

United States Department of the Interior Bureau of Land Management

BLM

Environmental Assessment
DOI-BLM-UT-CO20-2016-0027-EA

July 2016

Glencove Federal 11-1 Well and Access Roads

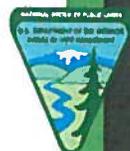
Location: Sevier County, Utah

Well Location: At Bottom Hole: 2061' FNL & 658' FWL, being in Lot 11 (SW/4 NW/4) Section 11, T24S, R2W, SLM
At Surface: 2419' FNL & 314' FWL, being in Lot 11 (SW/4 NW/4) Section 11, T24S, R2W, SLM Sevier County, Utah

Access Road Location: Primary access road is to be an improvement to an existing 2-track road that leaves Sevier County (600 South) road South and West of Glenwood beginning near the NE corner of SE4SE4 Sec 34-T23S-R2W, across private land for about ¼ mile to the lease boundary into the NE4NE4 Section 3-T24S-R2W. A right-of-way will be obtained from the private landowners prior to construction. An encroachment permit will be obtained from Sevier County Road Department for the use of the county road. The northern part (roughly half) of the on-lease well access road will be an improvement to an existing two-track road. The southern part of the on-lease well access will be an improvement to a road built by the Glenwood Irrigation Company in conjunction with the installation of an irrigation water line that runs from a headgate just southwest of the proposed well location to the Water Creek Reservoir.

Applicant/Address: Wolverine Gas and Oil Company of Utah, LLC.
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**Glencove Federal 11-1 Well
DOI-BLM-UT-C020-2016-0027-EA**

1.0 PURPOSE & NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the Glencove Federal well 11-1 as proposed by Wolverine Gas and Oil Company of Utah, LLC (Wolverine). The EA is a site-specific analysis of potential impacts that could result with the implementation of the proposed action or an alternative to the proposed action. The EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR and a FONSI would document the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the BLM Richfield Field Office (RFO), Richfield Resource Management Plan (RMP), approved in October 2008. BLM decisions issued as a result of this EA would apply only to BLM-administered public lands.

1.2 BACKGROUND

Wolverine proposes to directionally drill the Glencove Federal 11-1 oil well which is located approximately 2.4 miles South Southwest of Glenwood (See Appendix for map). The proposed well pad and new/upgraded access road would be located on both public lands and minerals administered by the Bureau of Land Management, Richfield Field Office (BLM).

An on-site inspection of the proposed well pad occurred on April 7, 2016. Individuals from the BLM, Wolverine, Savage Surveying, and Rocky Mountain Environmental Research participated in the on-site inspection.

Drilling oil and gas wells on public lands administered by the BLM requires a Federal lease. The proposed well pad location and bottom hole would occur within Federal lease UTU-91058 which is owned by Wolverine Gas and Oil Company.

The proposed primary access road is to be an improvement to an existing 2-track road that leaves Sevier County (600 South) road South and West of Glenwood beginning near the NE corner of SE4SE4 Sec 34-T23S-R2W, across private land for about ¼ mile to the lease boundary into the NE4NE4 Section 3-T24S-R2W. A right-of-way will be obtained from the private landowners prior to construction.

1.3 NEED FOR THE PROPOSED ACTIONS

Wolverine Gas and Oil Company has filed an Application for Permit to Drill. The underlying need for the proposed action is for the BLM to respond to the applicant’s proposal to exercise their valid

right to explore and develop their Federal Lease by drilling the proposed exploratory well, and if successful, to develop and produce commercial quantities of oil or gas under the terms and the stipulations of its Federal oil and gas lease.

1.4 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is for the BLM to consider the approval of the applicant's proposed oil and gas exploration and development request within their oil and gas lease. BLM's oil and gas leasing program is under the authority of the Mineral Leasing Act of 1920, as amended. The BLM oil and gas leasing program promotes the development of domestic oil and gas resources and the reduction of U.S. dependence on foreign energy sources. Oil and gas exploration and development is recognized as an appropriate use of public lands in the RMP that provides management direction for the leased area. BLM would consider approval of the proposed exploratory drilling and access road in a manner that avoids or reduces impact on other resources and activities as identified in the RMP.

1.5 CONFORMANCE WITH BLM LAND USE PLAN(S)

The alternatives described below (Proposed Action and No Action) are in conformance with the Richfield RMP approved in October 2008. Although the Proposed Action and No Action Alternative are not specifically mentioned in the RMP, they are consistent with the following Desired Outcomes (Goals and Objectives), and Management Actions.

Minerals and Energy Decisions (MIN) (Table 19, page 135)

Desired Outcomes (Goals and Objectives)

Manage conservation of leasable mineral resources using appropriate best management practices, and without compromising the long-term health and diversity of public lands.

Encourage and facilitate the development by private industry of public land mineral resources in a manner that satisfies national and local needs and provides for economical and environmentally sound exploration, extraction, and reclamation practices using appropriate BMPs.

Support the domestic need for energy resources.

Management Actions

MIN-1. Issue oil and gas leases and allow for oil and gas exploration and development.

MIN-3. To the extent allowed by a site-specific environmental analysis that justifies a constraint, consistent with 43 CFR 3101.1-2, and consistent with the terms of an existing lease, apply the constraints and requirements for leasing implemented in this RMP to leases that were authorized prior to the signing of the ROD and the approval of the RMP.

MIN-11. Manage fluid mineral leases as shown on Map 23:

- Areas open to leasing with standard lease terms
- Areas open to leasing subject to CSU and/or timing limitations
- Areas open to leasing subject to NSO.

The following stipulation is included in the lease (UTU-91058):

Section 6- The lessee must conduct operations in a manner that minimizes adverse impact to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users.

1.6 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

The authorization to gain access and to drill the Glencove Federal 11-1 Well would be consistent with Bureau policy, and other Federal, state and local laws, regulations and plans, including:

Mineral Leasing Act (1920) (30 U.S.C. 181-263, as amended) – Authorizes the Secretary of the Interior to issue leases for the extraction of certain minerals (including oil and gas).

Mining and Minerals Policy Act (1970) (30 U.S.C. 21) – Emphasizes the need for ongoing development of stable domestic mining and minerals industries.

Federal Onshore Oil and Gas Leasing Reform Act of 1987 (43 CFR 3162) – Amends the Mineral Leasing Act to require BLM to lease lands known or believed to contain oil or gas deposits under a competitive oral bidding system and governs the procedures for site-specific oil and gas permitting.

Energy Policy and Conservation Act (EPCA) of 2000 (43 U.S.C. 6361) – Outlines the following principles to be factored in to enhance energy development: Environmental protection and energy production are both desirable and necessary objectives of sound land management practices; ensure the appropriate amount of accessibility to energy resources necessary for the Nation's security while recognizing that special and unique non-energy resources can be preserved; sound planning must weigh the relative resource values consistent with existing legislation; and all resource impacts must be mitigated to prevent undue or unnecessary degradation.

Energy Policy Act of 2005 (43 U.S.C. 6361) – States environmental protection and energy production are both desirable and necessary objectives of sound land management practices.

Rangeland Health Standards and Guidelines (43 CFR 4100, subsection 4180) – Requires BLM management actions ensure watersheds' physical conditions are properly functioning; ecological process support healthy biotic populations and communities; meet state water quality standards and habitats are maintained or restored for special status species. The Proposed Action is consistent with the Fundamentals of Rangeland Health (43 CFR 4180) and Utah's Standards and Guidelines for Rangeland Health, which also addresses watersheds, ecological condition, water quality and habitat for special status species, and Native American Trust Resource policies.

Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq., as amended) – States the BLM consider multiple uses for the lands it administers. FLPMA specifies that the BLM consider the land's inherent natural resources as well as its mineral resources when making land management decisions.

Utah State Rule R850-21, Oil, gas and Hydrocarbon Resources – State rules addressing the issuing of oil, gas and hydrocarbon leases and management of trust owned lands and oil, gas and hydrocarbon resources.

Utah State rule R649-3. Drilling and Operating Practices – Provides the direction for the exploration and development of state oil and gas leases.

The Authorized Officer may impose stipulations which could include, but not be limited to: requirements for restoration, re-vegetation, and curtailment of erosion of the surface of the land, or any other rehabilitation measures determined necessary regarding extent, duration, survey, location, construction, operation, maintenance, use and termination. Requirements designed to control or prevent damage to scenic, esthetics, cultural and environmental values including damage to fish and wildlife habitat, damage to federal property and hazards to public health and safety may also be imposed.

The proposed action would be consistent with Bureau policy and other Federal, State, and local laws, regulations, and plans. The Applicant, however, would be required to secure all relevant permits prior to beginning construction activities on public land. An APD for the well has been submitted to the Utah Division of Oil, Gas and Mining.

A general listing of agencies that could be involved in the implementation of the Proposed Action, and their respective regulatory authority is provided below in Table 1.1

Table 1.1 Permits, Approval and Authorizing Actions Required for the Proposed Action

| Issuing Agency/Permit Name or Authorizing Action | Nature of Permit/Approval | Regulatory Authority (If appropriate) |
|---|--|---|
| Advisory Council on Historic Preservation (ACHP) | | |
| Cultural Resource Compliance | Protects cultural & historic resources; coordinated with Utah State Historic Preservation Officer (SHPO) | National Historic Preservation Act, Section 106. |
| Bureau of Land Management | | |
| Antiquities, cultural & historic resource permits | Inventory, excavate or remove cultural & historic resources from Federal lands | Antiquities Act of 1906 (16 U.S.C. 431-433); Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470.11), 43 CFR Part 3. |
| Pesticide Use Permit | Inventory, treat Federal lands for noxious weeds | Federal Noxious Weed Act of 1974, as amended (U.S.C. 2801-2814) |
| ROW Grants & Temporary Use Permits | Authorizes land uses on Federal lands | Mineral Leasing Act, as amended (30 U.S.C. 185), 43 CFR 2880; FLPMA (43 U.S.C. 1761-1771), 43 CFR 2800. |
| Mineral Material Sales Permit | Authorizes use of BLM-managed borrow pits in road construction, if applicable | Material Act of 1947, as amended (30 U.S.C. 601 et seq.) |
| Application for Permit to Drill | Authorizes drilling for oil and gas | Onshore Order 1; 43 CFR 3160 |
| State of Utah | | |
| Department of Transportation | Permitting of any activities impacting state highways or within highway easements, including road crossings and heavy equipment transport permits. | |

| | | |
|--|---|--|
| Division of Water Quality | Permit to alter a natural stream channel; issuance of permit for alternation of natural stream channel | Clean Water Act of 1977 (33 U.S.C. 1251 et seq. 401) |
| State Historic Preservation Officer | Consult on Section 106 compliance; approves cultural resource clearances; provides protection of cultural resources | Archaeological Resources Protection Act of 1979 |
| Utah Division of Oil, Gas and Mining (UDOGM) | Approval of Permits to Drill | Rule R649-3. Drilling and Operating Practices |
| Sevier County | | |
| Department of Road & Bridges | County road use & modification permit/agreement; noxious weed act enforcement; solid waste disposal permits | County Ordinance |
| Office of Planning & Zoning | Coordination, county zoning consultation | County Ordinance |

1.7 IDENTIFICATION OF ISSUES

The BLM began the issue identification process by conducting internal scoping with an interdisciplinary team (IDT) of BLM resource specialists. The proposed project was posted to the ePlanning website on May 3, 2016. A complete list of consultation is provided in Chapter 5, Consultation and Coordination.

Appendix A of this EA (Interdisciplinary Team Checklist), contains a checklist of all resources and issues considered, including some of the common supplemental authorities that provide procedural or substantive responsibilities relevant to identifying issues for analysis in the NEPA process. As a result of the information and documentation contained in Appendix A, those resources or issues which are identified in the checklist as “Not Impacted” by the Proposed Action or “Not Present” at the project area are not discussed further in the text of this EA. However, the following resources or issues were identified as “Potentially Impacted” in the ID Team Checklist, which requires further analysis in the EA: Air quality, Greenhouse gasses, Hydrology/water/wetlands, Recreation, Socio-economic, Soils/Watersheds, Vegetation, and Visual resources. Each of these resources/issues is briefly summarized below.

Air Quality

Emissions from earth-moving equipment, vehicle traffic, drilling and completions activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions could affect air quality.

Greenhouse Gases

Should development occur on any of the leases, greenhouse gases could be emitted during development activities.

Hydrology/Water/Wetlands

Excavation, drilling and production activities have the potential to contaminate water sources and

wetlands. The proposed well pad is about 1.5 miles away from the nearest Drinking Water Protection Zone (DWPZ) and about two miles from its associated spring source. There are no Sole Source Aquifers (SSAs) near the project area. A wetland/riparian area does exist within 330 feet of the proposed project area. The wetland area is fed by a small surface water source called Water Creek.

Soils and Watersheds

- **Soils:** The Proposed Action would result in soil disturbance. Direct impacts to soils would include soil exposure due to vegetation removal, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. These impacts may consequently result in increased erosion, runoff, and sedimentation.
- **Watersheds:** The loosening of earthen material and the removal of soil and vegetation could contribute sediment and total dissolved solids to the watershed. However, the increase in sediment load or total dissolved solids is anticipated to be relatively minor and localized. Diversion ditches would be constructed around the project site to prevent surface waters from entering the disturbed area.

Recreation

The proposed action area is within the extensive recreation management area (ERMA) of the Richfield Field Office. There are multiple designated routes in the proposed action area. There is one designated route on the hillside that crosses the disturbed area in the vicinity of the well pad and will be lost due to the proposed action. It is proposed to temporarily close this route during construction activities and re-route the road around the proposed action activities.

Socio-Economic

Drilling an exploration well could impact the local social structure and economy especially if the well is productive.

Vegetation

Whenever there is surface disturbance, vegetation is impacted. Rehabilitation of the disturbance would occur as a condition of approval for the project.

Visual Resources

The proposed action area is currently managed as VRM IV. Objectives for VRM Class IV are to provide for management activities that require major modification of the existing character of the landscape. The construction of an oil and gas well has the potential to change the visual landscape of an area.

2.0 DESCRIPTION OF THE ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This section of the EA provides a description of the alternatives, which include the Proposed Action and the No Action Alternative. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action. The alternatives and objectives were developed by using the interdisciplinary team approach using on-the-ground knowledge and experience of staff specialists in the RFO.

2.2 ALTERNATIVE A – PROPOSED ACTION

Wolverine has proposed to directionally drill the Glencove Federal 11-1 from the proposed well pad located in the SW/4NW/4 of section 11, T. 24 S., R. 2W., SLM. They also propose to up-grade an existing 2 track dirt county road and to construct a short segment of new road to access the well pad location. The well and the access roads are located on their Federal lease UTU-91058. (See Appendix B, Project Map)

Wolverine has filed an APD for the Glencove Federal 11-1 Well with the BLM and the Utah Division of Oil, Gas and Mining (UDOGM). The APD includes a Surface Use Plan of Operations. These components of Wolverine’s application are the basis for the Proposed Action in this EA. The Surface Use Plan of Operations provides specifications for construction of the well pad and access road, well pad layout, and restoration of the well pad and access road. (See Table 2.1 below)

Table 2.1 Proposed Surface Disturbance

| Action | Well Pad (acres) | Road, Upgrade (acres) | Total Acres |
|--------------------------|------------------|-----------------------|-------------|
| Glencove Federal 11-1 | 4.22* | 7.57* | 11.79 |
| Total Disturbance | | 11.79 | |

*Includes the pad, spoil piles and cut and fill slopes

The proposed start date for construction of the well pad, and upgrading and construction of the access road is summer of 2016. Construction of the well pad and new access road segment would require approximately 30 days and drilling would require approximately 2-3 weeks. Wolverine’s proposed construction, drilling, completion, reclamation, and abandonment procedures for the wells are discussed further in the following sections.

Well Pad:

- **On well pad** –A temporary testing facility may be constructed on this location in the event drilling is successful, consisting of treater/separator, tanks and related components. The facility would be surrounded by a dike of sufficient capacity to contain the storage capacity of the largest tank. All loading lines and valves would be located inside the berm surrounding the tank battery.
- **Off well pad** – It is not possible to know whether an off-well pad production facility would be necessary in the event of a discovery. The Operator would submit this information for approval at such time as production requirements are known.

Access Road:

Primary access road is to be an improvement to an existing 2-track road that leaves Sevier County (600 South) road South and West of Glenwood beginning near the NE corner of SE4SE4 Sec 34-T23S-R2W, across private land for about ¼ mile to the lease boundary into the NE4NE4 Section 3-T24S-R2W. The surface condition of portions of the dirt road will need considerable improvement to be suitable for all-weather oilfield traffic. These improvements would consist of the installation of culverts and water bars for drainage control, low-water crossings, installation of truck turnouts, widening in some places, and surfacing with gravel road base.

The proposed primary access road would require the construction of a driveway ramp off the county

road that will be addressed in the county road encroachment permit. The road would have a travel surface of about 12' in width. A secondary access road is planned to make a circle drive from the south end of the drill pad to connect back into the primary road. That road will also provide for emergency egress. See attached drawing sheets (Appendix B) for road location and improvements. See Typical Section sheet for road design.

Road construction, operation and maintenance would be in compliance with the terms and conditions of the Conditions of Approval, the American Association of State Highway and Transportation (AASHTO) safety standards, and will meet criteria for the Manual of Uniform Traffic Control Devices (MUTCD) manual for signs.

Energy dissipating structures and silt fences would be utilized to minimize erosion that may result from the road construction. There is small section of designated OHV route (BLM Route 3540 and BLM Route 3542) on a hillside within the proposed pad area that would need to be closed during construction and drilling activities. Due to the rocky very steep incline, the small section of designated route that is proposed for closure is currently very unsafe for travel and is not being used. Before construction activities occur, signage advertising closures for sections of BLM Route 3540 and BLM Route 3542 which go through the proposed well pad site would be placed on both routes outside of the project area. Upon completion of rehabilitation activities, the signage would be removed and the designated routes would be open and ready for full use again. These routes may be relocated to an adjacent area that would provide a safer route.

All existing county roads and the upgraded lease roads would be maintained and kept in good repair during all phases of operation. Vehicle operators would obey posted speed restrictions and observe safe speeds commensurate with road and weather conditions.

Location and Type of Water Supply (Rivers, Creeks, Lakes, Ponds and Wells):

The Operator intends to purchase water from the City of Richfield. The volume of water required is minimal due to the closed tank circulation system. The source of water is the city wells. Water would be trucked to the reserve tank onsite from a fire hydrant on the East side of town, as directed by the City of Richfield. Should additional water sources be pursued they would be properly permitted through the State of Utah – Division of Water Rights. The BLM would be notified of any changes in water supply.

Construction Materials:

Natural earth materials used for fill on the well pad would be taken from cuts made in construction of the pad. Imported granular borrow from an approved source will be applied to the surface of the well pad and access road where deemed necessary. No construction materials will be removed from federal lands.

Methods for Handling Waste Disposal:

The reserve tank would be used for the disposal of waste mud and drill cuttings. All borehole fluids and salts will be contained in the reserve tank. Upon completion of drilling all fluids and solids would be trucked to the Sevier County Landfill for disposal.

No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of the well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported,

or disposed of in association with the drilling, testing, or completion of the well.

Wastewater will not be discharged on the surface at this site and the drilling of the well would not require a wastewater management plan. All rubbish and debris would be kept in containers on the well site, and would be hauled to an approved disposal site upon completion of drilling operations and as needed during such operations. There will be no chemical disposal of any type. Self-contained, portable toilets will be used for human waste, and the waste will be disposed at an approved human waste disposal facility. Sanitation will comply with local and state regulations.

Ancillary Facilities:

No ancillary facilities are anticipated at this time.

Well Site Layout:

Pad Location and Layout Drawings in the APD packet show the proposed well site layout including location of the reserve tank and access road onto the pad, turnaround areas, parking areas, living facilities, soil material stockpiles, and the orientation of the rig with respect to the pad and other facilities. Cross section sheets in said packet show cuts and fills required for construction, and their relationship to topography.

The pad and road designs would be consistent with BLM specifications. A pre-construction meeting with responsible company representative and contractors will be conducted at the project site prior to commencement of surface-disturbing activities. The pad and road will be construction-staked (centerline and exterior boundaries) prior to this meeting. All surface disturbing activities would be supervised by a qualified, responsible company representative who is aware of the terms and conditions of approval from the BLM under the APD. All cut and fill slopes will be such that stability can be maintained for the life of the activity. The stockpiled topsoil (first 8 inches or maximum available) will be isolated in a berm by the well pad. Topsoil will be stockpiled for reclamation in such a way as to prevent soil loss and contamination. Water spraying may be implemented if necessary to minimize dust.

Drilling and Completion:

Once the access road and well pad construction are completed, a drill rig would be mobilized to the site and set-up for drilling. Wolverine's drilling program for the well provides specifications on anticipated formations, mud system, potential water and hydrocarbon intervals, casing, cementing and other standards. Surface and other casings would be set with cement to prevent migration of borehole fluids and contamination of any fresh water aquifers penetrated by the borehole and to isolate potentially productive hydrocarbon zones. The well would be directionally drilled with a combination of various drilling fluids to maintain borehole pressures, and the mud weight would be monitored to ensure proper weighting of the drilling fluid for anticipated borehole pressures. The borehole fluids would contain bentonitic clays, chemical additives, and a weighting material (usually barite), which in essence is a heavy, fluid suspension, that is called a drilling mud. The mud controls borehole fluid migration either from the borehole into the bedrock or from the bedrock into the borehole, and the mud provides a lubricant for drilling. This heavy suspension builds mudcake (or filtrate) on the borehole, and minor quantities of this filtrate may penetrate a minimal distance into the bedrock, depending on the porosity and permeability of the strata. The result of this co-mingling of drilling fluids and groundwater, if present, is unavoidable but does not contaminate the natural water quality in aquifers. Fresh-water, weighted mud, salt-saturated and oil based drilling fluids could be used. The proposed depth of the well is 6,249 feet. Drip pans and all other contingencies and equipment would be in place to handle the mud based drilling fluids. All fluids from the borehole

would be run through the closed tank circulation system. Water used for drilling operations would be purchased from Richfield City.

Wolverine's drilling program for the well has been reviewed by the BLM and Utah Division of Oil Gas and Mining (UDOGM) for adequacy of the plan and for conformance with state regulations and statutes. Conditions of Approval (COAs) would be added to the drilling permit as necessary to ensure that the Drilling Program has provisions for protecting water zones, mineral zones, and hydrogen sulfide zones. Diesel fuel would be stored on the well pad for drilling operations. The tank would be surrounded by an earthen berm to contain potential leaks.

Once the well has been drilled to its total depth, evaluation of potential reservoirs would be accomplished through well testing. If the well is determined to be capable of production, completion operations would begin, which could require approximately 30 days. Typically, the drill rig is demobilized, and a smaller work-over rig is used for completion. Testing of a gas reservoir would be accomplished by venting or flaring the produced gas to the flare pit, and testing of oil would require holding produced fluids in tanks on the well pad. In addition, temporary production facilities would include the well head and a dehydrator/separator unit.

All equipment and vehicles would be confined to the access roads and well pad. Fire suppression equipment would be available to suppress any wildfires caused by construction or related activities. In the event of a wildfire, the BLM RFO (435) 896-1500 and the Richfield Interagency Fire Center (RIFC) would be notified (435) 896-8404.

Production:

If the well is productive, the Operator will submit this information for approval at such time as production requirements are known.

Maintenance Operations:

No maintenance operations are anticipated at this time.

Plans for Reclamation of the Surface:

Edges of the access road and stockpiled topsoil will be seeded the first fall.

Interim Reclamation:

In the event production is achieved the Operator will perform interim reclamation of the site. Interim reclamation will consist of reclamation of that portion of the well pad not needed for ongoing operations or potential additional wells that could be located on this pad. All portions of the pad no longer necessary for well workover, testing or treating will be contoured to match the surrounding terrain to the best extent practicable. Stockpiled topsoil will be evenly distributed thereon, scarified and seeded as per BLM conditions of approval.

Final Reclamation:

In the event the well is a dry hole, or at such time that all production ceases and the well has been plugged and abandoned, the Operator will perform final reclamation of the site. Final reclamation will consist of reclamation of the entire well pad and the new-construction portion of the lease road as it crosses BLM land.

Any accumulation of hydrocarbons in the reserve tanks will be removed and recovered for sale unless it is determined by the authorized officer to be waste oil. All waste oil will be disposed of properly at

approved facilities. Road base material used in the construction of the lease road and pad will be removed from the site and disposed in a proper manner. The new construction portion of the access road will be contoured using an excavator or similar equipment, rather than simply ripping the surface.

Subsoil from the portions of the well pad that are fill will be moved onto the cut areas in order to reestablish the original slope to the best extent possible. Topsoil from the stockpile will then be evenly distributed over the entire impacted area, including the new-construction portion of the access road. The entire impacted area will be scarified and seeded in late fall, using the seed mix and methods described in BLM conditions of approval. Final reclamation will take place within 180 days after plugging date of the last well on site, depending on weather, season and other extenuating circumstances.

During the life of the project and until the site is released from liability for reclamation, the project will be inspected at least annually for noxious weeds. If invasive noxious weeds are found, the weeds will be treated to eliminate further reproduction, and treatment shall continue until the weeds have been eradicated. If noxious weeds are found, the BLM will be notified of their occurrence.

2.3 ALTERNATIVE B – NO ACTION

Under the No Action Alternative, the BLM would deny the APD as proposed. Thus, under the No Action alternative, any impacts identified under the proposed action would not occur. Current land use practices and resource trends would continue within the project area.

If the No Action Alternative were selected the applicant would have the option of modifying their proposal or submitting an APD for a different project. Any new proposal would be treated as a new project and would be subject to additional environmental analysis under NEPA, as necessary.

2.4 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Potential impacts identified during the onsite inspection could be avoided or reduced with standard mitigation measures. No alternatives were identified for the proposed action that would substantially reduce new impacts on BLM lands. Therefore, no additional alternatives were developed and considered in this EA.

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix A and presented in Chapter 1 of this assessment. The checklist indicates which resources of concern are either not present in the project area or would not be impacted to a degree that requires detailed analysis. Resources which could be impacted to a level requiring further analysis are described in this Chapter and impacts on these resources are analyzed in Chapter 4 below. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.2 GENERAL SETTING

Wolverine proposes to drill the Glencove Federal 11-1, approximately 2.4 miles south southwest of Glenwood (See Appendix B for maps). The proposed well pad and new access road would be located on both public lands and minerals administered by the Bureau of Land Management, Richfield Field Office (BLM). The proposed project is located within the Sanpete-Sevier Valleys physiographic subdivision of Utah between 5,320 and 5,720 feet elevation above sea level. The area is characterized as a complex area of faulting and folding of Jurassic formations covered by surficial deposits and alluvial fans. This area is named for the two rivers that traverse it, the Sevier River on the south and the San Pitch on the north.

The project area is used for livestock grazing and limited recreational activity such as hunting and OHV travel. The ID Team review indicated that the following resources could be potentially impacted by this proposed project requiring further analysis:

- Air Quality
- Greenhouse Gasses
- Hydrology/Water/Wetlands
- Recreation
- Socio-Economic
- Soils/Watershed
- Vegetation
- Visual Resources

3.3 RESOURCES/ISSUES BROUGHT FORWARD FOR ANALYSIS

3.3.1 Resource 1: Air Quality

The overall air quality within the Richfield planning area is good because of the remoteness, low population, limited industrial development, and lack of urban communities within the vicinity. The Utah Department of Air Quality (UDAQ) has classified the proposed projects area as a Class II attainment or unclassifiable area. The air pollutants that are of most concern in an attainment area originate from fire, fugitive dust, or vehicle use.

3.3.2 Resource 2: Greenhouse Gases

Greenhouse gasses are gasses which absorb and emit radiation within the thermal infrared range. The gasses include carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gasses could potentially be emitted from vehicles, heavy equipment, and the well itself during construction, production and completion activities.

3.3.3 Resource 3: Hydrology/Water/Wetlands

This proposed project area is located in a range named for the two rivers that traverse it, the Sevier River on the south and the San Pitch on the north. The proposed well pad is about 1.5 miles away from the nearest Drinking Water Protection Zone (DWPZ) and about two miles from its associated spring source. There are some domestic water wells about 1.5 miles to the north of the proposed oil well and some water wells associated with public water systems about 2.5 miles to the West. There are no Sole Source Aquifers (SSAs) near the project area. A wetland/riparian area exists within 330 feet of the proposed project area. The wetland area is fed by a small stream called Water Creek. A detailed analysis of this resource will be included in the discussion below.

3.3.4 Resource 4: Recreation

The proposed well and access road are located on a lease held by Wolverine (Federal lease UTU-91058; See Appendix B, Project Map). The proposed action area is within the extensive recreation management area (ERMA) of the Richfield Field Office. Recreation in the area is primarily dispersed. The area receives increased visitation due to the proximity to the town of Glenwood and other nearby population areas. The primary activities in the area consist of off-highway vehicle (OHVs), driving for pleasure, hiking, wildlife viewing, hunting, etc. There are multiple designated routes in the proposed action area. One route is proposed to be temporarily closed and relocated to a safer area adjacent to the well pad. Mitigation measures have been identified and are considered a part of the proposed action and are Conditions of Approval for this project.

3.3.5 Resource 5: Socio-Economic

Sevier County has a rural, agricultural-based economy. The Richfield Area Chamber of Commerce shows Sevier County's population is 20,802 (based on the 2010 census). The U.S. Census Bureau projected a -0.1 percent decrease in population by mid-2014, which would bring the current population to about 20,594. The population is mostly dispersed into small communities. Richfield, the county seat, has a population of 7,520 (2010 census) and is the largest town in the county. The county's economy is currently based on livestock, manufacturing, and trade.

3.3.6 Resource 6: Soils/Watershed

The access road crosses a number of soil types; however, the soil complex at the well pad site is called Hiko Peak, dry-Tarnach Rock outcrop association (NRCS soil maps were used). This is a very gravelly sandy loam which drains easily. Therefore, the likelihood of significant erosion and runoff is reduced because the surrounding soil is easily drained. Regardless, mitigation measures have been identified and are considered a part of the proposed action and are Conditions of Approvals for this project.

3.3.7 Resource 7: Vegetation

Most of the vegetation of the well pad and the access road is dominated by big sagebrush, fourwing saltbush, halogeton, and scattered Utah juniper trees. Other associated plant species include shadscale, snakeweed, cheatgrass, low rabbitbrush, doubleleaf pinyon, Sandberg bluegrass, squirreltail, Indian ricegrass, needle and thread grass, cheatgrass, Confusus penstemon, Coulter's biscuitroot, blue mustard, and tansy mustard.

3.3.8 Resource 8: Visual Resources

The proposed action area is currently managed as Visual Resource Management (VRM) IV. Objectives for VRM Class IV are to provide for management activities that require major modification of the existing character of the landscape. The level of change to 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, nominal disturbance, and repetition of the basic elements including color, line, and texture.

4.0 ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This section discloses the results of the analysis documented in the interdisciplinary team checklist (Appendix A). The potential impacts to the various resources are based on the assumption that the Proposed Action would be implemented as described and that standards required by a Federal regulation or an oil and gas onshore order would be complied with. In summary, the ID team determined which resources or issues of concern could be impacted to a degree that requires detailed analysis, if all recommended mitigation measures and rehabilitation requirements are applied. The potential impacts or issues related to each of these resources are discussed in the following sections.

4.2 DIRECT/INDIRECT IMPACTS

Direct impacts are those caused by the proposed action and occur at the time the proposed action is implemented. Indirect impacts are those caused by the action that occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, growth rate, and related effects on air and water and other natural ecosystems. The direct and indirect impacts of the proposed action on the resources brought forward for discussion are discussed in this section.

4.2.1 ALTERNATIVE A – PROPOSED ACTION

4.2.1.1 Resource 1: Air Quality

This alternative would have short-term effects on air quality during construction of the project. Drilling, separators, oil storage tanks, dehydration units, operation of vehicles and heavy equipment including front end loaders, trenchers, backhoes, and water trucks would produce emissions as hydrocarbon exhaust and PM10 and PM2.5. In addition, there would be short-term increases in PM10 and PM2.5 as fugitive dust during soil excavation and operation of vehicles and heavy equipment.

However, these short-term emissions are not expected to violate any Federal ambient air quality standards or expose any sensitive receptors to substantial pollutant concentrations. Once the project is completed, air quality would return to pre-project conditions. Therefore, there would be no long-term effects on air quality in the region. Although the project would have no significant effects on air quality, Wolverine Gas and Oil Company would be required to obtain any permits and comply with State statutes intended to protect air quality.

4.2.1.2 Resource 2: Greenhouse Gases

The Proposed Action has the potential to emit Greenhouse Gases into the environment during the development activities. Greenhouse gasses can be released with the use of heavy equipment operation and vehicle exhaust. Oil and gas wells have also been known to leak methane and other known greenhouse gasses. Although the release of greenhouse gasses could occur with the implementation of the Proposed Action, Wolverine Oil and Gas Company would not violate section 202 of the Clean Air Act which regulates greenhouse gasses. A single well would have GHG emissions below the 25,000 ton per year EPA reporting threshold, so emissions do not need to be quantified. This is consistent with draft CEQ guidance and current BLM NEPA practice.

4.2.1.3 Resource 3: Hydrology/Water Resources/Wetlands

Construction, operation, and maintenance of the proposed well would result in some alterations to surface and groundwater resources. These alterations would be short term and would not be expected to reach any sensitive receptors such as springs or ground-water wells. BLM policy requires specific types of analysis of potential impacts if drilling occurs within Sole Source Aquifers (SSAs) and/or within drinking water protection zones because of potential impacts to sensitive receptors. The proposed well pad is about 1.5 miles away from the nearest Drinking Water Protection Zone (DWPZ) and is about two miles from its associated spring source. There are no sole source aquifers (SSAs) near the project area.

Policy also directs BLM to address potential impacts to waters of usable quality outside of DWPZ and SSA. The drilling plan estimates that the depth to the top of the Arapien formation is about 900 ft. Usable groundwater could exist above that depth, but water of usable quality is not likely to exist within or below the Arapien. The Drilling plan specifies that surface casing would be present to a depth of 1300 ft. which would protect any usable groundwater.

4.2.1.4 Resource 4: Recreation

The primary activities in the area consist of OHVs, driving for pleasure, hiking, wildlife viewing, hunting, etc. There are multiple designated routes within the vicinity of the proposed action area. Although traffic through the area would be increased on a temporary basis, the improvements and maintenance of these routes may benefit recreationists traveling through the area.

There is section of designated OHV route (BLM Route 3540 and BLM Route 3542) on a hillside within the proposed pad area that would need to be closed and cut during construction and drilling activities. Before construction activities occur, signage advertising temporary closures for sections of BLM Route 3540 and BLM Route 3542 which go through the proposed well pad site would be placed on both routes outside of the project area. Upon completion of rehabilitation activities, the signage would be removed and the designated routes would be maintained, fixed, and open and ready for full use again. These routes would be relocated to an adjacent area that would provide a safer route of travel (see Appendix D).

4.2.1.5 Resource 5: Socio-economics

For the short-term, land surveyors, landmen, construction crews, drilling crews, and data logging crews would be involved during the drilling phase. Construction could take approximately 30 days and drilling operations are expected to take about 120 days. This activity would lead to work crews lodging in local facilities with subsequent of expenditures in local markets. The existing infrastructure (schools, rental housing, law enforcement, etc.) are adequate to accommodate temporary and permanent work force increases associated with the expected amount of oil and gas exploration (and possibly development) associated with this APD.

If producible oil and gas in paying quantities is discovered, then the economic development of the mineral resources would benefit the lessee and members of the surrounding community. It would assist the Federal government, State of Utah and local counties in generating an income source from lease rental payments, production royalties, and payments for encroachment permits on county roads.

These impacts could result in beneficial economic development, a need for additional infrastructure to provide goods and services to work forces, and possible changes to the economic and social base of the local community. Production could lead to additional exploration and development, increased oil

and gas activities, additional employment, and royalties. Long term beneficial impacts could be in the range of 10-40 years.

4.2.1.6 Resource 6: Soils/Watershed

The Proposed Action would result in the disturbance of approximately 11.79 acres of soil. Direct impacts to soils would include soil exposure due to vegetation removal, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. The loosening of earthen material and the removal of soil and vegetation could contribute sediment and total dissolved solids to the watershed. However, the increase in sediment load or total dissolved solids is anticipated to be relatively minor and localized due to the well drained soils in the area. Total acres to be disturbed by construction is minimal compared to the watershed that is considerably larger. Most sediment within the project area would be transported by surface runoff from precipitation, which includes summer rainstorms and occasional winter snow falls and snow runoff. Thunderstorms can produce significant runoff, but these storms are infrequent.

Most erosion would occur on steeper cut and fill slopes in areas where runoff is concentrated, such as within roadway ditches. However, these impacts would be reduced by rehabilitating disturbed lands. Cut and fill, stockpiles, and other disturbances would be seeded for re-growth of vegetation to stabilize slopes and to reduce erosion. Stockpiled topsoil (maximum available) would be stored in a windrow around the pad. All topsoil would be stockpiled for reclamation in such a way as to prevent soil loss and contamination.

If the well pad is needed for production, the well pad could be reduced in size, and interim reclamation would restore part of the disturbed lands to natural conditions to the extent practicable with ongoing, oil and gas operations.

Potential impacts would be reduced by following the mitigation measures outlined in the Conditions of Approval, Appendix C. It includes, requiring stabilization of cut and fill slopes, interim reclamation if the well is productive, and final reclamation when the project is terminated.

4.2.1.7 Resource 7: Vegetation

The Proposed Action would result in the disturbance of about 11.79 acres. This disturbance would be associated with construction and operation activities at the well pad and along the access route. Until the disturbed areas within the project area are successfully re-vegetated, introduction and spread of invasive and weedy plant species, including cheat grass could occur.

Rehabilitation of the disturbance would occur during the first fall following construction. Seeding with desirable perennial species would restore the vegetation within the disturbed area. Loss of vegetation during the proposed action is a minor, short-term impact.

Although short term vegetative disturbances would occur with the Proposed Action, the area may benefit from the required revegetation projects and intensive control of invasive and noxious weeds which are already known to occur in the area. Vegetative restoration and invasive and noxious species control requirements are listed in the Conditions of Approval, Appendix C.

4.2.1.8 Resource 8: Visual Resources

The proposed action is in conformance with VRM Class IV objectives. Although it would be difficult to reduce visual impacts during construction and drilling activities, every effort would be made to reduce visual impact during construction and drilling activities to conform with condition of

approvals to reduce visual disturbance during all activities associated with the proposed action. Every effort would be made to restore the landscape back to its natural state during restoration and completion. In an effort to reduce impacts, Wolverine Gas and Oil Company is using a pad design that is much smaller than what has been typically used in the area.

If producible oil and gas in paying quantities is discovered, then additional efforts would be made to reduce visibility of structures, blend basic elements and use natural colored paints on structures and buildings needed for operation. Specific VRM mitigation measures are included in Appendix, C, Conditions of Approval.

4.2.1.9 Mitigation Measures

The APD would be issued subject to regulations under 43 CFR 3100 and oil and gas onshore orders. The mitigating measures contained in Appendix C are needed to insure mitigation of associated downhole and surface disturbance activities would be attached as Conditions of Approval to the APD upon approval.

4.2.1.10 Residual Impacts

Residual impacts (i.e., unavoidable adverse impacts) are those impacts which persist after implementation of the Proposed Action and any identified mitigation measures. Appendix C lists COAs that could be attached to the APD if the Proposed Action is approved. These are based on this EA and on standards required by a Federal or state regulation. The following impacts would take place even though the COAs are complied with.

Approximately 11.79 acres of vegetation would be disturbed or removed during construction of the Proposed Action. If the proposed well is productive, the well pad would be reduced in size to what is necessary for on-going operations for production as soon as practical. This pad size reduction may be delayed due to potential additional wells that might be proposed on the well pad if production is achieved. The Glencove Federal 11-1 Well could be productive for 10 to 40 years, and final reclamation of the well pad and access roads would not be completed until the well is no longer productive in paying quantities.

4.2.1.11 Monitoring and/or Compliance

Under the Proposed Action, the operator would be required to notify the BLM prior to construction work on Federal lands. Notification to the BLM would also be required when the proposed well is spudded. Qualified BLM personnel would inspect the drilling operations and facilities and would witness cementing and testing of blow out preventer equipment as necessary. The operator would be required to notify the BLM prior to plugging and abandonment of the well. The operator would be required to notify the BLM prior to reclamation work on public lands. Reclaimed sites on public lands would be monitored and inspected, at least annually, by BLM staff until the sites were satisfactorily rehabilitated.

4.2.2 ALTERNATIVE B – NO ACTION

Denial of the proposed action would not allow Wolverine to drill a well to explore for hydrocarbons and to develop and produce any discovered oil or gas in paying quantities from the Glencove Federal Well 11-1, resulting in no impacts to the Federal lands.

4.2.2.1 Resource 1: Air Quality

With the No Action alternative, the temporary degradation of air quality would not occur. With no

surface disturbing actions occurring within the action area, no emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions would occur.

4.2.2.2 Resource 2: Greenhouse Gases

Under the No Action Alternative, Wolverine would not be allowed to test their lease and develop minerals if discovered. Actions which could create greenhouse gasses such as emissions from earth moving and drilling equipment would not occur. The potential release of underground greenhouse gasses during drilling activities would also not occur.

4.2.2.3 Resource 3: Hydrology/Water Resources/Wetlands

Under the No Action alternative, drilling and completion activities would not occur. Therefore, any impacts resulting from the Proposed Action would not occur to hydrology, water, or wetland resources.

4.2.2.4 Resource 4: Recreation

With the implementation of the No Action Alternative, no mineral resource management actions would disrupt existing recreational activities.

4.2.2.5 Resource 5: Socio-economics

Under the No Action alternative, potential short-term and long term beneficial impacts of increased employment and income and revenues generated from construction, drilling, completion and production of the well would not be realized.

4.2.2.5 Resource 6: Soil/Watershed

Under the No Action alternative, soil disturbance, erosion and sediment yield would not occur within the immediate project area.

4.2.2.5 Resource 7: Vegetation

Under the No Action Alternative, the existing vegetation would remain in-place and undisturbed. The proposed project area has a significant amount of invasive cheat grass and poisonous halogeton. With the No Action Alternative, the range land would not benefit from the seeding of desired plant species.

4.2.2.6 Resource 8: Visual Resources

With the No Action Alternative, heavy equipment, machinery, and possible future production facilities which could degrade visual resources would not be present. The visual landscape within the proposed project area would remain unchanged.

4.3 CUMULATIVE IMPACTS ANALYSIS

Federal regulations at 40 CFR 1508.7 define cumulative impacts as: "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

According to the UDOGM website, many oil and gas wells have been plugged and abandoned within the Richfield Field Office. All of the plugged and abandoned wells have been reclaimed in accordance with applicable laws and regulations.

Wolverine Gas and Oil established the Covenant Field near Sigurd, where oil was discovered in paying quantities in 2004. Following this discovery, Wolverine has continued to drill wells for exploration. The only field in Sevier County developed for production to date is located at the Covenant Field.

The Reasonably Foreseeable Development Scenario for Oil and Gas in the Richfield RMP, which was approved in October 2008, projected the drilling of 360 wells over the next 15 years. The assumption was also made that construction of each well pad would disturb four acres and require two miles of road construction. Development is currently well under this projection.

In the proposed Glencove Federal Well 11-1 project area, no cumulative impacts are anticipated under the No Action alternative. However, exploratory drilling could occur at other sites on Wolverine's leases and could have similar potential for cumulative impacts as discussed for the Proposed Action. Other impacts are the same as those identified in Appendix A for the APD.

5.0 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

This chapter of the EA provides detailed information on the consultation and coordination that occurred during the NEPA process.

5.2 PERSONS, AGENCIES AND ORGANIZATIONS CONSULTED

Notice of this pending project and EA was provided on the ePlanning website, as part of the scoping process, on May 3, 2016.

5.3 LIST OF PREPARERS

Non-BLM

Rocky Mountain Environmental Research

Megan Robinson, Environmental/NEPA Manager: Project coordination and document preparation

Bighorn Archaeological Consultants, Inc.

Jon Baxter, Archaeologist: Cultural surveys

Savage Surveying

Ryan Savage: Surveying and project construction design

BLM

Stan Andersen, Supervisory Natural Resource Specialist: Document review and project coordination

Wayne Wetzel, Richfield Field Office Manager: Management review and project approval

Additional BLM staff members involved with the project are identified in Appendix A.

APPENDIX A INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Glencove Federal 11-1 Well and Access Roads
NEPA Log Number: DOI-BLM-UT-C020-2016-0027-EA

Project Leader: Stan Andersen

Proposed Action: Wolverine Oil and Gas Company of Utah has submitted an Application for Permit to Drill (APD). Wolverine proposes to drill an exploratory oil well which would include the construction of a well pad (4.22 acres), and new/upgraded access road (7.57 acres). An on-site inspection of the project was held on April 7, 2016. Approval for road construction would be approved through the APD as a lease right under the Wolverine Federal Unit. Well pad is to be located approximately 2.4 miles south southwest from Glenwood, Utah.

A Federal onsite inspection was conducted on April 7, 2016, with the following individuals present:

Charlie Irons – Wolverine Gas and Oil Company of Utah
Ryan Savage – Savage Surveying
Megan Robinson – Rocky Mountain Environmental Research Inc. - NEPA Specialist
Stan Andersen – BLM Supervisory Natural Resource Specialist
Wayne Wetzel – BLM Field Office Manager
Brant Hallows – BLM Natural Resource Specialist (weeds, soils)
Jennifer Christensen – BLM Outdoor Recreation Planner
Daniel White – BLM Geologist
Mark Dean – BLM Hydrologist
Lauren Kingston – BLM Archaeologist
Michael Utley – BLM Realty Specialist
Mike Riches – BLM Petroleum Engineer
Mike McKinley – BLM Environmental Scientist

Legal Description:

Well Pad: SW/4 NW/4) Section 11, T24S, R2W, SLM

Road Upgrade/Construction: Primary access road is to be an improvement to an existing 2-track road that leaves Sevier County (600 South) road South and West of Glenwood beginning near the NE corner of SE4SE4 Sec 34-T23S-R2W, across private land for about ¼ mile to the lease boundary into the NE4NE4 Section 3-T24S-R2W. A right-of-way will be obtained from the private landowners prior to construction. An encroachment permit will be obtained from Sevier County Road Department for the use of the county road. The Northern part (roughly half) of the on-lease well access road will be an improvement to an existing two-track road.

DETERMINATION OF STAFF: *(Choose one of the following abbreviated options for the left column)*

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

| Determination | Resource | Rationale for Determination* | Signature | Date |
|--|---|---|----------------------|---------|
| RESOURCES AND ISSUES CONSIDERED (Includes Supplemental Authorities Appendix 1 H-1790-1) | | | | |
| PI | Air Quality | Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions could adversely affect air quality. | Mark Dean | 5/11/16 |
| NP | Areas of Critical Environmental Concern | The Richfield Field Office Resource Management Plan of 2008 was reviewed; there are no Areas of Critical Environmental Concern within the proposed action area. | Jennifer Christensen | 5/9/16 |
| NP | BLM Natural Areas | The Richfield Field Office Resource Management Plan of 2008 was reviewed; there are no BLM Natural Areas within the proposed action area. | Jennifer Christensen | 5/10/16 |
| NI | Cultural Resources | A Class III inventory of the APE was completed by Bighorn. BLM has agreed with their recommendations and has determined no adverse effect to historic properties. A letter seeking SHPO concurrence will be sent out on 6/29/16. | Lauren Kingston | 5/23/16 |
| NI | Environmental Justice | In connection with the resource management plan (RMP) revision, an evaluation was made to determine if there are any minority or low income populations within the boundaries of the Richfield Field Office. The evaluation revealed that at the county level, no populations that meet the criteria for minority or low income are present. | Stan Andersen | 5/10/16 |
| NP | Farmlands (Prime or Unique) | There are no prime or unique farmlands within the BLM portion of the project according to the Soil Survey of the Sevier County Area, Utah (UT628). The proposed actions on BLM land have no potential of impacting the nearby private farmlands. | Brant Hallows | 5/16/16 |
| NI | Fish and Wildlife | Dominant wildlife species known to occur in the area include mule deer, elk, black-tailed jackrabbit, cottontail rabbit, deer mouse, and Ord's kangaroo rat. These wildlife species would be temporarily displaced during construction activities, but would return post construction without any impact. | Larry Greenwood | 5/4/16 |
| NI | Floodplains | Portions of the proposed project are within the floodplain of Water Creek, but the project is not expected to impact floodplain function. There is little if any riparian vegetation within affected portions of the floodplain and therefore hydrologic characteristics of the floodplain would not be altered. There would be some alteration to flood flow patterns as a result of road construction, but these alterations would occupy a very small portion of the floodplain as a whole and would therefore not affect hydrologic function. | Mark Dean | 5/11/16 |
| NI | Fuels/Fire Management | The proposed action would have no impact on fuels/fire management | Bob Bate | 5/16/16 |
| NI | Geology / Mineral Resources/Energy Production | The proposed action will not have an impact on other mineral resources or other energy development in the area. | Daniel White | 5/16/16 |
| PI | Greenhouse Gasses | Should development occur on any of the leases, Greenhouse Gases could be emitted during the development activities. | Mark Dean | 5/11/16 |
| PI | Hydrology | See discussion below for "Water Resources/Quality (drinking/surface/ground)" – Surface Water | Mark Dean | 5/11/16 |
| NI | Invasive Species/Noxious Weeds (EO 13112) | All equipment should be washed/blown off prior to arriving at project location in order to prevent seed transport of new noxious weed species from other locations. Noxious weeds are already present on or near the project area. Soil disturbance associated with the proposed action will | Brant Hallows | 5/19/16 |

| Determination | Resource | Rationale for Determination* | Signature | Date |
|---------------|---|---|----------------------|----------|
| | | create opportunities for those species to increase. It will be the operator's responsibility to monitor for and control any noxious weeds if they are detected. | | |
| NI | Lands/Access | As described, the proposed action would not have any permanent negative effects on access to public land as long as the pad design provides a connection from BLM Route 3540 to BLM Route 3542. No other roads providing access to public land would be closed on a long term basis as a direct result of the proposed action. The proposed project would be subject to valid prior existing rights and any associated activities would be coordinated with associated right-of-way (ROW) Holders and adjacent non-federal landowners. This includes the diversion and pipeline system that are authorized to Glenwood Irrigation Company. The diversion structure is located less than 300' from the proposed drill pad and the pipeline follows the access road leading to the drill pad. That said, it is anticipated that the ROW should not be negatively affected because site specific mitigation would ensure that it would be avoided, restored or replaced. Other potential issues include but are not limited to surface disturbance within and outside described project areas; generated trash/debris which should be removed from public land and discarded at an authorized facility; and termination/abandonment of the facilities and granted areas. The proposed access road has the potential to improve access to the public lands adjacent to the proposed access road since the existing road is not in good condition. | Michael Utley | 5/17/16 |
| NI | Livestock Grazing/Range | The Proposed Action would be expected to temporarily remove available forage for livestock in the Sauls Meadow and Gypsum grazing allotments. The amount of forage removed is not expected to be significant and livestock grazing rotations and schedules are expected to not be impacted. | J. Reese | J. Reese |
| NI | Migratory Birds. | Three priority migratory bird species occur in the area - Brewer's Sparrow, Sage Sparrow and Sage Thrasher. A small amount of their habitat would be temporarily lost in the short term due to construction activities. This short term loss of habitat would also cause a temporary displacement of these birds. With successful rehabilitation of the disturbed areas, habitat would be restored and the migratory bird species would return with minimal impact to them. | Larry Greenwood | 5/4/16 |
| NI | Native American Religious Concerns | Tribal Consultation letters were sent out on 6/3/16; no comments were received. | Lauren Kingston | 5/23/16 |
| NI | Paleontology | The proposed action will not impact paleontological resources. The project site is located in an area of low paleo potential, and thus does not require further impact mitigation. | Daniel White | 6/16/16 |
| NI | Rangeland Health Standards & Guidelines | The Proposed action would not be anticipated to impact Rangeland Health Standards and Guidelines. Rehabilitated sites should be reseeded with BLM advised seed mix. | J. Reese | J. Reese |
| PI | Recreation | The proposed action area is within the extensive recreation management area (ERMA) of the Richfield Field Office. Recreation in the area is primarily dispersed. The area receives increased visitation due to the proximity to Glenwood and other nearby population areas. The primary activities in the area consist of OHVs, driving for pleasure, | Jennifer Christensen | 5/17/16 |

| Determination | Resource | Rationale for Determination* | Signature | Date |
|---------------|--------------------|---|---------------|----------|
| | | <p>hiking, wildlife viewing, hunting, etc. There are multiple designated routes in the proposed action area. The improvement and increased use of these routes should not negatively affect these routes. There is one designated route on the hillside of the proposed well pad that is proposed to be cut that would be lost due to the proposed action. This would affect the recreation opportunity in the area. This route could be moved and relocated around the proposed activities and tie back into itself above and below the hill to mitigate for impact to recreation. If this were done, the route should gain a switchback and it would positively impact recreation as the route would be improved and safety of the route would increase.</p> | | |
| PI | Socio-Economics | <p>Drilling an exploration well could impact the local social structure and economy. For the short-term, land surveyors, landmen, construction crews, drilling crews, and logging crews would be involved during the drilling phase. Construction could take 10 to 20 days and drilling operations are expected to take about 60 to 90 days. This activity would lead to work crews lodging in local facilities with subsequent of expenditures in local markets. If the well is producible in paying quantities, the local social structure and economy could experience long-term impacts. These impacts could result in beneficial economic development, a need for additional infrastructure to provide goods and services to work forces, and possible changes to the economic and social base of the local community. Production could lead to additional exploration and development, increased oil and gas activities, additional employment, and royalties. Long term impacts could be in the range of 10-40 years.</p> | Stan Andersen | 5/10/16 |
| PI | Soils / Watersheds | <p>SOILS: The Proposed Action would result in soil disturbance of about 12 acres. Direct impacts to soils would include soil exposure due to vegetation removal, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. These impacts may consequently result in increased erosion, runoff, and sedimentation. Most erosion would occur on steeper cut and fill slopes and in areas where runoff is concentrated, such as within roadway ditches. However, these impacts would be reduced by rehabilitating disturbed lands.</p> <p>Cut and fill, stockpiles, and other disturbances should be seeded for re-growth of vegetation to stabilize slopes and to reduce erosion. Stockpiled topsoil (maximum available) would be stored in a windrow on the uphill side of the mined area. All topsoil would be stockpiled for reclamation in such a way as to prevent soil loss and contamination.</p> <p>WATERSHEDS: The loosening of earthen material and the removal of soil and vegetation could contribute sediment and total dissolved solids to the watershed. However, the increase in sediment load or total dissolved solids is anticipated to be relatively minor and localized. Total acres to be disturbed by construction is minimal compared to the watershed that is considerably larger. Most sediment within the project area</p> | Brant Hallows | 6.1.2016 |

| Determination | Resource | Rationale for Determination* | Signature | Date |
|---------------|--|--|-----------------|--------|
| | | <p>would be transported by surface runoff from precipitation, which includes summer rainstorms and occasional winter snow falls and snow runoff. Thunderstorms can produce significant runoff. Potential impacts would be mitigated by requiring stabilization of cut and fill slopes and final reclamation when the project is terminated.</p> <p>The potential for increased erosion and sedimentation would be greatest in the short-term immediately after mining operations, when the disturbed soils are loose but then would decline over time in areas where reclamation is implemented, and in other areas as natural stabilization occurs through particle aggregation, soil structure development and armoring. The potential for erosion and short-term surface runoff would be decreased through several measures summarized below:</p> <ul style="list-style-type: none"> • All existing roads be kept in good repair during all phases of operation and would be maintained as necessary to prevent erosion. • Culverts may need to be installed along the proposed road. Energy dissipating structures would be utilized to minimize erosion at the culvert crossings. Adequate drainage structures would be incorporated into the remainder of the road if necessary. • The access road would require periodic maintenance to ensure that drainages are kept open and free of debris, ice, and snow, and that surfaces are properly treated to reduce erosion and impacts to adjacent areas. • Roads should be obliterated following abandonment of site if not needed for the future. • Diversion ditches would be constructed around the project site to prevent surface waters from entering the mining area. | | |
| NP | Special Status Plant & Animal Species other than FWS candidate or listed species | See Attached Clearance. | Larry Greenwood | 5/4/16 |
| NP | Threatened, Endangered or Candidate Plant Species | See Attached Clearance. | Larry Greenwood | 5/4/16 |
| NP | Threatened, Endangered or Candidate Animal Species | See Attached Clearance. | Larry Greenwood | 5/4/16 |
| PI | Vegetation | The vegetation is dominated by big sagebrush, fourwing saltbush, halogeton, and scattered Utah juniper trees. Other associated plant species include shadscale, snakeweed, low rabbitbrush, doubleleaf pinyon, Sandberg bluegrass, squirreltail, Indian ricegrass, needle and thread grass, cheatgrass, Confusus penstemon, Coulter's biscuitroot, blue mustard, and tansy mustard. | Larry Greenwood | 5/4/16 |

| Determination | Resource | Rationale for Determination* | Signature | Date |
|---------------|--|---|----------------------|---------|
| | | <p>The loss of vegetation during the proposed action would be a minor, short term impact. Rehabilitation of the disturbance would be a positive impact, because seeding with desirable perennial species could result in better, future vegetation. Long-term benefits, due to rehabilitation through seeding, far out-weigh any short-term loss of the current vegetative resource on the proposed project area</p> <p>For the recommended seed mixture and seeding techniques, see the attached Special Status Plant and Animal Clearance.</p> | | |
| PI | Visual Resources | <p>The proposed action area is currently managed as VRM IV. Objectives for VRM Class IV are to provide for management activities that require major modification of the existing character of the landscape. The level of change to 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, nominal disturbance, and repetition of the basic elements including color, line, and texture.</p> <p>Mitigation measures that would benefit visual resources as a whole include: reducing unnecessary surface disturbance, reducing visibility of the project, especially from population centers and roads, blending basic elements, and painting structures to blend with the landscape.</p> <p>While the proposed action is in conformance with the VRM objectives, the visuals in the area will still be impacted and affected.</p> | Jennifer Christensen | 5/17/16 |
| NI | Wastes (hazardous or solid) | <p>The use of equipment will introduce petroleum and other chemicals to the area, but unless an accident occurs the area should not see any impact. State and Federal regulations govern the storage, use and disposal of such products and if followed would not be anticipated to impact the project area.</p> | Dustin Rooks | 5/16/16 |
| PI | Water Resources/Quality (drinking/surface /ground) | <p style="text-align: center;"><u>Groundwater</u></p> <p>BLM policy for addressing impacts to groundwater resources is outlined in IM No. UT 2010-055. This policy directs BLM to require additional monitoring and conditions of approval for projects that occur in drinking water protection zones (DWPZ) and sole source aquifers (SSA). The proposed well pad is about 1.5 miles away from the nearest DWPZ and about two miles from its associated water well. There are no SSAs near the project area.</p> <p>Policy also directs BLM to address potential impacts to waters of usable quality outside of DWPZ and SSA. The Well will be drilled and cased through strata that could potentially contain water of usable quality, but drilling and production would not impact these zones. The drilling plan estimates that the depth to the top of the Arapien formation is about 900 ft. Usable groundwater could exist above that depth, but water of usable quality is not likely to exist within or below the Arapien. The Drilling plan specifies that surface casing would be present to</p> | Mark Dean | 5/11/16 |

| Determination | Resource | Rationale for Determination* | Signature | Date |
|---------------|---------------------------------------|--|----------------------|---------|
| | | a depth of 1300 ft which would protect any usable groundwater. <u>Surface Water</u> Surface water and wetlands / riparian resources are potentially impacted because the well pad and access roads are within 330 ft riparian and surface water associated with Water Creek. This 330 ft buffer was determined by the Richfield Field office RMP as an area in which new surface disturbance would not be allowed unless it can be shown that: 1) There are no practical alternatives to the surface disturbance; 2) all long term impacts could be fully mitigated; or, 3) the activity would benefit the riparian area. It appears that item 2 applies in this situation. The facilities are all located downstream of the resources and therefore impacts from runoff and sedimentation are not expected. However, because the RMP specifically identifies this as an important issue it is recommended that detailed analysis occur in the EA. | | |
| PI | Wetlands / Riparian Zones | See comments above for Water Resources/Quality (drinking/surface/ground) - Surface Water. | Mark Dean | 5/11/16 |
| NP | Wild and Scenic Rivers | The Richfield Field Office Resource Management Plan was reviewed, there are no Wild and Scenic Rivers within the proposed action area. | Jennifer Christensen | 5/9/16 |
| NP | Wilderness/WSA | The Richfield Field Office 2008 RMP was reviewed, there are no Wilderness or WSA areas within the proposed action area. | Jennifer Christensen | 5/17/16 |
| NP | Wild Horses and Burros | The RFO RMP was reviewed and there are no wild horse and burro, or Herd Management Areas located in or near the project area. | Sue Fivecoat | 6.15.16 |
| NI | Woodland / Forestry | The proposed action would have minimal impact to the woodland/forestry products in the area | Bob Bate | 5/16/16 |
| | Other Applicable Resources / Issues** | | | |
| | | | | |

FINAL REVIEW:

| Reviewer Title | Signature | Date | Comments |
|---------------------------|---|-------------|----------|
| Environmental Coordinator |  | 7/7/2016 | |
| Authorized Officer |  | 11 Jul 2016 | |

APPENDIX B
Project Maps

PROJECT

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.

SURFACE WELL LOCATION, LOCATED AS SHOWN IN LOT 11 (SW4NW4) SECTION 11, T.24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.
 BOTTOM HOLE LOCATION, LOCATED AS SHOWN IN LOT 11 (SW4NW4) SECTION 11, T.24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.

LEGEND



SECTION CORNER AS NOTED
 QUARTER CORNER AS NOTED
 PROPOSED WELL LOCATION

NOTE:

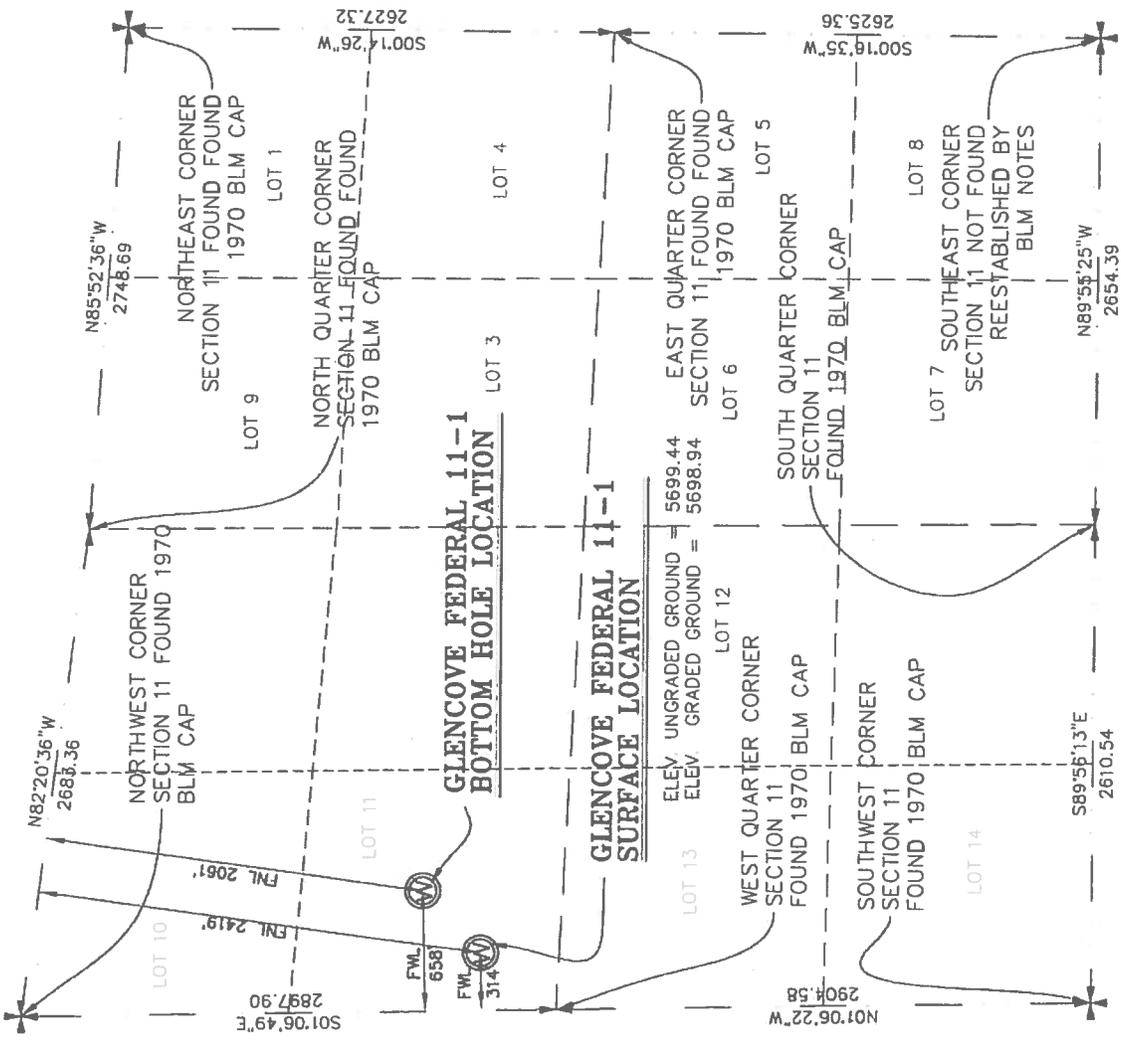
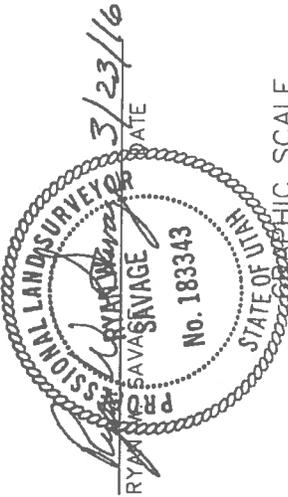
THE PURPOSE OF THIS SURVEY WAS TO PLAT THE SURFACE LOCATION OF THE GLENCOVE FEDERAL 11-1 WELL BEING LOCATED IN LOT 11 (SW4NW4) AND THE BOTTOM HOLE LOCATION BEING IN LOT 11 (SW4NW4) SECTION 11, T. 24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.

BASIS OF ELEVATION

ELEVATION BASED ON AN OPUS SOLUTION ON CP #1 LOCATED IN THE NW ¼ OF SECTION 3, T.24 S., R.2 W., S.L.B. & M. ELEVATION USED 5355.29

CERTIFICATE

THIS IS TO CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION, AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

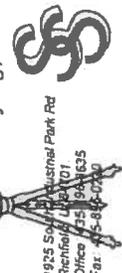


BASIS OF BEARING

BASIS OF BEARING USED WAS SOUTH 01°06'49" EAST BETWEEN THE NORTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 11 T.24 S. R.2 W. S.L.B. & M. SURFACE LOCATION LATITUDE: 38°43'48.158" OR 38.730044 SURFACE LOCATION LONGITUDE: 111°59'41.219" OR -111.994783 BOTTOM HOLE LATITUDE: 38°43'51.292" OR 38.730914 BOTTOM HOLE LONGITUDE: -111°59'36.973" OR -111.993604

COORDINATES SHOWN ARE NAD83

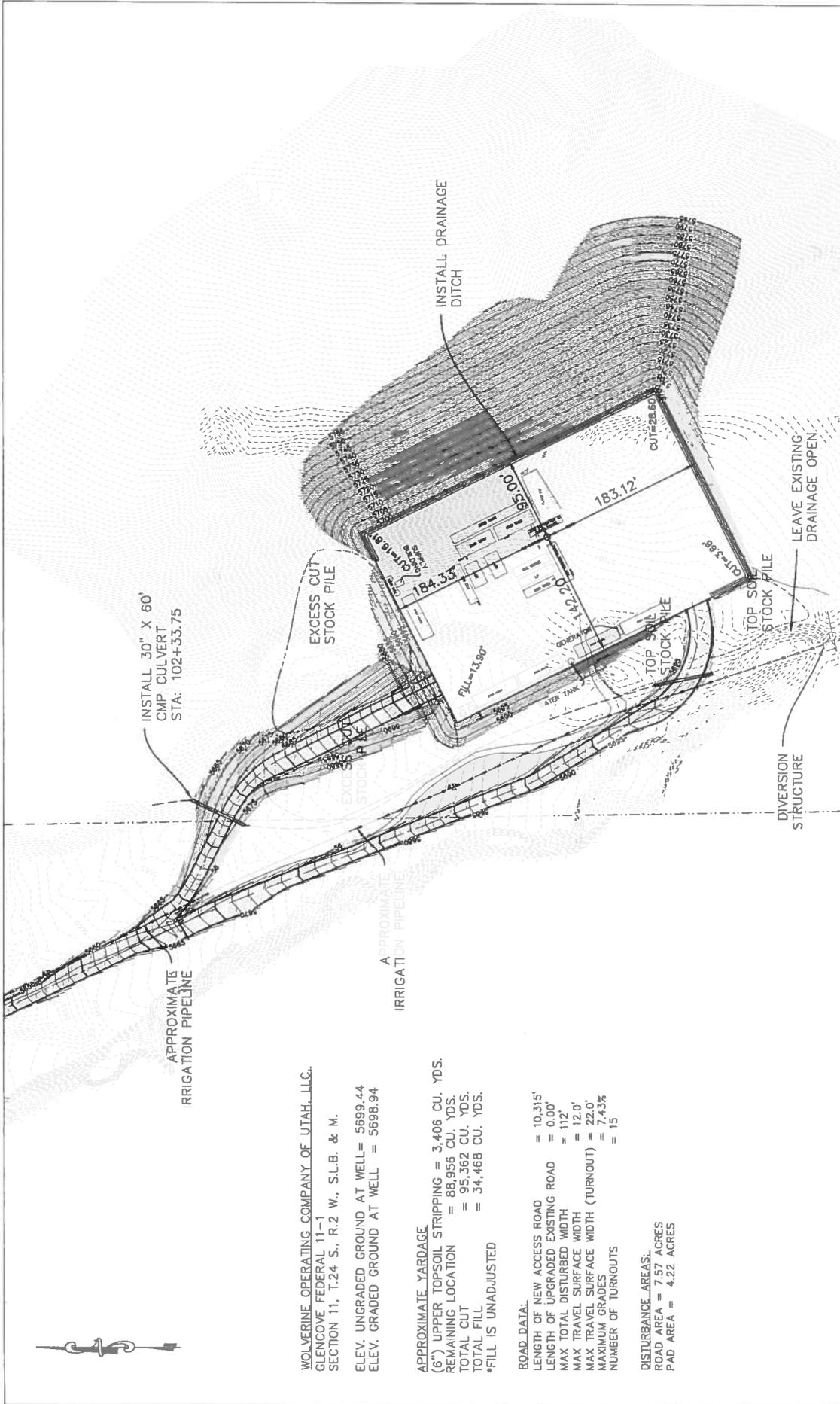
Savage Surveying, Inc.



GLENCOVE FEDERAL 11-1

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.

| | | | | |
|------------|-------------|---------|----------------|--------------|
| OWNER NAME | SCALE | DATE | PROJECT NUMBER | SHEET NUMBER |
| 1511-0115 | 1" = 1000' | 3/22/16 | 1511-0115 | 1 of 1 |
| DRAWN BY: | CHECKED BY: | DATE: | | |
| N.S. | R.W.S. | DC | | |



INSTALL 30" X 60"
CMP CULVERT
STA: 102+33.75

EXCESS CUT
STOCK PILE

INSTALL DRAINAGE
DITCH

APPROXIMATE
IRRIGATION PIPELINE

APPROXIMATE
IRRIGATION PIPELINE

EXCESS CUT
STOCK PILE

ATP TANK

TOP SOIL
STOCK PILE

DIVERSION
STRUCTURE

LEAVE EXISTING
DRAINAGE OPEN

WOLVERINE OPERATING COMPANY OF UTAH, LLC.
GLENCOVE FEDERAL 11-1
SECTION 11, T.24 S., R.2 W., S.L.B. & M.
ELEV. UNGRADED GROUND AT WELL= 5699.44
ELEV. GRADED GROUND AT WELL = 5698.94

APPROXIMATE YARDAGE
(6") UPPER TOPSOIL STRIPPING = 3,406 CU. YDS.
REMAINING LOCATION = 88,956 CU. YDS.
TOTAL CUT = 95,362 CU. YDS.
TOTAL FILL = 34,468 CU. YDS.
*FILL IS UNADJUSTED

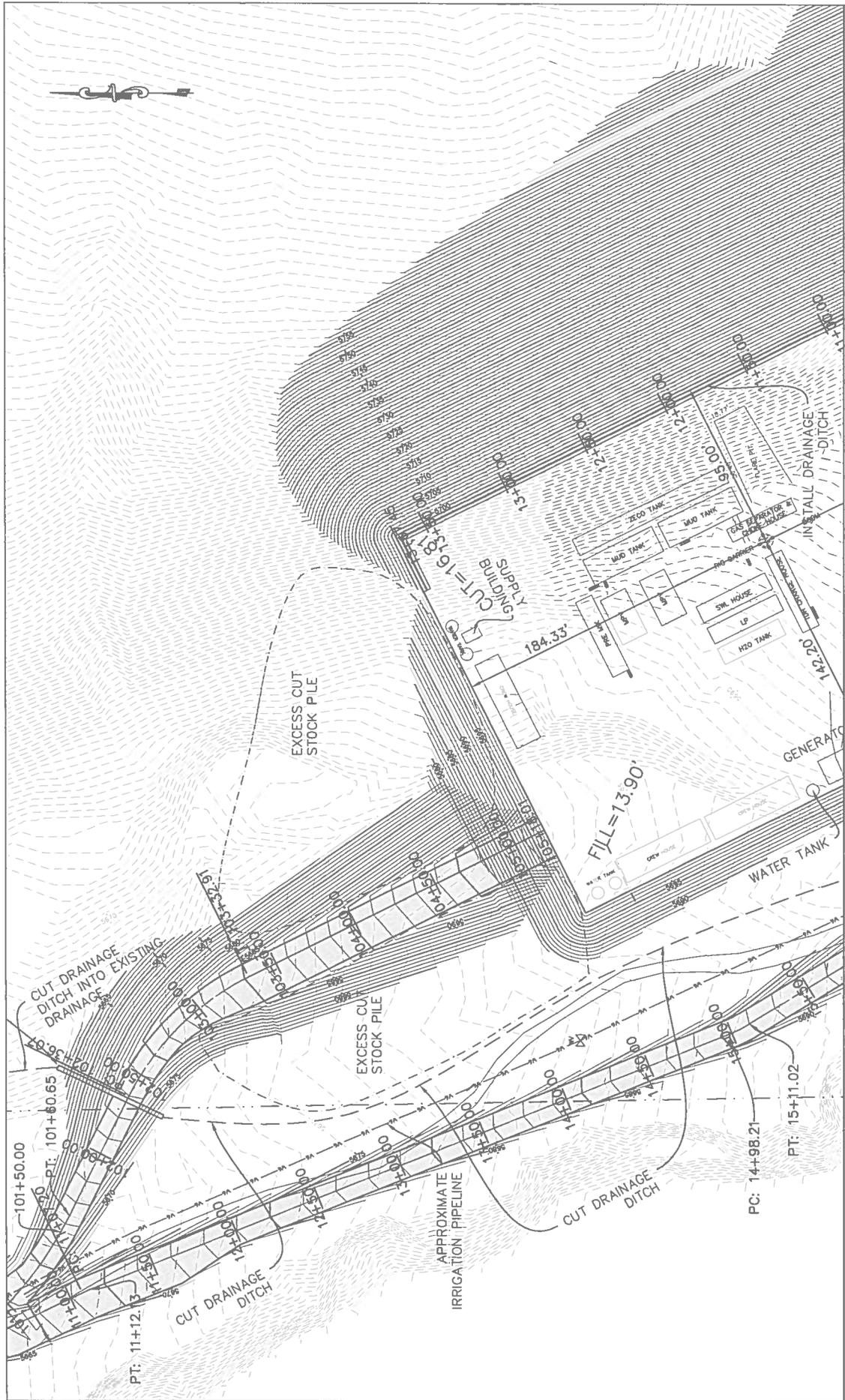
ROAD DATA:
LENGTH OF NEW ACCESS ROAD = 10.315'
LENGTH OF UPGRADED EXISTING ROAD = 0.00'
MAX TOTAL DISTURBED WIDTH = 112'
MAX TRAVEL SURFACE WIDTH = 12.0'
MAX TRAVEL SURFACE WIDTH (TURNOUT) = 22.0'
MAXIMUM GRADES = 7.43%
NUMBER OF TURNOUTS = 15

DISTURBANCE AREAS:
ROAD AREA = 7.57 ACRES
PAD AREA = 4.22 ACRES

| | | | | | |
|----------|--------|--------|-----------|-----------|-----------|
| ENGINEER | J.A. | SCALE | 1" = 100' | SHEET NO. | PAD-EX |
| CHECKED | R.W.S. | PROJ.# | 1511-0115 | DWG. NO. | 1511-0115 |
| DRAWN | D.G. | DATE | 03/22/16 | | |

GLENCOVE FEDERAL 11-1
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

Savage Surveying, Inc.
1825 S. 1000 West
Provo, UT 84601
Phone: 801-735-1133
Fax: 801-735-1134

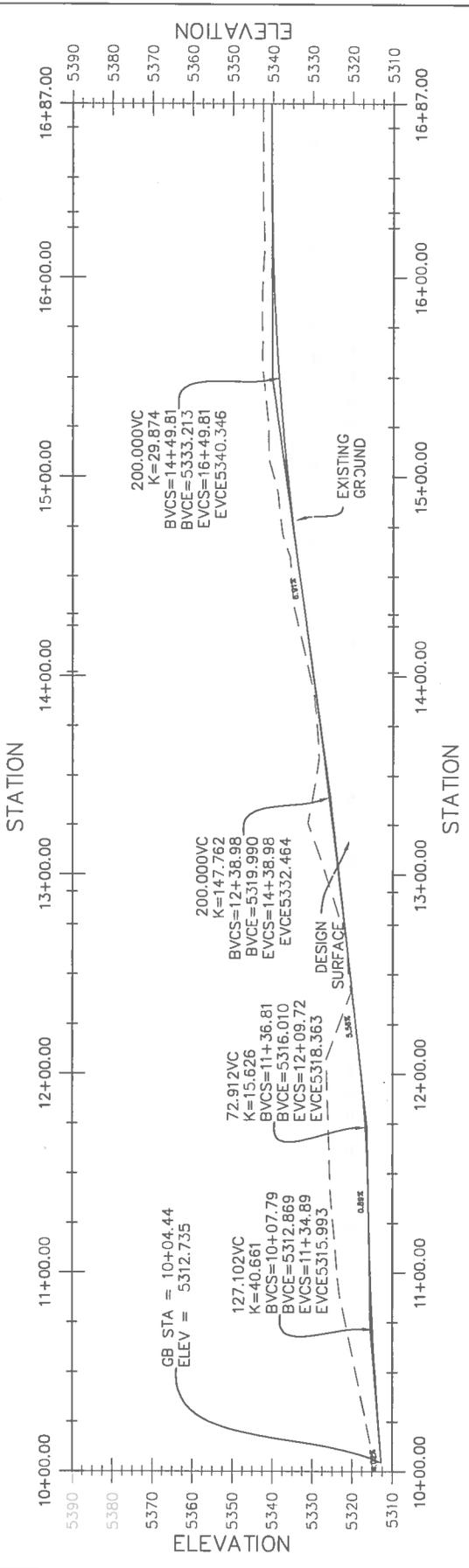
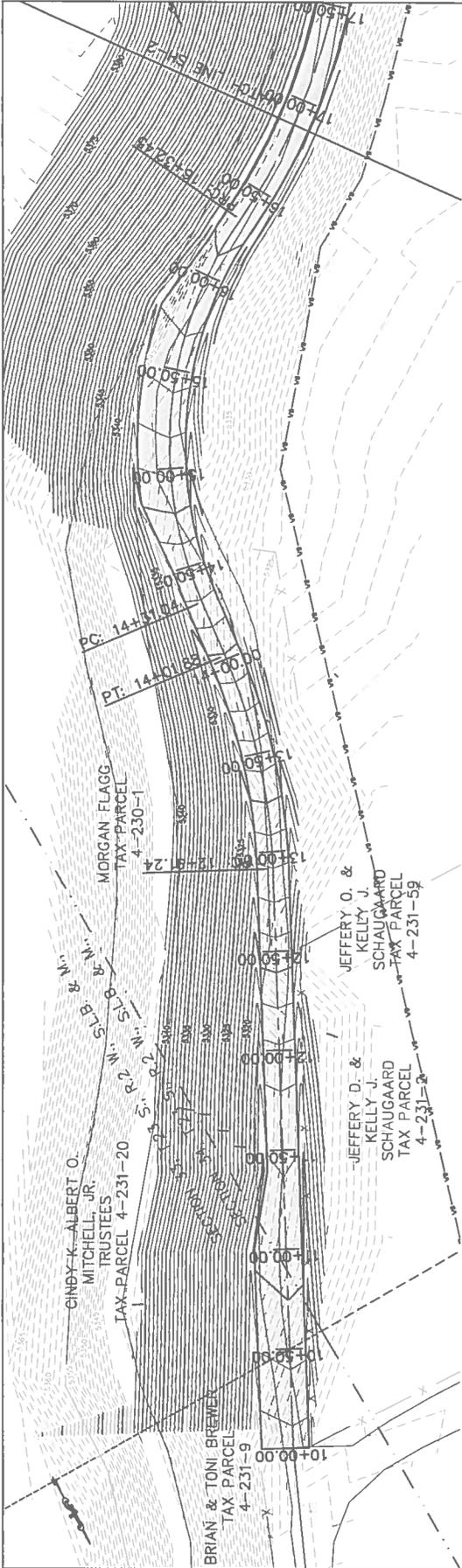


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|----------|--------|----------|-----------|----------|--|
| ENGINEER | J.A. | SCALE | 1" = 50' | SHEET NO | |
| CHECKED | R.W.S. | PROGRAM | 1511-0115 | | |
| DRAWN | D.G. | DWG. NO. | 1511-0115 | | |
| | | DATE | 01/27/16 | | |

PAD-1

GLENCOVE FEDERAL 11-1
 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

Savage Surveying, Inc.
 1155 S. 1000 W. Suite 101
 Provo, UT 84604
 Phone: 801-735-1111
 Fax: 801-735-1111
 Website: www.savage-surveying.com

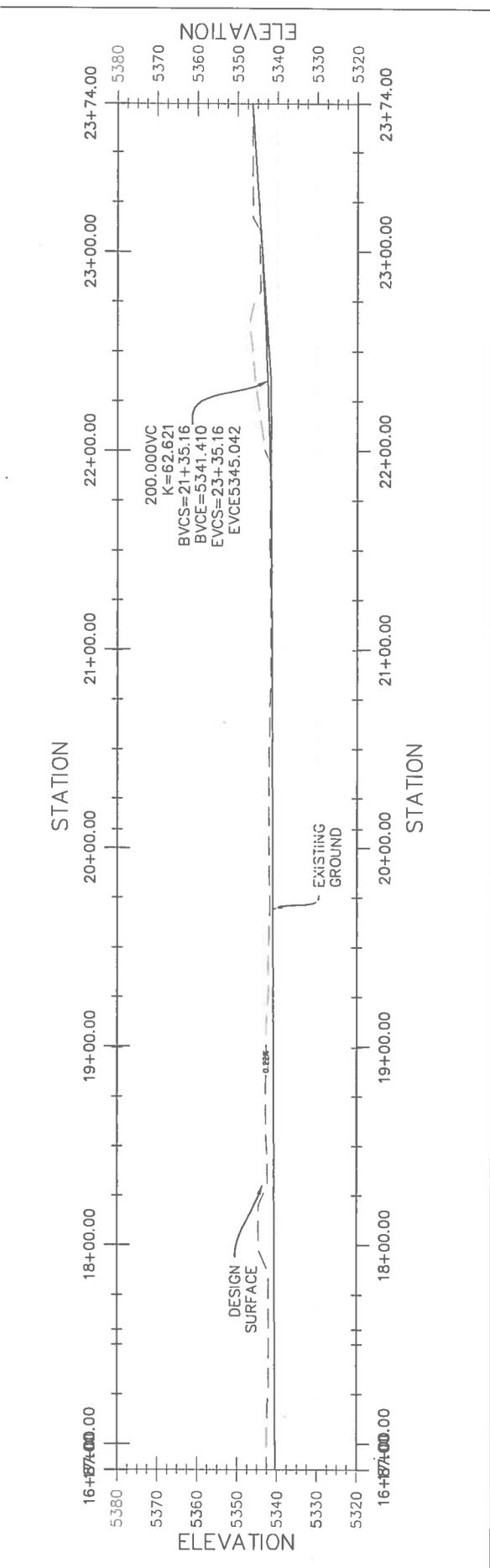
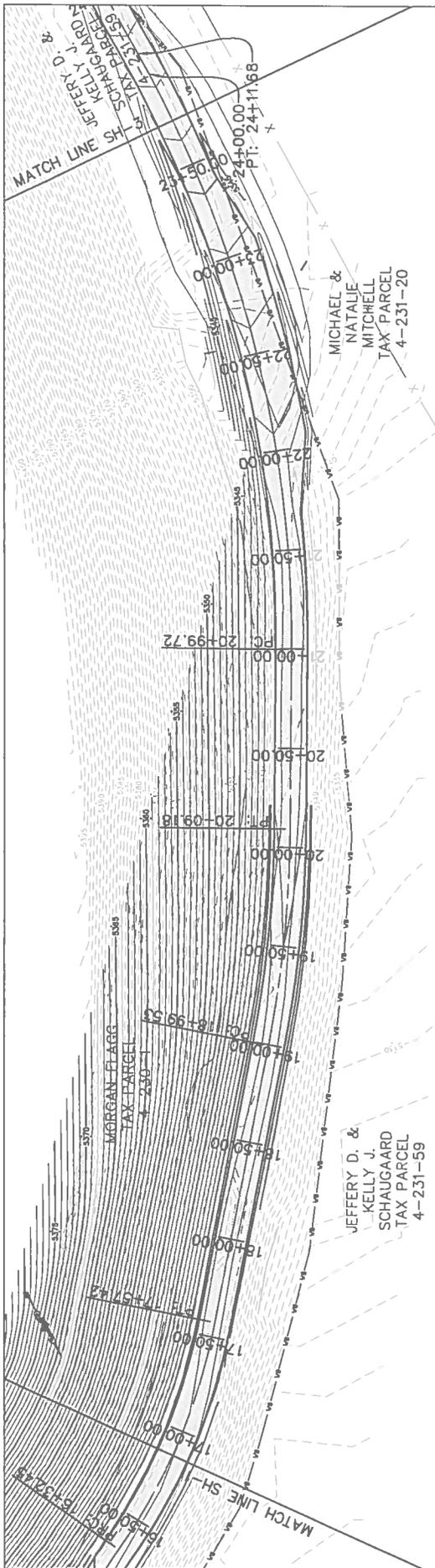


GLENCOVE FEDERAL 11-1
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

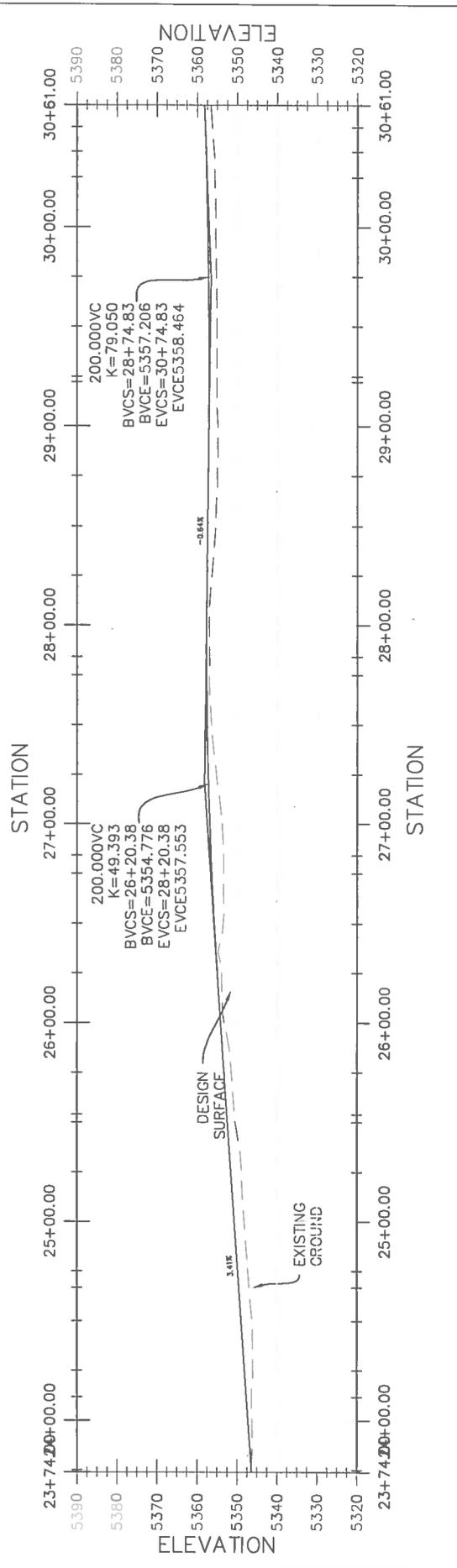
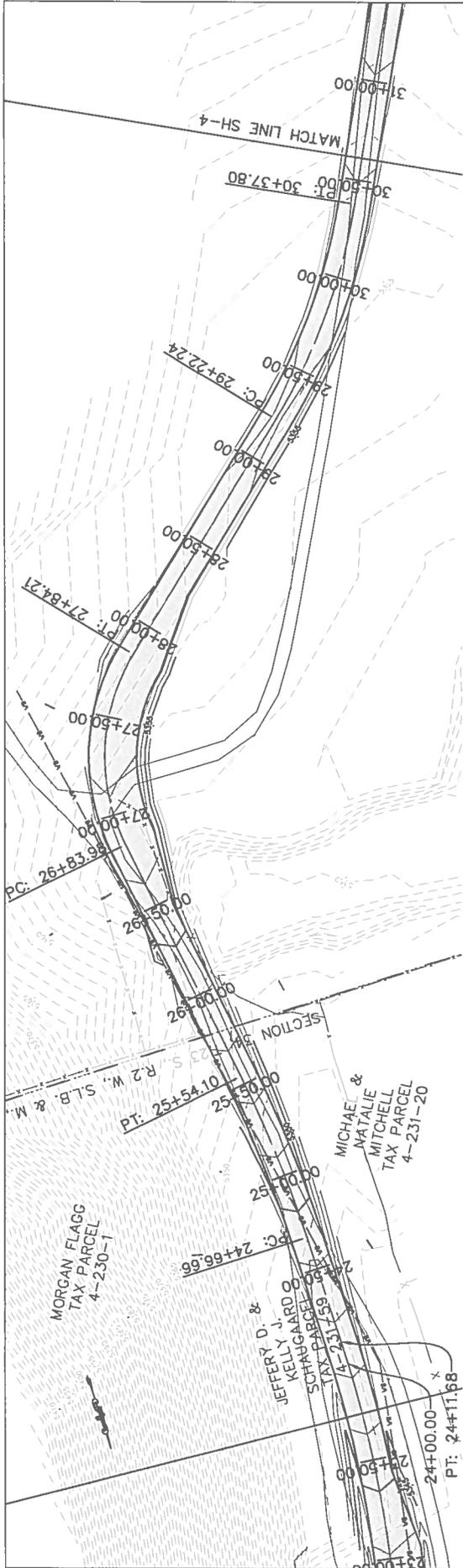
SHEET NO. **RD-1**

| | | | |
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| CHECKED R.L.S. | PROJ.# 1511-0115 | DWG.# 1511-0115 | |
| DRAWN D.G. | | | |

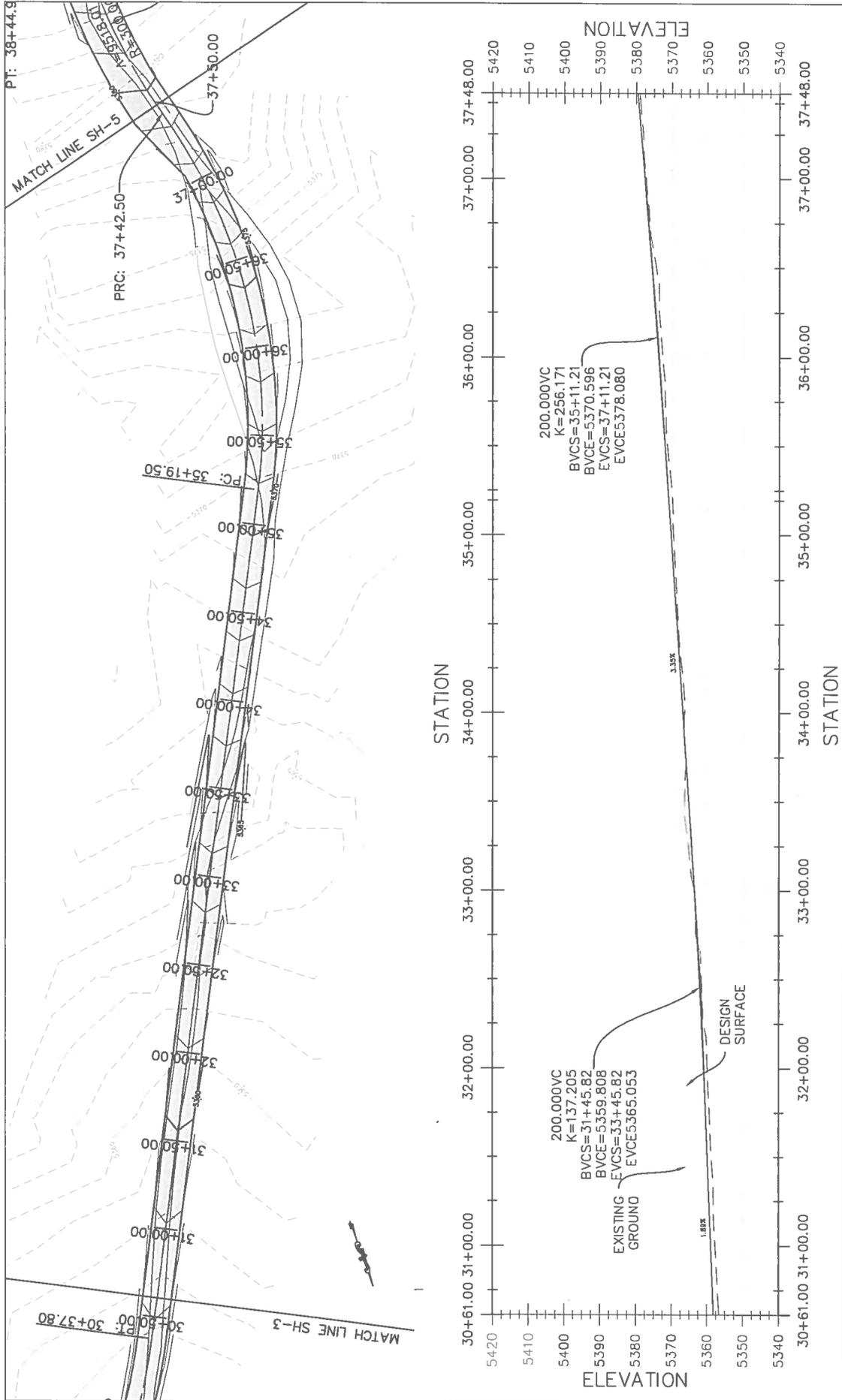
Savaas Surveying, Inc.
1825 S. ...
Provo, UT 84601
Ph: ...
Fax: ...



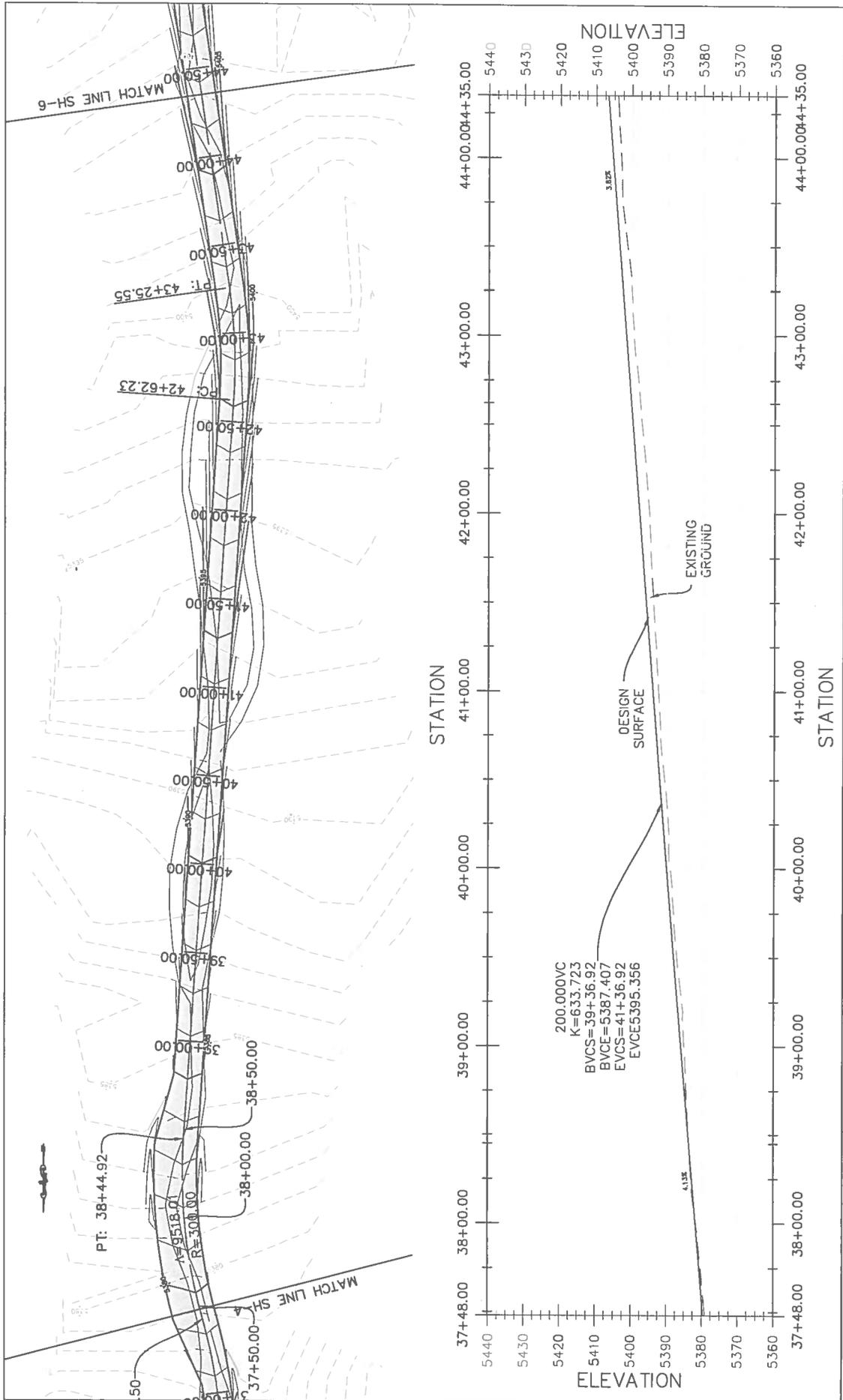
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|--|--|---|--|--|------------------------------|
| <p>Savages Surveying, Inc. 1825 South 1100 West Ogden, UT 84203 Ph: 435-799-3000 Fax: 435-799-3000</p> | | <p>ENGINEER: J.T.A.</p> <p>CHECKED: R.W.S.</p> <p>DRAWN: D.G.</p> | | <p>SCALE: 1"= 50'</p> <p>PROJ: 151-0115</p> <p>DWG: 151-0115</p> <p>DATE: 01/27/16</p> | <p>SHEET NO.</p> <p>RD-2</p> |
| <p>GLENCOVE FEDERAL 11-1</p> <p>WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC</p> | | | | | |



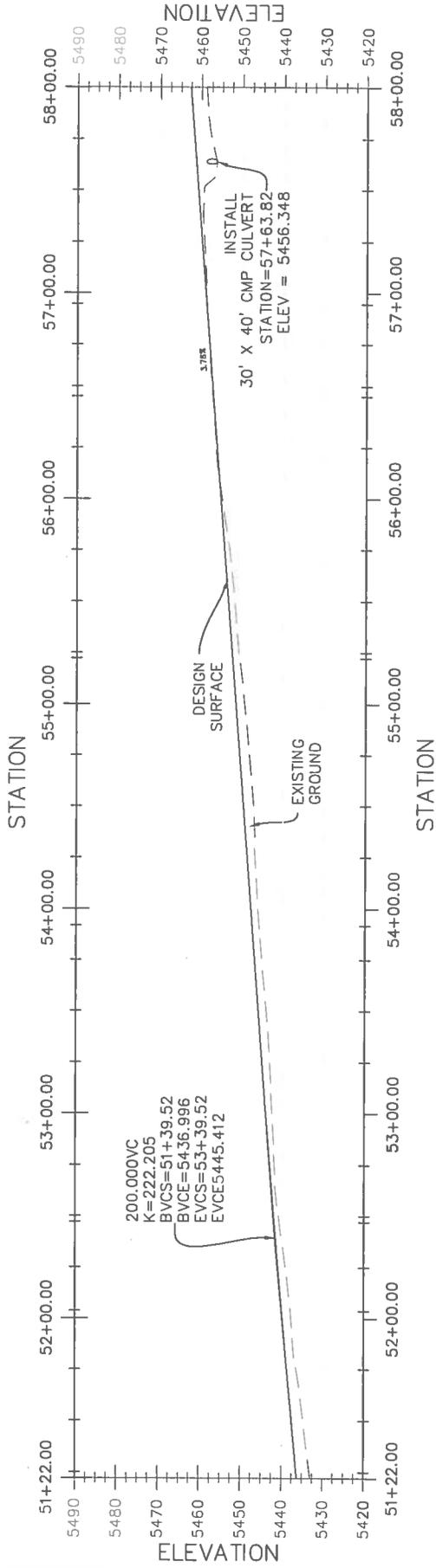
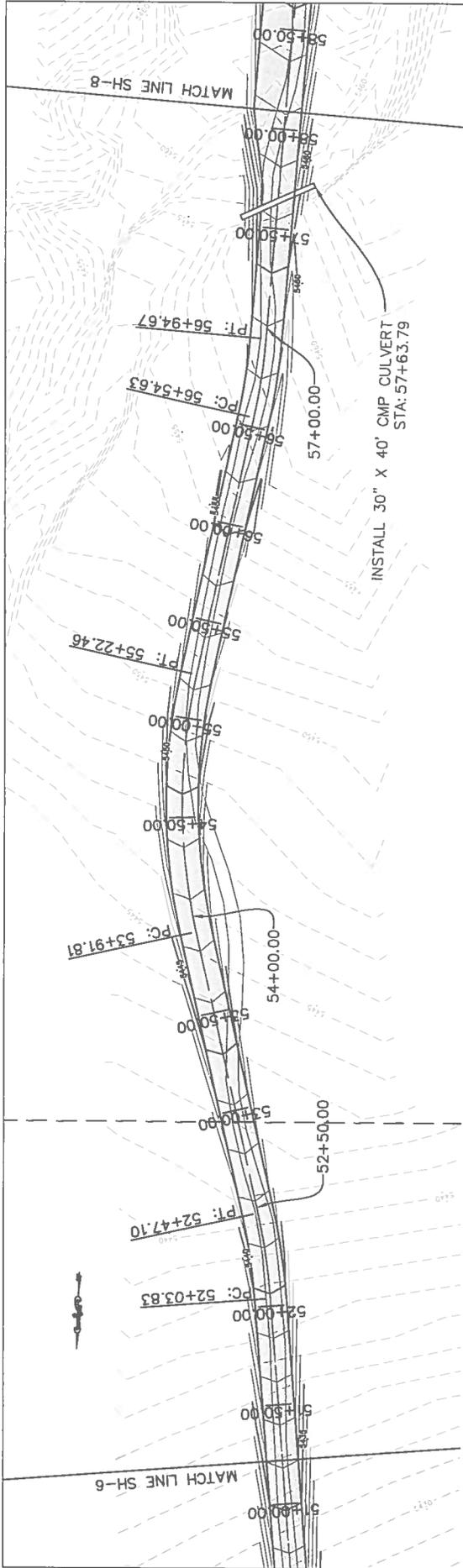
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| <p>Savage Surveying, Inc. 825 S. 1500 W. Suite 100 Orem, UT 84058 Phone: 801-225-8811</p> | | <p>ENGINEER J.T.A.</p> <p>CHECKED R.W.S.</p> <p>DRAWN D.G.</p> | | <p>SCALE 1" = 50'</p> <p>PROJECT RD-3</p> <p>DWG. NO. 151-0115</p> <p>DATE 01/27/16</p> | <p>SHEET NO. RD-3</p> |
| <p>GLENCOVE FEDERAL 11-1</p> <p>WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC</p> | | | | | |



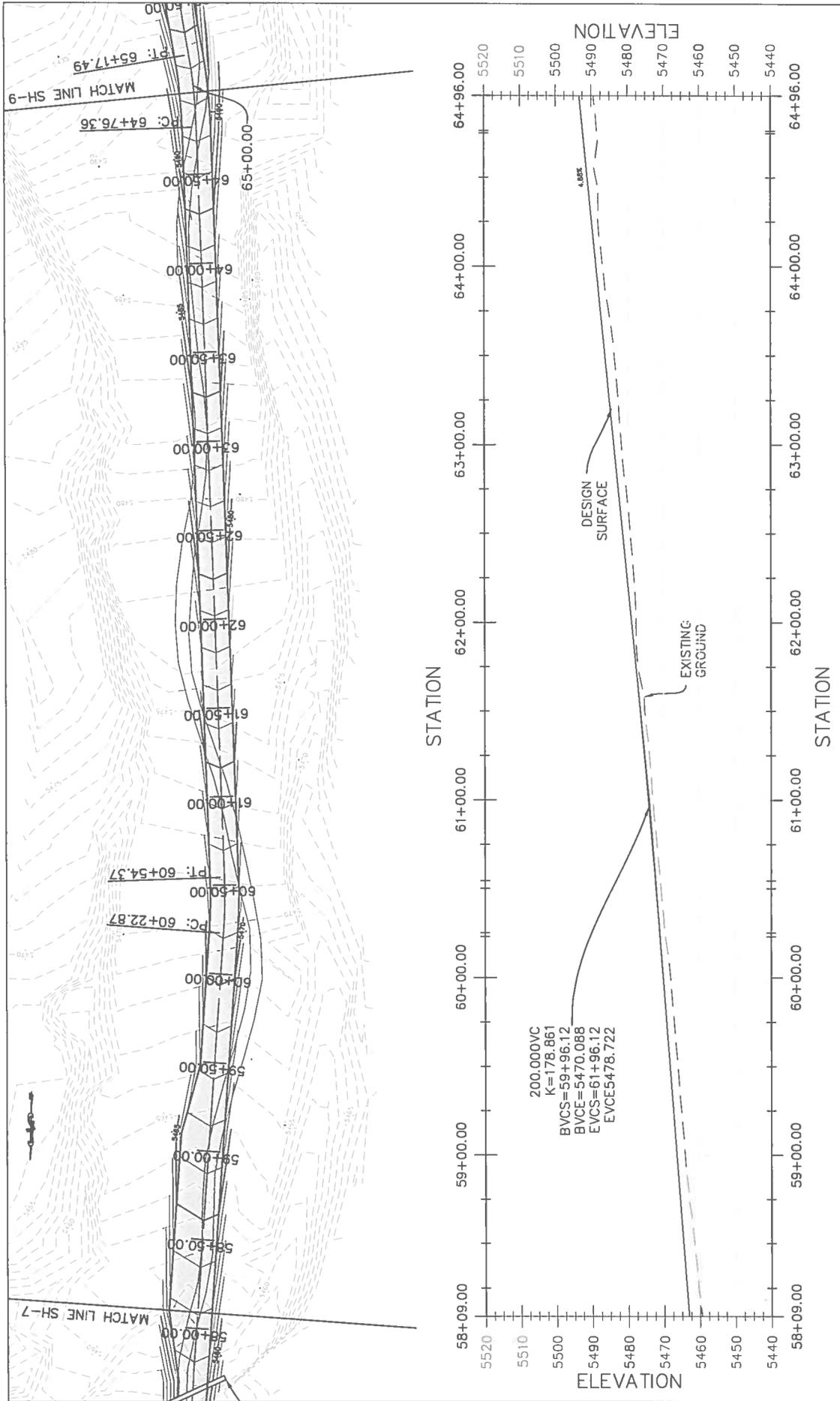
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| ENGINEER J.T.A. CHECKED R.W.S. DRAWN D.G. | | SCALE 1" = 50' PROJ. 151-0115 DWG. NO. 151-0115 | SHEET NO. RD-4 |
| | | | |
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | | |
| Savage Surveying, Inc. <small>1525 South 1000 West, Suite 100 Provo, UT 84601 Phone: 801-734-2100 Fax: 801-734-2101</small> | |  | |



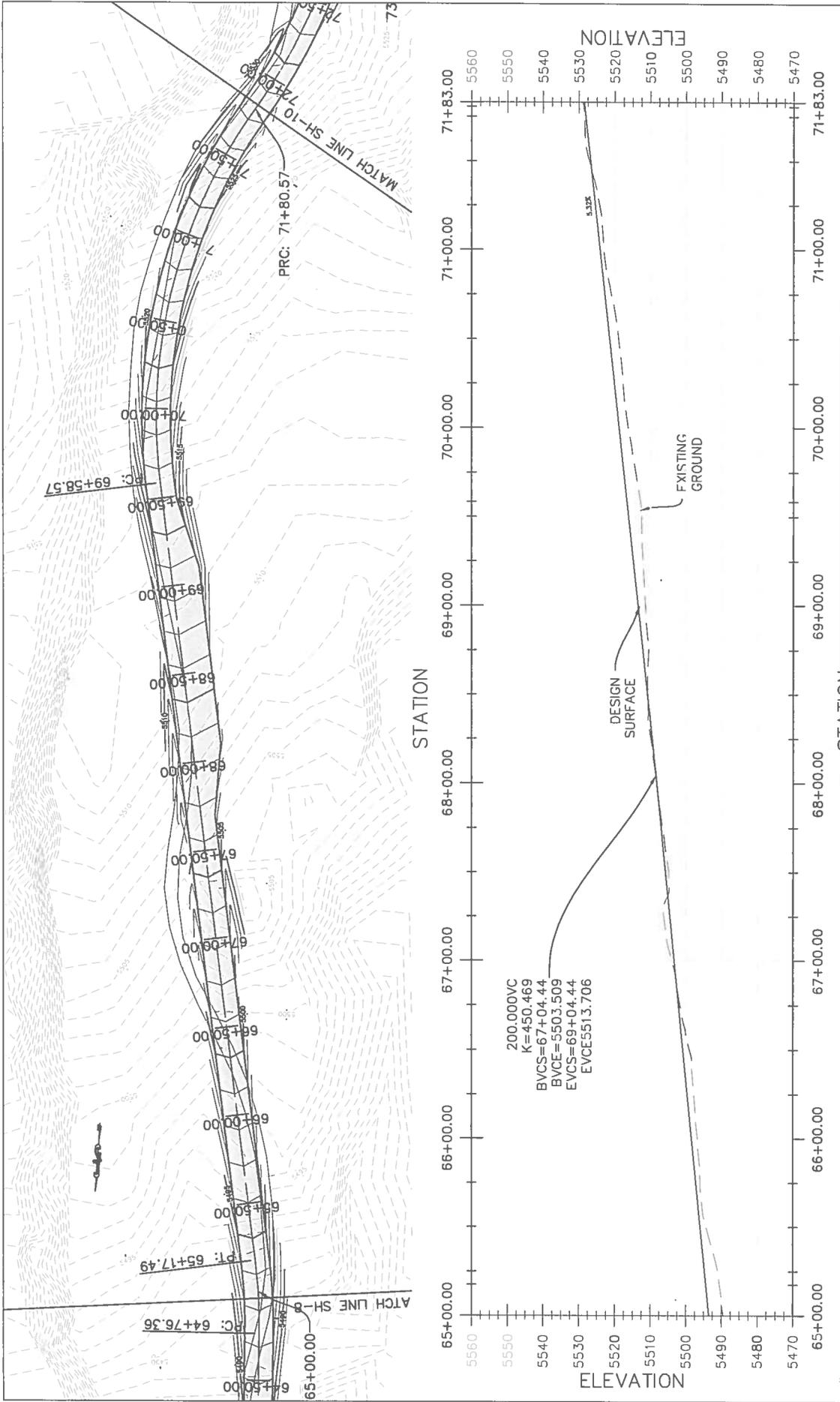
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|  1825 S. 1000 W. P.O. Box 1825 Provo, UT 84602 Phone: 801-735-1825 Fax: 801-735-1825 | | GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | ENGINEER J.T.A. | SCALE 1" = 50' | SHEET NO. RD-5 |
| CHECKED | R.M.S. | PROJECT | 1511-0115 | DWG NO. | 1511-0115 | |
| DRAWN | D.G. | DATE | 01/27/16 | | | |



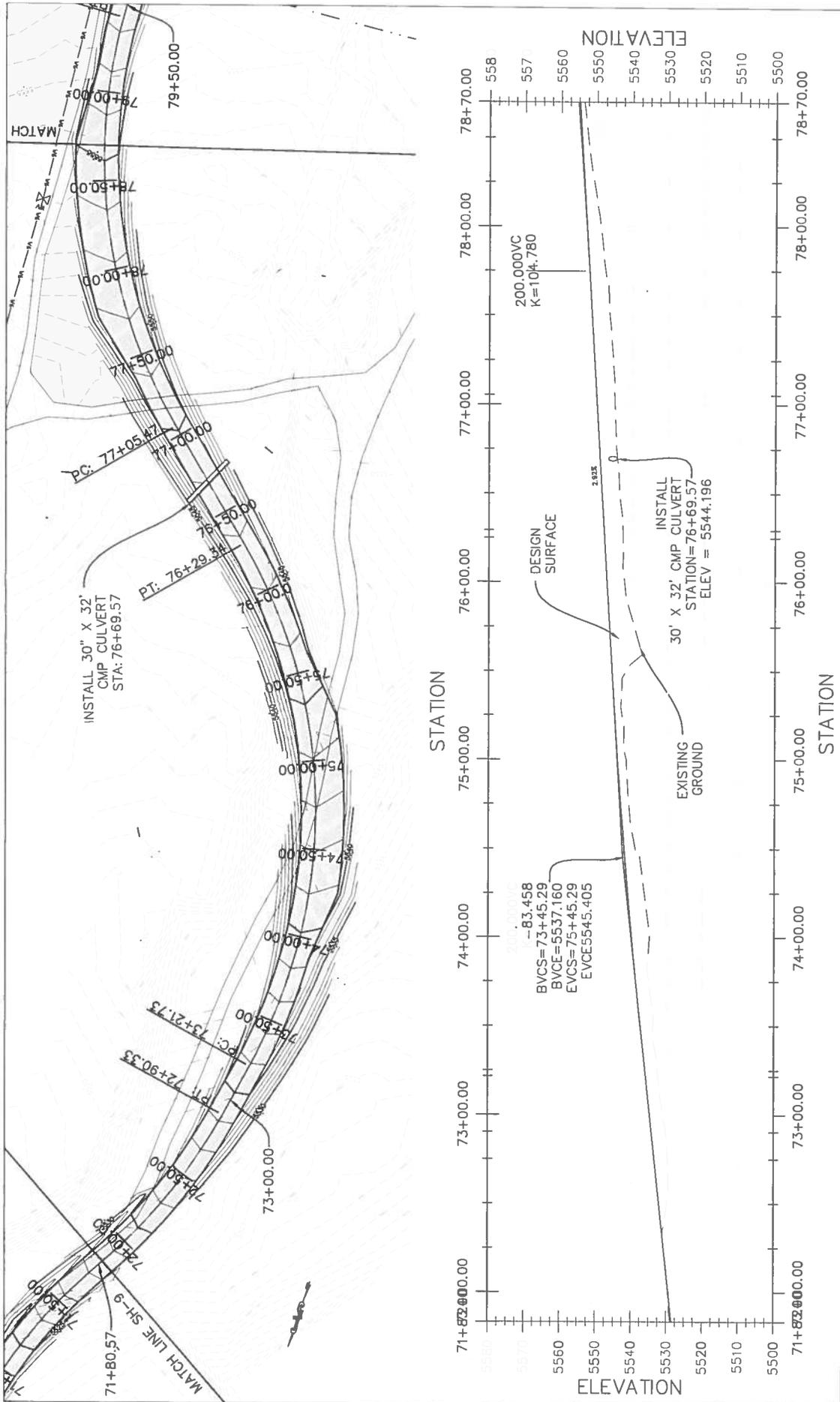
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|---|--|--------------------|---------------|-----------------------|-------------------|
|  Savage Surveying, Inc. 1425 South Main Street, Suite 101 Provo, UT 84601 Phone: 801-735-1815 Fax: 801-735-1816 | | ENGINEER J.T.A. | | SCALE 1" = 50' | SHEET NO. RD-7 |
| | | CHECKED R.W.S. | DRAWN D.G. | PROJ. NO. 111-0115 | DATE 01/27/16 |
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | | | | |



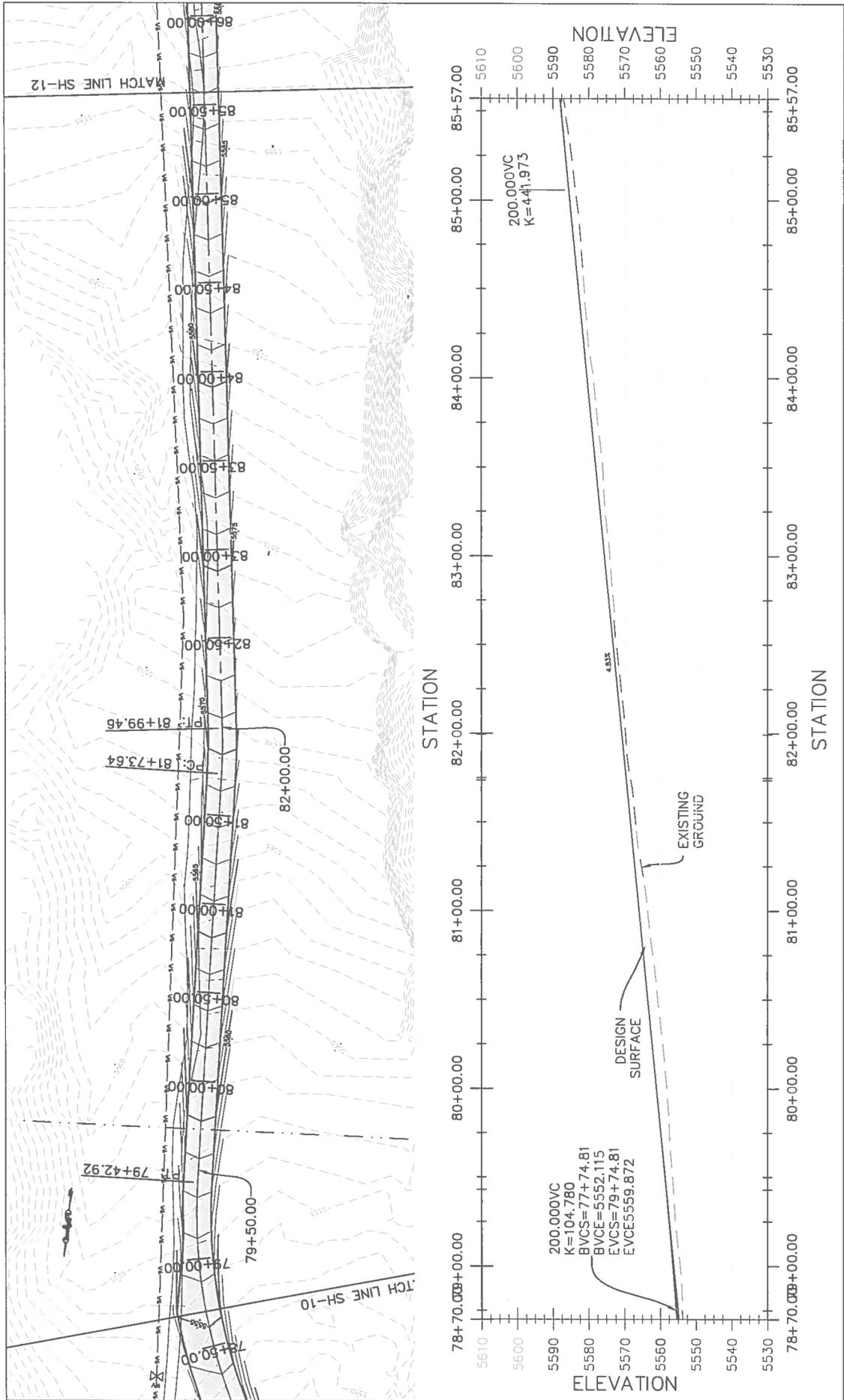
| | | | | | | |
|---|--|---|--|--|---|--------------------------|
|  1924 S. State Street, Suite 100 Ogden, Utah 84403 Phone: (435) 744-2100 Fax: (435) 744-2101 | | GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | ENGINEER J.T.A. CHECKED R.W.S. DRAWN D.G. | SCALE 1" = 50' PROJ# 151-0115 DWG# 151-0115 DATE 01/27/16 | SHEET NO. RD-8 |
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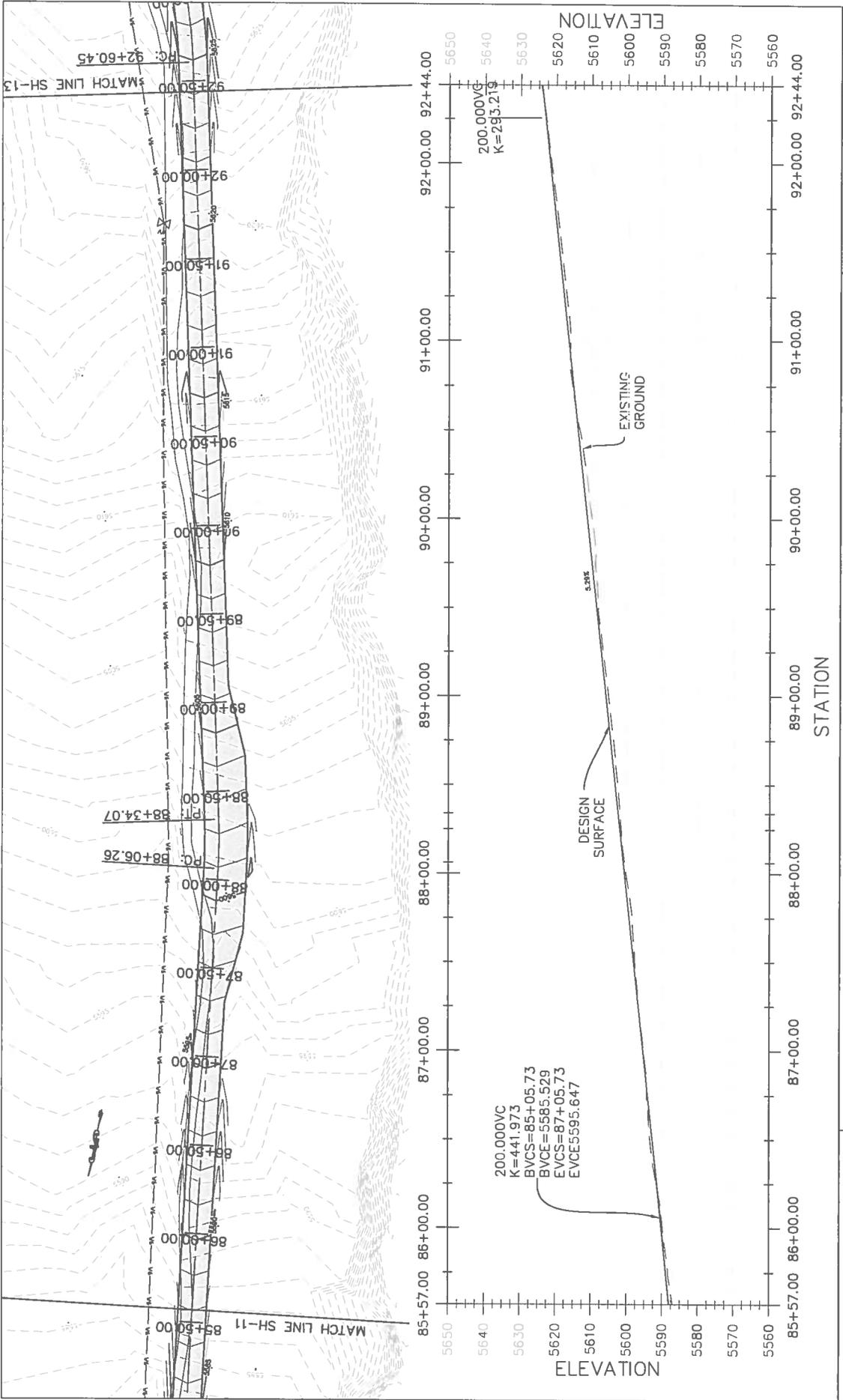
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| Savage Surveying, Inc. <small>1125 South 400 West, Suite 101 Provo, UT 84601 Phone: 801-733-8155 Fax: 801-733-8155</small> | | RD-9 <small>DATE: 01/27/16</small> | |
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | ENGINEER J.T.A. | SCALE 1" = 50' |
| SHEET NO. | | CHECKED R.W.S. | PROJ. NO. 1511-0115 |
| DATE 01/27/16 | | DRAWN D.G. | DWG. NO. 1511-0115 |

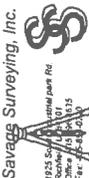


| | | | | |
|--|--------|---|----------|---------------------------|
|  Savage Surveying, Inc. <small>1435 South Main Street, Suite 200 North Salt Lake, UT 84061 Phone: (801) 433-8355 Fax: (801) 433-8355</small> | | GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | SHEET NO. RD-10 |
| ENGINEER | J.T.A. | SCALE | 1" = 50' | |
| CHECKED | R.W.S. | PROJECT NO. | 111-0115 | |
| DRAWN | D.G. | DWG. NO. | 111-0115 | |
| | | DATE | 01/27/16 | |



| | | | |
|---|---------------|---|---------------------------|
| ENGINEER J.T.A. | | SCALE 1"= 50' | SHEET NO. RD-11 |
| CHECKED R.W.S. | DRAWN D.G. | PROJ. NO. 511-0115 DWG. NO. 151-0115 | DATE 01/27/16 |
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | | |
| Savage Surveying, Inc. | | | |
| <small> 1525 South 1000 West, Suite 100 Provo, Utah 84601 Phone: 801-734-1115 Fax: 801-734-1110 </small> | | | |



| | | | | | | |
|---|--|---|--|--|--|---|
|  Savage Surveying, Inc. 1455 S. 1100 W. Suite 100 Provo, UT 84604 Phone: 801-734-1515 Fax: 801-734-1516 | | GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | ENGINEER J.T.A. CHECKED R.W.S. DRAWN D.G. | SCALE 1" = 50' FROM 11110115 DWG NO. 11110115 | SHEET NO. RD-12 DATE 01/27/16 |
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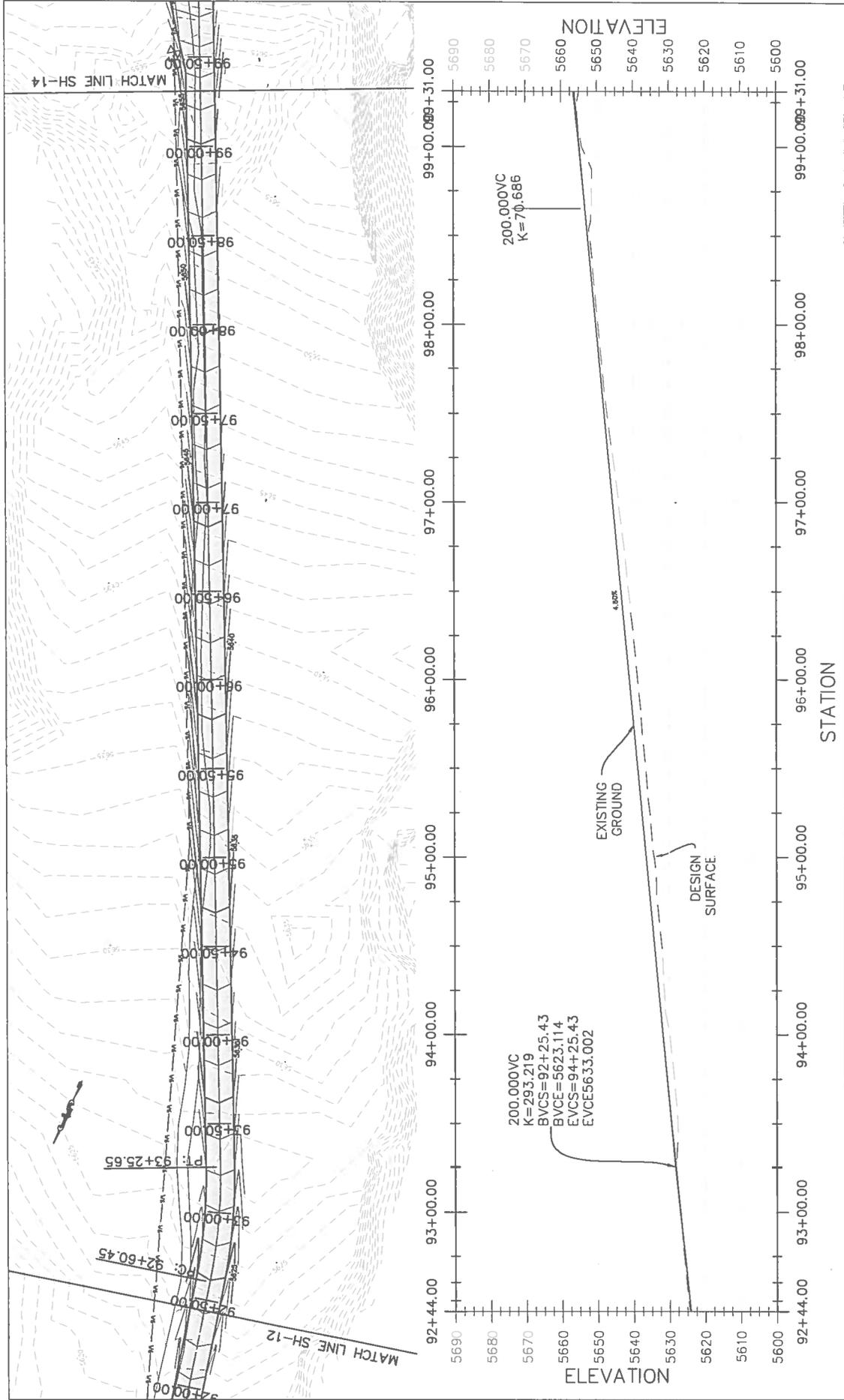
STATION
 85+57.00 86+00.00 87+00.00 88+00.00 89+00.00 90+00.00 91+00.00 92+00.00 92+44.00

ELEVATION
 5650 5640 5630 5620 5610 5600 5590 5580 5570 5560

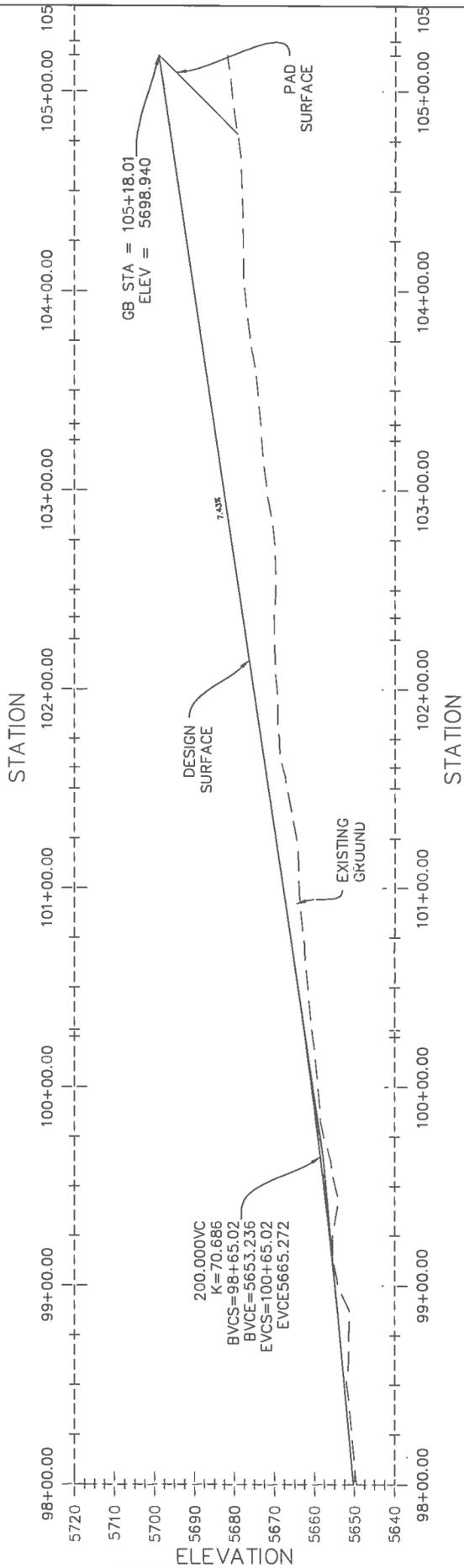
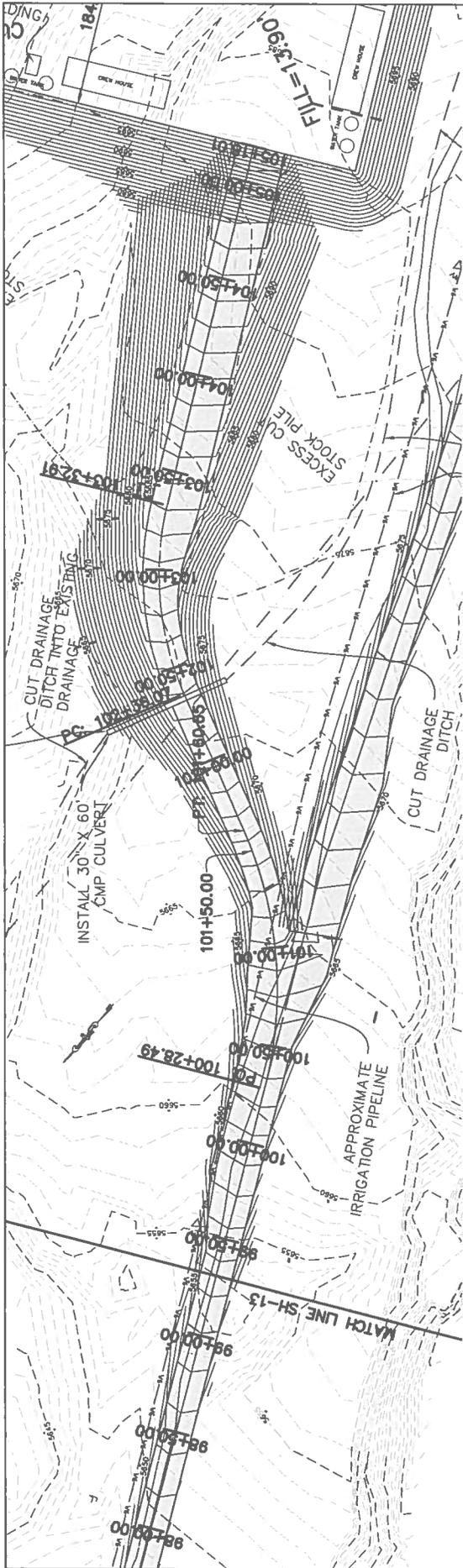
200.000VG
 K=441.973
 BVCS=85+05.73
 BVCE=5585.529
 EVCS=87+05.73
 EVCE=5595.647

5.28%
 DESIGN SURFACE
 EXISTING GROUND

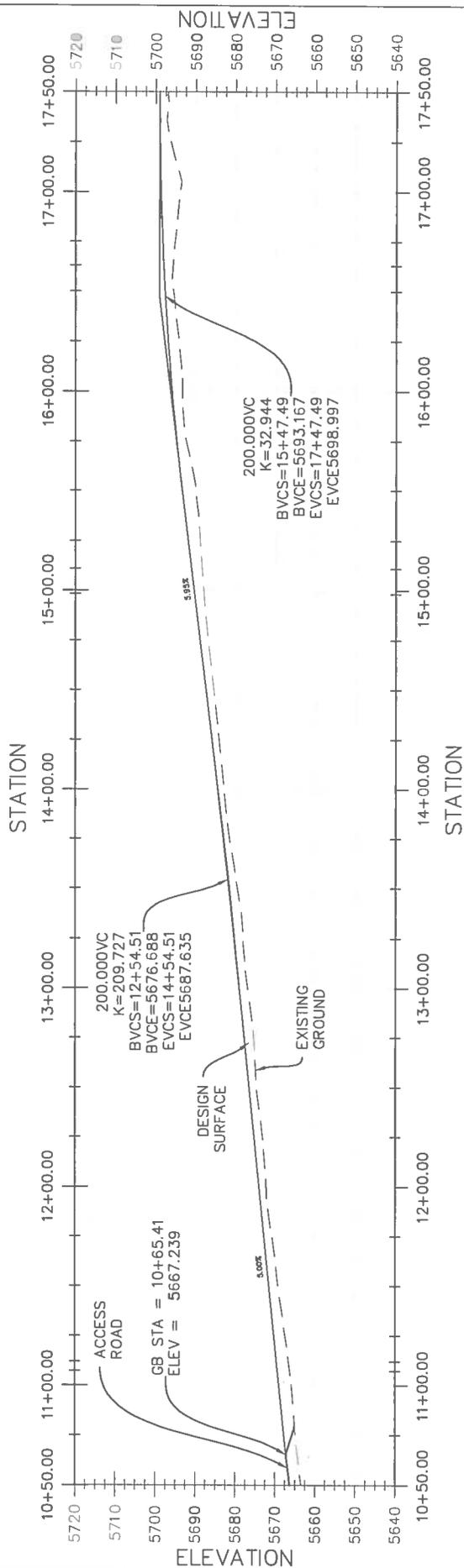
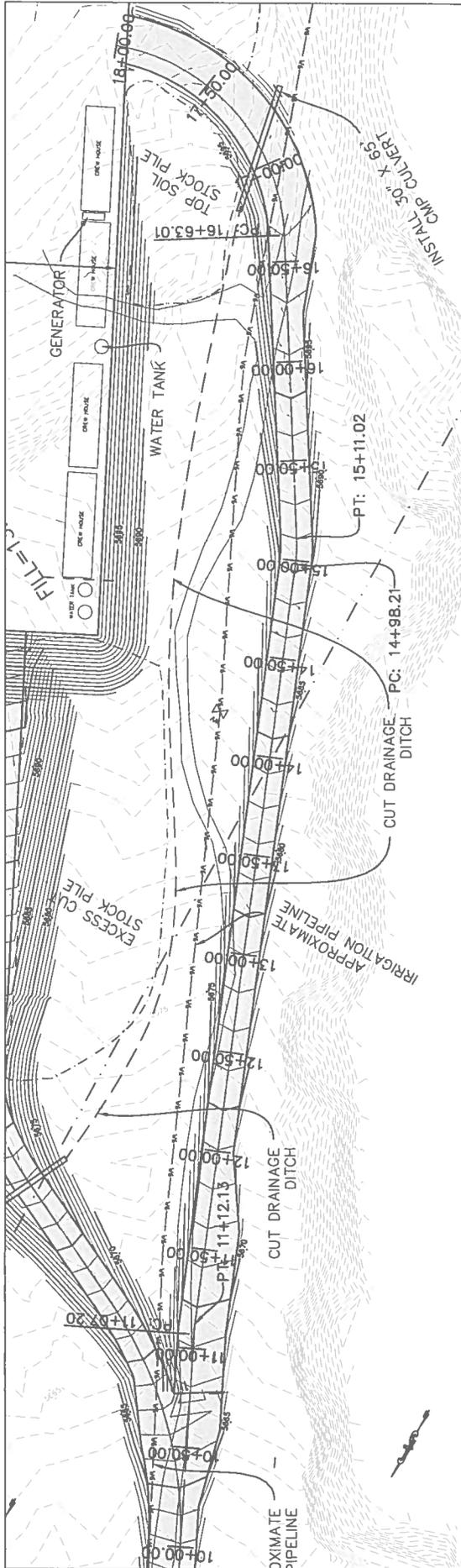
MATCH LINE SH-11 85+57.00
 MATCH LINE SH-13 92+44.00



| | | | |
|---|--|--|---------------------------|
| ENGINEER J.T.A. CHECKED R.W.S. DRAWN D.G. | | SCALE 1" = 50' PROJ# 151-0915 DRAWING# 157-0015 DATE 01/27/16 | SHEET NO. RD-13 |
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | | |
| Savags Surveying, Inc. 1925 So. ... Provo, UT 84601 Phone: (435) 798-1111 Fax: (435) 798-1112 | | | |



| | | | |
|--|--|--|---------------------------|
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | SCALE 1"= 50' ENGINEER J.T.A. CHECKED R.W.S. DRAWN D.G. | SHEET NO. RD-14 |
| | | DATE 01/27/16 | |
| Savage Surveying, Inc. 1035 South Main Street, Suite 100 Ogden, UT 84401 Phone: 435-844-8615 Fax: 435-844-0720 | | | |



Savage Surveying, Inc.

1035 South Granddune Park Rd.
 Bountiful, UT 84002
 (801) 973-1000
 FAX: (801) 973-1001

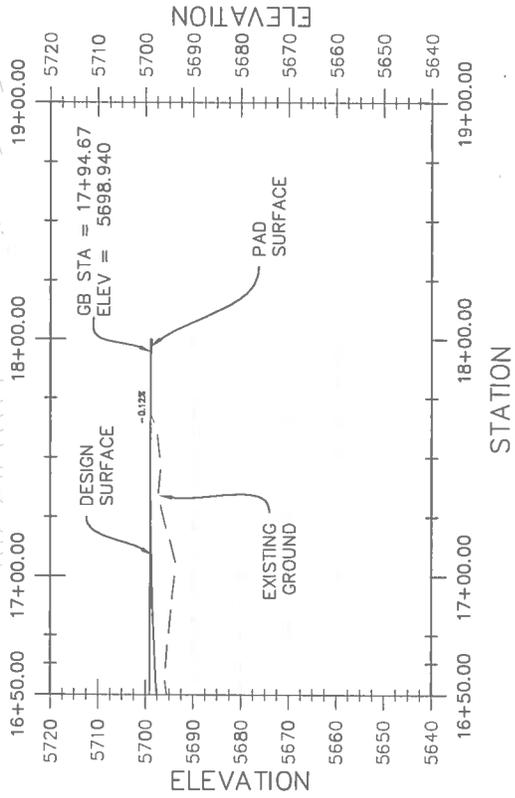
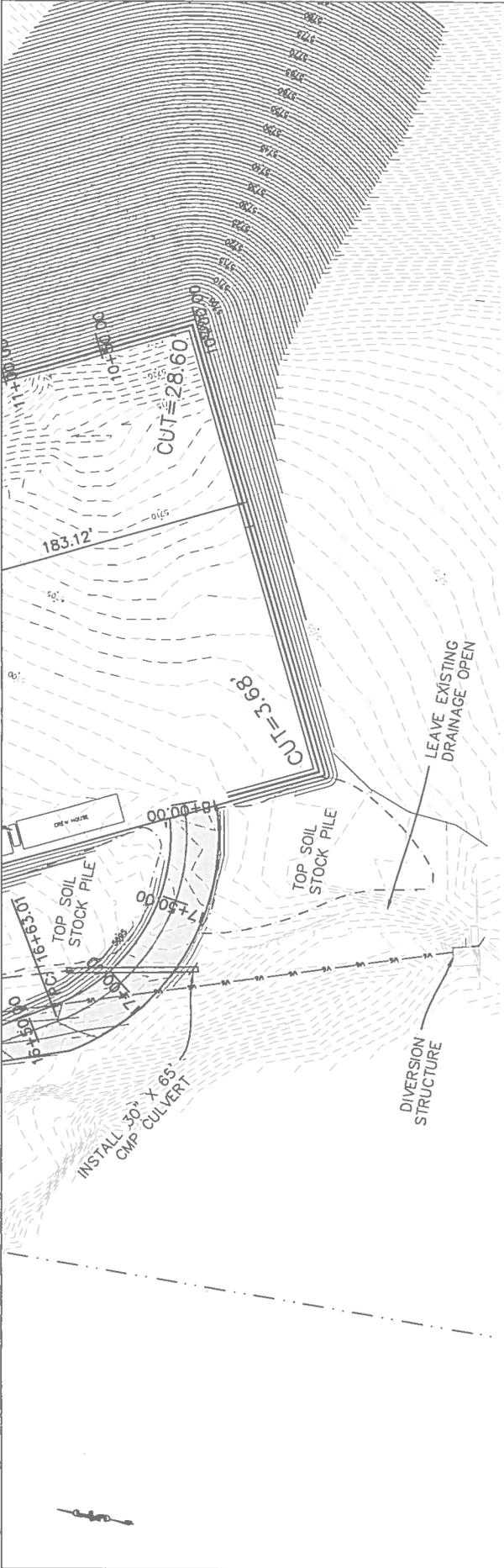
RD-15

DATE: 02/24/16

GLENCOVE REDERAL 11-1

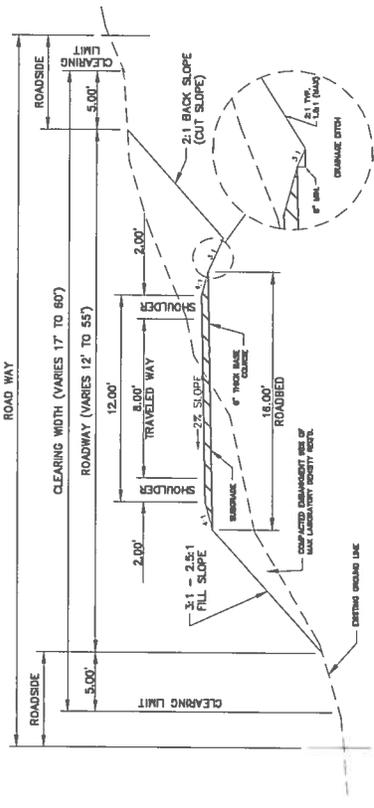
WOLVERINEE GAS AND OIL COMPANY OF UTAH, LLC

| | | | |
|----------|-------------------|-----------|--|
| ENGINEER | SCALE | SHEET NO. | |
| J.T.A. | 1" = 50' | | |
| CHECKED | PROJ# 1511-0115 | | |
| R.W.S. | DWG NO: 1511-0115 | | |
| DRAWN | DATE | | |
| D.G. | 02/24/16 | | |



| | | | | | | | |
|---|--|----------|--------|-----------|----------|-----------|-------|
| GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC | | ENGINEER | J.T.A. | SCALE | 1" = 50' | SHEET NO. | RD-16 |
| | | CHECKED | R.W.S. | PROJ. NO. | 151-0715 | | |
| | | DRAWN | D.G. | DATE | 02/24/16 | | |





TYPICAL SECTION



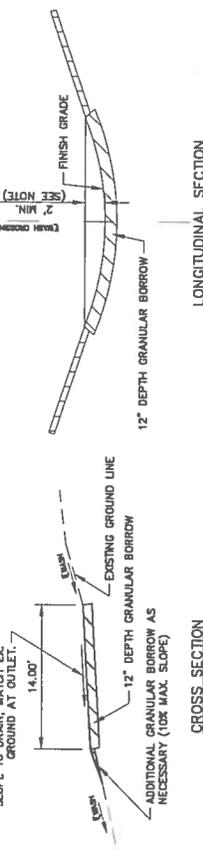
PLAN VIEW



SECTION VIEW

NOTE: 2% CROSS SLOPE UNLESS OTHERWISE NOTED ON PLANS.

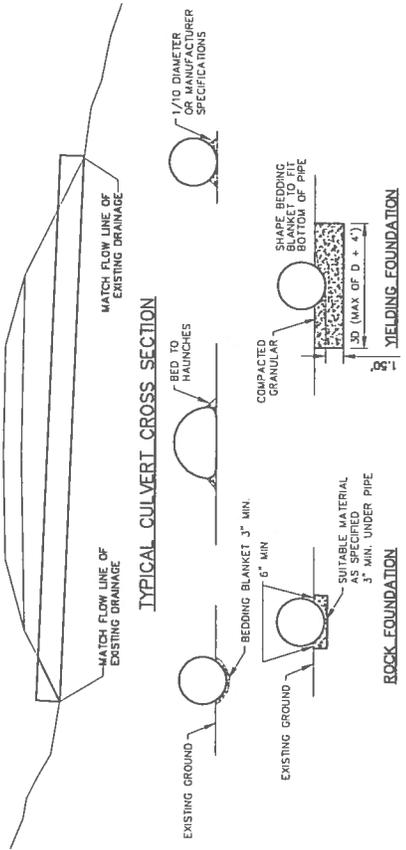
DIP CROSS SLOPE VARIES (4% MAX) SLOPE TO DRAIN, MINIMUM EX. GROUND AT OUTLET.



LONGITUDINAL SECTION

TYPICAL #3 (DRAINAGE DIP)

- NOTES:
- WHERE DRAINAGE DIP IS LESS THAN 2-FEET DEEP, 12" DEPTH GRANULAR BORROW BEDD THROUGH ENTIRE DIP TO GRADE BREAK(S)
 - CONSTRUCT DRAINAGE DITCH AS NECESSARY TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL DRAINAGE DIPS.



TYPICAL CULVERT CROSS SECTION

GENERAL NOTES

ALL MATERIALS FOR CONSTRUCTION OF THE COMPLETE PROJECT INCLUDING BUT NOT LIMITED TO WATER FOR DUST CONTROL AND COMPACTION OF CULVERTS, BEDDING MATERIALS FOR CULVERTS, GRANULAR BORROW, UNTREATED BASE COURSE, ECT. ARE TO BE PROVIDED BY THE CONTRACTOR AT HIS BID PRICE UNLESS OTHER ARRANGEMENTS ARE MADE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF PERMITS OR CABLE LINES IN THE VICINITY OF THIS ROAD AND FOR DESIGN, BIDDING, AND CONSTRUCTION OF THE ROAD AND DESIGN BASE STAKES (PUBLIC LINES) AND OR THE OWNER OF THE TRANSPORTATION LINES (CORPORATE LINES) MUST BE CONTACTED FOR IDENTIFICATION AND LOCATION BEFORE CONSTRUCTION BEGINS. TRANSPORTATION LINES THAT MAY BE IDENTIFIED ON NEAR OR OVER TRANSPORTATION LINES. EXTREME CAUTION SHALL BE USED WHEN CONSTRUCTING THE ROAD AND PAID NEAR OR OVER TRANSPORTATION LINES.

EXPLANATIONS:

PLAN & PROFILE SHEETS SHOW THE HORIZONTAL ALIGNMENT OF THE ROAD, SIGN PLACEMENT IF ANY, TURNOUT PLACEMENT IF ANY, ESTIMATED CULVERT PLACEMENTS AND SIZES, ESTIMATED WING DITCHES, HORIZONTAL AND VERTICAL CURVE DATA, AND THE PERCENT OF SUPER FOR CONSTRUCTION OF HORIZONTAL CURVES.

SCOPE OF WORK:

SHARPENING THE ROADWAY TO THE DIMENSIONS SHOWN ON THE TYPICAL CROSS SECTION INCLUDED IN THIS DOCUMENT. CARE SHALL BE GIVEN TO INSURE THAT THE DIMENSIONS SHOWN ON THE TYPICAL CROSS SECTION WILL BE MAINTAINED THROUGHOUT THE PROJECT. WHERE TURNOUTS ARE INDICATED, THE TYPICAL SECTION WIDTHS SHOWN ON THE TYPICAL CROSS SECTION WILL NEED TO BE MODIFIED BY THE PERCENTAGE SHOWN ON THE TYPICAL TURN-OUT DETAIL. WHERE THERE ARE HORIZONTAL CURVES, SUPER-ELEVATIONS WILL BE CONSTRUCTED TO THE TANGENT. TOPSOIL WILL BE HANDLED IN THE MANNER AGREED UPON AND STATED WITHIN THE APD AND THE CONDITIONS OF APPROVAL. F TOPSOIL IS TO BE MOVED. THE ROAD SHALL HAVE A CROWN AS SHOWN ON THE TYPICAL CROSS SECTION TO INSURE THAT THE WATER WILL DRAIN OFF OF THE TRAVEL SURFACE.

CULVERT CONSTRUCTION DETAILS

THE PLANS SHOW AN ESTIMATE OF THE NUMBER AND SIZE OF THE CULVERTS TO BE PLACED ON THE ROAD. THERE MAY NEED TO BE SOME FIELD ADJUSTMENTS MADE BY THE CONTRACTOR, BUA, AND/OR INSPECTOR/ENGINEER TO THE PLACEMENT AND LENGTH OF THE CULVERTS AND WING DITCHES. CULVERT INGRESS AND EGRESS DITCH LENGTHS ARE TO BE DETERMINED DURING CONSTRUCTION. ALL DITCHES ARE TO BE CONSTRUCTED WITH SUFFICIENT SLOPE SO THAT WATER WILL EXIT THE DOWNSTREAM SIDE AND NOT POND IN THE DITCH. ALL CULVERTS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT AN HS-20 LOADING OR HEAVIER. CHECK WITH MANUFACTURER FOR INFORMATION ABOUT MINIMUM COVER AND LOAD RATINGS. IN NO CASE SHALL COVER OVER CULVERTS BE LESS THAN 1'. CULVERT LENGTHS ARE ESTIMATED ON THE PLANS BUT THESE MAY NEED TO BE SOME ADJUSTMENTS MADE TO THE LENGTH OF THE CULVERTS DURING CONSTRUCTION.

| | | | | | |
|----------|--------|-----------|--------------|-----------|----------|
| ENGINEER | J.T.A. | SCALE | N.T.S. | SHEET NO. | T-1 |
| CHECKED | R.M.S. | PROJ. NO. | 151-0115 | | |
| DRAWN | D.G. | DWG. NO. | DMG/MT/2/DWG | DATE | 01/28/16 |

TYPICAL SECTIONS FOR GLENCOVE FEDERAL 11-1
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

Savage Surveying, INC.
 Ryan Savage, P.L.S.
 PO Box 107
 2710 N. 1000 E.
 Provo, UT 84601
 Phone: 801-898-8815
 Fax: 801-898-8925
 www.savesurveying.com

APPENDIX C
Conditions of Approval (COA's, Surface)

Company: Wolverine Gas and Oil Company of Utah, LLC.
Well No: Glencove Federal 11-1 Well and Access Roads
Location: **At Bottom Hole:** 2061' FNL & 658' FWL, being in Lot 11 (SW/4 NW/4) Section 11, T24S, R2W, SLM
At Surface: 2419' FNL & 314' FWL, being in Lot 11 (SW/4 NW/4) Section 11, T24S, R2W, SLM
Sevier County, Utah

Lease No: UTU-91058

Surface Use Conditions of Approval

Based on this environmental assessment and the APD submitted, the approval would be issued subject to regulations under 43 CFR 3100 and oil and gas onshore orders. The following mitigating measures are either required by policy, law, or regulation or are needed to insure mitigation of associated surface disturbance activities:

1. Wolverine shall secure all relevant Federal, state and local permits prior to beginning construction activities.
2. Wolverine shall conduct all activities associated with the construction, operation, maintenance, and termination of the described access road and well pad within the authorized limits, unless otherwise approved in writing by the Authorized Officer.
3. All equipment should be washed/blown off prior to arriving at project location in order to prevent seed transport of new noxious weed species from other locations. Any other equipment and vehicles, that have been used at other locations, where noxious weeds or seeds could have attached to the equipment, must also be sprayed and/or cleaned.
4. Water spraying may be implemented if necessary to minimize dust.
5. Wolverine Oil and Gas Company would be responsible to obtain any necessary ROW permits prior to the start of any associated activities. This includes the diversion and pipeline system that are authorized to Glenwood Irrigation Company. Right-of-way permits and permission would also be obtained from the private landowners prior to construction.
6. The diversion structure is located less than 300' from the proposed drill pad would be avoided, restored or replaced.
7. Surface disturbances that are created on public land as a result of construction, maintenance, operation, and termination activities, outside of the travel width of the subject access road, shall be reshaped and re-contoured, to approximate natural contours and conditions, to the extent practicable; evenly redistributing stockpiled topsoil over the re-contoured areas, the cut and fill slopes, and all other disturbed areas and seeded. The seed mixture specified below would be utilized. There would be no primary or secondary noxious weeds in the seed mixture. The seed shall be certified weed-free seed. The authorized Officer is to be notified a minimum of 15 days prior to seeding of the project.

Seed Mix: This seed mix is appropriate for drilling or broadcasting in upland ecological sites. Pounds per acre are based on pure live seed.

| | Seed Mix #1 | Status | Pounds/Acre |
|----------------|---|-------------|-----------------------|
| Grasses | Sandberg Bluegrass | Native | 0.50 lbs/acre |
| | Covar Sheep Fescue | Native | 2.00 lbs/acre |
| | Magnar Great Basin Wildrye | Native | 1.50 lbs/acre |
| | Luna Pubescent Wheatgrass | Non-Native | 1.00 lbs/acre |
| | Bozoisky Russian Wildrye | Non- Native | 2.00 lbs/acre |
| Forbs | Yellow Beeplant | Native | 0.50 lbs/acre |
| | Gooseberry Leaf Globemallow | Native | 0.50 lbs/acre |
| | Madrid Yellow Sweetclover | Native | 0.50 lbs/acre |
| | Delar Small Burnet | Non-Native | 1.00 lbs/acre |
| | Richfield Firecracker Penstemon (<i>P. eatonii</i>) | Native | 0.50 lbs/acre |
| | Cedar Palmer Penstemon (<i>P. palmeri</i>) | Native | 0.50 lbs/acre |
| | Appar Lewis Flax | Native | 2.00 lbs/acre |
| | Common Sunflower | Native | 2.00 lbs/acre |
| | Forage Kochia | Non-Native | 1.00 lbs/acre |
| Shrubs | Wyoming Sagebrush | Native | 0.50 lbs/acre |
| Total | | | 16.00 lbs/acre |

8. All of the seeding should be done in mid to late Fall (October/November) to prevent premature sprouting and subsequent winter killing of the forb species, due to late summer/early Fall precipitation combined with warm soil temperatures.
9. Wolverine shall be responsible for weed control within the project area. Wolverine shall also be responsible for consultation and coordination with the Authorized Officer for acceptable weed control methods.
10. In the event vertebrate fossils are encountered during construction activities the BLM will be notified immediately to determine the appropriate course of action.
11. Before construction activities occur, signage advertising temporary closures for sections of BLM Route 3540 and BLM Route 3542 which go through the proposed well pad site would be placed on both routes outside of the project area. Upon completion of rehabilitation activities, the signage would be removed and the designated routes would be maintained, fixed and open and ready for full use again. The routes that would be cut and lost due to proposed activities would be re-routed around the proposed action activities and open to the public prior to production or reclamation and cleanup efforts conclude.
12. Cut and fill, stockpiles, and other disturbances should be seeded for re-growth of vegetation to stabilize slopes and to reduce erosion.
13. Stockpiled topsoil (maximum available) would be stored in a windrow around the pad.
14. All topsoil would be stockpiled for reclamation in such a way as to prevent soil loss and contamination.
15. All existing roads, except for the road that will be cut and lost due to activities (which will be re-routed), would be kept in good repair during all phases of operation and would be maintained as necessary to prevent erosion.
16. During final reclamation the re-contouring would be approved prior to top soil being spread.

17. Culverts may need to be installed along the proposed road. Energy dissipating structures would be utilized to minimize erosion at the culvert crossings. Adequate drainage structures would be incorporated into the remainder of the road if necessary.
18. The access road would require periodic maintenance to ensure that drainages are kept open and free of debris, ice, and snow, and that surfaces are properly treated to reduce erosion and impacts to adjacent areas.
19. New access roads should be obliterated following abandonment of the site if not needed for the future or shown in the travel management plan of the Richfield Field Office.
20. Diversion ditches would be constructed around the project site to prevent surface waters from entering the mining area and sediments from entering stream channel.
21. Every effort will be made to reduce visibility of the proposed action in every phase including construction and drilling activities. If producible oil and gas in paying quantities is discovered, then additional efforts would be made to reduce visibility of structures, blend basic elements and use natural colored paints on structures and buildings needed for operation. All permanent structures, including pumping units, constructed or installed would be painted a flat, non-reflective color, as described on page 40 of the Gold Book (Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, 4th Edition 2007). Prior to painting permanent structures, the operator would submit a Sundry Notice for approval of a color proposed by the applicant. Permanent structures are defined as being on location for six months or longer. Facilities that must conform to a color standard required Occupational Safety and Health Act (OSHA) may not conform to the Gold Book standards.
22. The well pad and access roads are within 330 ft. riparian and surface water associated with Water Creek. The facilities are all located downstream of the resources. Therefore, impacts from runoff and contamination are not expected. However, if any impacts are identified to result from project related activities, resource managers would be contacted and mitigation plans would be implemented. A berm of top soil will be placed around the pad to prevent sediments from entering the ephemeral stream channel.
23. To reduce the emission of fugitive dust, routine watering and/or application of magnesium chloride shall be applied to the access road, as needed.
24. Wolverine shall be responsible for informing all persons associated with this project that they shall be subject to prosecution for knowingly disturbing historic or archaeological sites or for collecting artifacts. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by Wolverine, or any person working on their behalf, on federal land shall be immediately reported to the Authorized Officer. Wolverine shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. Wolverine shall be responsible for the cost of the evaluation and any decision as to proper mitigation measures would be made by the Authorized Officer after consulting with Wolverine.
25. The project area shall be kept free of trash, litter, discarded materials, and debris that are on site or generated as a result of Wolverine's activities. The areas shall be maintained in sanitary condition during all construction, operation, maintenance and termination activities.

Waste materials shall be removed and disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, pipe, oil, oil drums, grease, petroleum products, ashes, concrete, construction materials, and equipment. Debris/waste shall not be buried or burned without Holder obtaining prior written permission from the Authorized Officer.

26. Wolverine shall locate, handle, and store gas, diesel fuel, oil, lubricants, and other petroleum products in such a manner as to prevent them from entering into and contaminating soils on the public land. Should petroleum spills occur within the described area as a result of construction, maintenance, and termination activities, Wolverine shall be responsible for clean-up of any spills in accordance with Federal and State regulation and associated costs.
27. Fire suppression equipment will be available to suppress any wildfires caused by construction or related activities. In the event of a wildfire the Richfield Interagency Fire Center (435) 896-8404 will be notified.
28. The Authorized Officer would be contacted at least 48 hours prior to commencing any reclamation work. Final reclamation, including re-vegetation of the site, would be deemed complete and satisfactory when approved by the Authorized Officer.
29. All safety measures shall be compliant with OSHA requirements.
30. Oil based mud (OBM) would be treated as described in the Surface Use Plan (SUP) with a Soli-bond or similar type product. A closure report would be required with the results following the OBM treatment.
31. Construction and protective measures outlined in the Surface Use Plan of Operations and associated addendum submitted with the Application for Permit to Drill are considered part of the Conditions of Approval.

Operator Wolverine Gas & Oil Company of Utah, LLC
Lease Number UTU-91058
Well Name & Number Glencover Federal 11-1
Location SHL: SWNW Sec. 11 T24S-R2W, BHL:SWNW

Site Specific Drilling Plan COA's:

1. Cement for the surface casing will be circulated to the surface.
2. Cement for long-string shall be circulated 200' above surface casing shoe.
3. Flags indicating wind direction shall be present on location while drilling past the surface casing shoe.
4. If H2S is encountered during drilling operations all requirements as set forth in O.O. #6 III C shall be adhered to.

Appendix D
Map of Proposed ATV Route Relocation

Appendix D
Map of Proposed ATV Route Relocation

