APPROXIMATELY 6 CY OF CLASS 3 IS REQUIRED TO CONSTRUCT THE ACCESS OUTSIDE OF THE CDOT ROW (STATION 00+77 TO STATION 01+00)). SEE TABLE BELOW FOR FURTHER CLARIFICATION ON QUANTITIES.
 4. ACCESS ROAD IMPROVEMENTS PAST STATION 01+00 SHALL BE DETERMINED BY XCEL ENERGY.
 5. PROPOSED AREA OF DISTURBANCE WITHIN CDOT ROW IS APPROXIMATELY 92 SY. PROPOSED AREA OF DISTURBANCE ON BLM LAND IS APPROXIMATELY 103 SY.
 6. SEMI-TRUCKS IN EXCESS OF 50 FEET SHALL BE PROHIBITED FROM TURNING RIGHT UNLESS TRAFFIC CONTROL IS PROVIDED.

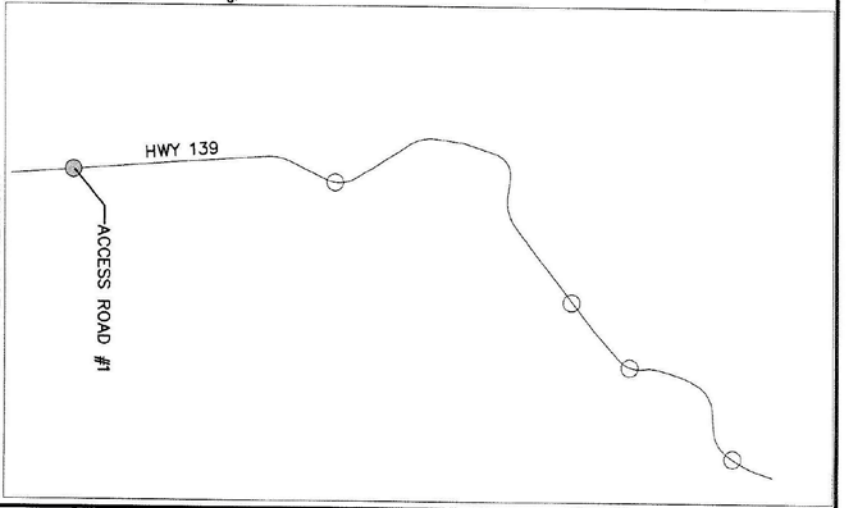
| MATERIAL | QUANTITY INSIDE CDOT ROW (STA. 00+30 TO STA. 00+77) | QUANTITY OUTSIDE CDOT ROW (STA. 00+77 TO STA. 01+00) | TOTAL QUANTITY |
|-------------------------------|-----------------------------------------------------|------------------------------------------------------|----------------|
| ASPHALT | 16 TONS | N/A | 16 TONS |
| CLASS 6 | 15 CY | N/A | 15 CY |
| CLASS 3 | 2 CY | 6 CY | 8 CY |
| NATIVE MATERIAL TO BE REMOVED | 9 CY | N/A | 9 CY |



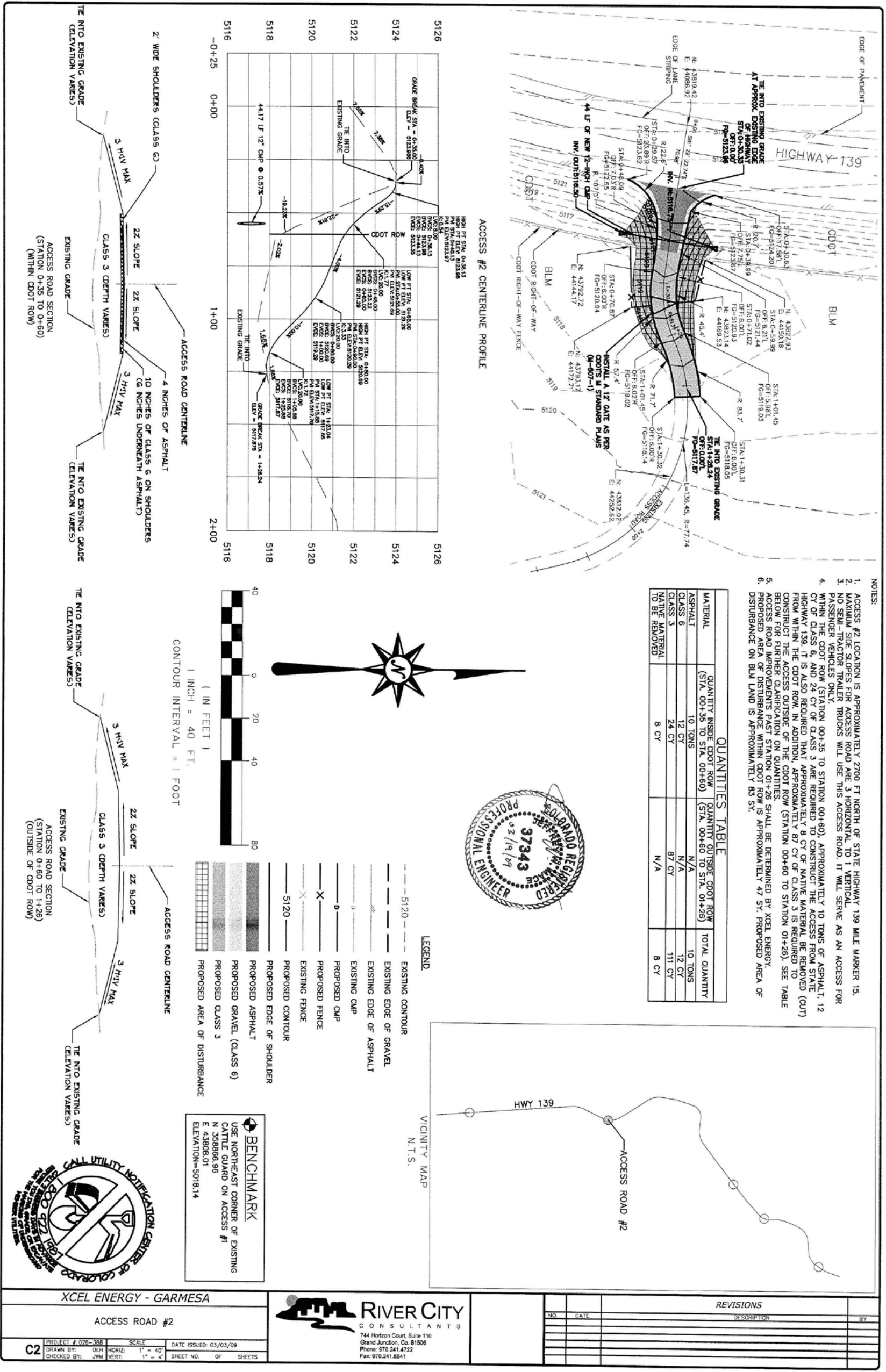
- LEGEND
- 5120 --- EXISTING CONTOUR
 - EXISTING EDGE OF GRAVEL
 - EXISTING EDGE OF ASPHALT
 - EXISTING CMP
 - EXISTING FENCE
 - 5120 --- PROPOSED CONTOUR
 - PROPOSED EDGE OF SHOULDER
 - PROPOSED ASPHALT
 - PROPOSED GRAVEL (CLASS 6)
 - PROPOSED CLASS 3
 - PROPOSED AREA OF DISTURBANCE



BENCHMARK
 USE NORTHEAST CORNER OF EXISTING
 CATTLE GUARD ON ACCESS #1
 N 358866.96
 E 43808.01
 ELEVATION=5018.14



| <p>XCEL ENERGY - GARMESA</p> <p>ACCESS ROAD #1</p> | | <p>RIVER CITY CONSULTANTS</p> <p>744 Horizon Court, Suite 110 Grand Junction, Co. 81506 Phone: 970.241.4722 Fax: 970.241.8841</p> | <p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> | | NO. | DATE | DESCRIPTION | BY | | | | | | | | | | | | |
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| <p>PROJECT # 026-388</p> <p>DRAWN BY: DEH</p> <p>CHECKED BY: JMM</p> | <p>SCALE</p> <p>HORIZ: 1" = 40'</p> <p>VERT: 1" = 4'</p> | <p>DATE ISSUED: 03/03/09</p> <p>SHEET NO. OF SHEETS</p> | | | | | | | | | | | | | | | | | | |



- NOTES:
1. ACCESS #2 LOCATION IS APPROXIMATELY 2700 FT NORTH OF STATE HIGHWAY 139 MILE MARKER 15.
 2. MAXIMUM SIDE SLOPES FOR ACCESS ROAD ARE 3 HORIZONTAL TO 1 VERTICAL.
 3. NO SEMI-TRACTOR TRAILER TRUCKS WILL USE THIS ACCESS ROAD. IT WILL SERVE AS AN ACCESS FOR PASSENGER VEHICLES ONLY.
 4. WITHIN THE CDOT ROW (STATION 00+35 TO STATION 00+60), APPROXIMATELY 10 TONS OF ASPHALT, 12 CY OF CLASS 6, AND 24 CY OF CLASS 3 ARE REQUIRED TO CONSTRUCT THE ACCESS FROM STATE HIGHWAY 139. IT IS ALSO REQUIRED THAT APPROXIMATELY 8 CY OF NATIVE MATERIAL BE REMOVED (OUT) FROM WITHIN THE CDOT ROW. IN ADDITION, APPROXIMATELY 87 CY OF CLASS 3 IS REQUIRED TO CONSTRUCT THE ACCESS OUTSIDE OF THE CDOT ROW (STATION 00+60 TO STATION 01+26). SEE TABLE BELOW FOR FURTHER CLARIFICATION ON QUANTITIES.
 5. ACCESS ROAD IMPROVEMENTS PAST STATION 01+26 SHALL BE DETERMINED BY XCEL ENERGY.
 6. PROPOSED AREA OF DISTURBANCE WITHIN CDOT ROW IS APPROXIMATELY 47 SY. PROPOSED AREA OF DISTURBANCE ON BLM LAND IS APPROXIMATELY 83 SY.

QUANTITIES TABLE

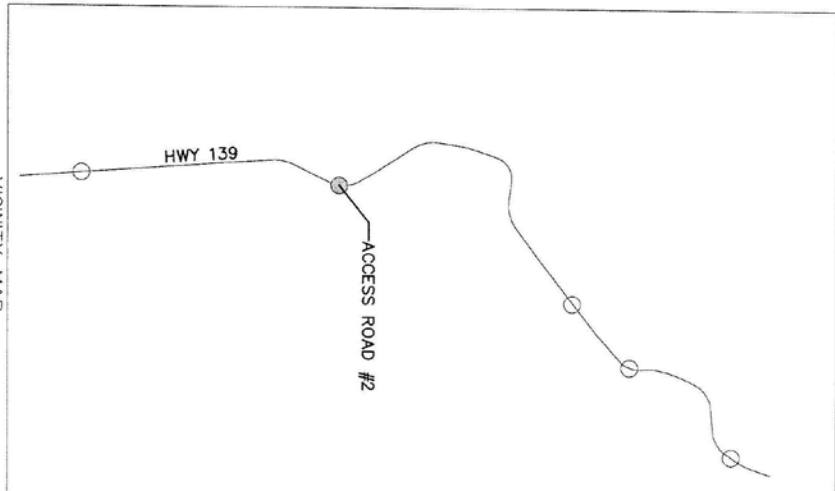
| MATERIAL | QUANTITY INSIDE CDOT ROW (STA. 00+35 TO STA. 00+60) | QUANTITY OUTSIDE CDOT ROW (STA. 00+60 TO STA. 01+26) | TOTAL QUANTITY |
|-------------------------------|-----------------------------------------------------|------------------------------------------------------|----------------|
| ASPHALT | 10 TONS | N/A | 10 TONS |
| CLASS 6 | 12 CY | N/A | 12 CY |
| CLASS 3 | 24 CY | 87 CY | 111 CY |
| NATIVE MATERIAL TO BE REMOVED | 8 CY | N/A | 8 CY |



LEGEND

- 5120 --- EXISTING CONTOUR
- EXISTING EDGE OF GRAVEL
- EXISTING EDGE OF ASPHALT
- EXISTING CMP
- EXISTING FENCE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED EDGE OF SHOULDER
- PROPOSED ASPHALT
- PROPOSED GRAVEL (CLASS 6)
- PROPOSED CLASS 3
- PROPOSED AREA OF DISTURBANCE

VICINITY MAP



XCEL ENERGY - GARMESA

ACCESS ROAD #2

PROJECT # 026-388 SCALE DATE ISSUED: 03/03/09

DRAWN BY: DEH HORIZ: 1" = 40' SHEET NO. OF SHEETS

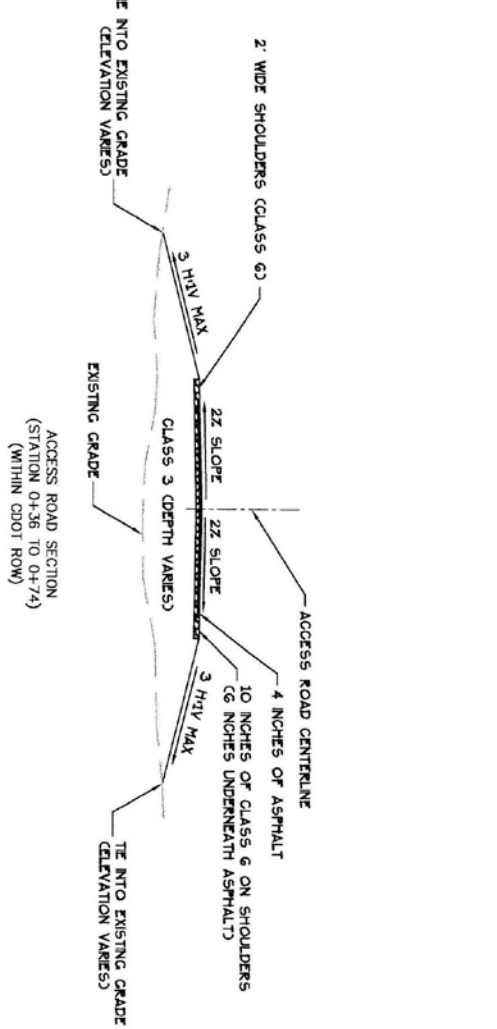
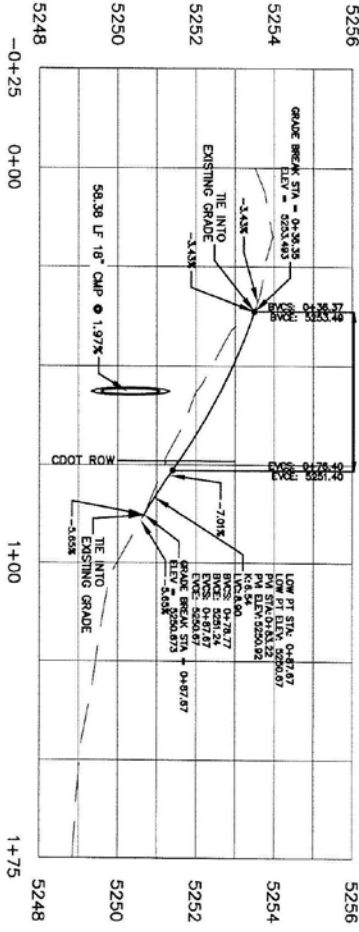
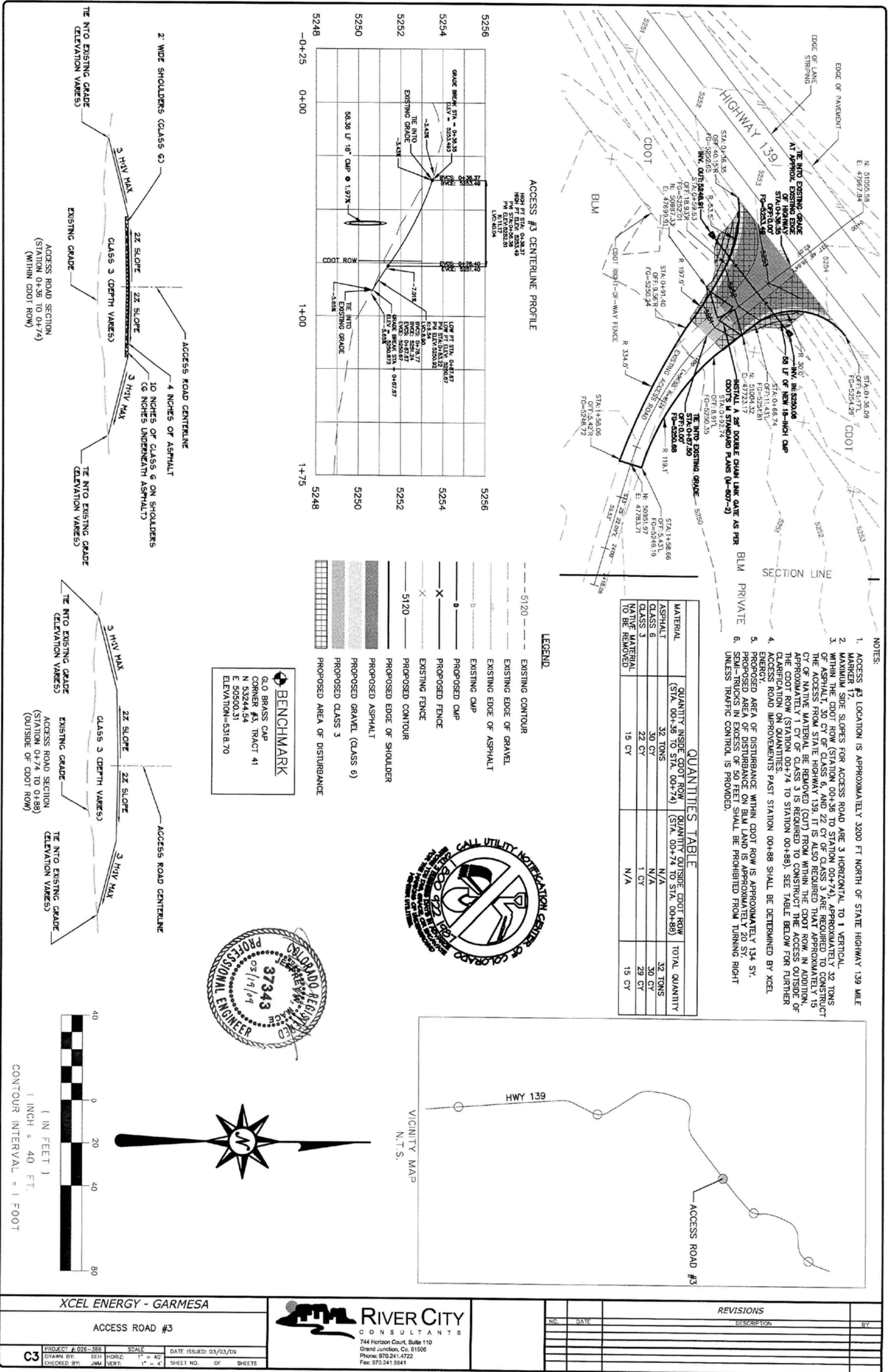
CHECKED BY: JMM VERT: 1" = 4'

RIVER CITY CONSULTANTS

744 Horizon Court, Suite 110
Grand Junction, Co. 81506
Phone: 970.241.4722
Fax: 970.241.8841

REVISIONS

| NO. | DATE | DESCRIPTION | BY |
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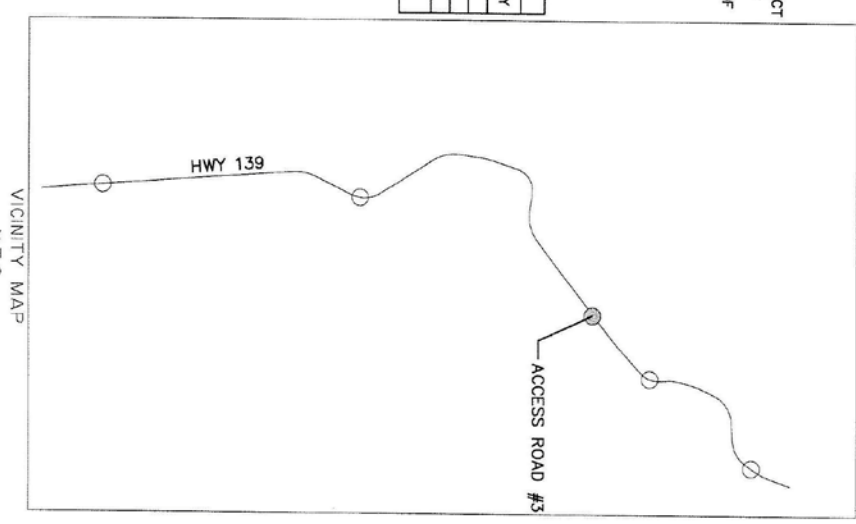


QUANTITIES TABLE

| MATERIAL | QUANTITY INSIDE CDOT ROW (STA. 00+58 TO STA. 00+74) | QUANTITY OUTSIDE CDOT ROW (STA. 00+74 TO STA. 00+88) | TOTAL QUANTITY |
|-------------------------------|-----------------------------------------------------|------------------------------------------------------|----------------|
| ASPHALT | 32 TONS | N/A | 32 TONS |
| CLASS 6 | 30 CY | N/A | 30 CY |
| CLASS 3 | 22 CY | 1 CY | 23 CY |
| NATIVE MATERIAL TO BE REMOVED | 15 CY | N/A | 15 CY |

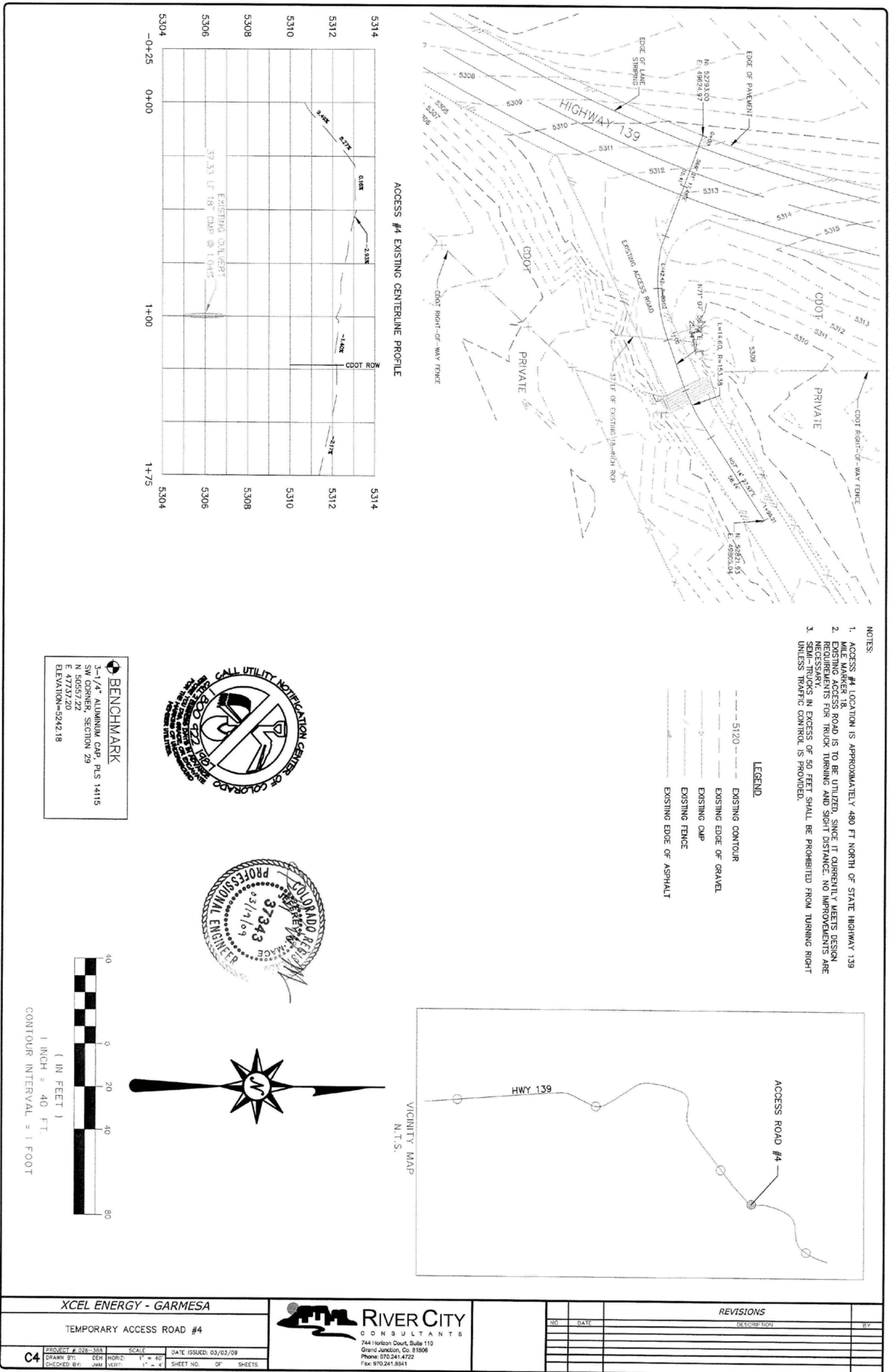
- LEGEND
- 5120 --- EXISTING CONTOUR
 - - - - - EXISTING EDGE OF GRAVEL
 - - - - - EXISTING EDGE OF ASPHALT
 - - - - - EXISTING CMP
 - - - - - PROPOSED CMP
 - - - - - PROPOSED FENCE
 - - - - - EXISTING FENCE
 - - - - - PROPOSED CONTOUR
 - - - - - PROPOSED EDGE OF SHOULDER
 - - - - - PROPOSED ASPHALT
 - - - - - PROPOSED GRAVEL (CLASS 6)
 - - - - - PROPOSED CLASS 3
 - - - - - PROPOSED AREA OF DISTURBANCE

BENCHMARK
 GLO BRASS CAP
 CORNER #3, TRACT 41
 N 53244.54
 E 50500.31
 ELEVATION=5318.70

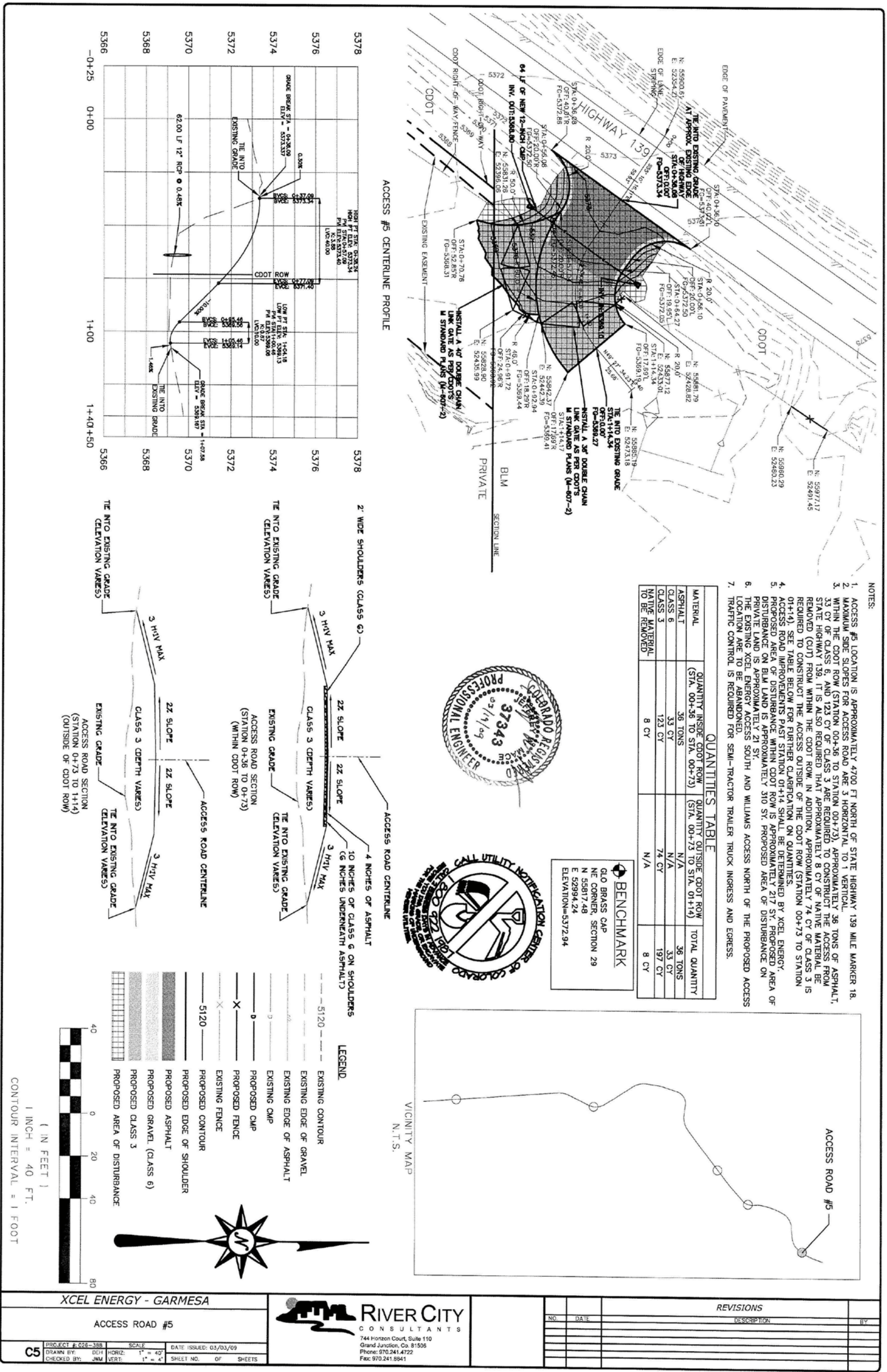


- NOTES:
- ACCESS #3 LOCATION IS APPROXIMATELY 3200 FT NORTH OF STATE HIGHWAY 139 MILE MARKER 17.
 - MAXIMUM SIDE SLOPES FOR ACCESS ROAD ARE 3 HORIZONTAL TO 1 VERTICAL.
 - WITHIN THE CDOT ROW (STATION 00+36 TO STATION 00+74), APPROXIMATELY 32 TONS OF ASPHALT, 30 CY OF CLASS 6, AND 22 CY OF CLASS 3 ARE REQUIRED TO CONSTRUCT THE ACCESS FROM STATE HIGHWAY 139. IT IS ALSO REQUIRED THAT APPROXIMATELY 15 CY OF NATIVE MATERIAL BE REMOVED (CUT) FROM WITHIN THE CDOT ROW. IN ADDITION, APPROXIMATELY 1 CY OF CLASS 3 IS REQUIRED TO CONSTRUCT THE ACCESS OUTSIDE OF THE CDOT ROW (STATION 00+74 TO STATION 00+88). SEE TABLE BELOW FOR FURTHER CLARIFICATION ON QUANTITIES.
 - ACCESS ROAD IMPROVEMENTS PAST STATION 00+88 SHALL BE DETERMINED BY XCEL ENERGY.
 - PROPOSED AREA OF DISTURBANCE WITHIN CDOT ROW IS APPROXIMATELY 134 SY. SETBACKS AND EXCESS OF FENCE SHALL BE PROHIBITED FROM TURNING RIGHT UNLESS TRAFFIC CONTROL IS PROVIDED.

| | | | | |
|-------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|
| XCEL ENERGY - GARMESA ACCESS ROAD #3 | | RIVER CITY CONSULTANTS 744 Horizon Court, Suite 110 Grand Junction, Co. 81506 Phone: 970.241.4722 Fax: 970.241.8841 | REVISIONS | |
| PROJECT # 026-388 DRAWN BY: DEH CHECKED BY: JMM | SCALE: 1" = 40' HORIZ: 1" = 40' VERT: 1" = 4' | | DATE ISSUED: 03/03/09 SHEET NO. OF SHEETS | NO. DATE DESCRIPTION BY |



| | | | | | | | |
|------------------------------|-------------------|-----------------|------------------------------------------------------------------------------------------------------|--|------------------|------|-------------|
| XCEL ENERGY - GARMESA | | | RIVER CITY CONSULTANTS | | REVISIONS | | |
| TEMPORARY ACCESS ROAD #4 | | | 744 Horizon Court, Suite 110 Grand Junction, CO 81508 Phone: 870.241.4722 Fax: 970.241.8841 | | NO | DATE | DESCRIPTION |
| C4 | PROJECT # 028-35A | SCALE | DATE ISSUED: 03/03/09 | | | | |
| | DRAWN BY: DEN | HORIZ: 1" = 40' | SHEET NO. OF SHEETS | | | | |
| | CHECKED BY: JAM | VERT: 1" = 4' | | | | | |



NOTES:

- ACCESS #5 LOCATION IS APPROXIMATELY 4700 FT NORTH OF STATE HIGHWAY 139 MILE MARKER 18.
- MAXIMUM SIDE SLOPES FOR ACCESS ROAD ARE 3 HORIZONTAL TO 1 VERTICAL.
- WITHIN THE CDOT ROW (STATION 00+36 TO STATION 00+73), APPROXIMATELY 36 TONS OF ASPHALT, 33 CY OF CLASS 6, AND 123 CY OF CLASS 3 ARE REQUIRED TO CONSTRUCT THE ACCESS FROM STATE HIGHWAY 139. IT IS ALSO REQUIRED THAT APPROXIMATELY 8 CY OF NATIVE MATERIAL BE REMOVED (CUT) FROM WITHIN THE CDOT ROW. IN ADDITION, APPROXIMATELY 74 CY OF CLASS 3 IS REQUIRED TO CONSTRUCT THE ACCESS OUTSIDE OF THE CDOT ROW (STATION 00+73 TO STATION 01+14). SEE TABLE BELOW FOR FURTHER CLARIFICATION ON QUANTITIES.
- ACCESS ROAD IMPROVEMENTS PAST STATION 01+14 SHALL BE UNDERTAKEN BY XCEL ENERGY.
- PROPOSED AREA OF DISTURBANCE WITHIN CDOT ROW IS APPROXIMATELY 217 SY. PROPOSED AREA OF PRIVATE LAND IS APPROXIMATELY 310 SY. PROPOSED AREA OF DISTURBANCE ON THE EXISTING XCEL ENERGY ACCESS SOUTH AND WILLIAMS ACCESS NORTH OF THE PROPOSED ACCESS LOCATION ARE TO BE ABANDONED.
- TRAFFIC CONTROL IS REQUIRED FOR SEMI-TRACTOR TRAILER TRUCK INGRESS AND EGRESS.

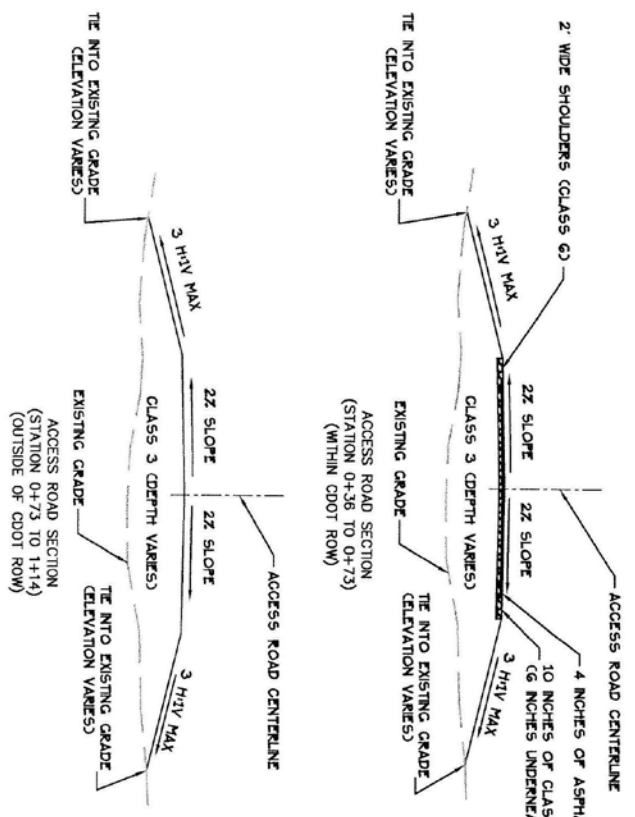
QUANTITIES TABLE

| MATERIAL | QUANTITY INSIDE CDOT ROW (STA. 00+36 TO STA. 00+73) | QUANTITY OUTSIDE CDOT ROW (STA. 00+73 TO STA. 01+14) | TOTAL QUANTITY |
|-------------------------------|-----------------------------------------------------|------------------------------------------------------|----------------|
| ASPHALT | 36 TONS | N/A | 36 TONS |
| CLASS 6 | 33 CY | N/A | 33 CY |
| CLASS 3 | 123 CY | 74 CY | 197 CY |
| NATIVE MATERIAL TO BE REMOVED | 8 CY | N/A | 8 CY |

PROFESSIONAL ENGINEER
 37343
 03/14/09

BENCHMARK
 GLO BRASS CAP
 NE CORNER SECTION 29
 N 55817.48
 E 52994.24
 ELEVATION=5372.94

CALL UTILITY NOTIFICATION CENTER OF COLORADO
 1-800-922-5222
 1800 922 5222



LEGEND

- EXISTING CONTOUR
- EXISTING EDGE OF GRAVEL
- EXISTING EDGE OF ASPHALT
- EXISTING CMP
- PROPOSED CMP
- PROPOSED FENCE
- EXISTING FENCE
- PROPOSED CONTOUR
- PROPOSED EDGE OF SHOULDER
- PROPOSED ASPHALT
- PROPOSED GRAVEL (CLASS 6)
- PROPOSED CLASS 3
- PROPOSED AREA OF DISTURBANCE

SCALE
 1 INCH = 40 FT.
 CONTOUR INTERVAL = 1 FOOT

| | | | | |
|-------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----|
| XCEL ENERGY - GARMESA ACCESS ROAD #5 | | RIVER CITY CONSULTANTS 744 Hanson Court, Suite 110 Grand Junction, Co. 81506 Phone: 970.241.4722 Fax: 970.241.8841 | REVISIONS | |
| PROJECT # 026-388 DRAWN BY: DCB CHECKED BY: JMM | SCALE: 1" = 40' DATE ISSUED: 03/03/09 SHEET NO. 01 OF 02 SHEETS | | NO. DATE DESCRIPTION BY | BY |

Appendix C: Best Management Practices

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Noxious Weeds

1. Incorporate weed prevention into road layout, design, and alternative evaluation.
 - 1.1 During transportation planning and alternative development, consider weed risk factors (presence of weeds, habitat type, aspect, shading, etc. to evaluate road location and design.
2. Remove seed source that could be picked up by passing vehicles and limit seed transport into relatively weed-free areas at moderate or high-ecological risk.
 - 2.1 Before construction equipment moves into a relatively weed-free area at moderate or high-ecological risk; mow, grade, or otherwise treat all seed-bearing noxious weed plants on the travel-way of existing Forest Service access roads. Treated sites must be reseeded as described in Weed Prevention Measure #4.1.
 - 2.2 Clean off-road equipment (power or high-pressure cleaning of all mud, dirt, and plant parts before moving into relatively weed-free areas at moderate or high-ecological risk. (This is not meant to apply to service vehicles that will stay on the roadway traveling frequently in and out of the project area.
3. Retain shade to suppress weeds.
 - 3.1 Minimize the removal of trees and other roadside vegetation during construction, reconstruction, and maintenance; particularly on south aspects.
4. Re-establish vegetation on all bare ground to minimize weed spread.
 - 4.1 For all construction, reconstruction, and maintenance activities, seed all disturbed soil (except traveled way within seven days of work completion at each site unless ongoing disturbance at the site will prevent weed establishment. In that case, seeding shall be done within seven days of final disturbance. Use a seed mix that includes fast, early-growing species to provide quick, dense re-vegetation. Seed should be certified relatively weed-free and/or analyzed (as deemed appropriate by the Forest Soils Scientist before purchase to ensure minimum weed content. Consider the following options: (1) fertilization concurrent with seed application and follow-up fertilization; (2) applying relatively weed-free mulch with seeding; (3) double-seed, full rate at initial ground disturbance, and full rate again at the end of the project. See the current Lolo Seeding Guidelines for detailed procedures and appropriate mixes.
5. Minimize weed spread caused by moving infested gravel and fill material to relatively weed-free locations
 - 5.1 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. Inspect gravel pits and fill sources to identify weed-free sources.
6. Minimize sources of weed seed in areas not yet re-vegetated.

- 6.1 Keep active road construction sites which are in relatively weed-free areas at moderate or high-ecological risk to weed invasion closed to vehicles that are not involved with construction.
7. Ensure establishment and maintenance of vigorous, desirable vegetation to discourage weeds.
 - 7.1 Monitor all seeded sites. Re-fertilize and spot reseed as needed. Prefer native, pioneer species for seeding (low nutrient demanding to minimize the need for fertilization).
 - 7.2 Road maintenance programs should include scheduled fertilization where needed (three-year period suggested).
8. Minimize roadside sources of weed seed that could be transported to other areas.
 - 8.1 Road maintenance programs should include monitoring for noxious weeds. Weed infestations should be inventoried and scheduled for treatment according to the selected alternative. Consider developing timber sale "C" clauses and "T" specifications to collect deposits for use in weed-control road maintenance.
9. Ensure that weed prevention and related resource protection is considered in travel management.
 - 9.1 Consider weed risk and spread factors in Travel Plan (road closure decision making).
10. Minimize transport of weed seed by pack and saddle stock.
 - 10.1 Require that all pack and saddle stock in designated areas use only certified weed-free and straw bedding. (In established wilderness, this requirement should be deferred to the Limits of Acceptable Change Planning Process. Encourage the use of weed-free feed in all areas of the forest).
 - 10.2 Pack and saddle stock should be quarantined and fed only weed-free feed for 24 hours prior to traveling off roads in the forest. Before quarantine, tail and mane should be brushed out to remove any weed seed.
11. Encourage a weed-free trail user's ethic.
 - 11.1 Sign trailheads for weed awareness and weed prevention techniques.
12. Ensure that areas under permit have on-site weed control and minimize spread to other areas.
 - 12.1 Revise recreation special-use permits to require weed treatment consistent with the Forest Plan Amendment for Noxious Weed Management. Require all bare soil to be reseeded as described in Weed Prevention Measure #4.1.

Water Resources

Table A-1:
Erosion and Sediment Control BMPs

| Controls | Earthen Berms |
|----------------|-------------------------------|
| Structural | Wattles/Sediment Control Logs |
| | Silt Fences |
| | Construction Fencing |
| | Temporary Swales |
| Non-Structural | Vegetative Buffer Strips |
| | Surface Roughening |
| | Street Sweeping |
| | Dust Control |
| | Training of Personnel |
| | Site Management Practices |

Other BMPs to be implemented include materials handling and spill prevention, vehicle tracking control, waste management and disposal, and groundwater and stormwater dewatering. Restoration and final stabilization will be an important aspect of the project following completion of earth disturbing activities. The proper use and implementation of the following BMPs will increase the likelihood of successful restoration of the project area to pre-disturbance conditions:

- Soil Compaction
- Topsoil Stripping, Storage, and Replacement
- Restoration Erosion Control
- Seedbed Preparation
- Recommended Seed Mixtures
- Recommended Seeding Procedures
- Mulch and Erosion Control Blanketing
- Final Stabilization
- Control of Noxious and Invasive Weeds

Soils

Topsoil Handling

Prior to surface disturbing activities, all available topsoil would be salvaged and stockpiled. This minimizes the loss of topsoil which is important to ensure successful revegetation and restoration. Salvaging suitable topsoil is also a BLM Soil Management Objective. During vegetation clearing and topsoil salvaging, all clearing work would be conducted when soils are not saturated and would occur without the mixing of soil and vegetation. This is required in the BLM's Standard Design Practices for all Projects (BLM, 1987).

Construction

Access road improvements and construction will not begin until after installation of temporary BMPs, including perimeter controls (wattles, earth berms, or silt fences) and wattles across small drainage features. Wattles consist of a net or geotextile fabric filled with straw or other fillers and help to reduce water velocity allowing sediment to accumulated on the up-gradient side of the wattle. Installation of temporary BMPs will be followed by clearing and grubbing of the pipeline corridor and access road improvements.

The project area will be graded to approximately level, saving as many plant root balls as possible, in order to provide a working surface for the excavation equipment, staged pipe, and stockpiles of topsoil and subsoil, and to establish a roadway for vehicle access, which will be removed at the end of the project. Where the pipeline route crosses small drainage features, a temporary swale will be installed to allow for continued water flow. Wattles will be placed at the downstream end of the swale to trap sediment.

Grading will be followed by excavation of an open trench, except in areas that will be crossed by above-ground spanning. Topsoil and subsoil from trench excavation will be stockpiled separately along the open trench. Upon completion of all 4 miles of pipeline installation, the trench will be backfilled and compacted with subsoil. During backfill and compaction, temporary swales will be restored as closely as possible to the original contour. Following trench backfill and compaction, the stockpiled topsoil will be spread over the disturbed area to begin the restoration and final stabilization process.

Above-ground spanning will be used to cross East Salt Creek and Munger Creek as well as two other unnamed washes. An open trench will be dug to the edge of the drainage where the spanned section of pipe will be guided to the other side with equipment and personnel and welded into place.

Restoration and Final Stabilization

Construction of water bars and earth berms, surface roughening, permanent seeding, mulching, and erosion control blanketing will be completed as part of the reclamation process. Water bars will be installed on steeper slopes throughout the project area to prevent gully erosion and will remain as permanent erosion control measures. They consist of ridges of compacted soil constructed at alternating angles across disturbed sloping areas in order to limit the accumulation of erosive volumes of water by diverting runoff at intervals.

Monitoring and Maintenance

The BMPs will be monitored and maintained as documented in the SWMP. Further discussion of BMPs in relation to vegetation and water resources are provided in Sections 3.2.5 and 3.2.6.

Land Use

According to Article 9 of the Land Use Resolution:

- Location of the staging areas required for pipeline construction.
- Temporary vs. Permanent right-of-way, width during construction, construction facilities, construction schedule.
- Reveg and weed mgmt plans
- Restore all disturbed areas associated with the construction of the project in accordance with applicable federal, state, and local regulations
- Compensate agricultural landowners for actual crop losses resulting from the removal of standing crops, disruption of planned seeding activity, disruption of general farming activities, or other losses resulting from construction of the pipeline as negotiated in individual easements with the landowners.
- Post-construction monitoring to monitor the revegetation
- Bring the right-of-way back to pre-construction condition

Agricultural Resources

Grazing

- Work with landowners and grazing allotment holders to reach mutually agreeable terms regarding exclusion of livestock from construction areas.
- Identify alternative areas for grazing during construction and revegetation periods.
- Revegetate with approved seed mixes appropriate for the soil type (salt and drought-tolerant).
- Consider temporary installation of fencing, trench plugs, and other mitigation safety devices during construction to allow safe passage of cattle to private grazing areas.
- Repair all fences after construction.
- Time pipeline construction to avoid months when cattle typically utilize or access forage in hay pastures.

Agriculture

- Avoid disruption of irrigation activities during construction.
- Recontour and revegetate appropriately after construction.

Recreation and Wilderness

- Because there is no formal recreation use in the study area, no mitigation measures are necessary. Mitigation measures that preserve visual quality, soils, vegetation, and wildlife will serve to protect recreational values.
- Work with Colorado State Parks and BLM to anticipate construction worker demand for campsites, and identify construction worker camping locations that may offer the least impact.

Visual and Aesthetic Resources

- Waste from construction activities would be collected, hauled away, and disposed of in an approved manner. A temporary construction staging area would be located in the previously disturbed area near the Garmesa Valve Set.
- After construction of the proposed project, the disturbed areas will be re-contoured
- The excavated soils will be stockpiled and re-used as backfill
- The disturbed area of buried pipeline would be revegetated with an approved mix of native seeds.
- Revegetation will occur immediately after construction or in the spring and monitored monthly until 70% revegetation has been achieved
- Construction equipment will be confined to access roads, and measures to avoid bringing in noxious weeds will be taken
- The pipeline would be painted with a flat/matte paint that would blend into the natural colors of the surrounding landscape
- Most of the structure will be buried in a 4 foot deep trench, backfilled, and revegetated.
- All disturbed areas would be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrasts associated with the surface disturbance so that the project area will fit into the natural landscape as much as possible.
- Construction activities would generate dust and a limited amount of equipment emissions. Standard dust suppression measures, such as water application and minimizing vegetation removal, would be implemented and all vehicle exhaust equipment would be maintained in good working order. PSCo would also adhere to required dust suppression requirements in applicable permits, and state and local regulations.
- Regarding visual effects, the pipeline would be buried, and the facilities to be enlarged are existing facilities. The primary visual effect would be the construction disturbance area which PSCo would minimize through erosion control practices, reclamation, revegetation, and coordination with BLM.

Appendix D: Soils Supplemental Information

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Garmesa Project area soil types include the following (NRCS 2000):

Cameo fine sandy loam. A deep well-drained soil on flood plains and low terraces. Typically, the surface area is very pale brown fine sandy loam about 4 inches thick. The underlying material is light yellowish brown, stratified sandy loam and loamy sand to 60 inches. The loss of adequate cover in areas of this unit can result in severe gully erosion. If the range vegetation has seriously deteriorated, seeding is needed. Suitable seeding mixtures include western wheatgrass, basin wildrye, Indian ricegrass, and alkali sacaton. This soil is only a fair source of reconstruction material for drastically disturbed areas because of excess lime. Cameo fine sandy loam is present in the northern portion of the East Salt Creek drainage valley and includes the area where the existing and proposed pipeline crossing is located.

Panitchen loam. A deep, well-drained soil present on low terraces and flood plains. Typically, the surface layer is light gray loam about 7 inches thick. The upper portion of the underlying material is pale brown, stratified gravelly loam and gravelly clay loam about 22 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown, stratified loam. Runoff is slow, and the hazard of water erosion is slight or moderate. If the range vegetation has seriously deteriorated, seeding is needed. Suitable seeding mixtures include western wheatgrass, streambank wheatgrass, and basin wildrye. This soil is only a fair source of reconstruction material for drastically disturbed areas because of excess lime. Panitchen loam is present in the East Salt Creek drainage valley and along tributary drainages entering the main valley. The northern access road traverses approximately 0.4 mile of Panitchen loam soils. The central access road traverses approximately 0.15 mile of Panitchen loam soils.

Mesa-Avalon complex. Located on fans and benches. The unit is about 50 percent Mesa very fine sandy loam and 35 percent Avalon loam. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the scale used. The Mesa soil is deep and well-drained and formed in alluvium derived dominantly from sedimentary rock. Typically, the surface layer is brown very fine sandy loam about 3 inches thick. The upper part of the subsoil is brown clay loam about 14 inches thick. The next part is light brown clay loam about 9 inches thick. The lower part of the subsoil is pink very gravelly clay loam about 8 inches thick. The substratum to 60 inches or more is light brown very gravelly loam. Runoff is medium, and the hazard of water erosion is moderate to very severe. Mesa-Avalon complex soils are present in the central/south-central section of the pipeline corridor and are dissected by several drainages (Panitchen loam soils). The central access road traverses approximately 0.5 mile of Mesa-Avalon complex soils.

The Avalon soil is deep and well-drained and formed in alluvium derived dominantly from sedimentary rock. Typically, the surface layer is brown loam and 6 inches thick. The upper part of the subsoil is light yellowish brown and light gray loam about 34 inches thick. The lower part to a depth of 60 inches or more is very pale brown gravelly sandy loam. Runoff is medium, and the hazard of water erosion is moderate to very severe.

Successful seedings can be expected only in years when precipitation is above average. Suitable native grass seeding mixtures include galleta and Indian ricegrass. The hazard of erosion is increased if the soils are left exposed during building site development. Preserving the existing plant cover during construction helps to control erosion. Structures that divert runoff are needed. These soils are only a fair source of reconstruction material for drastically disturbed areas because of excess lime.

Badland. This map unit is on rolling to very steep, nearly barren mountainsides, low hills, ridgetops, and canyon sides. It is formed in residuum derived dominantly from highly calcareous and gypsiferous shale and bentonite. The Badland is very shallow and exhibits no significant soil characteristics. Runoff is very rapid, and the hazard of water erosion is very severe. The use of this map unit is very limited because of the slope, the shrink-swell potential, and the susceptibility to mass movement. Badland soils are mapped in the southern section of the pipeline corridor and are broken up by a section of Youngston loam soils. The southern access road traverses approximately 0.75 mile of Badland soils. The central access road traverses approximately 0.35 mile of Badland soils.

Youngston loam. A deep, well-drained soil on alluvial fans, valley bottoms, low terraces, and flood plains. It formed in calcareous, stratified alluvium derived dominantly from sedimentary rock. Typically, the surface layer is light brownish gray loam about 4 inches thick. The upper part of the underlying material is pale brown loam about 10 inches thick. The lower part to a depth of 60 inches or more is stratified loam. Runoff is slow, and the hazard of water erosion ranges from slight on the lower slopes to severe in the steeper areas. Suitable seeding mixtures include galleta and Indian ricegrass. This soil is only a fair source of reconstruction material for drastically disturbed areas because of excess lime. The Youngston loam soil is present in a drainage valley area between Badland soils areas in the southern pipeline corridor. The southern access road traverses approximately 0.5 mile of Youngston soils.

General soil mapping unit characteristics are provided in Table C-1 as derived from NRCS (2007).

Table C-1:
Soil Types in the Project Area

| Soil Type | Slope | Available Water Capacity | Salinity | Drainage | Calcium Carbonate |
|------------------------------------------|---------------|---------------------------------|----------------------------------|---------------------|--------------------------|
| Badland | 10-65% | Very low | NA | | NA |
| Cameo fine sandy loam | 1-6% | Moderate | Non to slightly | Well-drained | 15% maximum |
| Mesa-Avalon Complex | 3-12% | | | | |
| <i>Mesa</i> | | <i>Moderate</i> | <i>Very slight to moderate</i> | <i>Well-drained</i> | <i>40% maximum</i> |
| <i>Avalon</i> | | <i>Moderate</i> | <i>Non to slightly</i> | <i>Well-drained</i> | <i>40% maximum</i> |
| Panitchen Loam | 1-6% | Moderate | Very slightly to slightly | Well-drained | 15% maximum |
| Rock outcrop – Torriorthents complex | 15-90% | | | | |
| <i>Rock outcrop</i> | | <i>Very low</i> | | | |
| <i>Torrorthents</i> | <i>35-90%</i> | <i>Very low</i> | <i>Very slightly to slightly</i> | <i>Well-drained</i> | <i>15% maximum</i> |
| Torriorthents, cool-rock outcrop complex | 35-90% | Very low | Very slightly to slightly | Well-drained | 15% maximum |
| Youngston Loam | 1-6% | High | Non to slightly | Well-drained | 15% maximum |

Northwest Garmesa 16-Inch Natural Gas Loop Line
Environmental Assessment

Appendix E: Geology Supplemental Information

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Table D-1:
Oil and Gas Facilities in the Project Vicinity

| Facility Type | Facility ID/ API | Facility Name/ Number | Operator Name/ Number | Status | Field Name/ Number | Location |
|---------------|---------------------|--------------------------|----------------------------------------|--------|-----------------------|---------------------------------------|
| Well | 05-045-06352 | Federal C 32-7-102 1 | Mitchell Energy Corporation 58395 | Pa | Unnamed 85251 | Garfield 045/23 SWSW 32 7S 102W |
| Well | 05-045-05024 | Carmesa Usa 1 | Pure Oil Co. 72640 | Da | Garmesa 27975 | Garfield 045/23 L25NW 5 8S 102W |
| Well | 05-045-05025 | Garfield 1 | Kerr Mcgee Oil Industries,Inc 47050 | Pa | Garmesa 27975 | Garfield 045/23 NWSW 5 8S 102W |
| Lease | 12635 | Garfield #1 | Kerr Mcgee Oil Industries,Inc 47050 | Pa | Garmesa 27975 | Garfield 045/23 NWSW 5 8S 102W |
| Well | 05-045-06421 | Federal 1/5/2008 | Mitchell Energy Corporation 58395 | Pa | Garmesa 27975 | Garfield 045/23 SWNE 5 8S 102W |
| Well | 05-045-06472 | East Salt Creek 5-Jan | Ambra Oil & Gas Co 1650 | Al | Garmesa 27975 | Garfield 045/23 SWNW 5 8S 102W |
| Lease | 12693 | Federal 5-15 | Beartooth Oil & Gas Company 6975 | Si | Garmesa 27975 | Garfield 045/23 SWSE 5 8S 102W |
| Well | 05-045-06401 | Federal 15-May | Diamond Oil & Gas Inc 10067 | Si | Garmesa 27975 | Garfield 045/23 SWSE 5 8S 102W |
| Lease | 12521 | Garmesa #1 | Beartooth Oil & Gas Company 6975 | Si | Garmesa 27975 | Garfield 045/23 NENW 8 8S 102W |
| Pit | 113517 | Garmesa 1 | | | GARMESA 27975 | Garfield 045/23 NENW 8 8S 102W |
| Well | 05-045-05016 | Smith 1 | Sun Oil Company 83992 | Pa | Garmesa 27975 | Garfield 045/23 NENW 8 8S 102W |
| Well | 05-045-05020 | Garmesa-Federal 1 | Diamond Oil & Gas Inc 10067 | Si | Garmesa 27975 | Garfield 045/23 NENW 8 8S 102W |
| Well | 05-045-05018 | Eagle 1 | Diamond Oil & Gas Inc 10067 | Si | Garmesa 27975 | Garfield 045/23 SENE 8 8S 102W |
| Pit | 113522 | Eagle1 | | | GARMESA 27975 | Garfield 045/23 SENE 8 8S 102W |

Northwest Garmesa 16-Inch Natural Gas Loop Line
 Environmental Assessment

| Facility Type | Facility ID/ API | Facility Name/ Number | Operator Name/ Number | Status | Field Name/ Number | Location |
|----------------------|-----------------------------|----------------------------------|----------------------------------------|---------------|-------------------------------|-----------------------------------|
| Lease | 12673 | Eagle #1 | Diamond Oil & Gas Inc 10067 | Si | Garmesa 27975 | Garfield 045/23 SENE 8 8S 102W |
| Pit | 112678 | Federal 8-7 | Beartooth Oil & Gas Company 6975 | Cl | Garmesa 27975 | Garfield 045/23 SWNE 8 8S 102W |
| Well | 05-045- 06497 | Federal 7-Aug | Diamond Oil & Gas Inc 10067 | Si | Garmesa 27975 | Garfield 045/23 SWNE 8 8S 102W |

Source: Colorado DNR Oil and Gas Conservation Commission Database (2008)

Appendix F: Visual Supplement Information

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The VRM classes are objectives that are used to define the amount of disturbance an area can tolerate before it no longer meets the visual quality of that class. The classes range in management objectives from restrictive of activity and changes to the landscape (class I), to generally permissive of activities and changes to the landscape (class IV). The class objectives are described in Table E-1.

Table E-1:
VRM Classes

| Class Designation | Class Objective |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Class I | To preserve the existing character of the landscape. The level of change to the characteristic landscape should be low and must not attract attention. |
| Class II | To retain the existing character of the landscape. The level of change to the characteristic 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 | To partially retain the existing character of the landscape. The level of change to the characteristic landscape 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 | To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. |

Most of the project area falls into the Class III designation, while a small portion of the southern tip of the ROW is in an unclassified area. The visual resource management Class III areas, in the Grand Junction management area include all scenic landscapes and highway corridors where a noticeable degree of landscape change is anticipated from land use activities but where visual change will be reduced through reasonable constraints in project design and mitigation. A portion of the proposed project would be located within an area that is unclassified in terms of VRM class, according to the Grand Junction RMP.

