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Environmental Assessment

Vernon Sheeprocks Project

U.S. Forest Service
Spanish Fork Ranger District, Uinta National Forest
Spanish Fork, Utah

U.S. Office of Surface Mining, Reclamation and Enforcement
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SUMMARY

The Uinta National Forest and the U.S. Office of Surface Mining (acting through the Utah Division of Oil, Gas and Mining, Abandoned Mine Reclamation Program) propose to abate physical safety hazards and remediate environmental problems at abandoned hardrock metal mines in the Sheeprock Mountains. The project area is located in southeast Tooele County about 40 miles south of Tooele and directly south of Vernon on the central spine of the Sheeprock Mountains. It is on the Vernon Division of the Wasatch National Forest but is administered by the Spanish Fork Ranger District, Uinta National Forest, Utah. This action is needed because the abandoned mines are hazardous and diminish the quality of the watershed.

The proposed action may affect cultural and natural resources in several ways: cultural resources, including some properties eligible for the National Register, may be altered or obliterated; some special status animal or plant species may be disturbed; vegetation will be uprooted or trampled; and there may be an increased risk of soil erosion until vegetation gets reestablished. In all cases the disturbance should be localized and of short duration-- only about ten acres of ground distributed over about twenty square miles will be affected, occupancy time may range from a few hours to a few days at any location. Adverse effects have been managed through project design and mitigation measures to minimize their severity. On the positive side, water quality (expressed as concentrations of dissolved metals) should improve and public safety should be enhanced.

In addition to the proposed action, the Forest Service also evaluated the following alternatives:

- *No Action: The Spanish Fork Ranger District and the U.S. Office of Surface Mining would not issue an authorization to expend funds and proceed with the planned reclamation construction.*

Based upon the effects of the alternatives, the responsible official will decide whether to issue an authorization to expend funds and proceed with the planned reclamation construction.

INTRODUCTION

Document Structure

The Utah Division of Oil, Gas and Mining, Abandoned Mine Reclamation Program (UDOGM/AMRP) and the U.S. Forest Service have prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource element. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

There are two federal actions requiring NEPA analysis for this project. One federal action is the authorization by the U.S. Office of Surface Mining to the UDOGM/AMRP to proceed with the project. For that portion of the project occurring on federal land administered by the Forest Service, a second federal action is the authorization by the Forest Service for the UDOGM/AMRP to enter the National Forest to proceed with the project. This environmental assessment serves as the NEPA document for the both the OSM and Forest Service authorization actions and applies to the project in its entirety (both federal and nonfederal lands). The organization of this document generally follows the Forest Service format, but it has been modified to reflect the OSM NEPA review process.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the UDOGM/AMRP office in Salt Lake City or the Spanish Fork Ranger District offices in Spanish Fork.

Background

In 1995 the UDOGM/AMRP inventoried abandoned mines in the Vernon Sheeprocks project area as part of a statewide inventory of abandoned mines on National Forest System (NFS) lands for the Forest Service Intermountain Region. The inventory located the mines and identified mine-related problems. Since then the UDOGM/AMRP and the Forest Service have selected the Vernon Sheeprocks project area as a priority for reclamation.

UDOGM/AMRP and the Forest Service have entered into a Participating Agreement (#FS-01PA-11046000-006) that makes funds available to UDOGM/AMRP for the purposes of watershed restoration and enhancement on National Forest system lands affected by past mining operations. These Forest Service funds for environmental remediation supplement the UDOGM/AMRP's traditional primary funding sources of the U.S. Office of Surface Mining and State of Utah legislative appropriations, which are restricted to safety hazard abatement for noncoal abandoned mines, and make possible a broader scope of reclamation work. UDOGM/AMRP will use funds from all three sources for different portions of the project in accordance with their respective purposes.

2003 Uinta National Forest Land and Resources Management Plan (Forest Plan): The Forest Plan establishes a long-range program for management of natural resources. It provides direction, goals, and criteria for management to use in responding to public issues and management concerns. Direction set forth in the Forest Plan relevant to this analysis is summarized below:

> Forestwide Goal 1: "Soil, air, and water resources provide for watershed health, public health and safety, long-term soil productivity, and ecosystem sustainability, and meet applicable laws and regulations." (2003 Forest Plan, Page 2-1)
>
> Sub-goal 1-11: "All activities on the Forest comply with state and federal clean water standards and applicable permitting processes. To the extent practical through management of activities on the Forest:
>
> - Water chemistry is maintained in all surface water where the alkalinity will not be reduced more than 10 percent of baseline, and
> - Management activities do not cause exceedances of State of Utah water quality standards (this monitoring is required by law) or increases in the listing of 303(d) streams." (2003 Forest Plan, Page 2-3)
>
> Forestwide Goal 2: "Biologically diverse, sustainable ecosystems maintain or enhance habitats for native flora and fauna, forest and rangeland health, watershed health, and water quality." (2003 Forest Plan, Page 2-1)
>
> Sub-goal 2-44: "Reclamation activities are designed to provide for achieving desired future conditions for the management area(s) involved." (2003 Forest Plan, Page 2-12)

Sub-goal 2-45: "Reclamation activities:

a. Stabilize the area,
b. Protect the aesthetics of the area,
c. Prevent water from off-site sources from impacting the disturbed area,
d. Control surface runoff to minimize erosion,
e. Trap sediment to enhance establishment of vegetation,
f. Restore and stabilize all unnecessary roads,
g. Include revegetation seeding or planting of local native species, and, where needed, fertilization and replacement of topsoil on all disturbed areas,
h. Provide maintenance of repeat applications where initial treatments do not achieve objectives, and
i. Prevent subsequent pollution from the site."

(2003 Forest Plan, Page 2-12)

Forestwide Goal 4: "Heritage resources are identified, preserved, and enhanced." (2003 Forest Plan, Page 2-1)

Purpose and Need for Action

The purposes of this initiative are twofold: 1) to improve public safety and reduce the risk of accidental death or injury by closing the abandoned mines in the project area and 2) to enhance the quality of the watershed by isolating mine-related sources of runoff contaminants, reducing erosion, and establishing vegetation on disturbed areas. These actions are needed because the abandoned mine sites in the Vernon Sheeprocks Project contain numerous hazards. Access to underground workings is unobstructed at most openings. The project area's historic and scenic values and easy road access make it a convenient recreation destination, particularly for off-highway vehicle (OHV) and all-terrain vehicle (ATV) users. Litter, graffiti, fire rings, and vehicle tracks in the area testify to the recreational use of the area and the risks people take there.

Conditions at abandoned mines expose people to health and safety hazards and reduce environmental quality. Past mining practices have resulted in losses of rangeland, wildlife habitat, and water quality through destruction of vegetation, improper dumping of wastes, and accelerated erosion. There is a need to remove the safety hazards and to restore the land's environmental productivity. Title IV of the Surface Mining Control and Reclamation Act (P.L. 95-87) provides a mechanism for funding such reclamation.

The Vernon Sheeprocks Project area is rated as a Priority 1 site by the Utah Abandoned Mine Reclamation Program ranking system and by the federal Abandoned Mine Land Information System (AMLIS).

This action responds to the goals and objectives outlined in the 2003 Forest Plan and helps move the project area towards desired future conditions described in that plan. The 2003 Forest Plan acknowledges both the safety hazards and water quality problems related to past mining and the need to address them:

Minerals Description: "Over the last several years the Forest has worked with the State of Utah and private landowners in closing dangerous mine adits and drifts. These features include obscure vertical and deep shafts, which create a hazard to the general public engaging in recreation opportunities in the area. Old and abandoned tailing piles from excavated mines are being evaluated for high levels of hazardous minerals and other deleterious materials that may cause environmental damage." (2003 Forest Plan, Page 5-197)

Desired Future Condition: "Abandoned and open mine shafts will continue to be closed for safety reasons. Evaluation of abandoned tailings piles will continue." (2003 Forest Plan, Page 5-175 and Page 5-197)

Water and Watershed Description: "Water quality was sampled extensively within the management area during the summer of 2000. Results indicate that, due to past mining activity and naturally occurring mineralization of parent rock formations, isolated areas exist where metals exceed State of Utah clean water standards. A preliminary assessment of the situation is currently being prepared; action will be taken if it is determined that a significant risk to the public, wildlife, or the environment exists." (2003 Forest Plan, Page 5-192)

Desired Future Condition: "Waters impacted from past mining activity are improved where risk to the public and the resource warrants." (2003 Forest Plan, Page 5-170 and Page 5-193)

Proposed Action

The actions proposed by the Forest Service and the U.S. Office of Surface Mining to meet the purpose and need are to authorize the UDOGM/AMRP to expend funds and proceed with a construction project to mitigate safety hazards and to remediate environmental problems at abandoned mines in the Sheeprock Mountains. The Proposed Action is presented as Alternative 2 in the next section and is described in detail in Appendix A of this Environmental Assessment.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

Shall the U.S. Office of Surface Mining issue an authorization to the UDOGM/AMRP to expend funds and proceed with the proposed mine reclamation?

Shall the Forest Service issue an authorization to the UDOGM/AMRP to enter National Forest System lands to proceed with the proposed mine reclamation and if so, under what conditions?

Public Involvement

The proposal was listed in the Spring, Summer, Fall, and Winter 2004 editions of the *Uinta National Forest Quarterly Schedule of Proposed Actions*. The proposed action was provided to the public and other agencies for scoping input and comment during scoping on June 23, 2004. This included a mailing individuals and organizations, publication of a legal notice in the Provo *Daily Herald*, and publication of a legal notice on the Uinta National Forest website. In response to these efforts, the Forest Service received two comments, one from the Utah Division of Wildlife Resources and one from the U.S. Fish and Wildlife Service.

Using the comments from the public and other agencies (see *Issues* section), the interdisciplinary team developed a list of issues to address.

Issues

The UDOGM/AMRP and Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" No significant or non-significant issues were raised through public scoping. The significant issues associated with the project were instead identified by the Interdisciplinary Team.

These issues include:

<u>Issue #1</u>: Potential Effect of the Project on Historic and Cultural Resources
All of the project mines date from the historic era; some are considered eligible for the National Register. Mine closure construction can alter or destroy the mine opening and/or associated cultural features. Preferred reclamation methods are those that avoid or minimize disturbance to cultural features and preserve the information that exists at the sites.
[2003 Forest Plan Direction and Guidance: Goal 4]

<u>Issue #2</u>: Potential Effect of the Project on Fish and Wildlife
Several species protected by law or policy may occur in the project area. Construction work can disturb these species through machinery noise and human activity or through habitat loss. Typically, for mine reclamation, the greatest concern for direct disturbance from noise and activity is directed towards birds while bats face the greatest risk of habitat loss. Preferred reclamation methods are those that avoid or minimize disturbance to wildlife.
[2003 Forest Plan Direction and Guidance: Goal 2; Sub-goals 2-44 and 2-45]

Issue #3: Potential Effect of the Project on Hydrology
Mines can influence hydrology by bringing subsurface minerals and groundwater to the surface, where they can react chemically and mobilize metals into the watershed. The statutory purpose of the Forest Service share of the project funding is to restore diminished watersheds. Preferred reclamation methods are those that will reduce the potential for soil erosion and the leaching of metals from mine dumps.
[2003 Forest Plan Direction and Guidance: Sub-goal 1-11, End Objective 1-4]

While other lesser concerns exist, these three issues most significantly shaped the Proposed Action. Project planning strove to achieve the project objectives while minimizing adverse effects on history and wildlife. The Proposed Action incorporates mitigation measures to minimize adverse effects and maximize benefits. These include preconstruction surveys to identify sensitive resources, careful selection of mine closure methods for each site, construction scheduling, contract stipulations, etc. Details are presented elsewhere in this document.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Vernon Sheeprocks project. It includes a description of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., sealing mines by backfilling them versus using masonry seals or steel grates) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., the number of bat roosts or cultural sites disturbed by backfilling versus other types of mine closures).

Alternatives

Alternative 1

No Action

Under the No Action alternative, no mine reclamation construction activities would be implemented to accomplish project goals.

Under this alternative, the OSM Denver Field Office would deny a federal grant in the amount of approximately $150,000 to implement the abandoned mine land reclamation project proposal described above under Alternative 1. The Forest Service would not authorize the UDOGM/AMRP to enter public land to implement the abandoned mine land reclamation project proposal described below under Alternative 2.

Alternative 2

The Proposed Action

Under this alternative, the OSM Denver Field Office would authorize project activities in the amount of approximately $150,000 for use by UDOGM/AMRP in implementing the abandoned mine reclamation proposal described below. The Forest Service would authorize the UDOGM/AMRP to enter public lands for the purpose of implementing the abandoned mine land reclamation proposal.

Project Area Location and Description:
The Vernon Sheeprocks Project area is located in southeast Tooele County about 40 miles south of Tooele and directly south of Vernon at the northern end of the Sheeprock Mountains (see Map 1 in Appendix E). The formal project boundary is defined by and coincident with the Wasatch National Forest “Vernon Division” boundary. The project

area takes in most of the central part of the Sheeprock Mountains and the flats and foothills northeast of the Sheeprocks. The formal project boundary includes about 160 square miles. Mines are not evenly distributed in this area. Nearly all of the mines are in the mountains in the far southern third of the project area. The area containing mines takes up a small fraction (about 10%) of the formal project area; the land area actually directly affected by mining is a fraction of this. The project area includes federal land administered by the Forest Service and private land. See the list of sites in Appendix B and Map 1 and Maps D1-D12 in Appendix E for more details about the location and description of each site.

The project area contains over 190 identified mine features, including adits, shafts, inclines, and prospects. About half of the inventoried mine features have serious enough safety or environmental problems to warrant reclamation. Roughly two-thirds of the mine features are on National Forest system land; the rest are on private inholdings (patented mining claims) within the larger tracts of federal land.

Vernon Sheeprocks Project mines occur in the following sections:

T9S, R6W, Sections: 20, 27
T9S, R7W, Sections: 11
T10S, R5W, Sections: 3, 11, 17, 18, 20, 21, 22, 24, 28, 29
T10S, R6W, Sections: 2, 3, 4, 7, 9, 10, 11, 13, 14, 15, 22, 23, 24

The Vernon Sheeprocks Project is mapped on the following USGS 7½' quadrangles: Dutch Peak, Erickson Knoll, Indian Peaks, Indian Springs, Lofgreen, Lookout Pass, Sabie Mountain and Vernon. Mines occur on the Dutch Peak, Erickson Knoll, Lookout Pass, and Sabie Mountain quads.

The mining area terrain is typical of Great Basin mountain ranges and is characterized as mountain spines dissected by canyons, with sagebrush on lower elevations and drier aspects, pinyon-juniper woodland at intermediate elevations, and mountain scrub (oak, maple, chokecherry), aspen, or conifer woodland at higher elevations.

Proposed Reclamation:
The proposed reclamation action calls for mitigation of safety hazards (Priority 1 sites under P.L. 95-87). The reclamation will consist of closing about 73 mine openings (50 on NFS land) to prevent human access to underground workings. More specifically, the proposed design calls for the use of structural steel closures (gates and grates), masonry bulkheads or walls, excavation and backfills, and specialized custom closures such as concrete or polyurethane foam plugs.

Closure Method	Number of Sites **Entire Project**	Number of Sites **NFS Land**
Backfill (Hand Labor)	26	17
Backfill (Mechanized)	17	15
Bat Gate	11	9

Closure Method	Number of Sites **Entire Project**	Number of Sites **NFS Land**
Masonry Wall (Block or Stone)	11	5
Rebar Grate	8	4
Total: All Closures	73	50
No Closure Proposed	121	71
Total Number of Sites	194	121

At selected sites, environmental problems (Priority 3 sites under P.L. 95-87) will be addressed with the objective of enhancing watershed characteristics. More specifically, mine waste rock dumps would be buried or regraded to isolate them from surface runoff and drainage channels and to establish vegetation, and mine water discharge would be diverted from waste dumps to prevent contamination. Areas disturbed by construction activities, including borrow sites, would be reseeded with a mix of native species using certified weed-free seed (including undesirable non-native species such as cheat grass). For sites on NFS land, the seed mix would be approved by the Forest Service.

Details of the reclamation work are contained in Appendix A of this environmental assessment. This appendix contains an excerpt from the draft construction specifications to be prepared by the UDOGM/AMRP, namely, Section 0300: Specific Site Requirements of the UDOGM/AMRP standard construction specification document. This section describes the proposed action in detail. Section 0300 of the construction specifications references an Appendix A to the specifications that lists the mine closures in the proposed action. An equivalent table with the same content is included in Appendix B of this environmental assessment. Proposed mine closure methods for each opening are presented on Map 2 in Appendix E. Proposed watershed remediation sites are presented on Map 3 in Appendix E. Complete construction specifications are not included in this environmental assessment. Omitted sections include boilerplate bidding and contract documents, generic technical specifications for the work, and generic design drawings. Reviewers desiring these omitted sections may contact UDOGM/AMRP.

The UDOGM/AMRP will use four primary methods to seal the mine openings in the Vernon Sheeprocks Project: backfilling with adjacent rock and soil, masonry walls, fabricated steel closures (gates and grates), and polyurethane foam shaft plugs. Backfilling would be done using heavy equipment or manual labor. The choice of a closure method at a particular mine opening is based on the site's geotechnical conditions, availability of materials, accessibility, cultural concerns, wildlife concerns, perceived risk, anticipated cost, and other factors. Backfilling is generally an effective, low cost, permanent closure method and can be considered to be the default closure choice. However, compared to walls and steel closures, backfilling disturbs more ground and is less compatible with wildlife (specifically bats) and cultural resources. The specific closure method proposed for each site is the result of weighing the above mentioned factors for each mine opening and attempting to select the closure method with the fewest conflicts with resource values. While it is not possible to optimize each of the multiple variables, the project configuration in the Proposed Action represents the elimination of numerous less acceptable alternatives.

The recommended closures at each mine opening are based on inventory data. Some closures methods may be changed from those listed in the contract specifications at the time of construction based on reanalysis of current site conditions. For instance, rock that appeared at time of inventory to be competent enough to anchor a bat gate may, on revisit, be found to be too fractured and the closure at that site might be changed to a backfill. In addition, new mine openings not previously inventoried may be found. Such changes in the proposed action cannot be predicted but are expected to be relatively minor (5-10% of the total). Any changes in the proposed action will be based on the same criteria used to develop the proposed action and should not significantly alter the environmental analysis of the action.

Where practical, and where the mines provide habitat and/or are being used by bats, gates/grates would be installed to provide bats access to abandoned workings without affecting air flow patterns or compromising human safety concerns. (While primarily intended to benefit bats, other wildlife can also use the gates.) Where this is not practical, and underground workings used by bats or likely to be used are to be sealed by walls or backfills, the mines would be cleared and bats excluded prior to closing to prevent them from being trapped inside and killed.

At selected mine sites on National Forest System lands, mine dumps will be buried or regraded to improve watershed quality. Mine waste rock will be excavated and moved away from stream channels, buried, or graded to aid the establishment of vegetation. The intent is to isolate the barren dump material from surface runoff and groundwater to prevent leaching and discourage erosion. Mines discharging water may have ditches dug to divert the water away from mine dump material.

The mines proposed for remediation earthwork have dumps that range in size from approximately 100 to 1500 cubic yards. Typical remediation work would entail stripping and stockpiling topsoil from the burial site, excavating a trench or pit adjacent to the dump, grading the dump material into the trench, and covering the regraded dump area with the excavated material (with the stockpiled topsoil on top). The customary mine dump cone or fan shape is flattened in the process. There are site-specific variations to this approach based on terrain, soil depth, etc. Total disturbance is roughly proportional to the size of the dump and can be expected to range from 0.1 to 1.5 acres per site. There are about 15 sites where this type of work may occur. See Appendix A for details. Sites with earthwork will be monitored for noxious weeds and treated as necessary.

Reclamation construction will be performed by UDOGM/AMRP using a private general contractor. Based on previous UDOGM/AMRP projects of similar scope, the following equipment will likely be used: one or two trackhoes (Cat 325 or equivalent), rubber-tired backhoe/loader (Cat 416 or equivalent), small dozer (Cat D6 or equivalent), 1- or 2-ton flatbed truck, 4WD pickup trucks, 10-wheel dump truck, water tank truck or trailer, equipment transport trailer, trailer-mounted and/or hand-carried portable gasoline-powered arc welder/generator, ATV's, and hand tools (shovels, picks, pry bars, rakes, carpentry and masonry tools, arc and gas welding tools, etc.). Other equipment may be added or substituted as circumstances require. Construction crews would likely consist

of up to twelve workers working concurrently in groups of one to four people. A typical allocation of labor would be: 1 supervisor, 1-2 backhoe/trackhoe operators performing backfills and earthwork, 2 crews of 3-4 manual laborers performing backfills and/or wall construction, 2 welders/laborers building gates or grates, 1 driver/gofer.

In order to make the most efficient use of the field crews and equipment, work may be ongoing at several different openings at widely separated parts of the project at any given time.

Some workers may choose to camp onsite to reduce commuting time and maintain security over equipment, supplies, and work sites. Campsites and staging areas may be on public land. Camping on public land will be limited to 14 days in any one place and will be in a camp trailer with a chemical toilet. Camping will only be allowed in previously disturbed areas.

Construction will be performed in a way that minimizes disturbance to the ground and vegetation. Truck, equipment, and ATV access to mine sites will be limited to existing roads and trails where possible. Cross-country traverses, where necessary, will be on routes that minimize disturbance. Vehicle tracks will be raked and/or seeded as needed. Backfill sources will normally be the mine dump adjacent to the mine opening, the brow and slope above the opening, and nearby surface rock. In the extremely rare event that additional backfill is required from offsite, it will be obtained from areas that have no cultural resource or wildlife conflicts and in a way that minimizes disturbance. Additional surveys and consultation will be performed if these areas are not covered by existing environmental analysis. All borrow areas will be shaped to blend with adjacent slopes and contours to avoid leaving a gouged or scarred look.

Access routes will need to be improved in localized areas to a degree dependent on the type of vehicles used and the number of trips required. Some access road segments are badly washed out and may require the filling of gullies, culverting, or blading of ramps into and out of the gullies. The ramps will be no wider than the existing road. Other roads will need to have deadfall trees cut and moved or individual boulders moved aside to clear a path for vehicles. Ground disturbance from road improvements will be minimized.

UDOGM/AMRP will have an onsite project manager/construction inspector overseeing the work as much as possible for the duration of the construction.

Reclamation is scheduled to commence in the spring of 2005. The mine closure work should take about three months to complete. Delays to avoid interference with wildlife (raptor nesting) or due to weather (late snowmelt at high elevations) could push some of the work further back to the fall of 2005. The work consists of numerous independent actions that can be flexibly scheduled; the work may not occur as one continuous sequence of activity. All work should be completed by the end of December, 2005.

Mitigation Common to All Alternatives

In response to interdisciplinary team consultation and public comments on the proposal, mitigation measures were developed to ease some of the potential Vernon Sheeprocks Project impacts the various alternatives may cause. The mitigation measures may be applied to any of the action alternatives.

Most of the recommended mitigation measures are standard operating procedures of the UDOGM/AMRP. Mitigation measures fall into a few main categories:

Wildlife:

- scheduling work to avoid raptor and sage-grouse conflicts
- preconstruction surveys for raptor nests and rare plants
- using bat compatible closures or using pre-closure exclusion methods to prevent bat entombment where bat compatible closures are not installed (Forest Plan Guideline M&E-1, Page 3-4)

Cultural Resources:

- selection of closure method to minimize impacts or alteration
- avoiding other features not targeted for reclamation

Hydrology:

- proper storage of equipment, fuel, and lubricants away from waterways
- minimize erosion by minimizing area of disturbance
- minimize erosion by leaving disturbed areas roughened
- ditches to route mine discharge off of mine dumps
- revegetation to reduce soil erosion

Vegetation/Range Quality:

- requiring certified weed-free seed and mulch
- use of seed mix approved by the Forest Service
- stripping, stockpiling, and replacing topsoil at earthwork sites
- cleaning vehicles and equipment to prevent spread of weed seed
- immediately closing gates after passage
- repairing gates and fences damaged by the work

Protective measures identified during project planning have been incorporated into the proposed action and contract specifications. In particular, refer to Part 2 (Special Conditions and Restrictions) and Part 3 (Execution) of Section 0300: Specific Site Requirements of the specifications (included as Appendix A of this environmental assessment).

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Summary Comparison of Alternatives 1 and 2

Resource	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Historic & Cultural Resources	No change from current conditions.	"No Adverse Effect" at National Register eligible properties.
Fish & Wildlife Resources	No change from current conditions.	Short-term, localized disturbance from construction activities, mitigated by scheduling and preconstruction raptor nest surveys. Bat habitat preserved by gating.
Hydrology	No change from current conditions. Continued degradation.	Long-term improvement in water quality (reduction in dissolved metals), but possible short-term erosion risk until vegetation reestablishes.
Vegetation	No change from current conditions.	Short term, localized disturbance from earthwork and travel (trampling). Estimated 10 acres total disturbance. Disturbance will be reseeded.
Recreational Resources Values	No change from current conditions. Continued risk to public.	Reduced risk of death or injury to recreationists from mine fall and entrapment hazards. Possible temporary disturbance or displacement of recreationists by construction in short term.
Land Use	No change from current conditions.	Possible temporary disturbance or displacement of livestock by construction in short term. No change from current conditions in long term.
Air Quality	No change from current conditions.	Short-term, localized engine exhaust fumes from vehicles, heavy equipment, and portable welders.
Noise	No change from current conditions.	Short-term, localized engine noise from vehicles, heavy equipment, and portable welders.
Hazardous/ Solid Wastes	No change from current conditions.	No change from current conditions.
Social/ Economic Issues	No change from current conditions. Continued public hazards.	Infusion of jobs and cashflow into the local economy. Minor loss of access to subsurface information for mineral exploration. Improved public safety.

Alternatives Considered But Not Given Detailed Study

The "authorize/do not authorize" alternatives are essentially the only two options available to the OSM Denver Field Office and the Forest Service for the proposed reclamation project.

The individual mine closures in the proposal can be considered as separate independent actions, each with its own "authorize/do not authorize" option for the federal agency. Accordingly, many alternative project configurations consisting of fewer mine closures (i.e. partial projects) could be analyzed. However, the environmental analysis and impacts of any subset of the whole project will generally be the same as those for the whole.

As noted above in Alternative 2, the specific mine closure or site remediation method selected for each mine in the Proposed Action is the result of weighing several factors and attempting to select the reclamation action with the fewest conflicts with resource values. There are hundreds of possible permutations of mine closures that could be presented as alternative project configurations. These have been evaluated in the project planning using the criteria presented in this document. The project configuration in the Proposed Action represents the elimination of numerous less acceptable alternatives during early planning and design. Therefore no other specific alternative project proposal has been brought forth for analysis.

The Forest Service has posted warning signs at some project mines as a temporary precaution in anticipation of permanent closure of the mines under the Proposed Action. UDOGM/AMRP does not normally use signage and fencing to permanently safeguard mines as a matter of policy. Both signs and fences are temporary and are easily circumvented. For these reasons UDOGM/AMRP does not consider signage and fencing to be meaningful alternatives and they have not been brought forth for analysis.

ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

Historic & Cultural Resources

Description

The Vernon Sheeprocks Project area consists of a number of underground hardrock metal mines in the Columbia, Erickson (Black Crook), and Blue Bell mining districts. Silver, lead, zinc, gold, tungsten, iron, and copper were the primary commodities. Mining in the area dates back to the 1870's, but significant ore production did not occur until the 1890's. Production continued into the twentieth century but mostly ended around the time of World War II. Since then, the mines have deteriorated or been scavenged, and little of the mine surface facilities, mills, or the old townsites remains intact except for a few structures.

A cultural resources inventory was conducted in the proposed Vernon Sheeprocks Project area for the UDOGM/AMRP in 2002-3. The inventory recorded 50 cultural sites (Sites 42To2199 through 42To2248). These sites may contain multiple mine openings and features. The study concluded that sixteen sites (42To2204-2208, 2212, 2214, 2215, 2220, 2224, 2226, 2227, and 2245) were eligible for the National Register based on their association with regional mining history, the integrity of its structures representative of the period, and the potential for future data recovery. The study concluded that the 34 remaining cultural sites (42To2199-2203, 2209-2211, 2213, 2216-2219, 2221-2223, 2225, 2228-2244, and 2246-2248) were not eligible for the National Register primarily due to their poor integrity and the resulting lack of potential for data recovery. See Map 4 in Appendix E for the general locations of the eligible properties.

Native Americans inhabited the project area in prehistory and were present during the historic era. No ancient Native American sites were found at or near the project mines. No burial sites or sites of Native American religious significance are known in the project area. There is no evidence of current religious usage of the project area. The Skull Valley Band of Goshutes and the Confederated Tribes of the Goshute Reservation have been consulted (see consultation list, page 36).

The geology of the project area (Quaternary and Recent alluvium, Tertiary volcanics, and Paleozoic limestones) is not suitable for significant paleontological resources. The Utah Geological Survey has determined that a paleontological survey is not warranted (Hayden, pers. comm.).

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are. National Register eligible properties will not be disturbed.

Effect of Alternative 2 (Proposed Action)

Several of the mines in the Vernon Sheeprocks Project area have been found to be eligible for the National Register. The effects on cultural resources will be managed through the selection of closure types that minimize damage to structural features. Mine closures will be managed to maintain the historic character of the sites.

Many of the mine closures are simple barriers set inside the mine opening that prevent human entry without modifying the geometry of the opening. Masonry walls, steel gates and grates, and polyurethane foam shaft plugs fall into this category. The closure installation requires removal of loose rock from portal brows and ribs, excavation and construction of concrete footings in sills, and drilling holes in the host rock for steel anchor pins. In general for barrier-type closures, the mine geometry is not materially altered and the appearance of the mine is unchanged except for the presence of the barrier. Although intended to be permanent, most of the barrier closures could be removed and the pre-closure appearances of the mines restored, given sufficient interest and effort. Concrete block walls in high visibility situations will be faced with stone or plastered with local soil mixed with mortar for a better color match with their surroundings.

Backfill closures result in greater alteration of appearance and loss of historic information at a mine. While the location of a backfilled mine opening usually remains evident as a mound or divot, the mine opening itself is often completely obliterated and the dump is reshaped. Backfills can sometimes be recessed so that access is blocked but the appearance of the shaft or adit opening is preserved.

For all types of closures, underground access for legitimate historical and scientific data recovery is precluded (as is access for illegitimate users). However, closures also protect underground artifacts and other scientific data from vandalism and pilfering until such time as they can be properly studied. Steel gates and grates preserve views to underground workings.

The selection of a mine closure method for each mine opening has taken cultural resource values into account. Methods that minimize alteration, such as barriers, are preferred at National Register eligible sites. Notwithstanding this, geotechnical conditions at some mines mandate closures that will result in substantial alteration or complete obliteration of the mine opening. For instance, barriers cannot be installed where the host rock is too badly fractured to anchor them. Mechanized backfill closures proposed at many sites will substantially alter the historic appearance of those mines, although it is usually still apparent following closure that the site is a mine. Many of these mines have already been greatly altered by natural erosion processes.

Mine closure work typically leaves a small footprint of disturbance. Backfills seldom affect more than a 50-foot radius around an opening, except at larger mines, and rarely exceed the footprint of the mine dump. It is generally easy to avoid other cultural features at a mine (e.g. cabins, ore loading bins, etc.) that are not specifically targeted for reclamation. Small portable features and surface artifacts (lumber, timbers, machinery parts) can be avoided or moved out of the way. The proposed watershed remediation work would necessarily have a larger disturbed area, but again, it can be minimized and other features avoided.

The 2003 Forest Plan calls for recording historic sites and trying to maintain historic values while protecting public safety. Site recording has been done.

Some National Register eligible properties will be altered by the proposed action. However, considering the existing integrity of the sites, the nature of the disturbance, and the information remaining after the proposed work, within the context and terminology of Section 106 of the National Historic Preservation Act, the disturbance does not rise to the threshold of an adverse effect. UDOGM/AMRP, in consultation with and with the concurrence of the Forest Service, has determined that the proposed action will have "No Adverse Effect" at the National Register eligible properties and that "No Historic Properties" will be affected at ineligible properties. The Utah State Historic Preservation Office has concurred with these findings (see letter in Appendix D).

The proposed work would not affect paleontological resources.

Fish & Wildlife Resources

Description

1. Special Status Animal Species

The project area lies within the historic range of or has potential habitat for a number of species with special management status. Special status species here means those protected by state or federal law or policy and includes those listed as threatened or endangered under the Endangered Species Act, those listed on the Forest Service Intermountain Region Proposed, Endangered, Threatened, and Sensitive Species list (December 2003), those Management Indicator Species (MIS) identified in the 2003 Forest Plan to fulfill requirements of 36CFR Chapter II - 219.19, and those listed by the Utah Division of Wildlife Resources (UDWR) on the State Sensitive Species list. The table in Appendix C lists those special status species identified as potentially occurring in the project area or affected by the proposed work.

The U.S. Fish and Wildlife Service (USFWS), the Utah Division of Wildlife Resources (UDWR), and Forest Service biologists have been consulted for special status animal species that may occur in the general project area and for ways to manage the project to protect them. Based on assessments of known occurrences of the species, historic ranges, habitat preferences, the following species are considered to have sufficient likelihood of effect to be discussed in this document:

Bald Eagle *(Haliaeetus leucocephalus)*
Yellow-billed Cuckoo *(Coccyzus americanus)*
Short-eared Owl (*Asio flammeus*)
Burrowing Owl (*Athene cunicularia*)
Ferruginous Hawk (*Buteo regalis*)
Swainson's Hawk (*Buteo swainsoni*)
Peregrine Falcon (*Falco peregrinus anatum*)
Long-billed Curlew (*Numenius americanus*)
Lesser Nighthawk (*Chordeiles acutipennis*)
Greater Sage-grouse (*Centrocercus urophasianus*)

UDWR knows of no bald eagle nesting locations in the project area, although there are records of eagle sightings in the general area. The project area is dozens of miles from any of the four known bald eagle nesting sites in Utah. Bald eagle nests are usually in tall trees and commonly near bodies of water where fish and waterfowl prey are available. These are absent from the project area. Wintering eagles occur as regular visitors and could forage in the project area. Wintering eagles were observed in 2003 near the town of Vernon but outside the project area.

UDWR knows of no western yellow-billed cuckoo nesting locations in the project area. Western yellow-billed cuckoos typically nest in dense lowland riparian forests near water. Understories are characterized by a dense sub-canopy or shrub layer; overstories may be large gallery-forming trees or developing trees, usually cottonwoods. Cuckoos require large tracts (>25 acres) of contiguous riparian nesting habitat. This type of habitat is absent from the project area, which has patchy shrubby riparian vegetation (willows) and mountain uplands.

UDWR has no occurrence records for any of the next seven birds listed above (two owls, two hawks, falcon, curlew, and nighthawk) near any of the project mines, and only the two hawks have records inside the project boundary. All of the recorded occurrences for these species are in the valleys north of the Sheeprock range. Most of the occurrence descriptions have very generalized locations (e.g. “Skull Valley” or “Tooele Valley”). While there are no specific known occurrences of these six species near proposed work areas, there is suitable habitat and the potential for them to occur.

All of the project mines are located in a broad area that UDWR identifies as greater sage-grouse year-long habitat. Several mines are in an area UDWR identifies as containing strutting areas. UDOGM/AMRP and FS staff have seen greater sage-grouse in the area on several occasions.

UDWR has no occurrence records for peregrine falcons in or near the project area. There are few large cliffs in the Sheeprock Mountains, but there are smaller ledges and rock outcrops that could provide marginal nest sites.

The UDWR occurrence records indicating presence or absence of the above species in the project area are corroborated by Forest Service bird surveys.

At least seven bat species are known to use abandoned mine workings statewide. The UDOGM/AMRP has completed warm and cold season underground surveys at 76 Vernon Sheeprocks Project mines considered suitable habitat for bat use. Bats or bat sign were found at 19 mine openings. One mine had four bats (all Townsend's big-eared bat, *Corynorhinus townsendii*, the only special status bat species observed), one had western long-eared myotis, *Myotis evotis*, and western pipistrelle bats, *Pipestrellus hesperus*, but all other mines with bat use had at most a single individual or only sign (guano, insect parts). Townsend's big-eared bat was the most frequently observed species, but western long-eared myotis, western pipistrelles, long-legged myotis (*M. volans*), and big brown bats (*Eptesicus fuscus*) were also observed. (Diamond and Diamond, 2003)

No special status fish species are known to occur in the streams where project work is proposed.

2. Other Wildlife in the Area
Other wildlife species known to use abandoned mine workings in the state include cottontail and jack rabbits, deer mice, canyon mice, woodrats, rock squirrels, striped and spotted skunks, ringtail cats, coyotes, mountain lions, several species of owls, western kingbird, rock wren, Say's phoebe, red-spotted toads, a variety of lizard species, and a variety of rattlesnake species. These species often enter mine workings to forage for food or to seek shelter from adverse environmental extremes found outside. Only Vernon Creek and Little Valley Creek have fish present.

Several species of neotropical migratory birds inhabit the project area. Breeding bird surveys have been performed in Harker Canyon and Bennion Creek.

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are for both special status species and other wildlife. There would be no potential for disturbance to breeding from construction noise and activity. Mines used by bats as roost sites would remain unsecured and bats in them would continue to be subject to disturbance or harassment by human recreationists exploring the mines. Water quality would continue to be degraded by the mines, with continuing potential for adverse effects on fish and other aquatic life.

Effect of Alternative 2 (Proposed Action)

1. Special Status Animal Species
The work is scheduled for the spring and summer, which creates nesting and brood rearing conflicts with all of the bird species. UDOGM/AMRP will perform surveys around work locations for nesting raptors at the time of construction. If active raptor nests are found, the UDOGM/AMRP will follow the time and distance buffer recommendations in the USFWS raptor protection guidelines (Romin and Muck, 1999) for that species. Construction work within buffer zones will be rescheduled until after fledging.

Wide-foraging bald eagles might occur as fall or winter visitors, in which case they will be avoided and given opportunity to leave. Since the work consists of numerous independent units (individual closures), it is usually possible to reschedule work on a particular site and substitute work elsewhere on short notice.

There are known greater sage-grouse lek sites in the project area but construction at sites within the identified strutting area will be scheduled to avoid lek strutting, so there would be no direct interference with lek behavior or disturbance of lek sites. If construction extends into the spring breeding season, there might be sage-grouse near the work. However, sage-grouse are tolerant of disturbance and the young are precocial and mobile. They would most likely temporarily move out of the way of work in an area.

Some mine closures might eliminate bat habitat by sealing off roost sites. Bat survey data are being used to protect bat habitat. Wherever geotechnical conditions allow, steel grates that allow bat use and maintain ventilation will be used as mine closures at mines used by bats. This will preserve habitat while also reducing human disturbance to bats. Where bat-compatible closures are not possible, methods will be used to exclude bats prior to closure to avoid entombing them. This is done by sealing the mine opening with chicken wire for several days. The wire acts as a one-way gate; bats leave but do not return. Visual inspection can be done in shallow mines to ensure that no bats are trapped inside.

Management Indicator Species: Five Management Indicator Species (MIS) for the Uinta National Forest have been evaluated: beaver, goshawk, three-toed woodpecker, and two cutthroat trout species (see Appendix C). As noted in Appendix C, UDWR knows of no occurrences of these species in the project area. The project is entirely out of the range of the two trout. The preferred habitat is rare to uncommon for either bird. The two MIS birds are covered by the same mitigation measures as the other special status birds. The project may have suitable habitat for beaver in some of the perennial streams, but it is uncommon. Forest Service and UDOGM/AMRP staff have not observed beaver or dams near any of the project mines. The proposed work will not disturb riparian areas or beaver habitat. In the unlikely case beavers are observed, work plans will be evaluated and adjusted as needed to avoid conflicts. The project will have no negative direct or indirect effect on populations or population trends of any of the MIS species.

Conclusion: Few of the special status animal species identified as potentially occurring in the project area have meaningful probabilities of actually occurring there. Raptors, sage-grouse, and bats are most likely to be affected. With the mitigation measures described in this document, UDOGM/AMRP, in consultation with and with the concurrence of the Forest Service, has determined that the proposed work will have no effect on federally listed or candidate threatened or endangered species at the sites. Mitigation will consist of scheduling work to avoid breeding bird conflicts, performing raptor nest surveys during breeding season, and minimizing the area of disturbance. The U.S. Fish and Wildlife Service has concurred with these findings (see the letter in Appendix D).

2. Other Wildlife in the Area
Other wildlife will experience short-term disturbance from human activity and noise during construction. Most of the more common and conspicuous species (e.g. mule deer, coyotes, ravens, turkeys) are either transient visitors in any given location and/or have the behavioral flexibility to adapt to temporary disturbance. Construction activity should generally be short term and localized (ranging from a few hours to a few days in any one location). The project should not impact the common wildlife in the area.

The same measures that protect the special status bird species (late season construction, spring nest surveys) will also protect neotropical migrants and other birds. Spring construction does carry some risk of disturbance, primarily in brushy or scrubby vegetation that may have established nests. Vegetation disturbance will be minimized; very few trees are expected to be removed. Cavity trees, if present, will be avoided. The project should have only a minor effect on neotropical migratory birds.

Hydrology

Description

1. Surface Water
The Vernon Division of the Uinta National Forest contains approximately 36 miles of perennial and 345 miles of intermittent streams. The majority of free-flowing water, which originates in the Sheeprock Mountains, was diverted for irrigation purposes when the area was first settled in the early to mid-1800s. Most of the streams in the Vernon Management Area (north slope canyons) are diverted for irrigation use. Most streams in the West Sheeprock Management Area (southern canyons) are free flowing.

Water from Vernon, Little Valley, and Bennion Creeks is diverted to the approximately 40-acre (surface average) Vernon Reservoir for irrigation use, leaving several miles of natural stream course de-watered through the year. Water from Harker Creek is diverted to the Harker Ditch and is also used for irrigation purposes. Live water sources on the southwest side of the Sheeprock Mountain Range are still free-flowing in natural stream courses. Only one southwest side stream, located on the Onaqui Allotment, has its water diverted. This stream is diverted into Charlie's Ditch which conveys water for irrigation to adjacent private lands. Other small diversions exist in the lower portion of streams, but Charlie's Ditch diverts water from the upper portion of the stream and de-waters the stream course for the majority of its length.

Vernon Reservoir and Dam were dedicated in May 1977. The reservoir facility includes a 53-foot earthen dam, 560 acre-feet of irrigation water capacity, and 215 acre-feet of storage capacity in the bottom and floodwater on top. The Vernon Creek watershed, which includes Vernon, Bennion, Dutch, and Little Valley Creeks, provides irrigation water to the community of Vernon, located one mile north of the Vernon Division. This watershed provides an average annual total of 2,070 acre-feet of water, with a peak runoff during April, May, and June.

Other watersheds important for providing irrigation water, but with lower flow rates, include Harker Creek, Cottonwood Canyon (in the spring), Hard-to-Beat Canyon, Sheeprock Canyon (in the spring), and Pole Canyon. Other canyons have water important for wildlife and livestock, and provide vegetative diversity by supporting riparian vegetation in a desert setting. Some of these minor creeks flow off National Forest System lands onto adjacent Bureau of Land Management (BLM) and private lands where they dry up. Some creeks tend to dry up as the summer progresses, and flows never leave the Forest.

Most of the project mines are located high on upland slopes with ephemeral drainage (annual precipitation is about 14-25 inches, mostly from October to April). Only a few mines directly impinge on a stream channel. Several mines are known to discharge water. Minewater discharges usually flow across or through the mine dump before reaching a steam channel or seeping into the ground. Mines in the Vernon Sheeprocks Project occur in the following named drainages: East Government Creek, North Oak Brush Creek, Harker Canyon, Bennion Creek, Little Valley Creek, Vernon Creek, Joes Canyon, Sheeprock Canyon, Hard to Beat Canyon, Cottonwood Canyon, South Pine Canyon, South Oak Brush Canyon, Black Crook Creek, Elderberry Creek, plus a single site in an unnamed tributary to Log Canyon.

The Vernon Division was sampled intensively for water quality during the 2000 field season. Forty-one sites were set up on the Unit with each site sampled twice (total of 82 samples). Twenty-one samples at 15 locations did not meet State of Utah clean water standards for arsenic, cadmium, lead, or zinc. The following table lists the levels of these heavy metals present in the samples that exceeded standards. Those metal concentrations that exceeded standards are shaded in gray.

Dissolved Metal Concentrations Exceeding State Standards in the Vernon Division					
Sample Date	Location	Dissolved Heavy Metals (ppb)			
		As	Cd	Pb	Zn
10/19/00	West Oak Brush Headwaters	< 5.0	< 1.0	< 3.0	35.5
08/01/00	West Oak Brush at FS Boundary	9.9	< 1.0	< 3.0	< 30.0
10/10/00	West Oak Brush at FS Boundary	< 5.0	< 1.0	3.3	< 30.0
10/16/00	Black Crook Creek Below Upper Spring	< 5.0	< 1.0	25.2	49.6
06/23/00	Cottonwood Canyon Below Mine	< 5.0	< 1.0	< 3.0	99.1
10/18/00	Cottonwood Canyon Below Mine	< 5.0	< 1.0	< 3.0	101
07/11/00	Harker Canyon, Spring Above Mine	< 5.0	9.2	119	1280
10/04/00	Harker Canyon, Spring Above Mine	16.5	15.2	6655	3210
07/11/00	Harker Canyon, Below Mines on Tailings	< 5.0	7.3	5.9	1060
10/04/00	Harker Canyon, Below Mines on Tailings	< 5.0	7	5.3	1150
10/02/00	South Pine Canyon At FS Boundary	< 5.0	< 1.0	3	< 30.0
10/18/00	Sheeprock Canyon Below Two Adits	< 5.0	< 1.0	7.1	< 30.0
07/12/00	North Oak Brush Main Fork at Adit	< 5.0	3.6	< 3.0	417

Dissolved Metal Concentrations Exceeding State Standards in the Vernon Division					
Sample Date	Location	Dissolved Heavy Metals (ppb)			
		As	Cd	Pb	Zn
10/16/00	North Oak Brush Main Fork at Adit	< 5.0	4.6	113	602
10/16/00	North Oak Brush, West Tributary 120' Upstream of Confluence	< 5.0	< 1.0	4.2	33.2
06/13/00	South Oak Brush , Headwaters Right Fork	< 5.0	< 1.0	< 3.0	30.2
07/11/00	East Government Creek At Confluence of Upper Tributaries	< 5.0	< 1.0	< 3.0	35.9
07/07/00	Little Valley Creek 300' Below Mines	6	< 1.0	82	< 30.0
10/13/00	Little Valley Creek 300' Below Mines	< 5.0	< 1.0	70.8	30.8
07/06/00	Vernon Creek Below Cattle Guard	6.1	< 1.0	< 3.0	< 30.0
07/06/00	Vernon Creek Above Reservoir	5	< 1.0	< 3.0	< 30.0

2. Groundwater

Most mines in the project are dry, but several mines with water underground are known to occur in the project, as are several mines that are known to discharge water. If a mine is found to contain water, a closure method other than backfilling with dump material will be selected if the size of the mine warrants. This will prevent potential groundwater contamination caused by placing mine dump material in contact with groundwater. Small mines containing water may be backfilled depending on the depth; fill material will displace the water. Closures in mines discharging water will have drain pipes to allow drainage and prevent the buildup of hydraulic head behind the closure. Mine water discharge will be diverted through surface ditches to avoid flowing over mine dumps at some sites.

3. Floodplains

No floodplains occur in the project areas other than the primary stream terraces along the small creek channels. No mine openings identified for closure occur in or near a floodplain.

4. Wetland and Riparian Areas

Wetlands occur within the overall project boundaries. Springs and seeps are common. Some mine portals discharging water have small areas of shallow ponded water or saturated soils with riparian and/or wetland vegetation. Vegetation in these areas may include willow, wild rose, chokecherry, sedges (*Carex* spp.), rushes (*Juncus* spp.), and various forbs.

The project may require repair of roads where they cross intermittent or perennial stream channels to make them passable for vehicles and equipment, but any riparian vegetation will be avoided.

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are. Water quality now degraded by the mines would continue to be degraded, with continuing potential for downstream effects on fish, aquatic wildlife, and downstream users. There would be no construction-related erosion or disturbance of stream channels.

Effect of Alternative 2 (Proposed Action)

1. Surface Water

The proposed mine closure work will have minimal effect on surface hydrology because of the limited scope of surface disturbance planned. Most of the mine openings are located on uplands away from the stream channels. At these sites surface water quality will be maintained by minimizing the areal extent of vegetation disturbance to reduce erosion. Practices such as soil roughening will also minimize erosion. Drain pipes or other measures may be necessary in some closures to accommodate minewater discharge and maintain surface flow regimes.

No fill will be placed in channels and any riparian vegetation will be avoided. Road crossings at ephemeral gullies and roads with erosional gullies and ruts may be upgraded to improve their passability by vehicles, resulting in the gullies being fully or partially filled.

At selected sites, waste rock piles (mine dumps) will be regraded or buried and the sites revegetated (see Appendix A for a description of the work). The intent is to prevent erosion and to isolate materials that could contribute heavy metals to surface waters. This should reduce metal concentrations in the streams and benefit aquatic wildlife and downstream water users. Due to legal restrictions on funding (OSM funds can only be used for safety hazard mitigation, Forest Service funds can only be used to benefit the Forest), not every site with a metals problem is eligible for remediation.

2. Groundwater

Groundwater impacts would be avoided by not backstowing mine dump material into flooded workings where they could contact and contaminate groundwater. Mine dumps that are regraded or buried would be kept above the water table.

3. Floodplains

The proposed work would have no effect on floodplains.

4. Wetlands and Riparian Areas

DOGM/AMRP recognizes the importance of wetlands and riparian areas. Any freestanding wetlands not associated with mines will not be affected by the proposed work. Access routes will be selected that avoid disturbing these areas. Closures at mines discharging water will be fitted with drain pipes to maintain the flow after the closure.

Vegetation

Description

1. Vegetation in the Project Area (General)
The project area spans a broad range of elevations, aspects, and soils and vegetation varies accordingly. See the table below. Vegetation is in the Upper Sonoran, Transition, and Canadian Life Zones. Vegetation in the vicinity of project mines includes sagebrush steppe, pinyon-juniper woodland, mountain brush (scrub oak, maple, chokecherry, snowberry), aspen, and alpine conifer. Most of the mines are in sagebrush, pinyon-juniper, and mountain brush communities. Several areas of pinyon-juniper woodland (notably Harker Canyon and South Oak Brush Canyon) burned in the last decade and are now recovering.

Most of the lower elevations area of the Vernon Division have been reseeded with non-native species such as crested wheat, *Agropyron cristatum*; Russian wildrye, *Elymus junceus*; intermediate wheatgrass, *Agropyron intermedium*; bulbous bluegrass, *Poa bulbosa*; and tall wheatgrass, *Agropyron elongatum.* Cheatgrass, *Bromus tectorum*, a non-native annual grass is a small component in the area, but will rapidly increase with any form of disturbance. There are isolated patches of noxious weeds including white top, *Cardaria draba*, and squarrose knapweed, *Centaurea virgata*.

Vegetation Community Types in the Vernon Division	
Vegetation Community	Percent of the Vernon Unit
Agricultural	0.1
Aspen	0.3
Black Sage Brush	9.1
Mountainbrush	8.4
Douglas-Fir (crown density 15-59%)	0.3
Douglas-Fir (crown density 60-100%)	0.1
Mahogany Oak	0.1
Mountain Mahogany, Bitterbrush	1.4
Oak	3.6
Oak/Pinyon/Juniper mixture	3.5
Outcrop of cliffs and rocks	0.2
Pinyon/Juniper	18.7
Serviceberry	2.0
Seeded Grass	0.3
Box Elder/Cottonwood/Aspen/Conifer riparian	0.3
Mountain Big Sage Brush	28.9
Willow/Birch riparian	0.1
Wet Meadow	0.3
Wyoming Big Sage Brush	22.3

2. Special Status Plant Species

The project area lies within the historic range of or has potential habitat for a number of species with special management status. Special status species here means those protected by state or federal law or policy and include those listed as threatened or endangered under the Endangered Species Act, those listed on the Forest Service Intermountain Region Proposed, Endangered, Threatened, and Sensitive Species list (December 2003), and those listed by the Utah Division of Wildlife Resources (UDWR) on the State Sensitive Species list. The table in Appendix C lists those special status species identified as potentially occurring in the project area or affected by the proposed work.

The U.S. Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources (UDWR) have been consulted for special status plant species that may occur in the general project area and for ways to manage the project to protect them. Based on assessments of known occurrences of the species, historic ranges, habitat preferences, the following species are considered to have sufficient likelihood of effect to be discussed in this document:

Ute Ladies'-tresses *(Spiranthes diluvialis)*
Slender and Dainty Moonwort (*Botrychium lineare* and *B. crenulatum*)
Pohl's Milkvetch (*Astragalus lentiginosus* var. *pohlii*)
Coulter Biscuitroot (*Cymopterus coulteri*)

UDWR knows of no occurrences of Ute ladies'-tresses or either of the moonworts in the project area. The only known *S. diluvialis* occurrence in Tooele County is near Callao, more than fifty miles from the project area. This orchid is found in streamside meadows and low elevation wetlands. The two moonworts are also damp soil species. This type of habitat is present in the project area, though rarely near the mines. A few mines discharge water and have small associated wetlands, so there is a possibility of either Ute ladies'-tresses or *Botrychium* species.

UDWR has one record of the Pohl's milkvetch inside the project boundary and several in Rush Valley north of Vernon (the type locality). The record inside the project area is in a low elevation sage flat and is not near any of the mines. Pohl's milkvetch is found in several types of shrub communities, including big sagebrush. Project mines are present in sagebrush communities, although all the mines are higher than the 5400 feet cited as the upper range for Pohl's milkvetch (the lowest mine is 6400 feet). The plant has potential to occur in work areas, but is unlikely.

UDWR has no records of Coulter biscuitroot in the project area, only a single record in Rush Valley north of Vernon. The plant grows in desert shrub and juniper communities. These communities are present in the project area, although all of the mines are higher than the 5600 feet cited as the upper range for Coulter biscuitroot. The plant has potential to occur in work areas, but is unlikely.

The UDWR occurrence records indicating presence or absence of the above species in the project area are corroborated by Forest Service records.

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are for both rare and common plants. There would be no construction-related soil disturbance, plant trampling, or risk of noxious weed import. Some mine dumps targeted for reclamation in the Proposed Action that are currently barren would continue to be barren.

Effect of Alternative 2 (Proposed Action)

1. Vegetation in the Project Area (General)

Mine closure work typically has little vegetation impact because of the limited area involved and the extensive use of manual labor. Vegetation disturbance would consist of grubbing and removal of plants at excavation and borrow sites for backfill closures and trampling by foot or vehicle traffic along access routes and in the immediate vicinity of the openings. Vegetation disturbance from the proposed mine closure work can generally be expected to occur in discontinuous patches on the order of a few hundred or a few thousand square feet each. Mine dump regrading and burial can be expected to disturb areas of 0.1 to 2.0 acres, depending on the size of the dump and other circumstances. All disturbed areas would be reseeded with native species. Seed mixes used on NFS lands would be approved by the Forest Service.

The project would disturb a minor amount of vegetation, estimated at less than ten acres total. This estimate includes ground disturbance directly associated with mine closure construction, disturbance from mine dump remediation, and ground disturbance on linear access corridors. Because mine dumps (which are often barren) and other pre-existing disturbed areas are used as the preferred source of backfill material, the area of vegetation disturbance is probably overstated. Much of the disturbance will consist of trampling and compaction from foot and vehicle traffic without upsetting soil profiles or killing plants. Disturbance resulting in altered soil profiles would be expected primarily in the mechanized backfill closure locations and at the sites where earthwork to regrade or bury mine dumps is performed. Disturbed areas will be reseeded, but revegetation would also occur from natural sprouting from roots or adjacent plants.

The import or spread of noxious weeds will be minimized by requiring the use of certified weed-free seed and mulch. If mitigation measures are followed there should be little no effect on the vegetation resource. The total area that will be disturbed by mine closure and dump remediation work is estimated at about ten acres. There are no significant cumulative effects to the vegetation resource.

2. Special Status Plant Species

None of the special status plant species identified as potentially occurring is likely to occur in the project area or be affected by the work. Where permanently saturated soils are encountered in project areas, their presence will be noted. When pre-work surveys or

work is scheduled in such wet areas surveys will be performed for Ute ladies'-tresses orchid.

As noted above, the limited scale of vegetation disturbance reduces the chance that other special status plant species will be disturbed. UDOGM/AMRP will perform informal surveys for sensitive plant species at the time of construction, which will afford an additional level of protection (to the extent that their phenologies allow identification). Project work should not affect any of these species.

None of the special status plant species identified as potentially occurring is likely to occur in the project area. With the mitigation measures described in this document, UDOGM/AMRP, in consultation with and with the concurrence of the Forest Service, has determined that the proposed work will have no effect on federally listed or candidate threatened or endangered species at the sites. Mitigation will consist of preconstruction surveys of saturated soil locations, disturbance minimization, and avoidance. The U.S. Fish and Wildlife Service has concurred with these findings (see letter in Appendix D).

Recreational Resource Values

Description

1. General Recreational Values

The project area is located in a rugged, scenic region. The area is used for general recreation purposes (hunting, camping, ATV riding, etc.). The mines attract visitors interested in the history, photogenic old buildings, the lure of underground adventure, or the technical challenge of driving on old mine roads. This part of the Sheeprock range is a popular recreational destination, as evidenced by litter, fire rings, and vehicle tracks. A youth wilderness therapy program regularly uses the area for primitive camping. Websites for ghost town enthusiasts promote the area as a destination. Vernon Reservoir is developed for recreational use with pads, tables, and toilets.

When viewed from a purely naturalistic esthetic perspective, the project area is visually degraded by the existing site conditions. However, the human history of the area makes a cultural esthetic also appropriate, and the remnant structures, mine dumps, and the mine openings themselves comprise a landscape evocative of the past and a draw to recreationists.

There are no Wild and Scenic Rivers in the project area.

The project area contains two designated roadless areas: Red Pine Mountain and Vernon (see Map 5 in Appendix E). Nearly all of the project mines are inside or adjacent to a roadless area boundary. The primary access roads in the canyons are cherry-stemmed into the boundaries. From the ends of these roads it will be necessary to take vehicles further into the designated roadless areas for distances of up to a mile to perform the work. In all cases vehicles will follow old mining roads that are currently passable or require only minimal upgrading (e.g. moving fallen rocks or trees out of the way). These roads already experience recreational traffic.

2. Wilderness Values
There are no designated or proposed wilderness areas in or near the project area. Access to the mines will not require approaching or entering any designated or proposed wilderness area.

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are. Recreationists would continue to be at risk of injury or death from the fall and entrapment hazards at the mines. Recreationists would not be disturbed by noise or traffic from mine closure construction activities.

Effect of Alternative 2 (Proposed Action)

1. General Recreational Values
The proposed work would have no effect on parks, wilderness areas, wilderness study areas, wild and scenic rivers, or other formally designated important natural ecological or scientific areas.

The information gathered from the engineering and cultural resource inventories is available as a resource for creating interpretive materials to enhance the public's knowledge and awareness of the history of the area and improving the recreational experience. The mine closure techniques have been selected to maintain historic values wherever possible.

The mine closures will prevent unauthorized casual recreational exploration of the mines and thus enhance the safety of the recreating public, though the loss of underground access is also likely to be resented by a certain sector of the public accustomed to that form of recreation.

Visually, the project is designed to subdue, but preserve, the historic mining cultural esthetic and enhance the naturalistic esthetic perspective. This should create a landscape evocative of both nature and the past. Closures would be visible at close range, but should generally not be noticeable from a distance (i.e. at landscape scale). There will be larger areas of visible disturbance at sites where mine dumps are buried. This disturbance will gradually disappear as vegetation gets re-established.

Travel on old roads within the roadless areas will add to the existing wear from recreational traffic and possibly induce others to use them.

2. Wilderness Values
No work would be performed in or near any designated or proposed wilderness area. Wilderness values would not be affected by the proposed work.

Land Use

Description

1. Land Use

The project area contains public land managed by the Forest Service and private land, including private patented claims as inholdings within larger public tracts. The primary land uses occurring within the project area are ranching, recreation, wildlife habitat, open space, and mining. There are eleven cattle allotments and one sheep allotment on the Vernon Division. There are permits for 2043 cow/calf pairs and 2400 ewe/lambs permitted to 20 different permittees. The grazing dates on each allotment vary, however the earliest permitted on date is April 15 and the latest permitted off date is November 10. All activities are transient; there is no permanent population or residential or commercial presence in the project area. Recreational activities include camping, hiking, ATV and OHV riding, hunting, and appreciation of the area's history and scenery.

The mining land use is primarily historic. There are three nominally “active” mine operations, but none are producing. Current mineral activity in the project area is limited to casual use level exploration activity and assessment work. No mineral production has been reported from the area since the 1950’s (Harris, 1957).

2. Soils and Prime/Unique Farmland

There is cultivated land inside the formal project boundary (i.e. Vernon Division boundary) in the valley near Vernon and at the Bennion Ranch, but none in the mountains near any of the proposed work areas. No prime or unique farmland is known in the immediate vicinity of the project mines. The overall project area is arid, rugged rangeland. Soils in the proposed work areas are thin and poorly developed. The slopes are steep, rocky, and not suited for agriculture. There are livestock grazing permits in the project area and grazing in the vicinity of the mines.

3. Topography

The project area is located in the Thomas Range-Tintic Mountains subdivision of the Basin and Range physiographic province. The area consists of mountain spines dissected by canyons. Elevations range from about 5900 feet to about 9200 feet, for a total relief of about 3300 feet.

Effect of Alternative 1 (No Action)

Under this alternative, conditions will stay as they are. Land use would be unchanged. Underground mine workings would continue to be accessible for mineral exploration.

Effect of Alternative 2 (Proposed Action)

1. Land Use

The postreclamation land use of the sites in the proposed work is unchanged from the present and is compatible with the surrounding land uses. If mitigation measures are followed there should be no effect to the grazing program. There are no cumulative effects to the grazing program.

The impact to the mineral resource will be the loss of the opportunity to use the underground mines for future exploration. Only one application to explore for, or develop, any mineral resources in or adjacent to the affected Forest Service lands has been submitted in the last five years. Without a substantial increase in base and precious metals prices, or an increase in the mineral potential in the project area, it is unlikely that substantial exploration or development activity will occur in the foreseeable future. Furthermore, many of the mines to be closed are deep enough to be hazardous, but not deep enough to provide a meaningful window into the earth's interior. Closing them will not result in a loss of mineral information.

2. Soils and Prime/Unique Farmland
No cultivated or prime or unique farmland would be affected.

The proposed project would disturb the soil in both the roads and trails used to access the sites, and any borrow areas used for backfill closures. Typically, backfill closures use the adjacent mine dump for fill, so the action re-exposes the native pre-mining soils. A total area estimated at less than ten acres would be disturbed, mostly in discontinuous patches on the order of a few hundred or a few thousand square feet each. The disturbances would increase the potential for both wind and water erosion in the short term, but the disturbed sites should stabilize quickly.

3. Topography
The proposed work should have no effect on regional landforms or physiographic processes. The historic mining landscape would be maintained as much as possible by obtaining material from mine dumps for backfills in a manner that maintains the outward appearance of the dumps. Backfill closures would have the effect of returning sites to their approximate pre-mining topography.

Air Quality

Air quality in the project area is generally considered to be good. Reductions in air quality attributable to existing conditions at the mine sites are limited to fugitive dust from mine dumps and dirt roads on windy days. The proposed work would generate some minor amounts of fugitive dust (from vehicle traffic on dirt roads and excavation by heavy equipment) and a small amount of localized emissions from vehicle and equipment exhaust during construction. The dust and emissions would be of short duration and would not affect the overall air quality of the area. The project will meet all applicable air quality regulations.

Noise

Noise levels in the project area under existing conditions are generally low, consistent with the adjacent open space land uses. The proposed work would create localized short term noise from trucks, heavy equipment, and portable generator/arc welder operation. This should be on a par with the existing recreational OHV noise.

Hazardous/Solid Wastes

No mining-era hazardous materials (solvents, explosives, process chemicals, lubricants, etc.) are known to be present in the historic mining areas. There is some mining-era solid waste, mostly wood and iron items (mine timbers, track for ore haulage, cabins, machine parts, tin cans). This is not hazardous and is important as a cultural resource. Historic mill tailings may be present in the project area and may contain potentially hazardous materials. These are outside the scope of the proposed project. No mill tailings will be used for mine backfills. A small amount of non-historic recent solid waste (beverage containers, other litter) is present in the area.

Mine waste rock dumps may contain potentially hazardous materials that can leach or erode into waterways. One primary goal of the Proposed Action is to remediate mine dumps by isolating them from surface runoff.

All wastes generated by reclamation construction (e.g. packaging, containers, pallets, etc.) will be contained and disposed of properly at an approved disposal site. Fuel, hydraulic fluid, and lubricants will be properly stored a safe distance from waterways and will be properly disposed of at an approved location.

Social/Economic Issues

There is no permanent resident population in the project area. The nearest population centers are the towns of Vernon (population 236) and Eureka (population 766). The Tooele County economic picture has improved in the past year as it recovers from recession. The April 2004 unemployment rate for Tooele County was 6.7%, compared to a State level of 4.5% and a national level of 5.6%. Tooele County was not classified as a Labor Surplus Area by the U.S. Department of Labor for the period October 1, 2001 to September 30, 2002.

The Vernon Division has three “active” mines, but none are currently producing. None of the mines to be closed is being actively mined or developed for future mining. The unpatented claimholders will be consulted and their concerns for accessibility and ventilation will be accommodated. Therefore, the closures should not have any impacts on the mining industry in Tooele County. Some of the mines are currently used by individuals or small groups for unauthorized recreational exploration. However, closure of the mines would not have any impact on commercial recreation in Tooele County.

There is no permanent resident population in the project area. There is no one who could be affected by the proposed work for whom questions of environmental justice or inequitable distribution of social and environmental costs and benefits could be raised.

The Vernon Sheeprocks Project is expected to directly employ eight to twelve people for about three months, contributing to the local economy.

Cumulative Effects

Cumulative impacts are the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Individually minor actions can have a significant collective effect over a period of time.

The Proposed Action comprehensively addresses the abandoned mine hazards in the entire Vernon Division. No additional mine reclamation projects by UDOGM/AMRP in the area are foreseen. One unpatented claimholder has indicated a desire to cease activities and reclaim operations. If this happens, it would complement the Proposed Action's achievement of the goals and objectives. It would incrementally have the same potential effects on cultural resources, vegetation, wildlife, and watersheds.

At present, the only other public projects scheduled on the Uinta National Forest calendar for the Vernon Division are pinyon-juniper thinning near North Oak Brush Canyon (scheduled for spring 2005) and Mormon cricket eradication (an ongoing multiyear seasonal effort). The pinyon-juniper thinning, like the Proposed Action, will entail minor short-term vegetation disturbance (there is no geographic overlap in the two actions), but will ultimately improve the vegetation condition. Mormon cricket control may enhance the project's revegetation success by reducing cricket grazing damage, but otherwise the two actions are unrelated and affect different resource values.

Private construction projects may be scheduled for the same time and place as the Proposed Action, but these are currently unknown and cannot be analyzed. Any major private action involving NFS land would require notification and NEPA review by the Uinta National Forest; none are currently proposed. Private actions are likely to be limited to the ongoing ranching and recreation activities already discussed and evaluated above in the Recreation and Land Use sections of this environmental assessment.

The impacts of this project, when combined with all past, present, and reasonably foreseeable future actions are anticipated to be negligible.

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REFERENCES

Clements, M.A. *et al*. 2003. Archaeological Inventory of Abandoned Mines in the Sheeprock Mountains, Tooele County, Utah. October, 2003. BYU Museum of Peoples and Cultures Technical Series No. 03-11

Diamond, G.F. and J.M. Diamond. 2003. An evaluation of abandoned underground precious and base metal hard rock mines as bat roosting habitat in the Vernon Sheeprocks abandoned mine project area, Tooele County, Utah. Report prepared for the Utah Division of Oil, Gas & Mining by the Department of Biology, Southern Utah University. (February 2003).

Harris, DeVerle. 1957. The geology of the Dutch Peak Area, Sheeprock Range, Tooele County, Utah. Master's Thesis, Brigham Young University, Provo, Utah.

Hayden, Martha (Utah Geological Survey). 2002. Letter to J. Chris Rohrer, Utah Division of Oil, Gas & Mining dated November 25, 2002.

Romin, L.A. and J.A. Muck. 1999. Utah Field Office guidelines for raptor protection from human and land use disturbances. U.S. Fish and Wildlife Service unpublished report.

U.S. Department of Agriculture, Forest Service. 2003. Forest Land and Resource Management Plan. USDS-FS Intermountain Region, Uinta National Forest.

U.S. Department of Agriculture, Forest Service. 2003. Preliminary assessment for the Vernon Abandoned Mine Lands Project. USDS-FS Intermountain Region, Uinta National Forest. Unpublished report. November 2003.

U.S. Department of Agriculture, Forest Service. 2003. Intermountain Region proposed, endangered, threatened, and sensitive species. USDS-FS Intermountain Region. Unpublished list. December 2003.

U.S. Department of Labor. Fed Reg 66(250):67648. online version at: http://ows.doleta.gov/employ/pdf/lsareg.pdf (accessed 02/25/03)

Utah Department of Workforce Services. Online economic reports and data available at http://jobs.utah.gov/wi/pubs/UnE/dwsdefault.asp (accessed 08/09/04)

Utah Division of Oil, Gas and Mining. 2004. *Vernon Sheeprocks Project Reclamation Construction Contract Specifications.*

Welsh, S.L., et al. 1987. *A Utah Flora*. Great Basin Naturalist Memoirs Number 9

Electronic Versions of this EA:

The information in this environmental assessment is available in several electronic formats:

MS Word:

File: VS_EA_013105_text.doc
This file contains all of the EA text (body and appendices). It does not include the Appendix D copies of the clearance letters or the Appendix E maps.

MS Excel:

File: VS_EA_013105_table.xls
This file contains the inventory and proposed mine reclamation information presented in Appendix B in spreadsheet format.

Adobe Acrobat:

File: VS_EA_013105_text.pdf
This file contains all of the EA text (body and appendices) plus the Appendix D copies of the SHPO and USFWS clearance letters. It does not include the Appendix E maps.

File: VS_EA_013105_maps_100k.pdf
This file contains the seven Appendix E project area maps (1:100,000 scale).

File: VS_EA_013105_maps_48k.pdf
This file contains the six Appendix E subarea maps (1:48,000 scale).

File: VS_EA_013105_maps_12k.pdf
This file contains the twelve Appendix E detail maps (1:12,000 scale).

File: VS_EA_013105_complete.pdf
This file contains the entire EA (body and appendices with maps and copies of the SHPO and USFWS clearance letters).

APPENDIX A

Proposed Reclamation Work

The Proposed Action for the Vernon Sheeprocks Project calls for sealing mine openings to enhance public safety and for site grading and earthwork to enhance the watersheds and improve water quality by burying or isolating mine dumps, removing mine dumps from stream channels, diverting mine water away from mine dumps, and re-establishing drainage channels.

The following is an excerpt from the draft construction specifications. It is Section 0300: Site Specific Requirements in the standard UDOGM/AMRP specification document. Because final design is not completed, there are still gaps in this draft, primarily dates, dimensions, quantities, and formatting references that need to be determined, but the nature of the proposed work is apparent. Incomplete or uncertain items are marked by asterisk or pound sign strings (*****, #####); these gaps will be fixed before going to bid. The specifications make references to a mine closure schedule in Appendix A. An equivalent table to this is included as Appendix B of this environmental assessment. The specifications refer to maps in Appendix G. Equivalent maps are included as Appendix E of this environmental assessment.

Besides defining the proposed construction action, the construction specifications also define the project area and explain the site identification system, map organization, and closure methods.

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SECTION 0300
SPECIFIC SITE REQUIREMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section describes the location, the features present, and the WORK to be done at the Vernon Sheeprocks Project area. The items of the WORK shall be performed according to the appropriate sections of these Specifications.

B. It is the intent of these Specifications that the site-specific scope of WORK is as described in this Section. The General Technical Specifications, Sections 0200 through 0290, outline WORK broadly applicable to all abandoned mine reclamation situations and that may not be required at each site in this project. Where there is a conflict between Section 0300 and the General Technical Specifications (0200's), Section 0300 shall govern.

C. A description of the mine sites and their locations is presented below. Details and dimensions are shown on the Drawings. CONTRACTOR shall be aware that the dimensions on the Drawings are

approximate. CONTRACTOR shall also be aware that minimum or maximum dimensions on the Drawings or given in the Specifications are specific and are to be adhered to unless such changes are approved in writing by the OWNER. The quantities presented in the specific site sections should be considered as an estimate with a tolerance of plus or minus 15 percent. CONTRACTOR shall visit the site and decide for his or her own purposes the quantities and amounts required in doing the WORK as intended in these Specifications and on the Drawings.

1.02 LOCATION AND DESCRIPTION

A. The Vernon Sheeprocks Project area is located in Tooele County in the Sheeprock Mountains directly south of the town of Vernon and about 40 miles south of Tooele. General reclamation area boundaries of the Vernon Sheeprocks Project are shown on the attached location maps (see Appendix G, Sheet G1 and Plate 1) and are described in this section.

B. The Vernon Sheeprocks Project area consists of approximately 191 abandoned precious and base metal mine openings or related features, including adits, shafts, inclines, prospects, pits, and trenches, on the Uinta National Forest in the Sheeprock Mountains. The formal project boundary is defined by and coincident with the National Forest boundary and includes federal lands managed by the U.S. Forest Service (USFS) and private inholdings. The project area takes in most of the northern part of the Sheeprock Mountains and the flats and foothills northeast of the Sheeprocks. The project area contains an estimated 191 inventoried mine features. The formal project boundary includes about 160 square miles. Mines are not evenly distributed in this area. Nearly all of the mines are in the mountains in the far southern third of the project area in an area covering about 20 square miles along the main spine of the mountain range. The area actually affected by mining is substantially smaller than the formal project boundary.

C. Access: To reach the Vernon Sheeprocks Project area from Tooele, go south on Main Street (Hwy U-36) 33 miles to the town of Vernon. From Vernon, a loop of roads runs around the perimeter of the Sheeprock Mountains, and from this perimeter loop a number of spur roads lead into the several canyons where the mines are located. Access to individual mine sites within the project area is discussed in Parts 1.05 and 1.06 below.

D. The formal Vernon Sheeprocks Project boundary takes in the following sections, although mines occur in only a portion of this area:

T9S, R4W, Sections: 7 (part), 8 (part), 17 (part), 18, 19, 20 (part), 21(part), 27 (part), 28-33, 34 (part)
T9S, R5W, Sections: 1-36
T9S, R6W, Sections: 1-36
T9S, R7W, Sections: 1 (part), 2 (part), 3 (part), 10-15, 22-27, 36
T10S, R4W, Sections: 5 (part), 6, 7, 8 (part), 17 (part), 18
T10S, R5W, Sections: 1-24, 27 (part), 28-30
T10S, R6W, Sections: 1-26
T10S, R7W, Sections: 1, 12, 13, 24

E. The Vernon Sheeprocks Project is mapped on the following USGS 7½' quadrangles: Dutch Peak, Erickson Knoll, Indian Peaks, Indian Springs, Lofgreen, Lookout Pass, Sabie Mountain and Vernon. Mines occur on the Dutch Peak, Erickson Knoll, Lookout Pass, and Sabie Mountain quads.

USGS 7½' quad index:

Indian Peaks	Lookout Pass	Vernon	Lofgreen
Indian Springs	Erickson Knoll	Dutch Peak	Sabie Mountain

Because the project covers such a large area, the USGS 30'x60' series maps (1:100,000 scale) are especially useful for general navigation. The Vernon Sheeprocks Project is mapped on the following 30'x60' quadrangles: Rush Valley, Lynndyl.

USGS 30'x60' quad index:

Rush Valley
Lynndyl

1.03 MINE OPENING LOCATIONS AND DESCRIPTIONS

A. The Vernon Sheeprocks Project area consists of approximately 191 identified abandoned mine openings or other mining features. The mine openings consist of adits, inclines, vertical shafts, exposed stopes, prospect pits, trenches, and subsidence holes. The openings occur in a wide range of sizes, configurations, and conditions.

B. Locations, descriptions, approximate dimensions, UTM coordinates, closure methods, and map references of each mine opening (site) are provided in the table in Appendix A. Detailed locations of the sites are presented on the maps in Appendix G (Maps S1 to S6 and D1 to D12 and Plate ##). Note that mine symbols may be plotted on the maps offset slightly from their true locations due to terrain interference with GPS surveys and the way the mapping software treats adit symbols.

C. Site ID Numbers (Tag Numbers): Each mine opening or feature is identified by a unique site identification number such as 3411308HO002. The ID number consists of seven digits, one or two letters, and one to three digits. The first digit indicates the quadrant around the Salt Lake baseline and meridian (or the Uinta special meridian). Townships south and east of the SLBM are coded "4." The second and third digits indicate the township, the fourth and fifth digits indicate the range, and the sixth and seventh digits indicate the section. These numbers are followed by letters indicating the type of mine opening or feature (H = horizontal adit, I = inclined adit, V = vertical shaft, SH = subsidence hole, PR = prospect, TR = trench, PT = open pit, TA = tailings) and, in the case of shafts and adits, letters indicating whether the mine is open (O) or closed (C). These letters are followed by numbers that are sequential numbers assigned as the openings were encountered during the field inventory. Thus, site number 4060318HO003 is the third horizontal opening (HO) inventoried in Township 6 South, Range 3 East, Section 18. The leading zeros in the sequential number part of the ID number are frequently omitted (i.e. HO3 instead of HO003).

D. Identifying Sites: Sites in the field are marked two ways, with wooden stakes and steel washers. The 1"x2" wooden stakes have the full ID number written in ink. The washers are 1½" diameter and are bolted to rock with masonry anchors. They are stamped with only the opening ID, without the numbers for quadrant, township, range, and section (e.g. just "HO3"). Because of vandalism or weather, many mine ID markers are illegible or are missing altogether. Some mine features, particularly small prospects, are not marked. In a very few cases, sites have been renumbered, and ID numbers on tags may not match the ID number in these Specifications. CONTRACTOR will have to rely on the site location maps and the descriptions in Appendix A to identify mine sites. OWNER's Contract Representative will provide assistance in identifying the mine openings.

1.04 PROJECT ORGANIZATION AND MAPPING

A. The Vernon Sheeprocks project covers a very large area and has a complicated system of roads. To simplify descriptions of mine location and access, the mine sites in the Vernon Sheeprocks Project have been organized into six "subareas" based on geographical proximity and access. These subareas are the basis for the subarea maps in Appendix G (Subarea Maps S1 to S6). The subarea

maps are designed to show access routes to the mines from an easily located landmark on a 2-wheel-drive perimeter road.

B. The mine sites are too dense to be clearly mapped and labeled at the scale of the subarea maps. Within five of the six subareas there are clusters of mines that are mapped on a series of twelve "detail" maps (Detail Maps D1 to D12). Each detail map corresponds to a particular canyon and has a single access road. The detail maps are designed to show the location of each mine in the canyon once one has entered the map area.

C. The following table shows the relationship between the six subareas and the twelve detail areas:

Subarea		**Detail**	
Map Scale: 1:48,000 or 1 inch = 4000 feet		Map Scale: 1:12,000 or 1 inch = 1000 feet	
Subarea Number	Subarea Name	Detail Number	Detail Name
S1	Copper Springs	None	None
S2	East Gov't/No. Oak Brush/Harker	D1	North Oak Brush
		D2	Harker Canyon
S3	Bennion	D3	Bennion
S4	Vernon Ck/Little Valley	D4	Little Valley North
		D5	Little Valley South
S5	Joes/Hard to Beat	D6	Joes Canyon
		D7	Sheeprock
		D8	Hard to Beat South
		D9	Hard to Beat North
		D10	Cottonwood
S6	So. Pine/So. Oak Brush	D11	South Pine
		D12	South Oak Brush

D. The detail maps are the basis for the site groupings in the Bid Schedule and Appendix A. All sites are listed in the Bid Schedule and the Appendix grouped by their detail map and then in the numerical order of their tag numbers.

E. Note that there are seven isolated mine openings that are plotted on the subarea maps but are not included on any detail map. The subarea maps alone are adequate to locate these sites. These sites are 3090711VO001 (Copper Springs, Subarea S1); 3090620VO001, 3090627IO001, 3090627PR001 (East Gov't/No. Oak Brush/Harker, Subarea S2); and 3100503HC001, 3100511HO001, 3100524HO001 (Vernon Ck/Little Valley, Subarea S4). These seven outlying sites are grouped together and listed separately in the Bid Schedule and Appendix.

1.05 PROJECT ACCESS AND NAVIGATION

A. To reach the Vernon Sheeprocks Project area from Tooele, go south on Main Street (Hwy U-36) 33 miles to the town of Vernon. From Vernon, mines on the northern flank of the Sheeprock Mountains are reached by taking a number of roads that lead to the several canyons where the mines are located. Mines on the southern flank of the Sheeprock Mountains are reached from Vernon by going around the west end of the range via the Pony Express Trail and Erickson Pass Road, by going around the east end of the range on USFS Road #005 along Vernon Creek to the Cherry Creek Road, or by taking highway U-36 to Eureka and then taking highway US-6 to the

Jericho-Callao Road (past Little Sahara). It is generally easier and faster to reach mines on the southern flank by taking the Jericho-Callao road from highway US-6.

B. The Vernon Sheeprocks project covers a very large area (approximately 160 square miles). Although most of the mines are clustered in a 20-square-mile band along the main spine of the mountain range, access to the mines is complicated. The system of roads serving the area is not very good and consists of several dead-end spurs leading up the canyons where the mines are located. There are no good internal connecting roads. Travel distances are long and the roads are slow. *In many cases it will take longer to travel to the mines than it will to actually close them.* It may take several hours to drive from one mine to another less than a mile away on the opposite side of a ridge due to the lack of connecting roads in the interior of the project area.

C. Detailed road directions are not included in these specifications. The project is large and the road system is complex. There are too many potential starting points and too many destinations to provide a complete set of written directions. Access routes are best determined by consulting the project maps. The road system can be thought of as a loop that runs around the perimeter of the Sheeprock Mountain range, with several dead-end spurs that run from the perimeter loop into the various canyons in the range. The "Key Roads" map (Map *****) shows the location of the perimeter loop roads and their relationship to major highways and cities. Use this map and the "Project Overview" map (Map *****) to navigate to the landmarks shown on the subarea maps (Maps S1-S6). Use the subarea maps to navigate from the landmark to the canyons shown on the detail maps (Maps D1-D12). Use the detail maps to find the individual mine openings.

D. OWNER has detailed written access route descriptions and road logs to all work areas and will provide them to CONTRACTOR if needed.

E. To simplify navigational directions, some key point locations have been defined for use as landmarks. These landmark points are labeled on the project maps. (Most of these landmark location names were made up for this project and will mean nothing to local residents.)

<u>Vernon</u>: junction of U-36 and Castagno Street (Silver Sage gas station)

<u>Benmore</u>: T-intersection located at the common corner of T9S, R5W, Sections 20, 21, 28, 29. It is the junction of USFS Roads #005 and #090 at the USFS Benmore Station. Benmore is two miles due east of the Harker Road Junction on USFS Road #090.

<u>Harker Road Junction</u>: 4-way intersection at the common corner of T9S, R5W, Sections 19 & 30 and T9S R6W, Sections 24 & 25 at the south end of Harker Road. The Harker Road Junction is two miles due west of Benmore on USFS Road #090.

<u>Cherry Creek Junction</u>: 4-way intersection in T12S, R5W, Section 3 SW¼. There are "Prevent Wildfires" and "No Maintenance During Winter Months" signs on the east side of the intersection. The road heading southeast connects the Cherry Creek Road to the Jericho-Callao Road. The road heading northwest enters the Cherry Creek Project area.

<u>Ekker Ranch Junction</u>: 4-way intersection in T11S, R6W, Section 9 NW¼, south of Ekker Ranch. There is a juniper post in the "island" between the roads formed by corner-cutting.

<u>Benchmark Junction</u>: T-intersection in T10S, R7W, Section 35 SW¼, northwest of Erickson Knoll. The benchmark is a brass survey monument set in a small concrete block about 10 feet west of the road and is clearly visible from the road. There is a steel T-post near the benchmark.

<u>Erickson Pass Junction</u>: 4-way intersection in T8S, R7W, Section 20 SW¼ that is the turnoff from the Pony Express Trail onto the Erickson Pass Road. It is marked by a routed wood BLM directional sign with arrows for Simpson Springs, Fish Springs, Erickson Pass, and Dugway.

005/Cherry Creek Junction: 3-way intersection of USFS Road #005 along Vernon Creek and the Cherry Creek Road in T11S, R4W, Section 7 SW¼. Because of corner-cutting the junction is actually three intersections about 0.1 mile apart with a large triangular island between them. There are routed wood BLM directional signs at each intersection, but the west-facing sign has fallen down.

F. The following list provides the navigational landmarks and the detail maps found in each subarea. Use the "Key Roads" and "Project Overview" maps to navigate to the landmark. Use the subarea maps to navigate from the landmark to the areas mapped on the detail maps. The detail maps can then be used to locate each individual mine site.

Copper Springs: (Subarea Map S1) [1 site, 1 closure]
Landmark: Erickson Pass Junction (turnoff from the Pony Express Trail)
Details: None.
This subarea has a single site, 3080911VO001 that is not mapped on a detail map.

East Gov't/No. Oak Brush/Harker: (Subarea Map S2)
Landmark: Harker Road Junction
Details: North Oak Brush (D1), Harker Canyon (D2)
This subarea has three sites that are not mapped on a detail map: Site 3090620VO001 on East Government Creek and Sites 3090627IO001 and 3090627PR001 on Lion Hill along the road to North Oak Brush Canyon.

Bennion: (Subarea Map S3)
Landmarks: Harker Road Junction, Benmore
Detail: Bennion (D3)

Vernon Ck/Little Valley: (Subarea Map S4)
Landmark: Benmore
Details: Little Valley North (D4), Little Valley South (D5)
This subarea has three sites that are not mapped on a detail map: Site 3100503HC001, Site 3100511HO001, and Site 3100524HO001, all near Vernon Creek along USFS Road #005.

Joes/Hard to Beat: (Subarea Map S5)
Landmark: Ekker Ranch Junction
Details: Joes Canyon (D6), Sheeprock (D7), Hard to Beat South (D8), Hard to Beat North (D9), Cottonwood (D10)

So. Pine/So. Oak Brush: (Subarea Map S6)
Landmarks: Ekker Ranch Junction, Benchmark Junction
Details: South Pine (D11), South Oak Brush (D12)

1.06 PROJECT AREA ROADS

A. Except for Hwy U-36 and local streets in Vernon, the roads in the Vernon Sheeprocks Project area are gravel or dirt. The perimeter routes around the Sheeprock range (Pony Express Trail, Erickson Pass Road, Cherry Creek Road, Jericho-Callao Road, USFS Road #005) are generally maintained and suitable for all 2-wheel drive vehicles and semis hauling transports in most weather (Some of these roads may not be passable in wet weather). Access to the mines in the interior of the project area is on unmaintained 4-wheel-drive roads. These dirt roads have varying degrees of passability. High clearance and/or four-wheel-drive vehicles are mandatory for travel in most of the project area, particularly in wet weather and in the upper reaches of the canyons. Some dirt roads may be fine when dry, but can be muddy quagmires when wet. Some mines may only be accessible by ATV or foot. Many stretches of the roads in the upper reaches of canyons are narrow tracks through dense scrub that will scratch vehicle paint. Dead trees fallen across the roadways are common.

B. Roads on the maps in Appendix G are symbolized as Paved, 2WD, 4WD, ATV, Foot, or Unclassified. Roads symbolized as Paved or 2WD are maintained and should be passable to all types of vehicles in most weather. Roads symbolized as 4WD are wide enough for a standard truck or SUV, but may have rocks, ruts, gully crossings, mud, or other obstacles requiring high clearance and/or four-wheel-drive. Roads symbolized as ATV are too narrow, too steep, or too rocky for full sized vehicles but are suitable for ATV's. Some ATV roads may be also suitable for tracked equipment. Roads symbolized as Foot are too steep, narrow, washed out, or boulder strewn for vehicles, although some may be passable to single-track vehicles (dirt bikes). Unclassified roads may be any type (most are 4WD) but are not needed to access the mines; they are included as reference landmarks.

C. Many of the interior roads in the project area are Forest Service roads with USFS road number designations. These road numbers are marked in the field on Carsonite (fiberglass) posts and are labeled on the maps. Some of these posts are missing.

D. Roads in Joes, Sheeprock, Hard to Beat, and Cottonwood canyons have locked gates. OWNER will provide a key for these locks. Keys are USFS property.

E. The road going up Joes Canyon has two gates with overhead guy wires bracing the gateposts. The maximum clearance under these wires is 6-8 feet, which is adequate for a pick-up or SUV, but not for a larger truck or backhoe.

F. The road going up Hard to Beat Canyon has a gate with an overhead crossbeam between the gateposts. The maximum clearance under this beam is 12.5 feet.

G. Vehicle travel on some roads is subject to restrictions (see Part 2.08 below).

1.07 LAND STATUS

A. The Vernon Sheeprocks Project area contains land owned or controlled by several parties. OWNER is responsible for obtaining the necessary rights of entry to perform the reclamation work. OWNER will have maps showing boundaries of property tracts available during construction for consultation.

B. Approximately 120 of the 191 sites occur on public land managed by the U.S. Forest Service (USFS). These include sites on unpatented mining claims and sites on other public land. Approximately 50 of the 120 USFS sites are scheduled for closure. For more information, contact:

Bill Ott, District Ranger
Spanish Fork Ranger District
Uinta National Forest
44 West 400 North
Spanish Fork, Utah 84660
(801) 342-5260

Duane Resare, Minerals Manager
Spanish Fork Ranger District
Uinta National Forest
44 West 400 North
Spanish Fork, Utah 84660
(801) 798-3571

C. The remaining sites (71 sites, 23 scheduled for closure) are on private land held by a number of different interests.

D. *CONTRACTOR shall not perform WORK on any site until OWNER has obtained landowner consent for that site.*

E. At time of project bidding, OWNER has secured *****oral/written landowner consent for right of entry for most of the private land in the project area. OWNER anticipates having all private land written rights of entry in place by the time the Notice to Proceed is issued.

F. CONTRACTOR shall not perform WORK on sites on USFS administered land until OWNER has obtained authorization from USFS (expected prior to Notice to Proceed).

PART 2 - SPECIAL CONDITIONS AND RESTRICTIONS

2.01 CULTURAL RESOURCE PROTECTION

A. The Vernon Sheeprocks Project area has 69 mine openings determined to be on significant historical sites eligible for listing on the National Register of Historic Places (31 of these are scheduled for closure). National Register eligible sites are indicated in the mine closure table in Appendix A. ***All reclamation activities shall be conducted in a manner sensitive to the historic values and resources found in the area.*** CONTRACTOR shall ensure that all construction crew members are aware of the cultural sensitivity of the area and the cultural resource protection requirements.

B. While features such as cabins, headframes, and ore chutes are obviously important, many of the historically important features present in the project area are not readily apparent. For example, ore sorting areas may appear simply as a patch of differently colored rock on a dump. Much of what is significant might typically be dismissed as "trash" somewhere else. Often, the mine opening itself, or cribbing within an opening, is important and needs to be treated appropriately.

C. Access improvement, excavation, and other ground disturbing activities shall be limited to the minimum necessary to achieve the goals of the WORK. Alteration or removal of structures or structural elements of mine openings, such as props, lagging, cribbing, retaining walls, foundations, and doorways *shall be limited to the minimum necessary to safely and effectively install the closure.* Any such alteration shall be planned in consultation with and executed as directed by the OWNER.

D. One of the key features of the project area that makes the Vernon Sheeprocks Project area historically important is its surviving "historic landscape", the overall appearance of the terrain dotted with mine dumps and workings offering a glimpse of the past. To preserve this historic appearance, when possible mine dumps used as a source of backfill shall be excavated in a way that maintains the outer lines and grades of the dump. This can be done by uniformly removing material from all surfaces, by removing material from the top down, by slightly "hollowing out" the dump, or by removing one lobe of a multi-lobed dump. The idea is to avoid leaving the dump with an uneven, gouged look.

E. Removal of historic or prehistoric artifacts or rock specimens is prohibited. This includes, but is not limited to, bottles, bottle fragments, china and glass fragments, tools, tin cans, buckets, pipe, wire, nails, spikes, bolts, track, machinery, ore cars, vehicles, lumber and other wood, arrowheads and other stone tools, ore samples, petrified wood, and fossils.

F. CONTRACTOR shall stop work and notify OWNER immediately if human burial remains are discovered.

2.02 BAT CONSERVATION

A. OWNER has performed surveys to determine which mines are used for bat habitat. Where bats are present in a mine, they will be excluded from the mine prior to installing airtight closures (see

Section 0250, Part 3.01.F). Sites requiring exclusion prior to closure are indicated in the mine closure table in Appendix A.

B. The length of the exclusion period may be reduced from one week to three fair weather days with OWNER's approval. Rainy or cold weather inhibits bat activity and will increase the length of the exclusion accordingly, up to the one week maximum.

C. The recreational use of the project area raises the possibility that vandals may damage or remove the chicken wire seals during the exclusion period. Should this occur, damaged seals shall be replaced and the exclusion period started over.

D. The exclusion process is effective only in warm seasons when bats are active. To prevent entombing hibernating bats, sites indicated in Appendix A as requiring exclusion prior to closure shall not be closed during the cold season (from October 31 to March 31). Closure of these sites shall be postponed to the following warm season. Cold season closures may be performed following an internal inspection for hibernating bats. Internal inspections shall be performed by the OWNER and are subject to the availability of the OWNER's bat inspection team.

E. Vertical shafts covered with chicken wire for bat exclusion shall be flagged with warning tape.

2.03 BIRD CONSERVATION

A. A number of state and federal laws or policies protect several bird species. CONTRACTOR shall avoid or minimize disturbance to protected birds as outlined in this section. Generally this is done by scheduling work to avoid sensitive breeding activity and by minimizing habitat disturbance.

B. During spring nesting and fledging (January 15 to August 31) OWNER will perform line-of-site visual surveys for raptor nests in the vicinity of the mine sites. If nests are found, CONTRACTOR shall reschedule work at those sites until after August 31.

C. The greater sage-grouse (*Centrocercus urophasianus*) occurs in sagebrush habitats throughout the project area and has leks (strutting areas) in Vernon Creek, Little Valley, and Bennion Creek. WORK in these area may be scheduled for *****

D. Two bird species designated as threatened and protected under the Endangered Species Act may occur in the project area, although it is extremely unlikely. They are the western yellow-billed cuckoo and the bald eagle. Should either of these birds be sighted, WORK may be stopped or rescheduled in that area, pending consultation with wildlife authorities.

E. A category of birds known as neotropical migrants (basically, familiar migratory songbirds and other birds such as warblers, thrushes, wrens, towhees, hummingbirds, etc.) may be nesting in construction areas, especially in brushy or scrubby vegetation, during spring work. CONTRACTOR shall avoid disturbing any more vegetation than necessary to achieve the reclamation goals to reduce the risk of disturbing an active nest. If nests are found, CONTRACTOR shall reschedule work at those sites until later in the season

2.05 RARE PLANT CONSERVATION

A. One plant species listed as threatened under the Endangered Species Act may occur in the project area. It is the Ute Ladies'-tresses *(Spiranthes diluvialis)*. OWNER will survey work areas for these plants prior to construction. Any plants found shall be flagged by OWNER and avoided by the work crews.

B. Four other plant species considered rare and sensitive but not listed as threatened under the Endangered Species Act may occur in the project area. They are the Slender Moonwort and Dainty Moonwort (*Botrychium lineare* and *B. crenulatum*), Pohl's Milkvetch (*Astragalus lentiginosus* var.

pohlii), and Coulter Biscuitroot (*Cymopterus coulteri*). OWNER will survey work areas for these plants prior to construction. Any plants found shall be flagged by OWNER and avoided by the work crews.

2.06 LAND PROTECTION

A. Trash, containers, wrappings, empty mortar and concrete mix bags, concrete block fragments, rebar cuttings, welding rod scraps, waste PUF, pallets, water jugs, buckets, broken tools, discarded materials, food wrappers, beverage containers, paper towels, and other such litter generated by the reclamation activities shall be kept contained during construction and shall be cleaned up and removed from the site upon completion.

B. CONTRACTOR shall exercise care with open flames when welding or cutting to avoid starting range fires. CONTRACTOR shall submit a written range fire prevention and fire response plan to OWNER at the start of construction.

2.07 LANDOWNER AND NEIGHBORHOOD RELATIONS

A. CONTRACTOR shall be responsible to reimburse landowners or lease holders for livestock, fences, gates, or other property lost, injured, or damaged by CONTRACTOR's operations and/or traffic on access roads and trails.

B. CONTRACTOR shall immediately close all gates after use as requested by landowners. The locked gates may have multiple locks on a chain. CONTRACTOR shall take care not to “lock out” other users when relocking a gate shared by multiple users.

C. CONTRACTOR shall conduct all reclamation construction work in a timely manner that minimizes interference with or disturbance to nearby residents. CONTRACTOR shall organize the work to minimize the need to cross residential or cultivated property. CONTRACTOR is responsible for remedying all damage done to private residences and appurtenances, including landscaping, fences, and road surfaces.

E. *****other specific landowner requirements

2.08 ACCESS RESTRICTIONS

A. Vehicles shall stay on existing roadways as much as possible and avoid cross-country trips across undisturbed areas except where necessary.

2.09 WORKER HEALTH AND SAFETY

A. Rodents often nest in abandoned mines and leave accumulations of droppings and nest debris. In theory, these nests and droppings could host the potentially lethal hantavirus, although no mine closure work has ever been linked to a case of hantavirus. As a precaution, workers should avoid stirring up dust or rodent droppings in mines and use standard hygiene and sanitation practices (washing before eating, etc.). Workers are encouraged to learn to recognize the symptoms of hantavirus infection and seek proper medical attention if indicated.

B. The heavy reliance on manual labor for this project and the steep, rugged terrain increase the probability of orthopedic and trauma injuries. Standard safety gear (hard hat, steel-toed shoes) are required for all personnel. Fatigue, heat stress, and dehydration are inherent medical risks of heavy manual labor in desert environments. Frostbite and hypothermia are risks of winter work. Workers should take appropriate precautions for the site conditions.

C. CONTRACTOR is required to hold regular safety meetings and is encouraged to have a response plan in place in the event of accidents, personal injury, animal bites, or other medical emergency.

D. All of Tooele County is covered by 911 emergency telephone service, but the project area has little reliable cell phone coverage.

PART 3 - EXECUTION

3.01 THE WORK

The WORK at the Vernon Sheeprocks Project area shall include closure of approximately 73 mine openings, burial of mine dumps and other earthwork at *****15 sites, drainage channel construction, and revegetation of areas disturbed by reclamation work. Additional mine closures or earthwork may be added to the WORK as the project progresses if new mine openings are found or sites are re-evaluated.

A. Mobilization/Demobilization. Mobilize labor, equipment, and supplies to the site in accordance with Section 0220: Mobilization/Demobilization, and as follows:

1. Previously disturbed areas should be selected for staging and activity areas as much as possible. Vegetation grubbing and topsoil stripping and stockpiling shall not be done in staging areas.

2. Vehicles and heavy equipment shall be thoroughly cleaned before entering the project area in order to prevent the introduction or spread of noxious weed seeds.

3. There are minimal commercial services available in the project area. Vernon has a small market with gas, diesel, a café, and a pay phone. Eureka has all services and a small motel. Business operating hours are limited in both towns. Nephi and Delta have all services and lodging and are the closest towns to the southern flank canyons. Cell phone coverage is spotty and poor throughout the project area.

4. ***** camping rules

B. Access Improvement. Improve access for labor, equipment, and supplies to the individual mine sites in accordance with Section 0230: Access Improvements, and as follows:

1. Access into the project area is possible on the existing paved and primary dirt roads and requires little or no additional improvement. The secondary 4WD dirt roads up the canyons are subject to washouts, ruts, fallen trees, and rockfalls. Moderate access improvement is anticipated to be needed in numerous localized areas.

2. No new access road construction will be allowed. Improve access to the individual mine openings by upgrading the existing dirt roads, ATV trails, and foot paths to the minimum degree required to conduct the WORK. Site access should require no or minimal improvement work in most areas. CONTRACTOR should generally expect to select the mode of transportation to fit the existing ground conditions rather than changing the ground to accommodate a vehicle. Access to many sites will require cross-country traverses. Access routes should be selected to avoid or minimize disturbance to vegetation and cultural resources. Access routes and improvements are subject to approval by OWNER. Except on main roads, work should be organized to minimize the number of repeat trips on a particular route to reduce trail wear and tear (this applies to foot traffic as well as to vehicles and equipment). Where possible, "one trip in, one trip out" is the goal.

3. CONTRACTOR shall remove access improvements and return roads to their pre-construction condition upon completion of work.

4. CONTRACTOR shall obliterate footprints, truck and ATV tire tracks, and crawler tracks by raking or similar means as directed by OWNER in areas where access routes deviate from existing established open roads. Severe trail wear or compaction may require mechanical scarification and reseeding.

5. The road up Joes Canyon (Subarea S5, Detail D6) has two gates with low-clearance overhead guy wires (6-8 feet clearance) supporting broken gate posts. CONTRACTOR shall repair or replace these wires if it is necessary to remove them to get equipment to the sites.

C. Mine Closure. Close all identified mine openings, subsidence holes, and pits in accordance with the technical specifications in Sections 0250 through 0254, and as follows:

1. Use the closure method specified for each site in the "Closure Method" column of the table in Appendix A. Estimated closure dimensions and/or construction quantities (cubic yards of backfill; square feet of masonry wall, bat gate, or rebar grate; or cubic feet of PUF or concrete) for each closure are provided in Appendix A. (Note that quantities are expressed in square feet, cubic feet, and cubic yards, depending on the material and type of closure. Do not confuse units.) Use the technical specification section and standard drawing referenced in Appendix A for each closure. The closure methods specified for the sites are shown on the mine closure map, Appendix *****G, Plate 2.

2. Backfill closures specified in Appendix A are noted as either hand work or equipment work. These designations reflect OWNER’s expectation for the backfill method, but are not binding. Mine openings scheduled for equipment backfill may be backfilled by hand and mine openings scheduled for hand backfill may be closed by equipment depending on circumstances on the ground. The choice of hand or machine backfill methods shall be determined in consultation with OWNER and is subject to OWNER's approval. Cost adjustments to the Bid Price may be made when backfill methods are changed. Cost adjustments will be negotiated based on the Variation in Quantity Unit Prices in the bid schedule for comparable work.

3. Wall closures specified in Appendix A are noted as either stone or concrete block. These designations reflect OWNER’s expectation for the wall material, but are not binding. The designations are based on assessments of the onsite availability of suitable stone and the difficulty of transporting block to remote locations. Mine openings scheduled for stone walls may be closed with block walls, and vice versa. The choice of wall material shall be determined in consultation with OWNER and is subject to OWNER's approval. Cost adjustments to the Bid Price will not be made when a wall material is changed.

4. Concrete block walls shall be treated on the outer surface to blend with the adjacent native rock. Suitable treatments include facing the block wall with a layer of rock or plastering or stucco-ing with mortar mixed with local sand or soil. The intent is to camouflage the wall by matching the color and texture of the native rock. Camouflage treatments may be omitted at some sites at OWNER's direction depending on the visibility of the wall.

9. One adit is specified to be closed with a rebar grate. Use the pinned rebar shaft grate design (see Section 0253, Part 3.03.G) with the grate installed in a vertical plane across the opening. Rebar adit grates (mild steel rebar, 8"x8" grid) should not be confused with bat gates (Manganal steel, 6"x24" grid).

10. Site specific variations to the generic closure methods are required at some mine openings. Some of these special requirements or customized details are noted in Appendix A. Not all such special requirements are so noted in Appendix A. Sites without such notes may still require site specific variations to be determined during construction.

11. Where present in a mine, bats will be excluded from the mine prior to installing the closure (see Section 0250, Part 3.01.F and Section 0300, Part 2.02). Mine sites requiring exclusion prior to closure are indicated in Appendix A.

12. One hundred eighteen (118) mine sites on the inventory list in Appendix A do not have closures specified at the time of bidding. Closures at these sites are designated "None" in Appendix A and on the bid sheets. In addition, new sites not on the inventory are commonly found during the course of reclamation. OWNER anticipates adding closures at newly discovered sites to the contract by means of contract change orders as engineering is completed. Costs for additional work will be negotiated based on the Variation in Quantity Unit Prices in the bid schedule for comparable work. Sites designated "None" in Appendix A (118 sites) are not expected to require closure work. In addition, some sites currently specified for closure may be dropped from the WORK if re-evaluation shows that they do not warrant closure.

D. Site Grading/Earthwork (General). Perform earthwork to achieve reclamation objectives in accordance with Section 0270: Site Grading/Earthwork, and as follows:

1. At all sites, try to salvage existing vegetation and vegetated soil. When feasible, stockpile grubbed vegetation and upper soil layers to place on the surface of fill and use barren waste rock for the deeper fill. CONTRACTOR is encouraged to salvage whole live trees with root balls during grubbing for replanting on fill areas, if possible.

2. The intent of the site grading and earthwork is to enhance the watersheds and improve water quality by burying or isolating mine dumps, removing mine dumps from stream channels, diverting mine water away from mine dumps, and re-establishing drainage channels.

3. Site grading and earthwork may precede or follow mine closure work at the same location, depending on crew/equipment availability and the logistics of the situation. Later work should not undo earlier work. CONTRACTOR is responsible for fixing any damage to previously completed work

4. Estimated quantities for site grading and earthwork are based on the volume of mine dump material to be buried and do not reflect the total volume of material that must be moved in order to bury the dump (burial pit excavation, cover material stockpiling, dump grading, cover material spreading).

5. Site grading and earthwork at some sites will incorporate the mine closure. At these sites, there will not be a separate mine closure item in the Bid Schedule.

E. Site Grading/Earthwork (Specific). Perform earthwork to achieve reclamation objectives in accordance with Section 0270: Site Grading/Earthwork, and as follows:

1. Site 3090620VO001: (East Gov't/No. Oak Brush/Harker, Map S2)

Description:
This mine is a 6' x 6' x 20'd shaft inside a 10' x 10' x 7'h alcove cut in the corner of a face-up that is approximately 25'l x 25'w x 20'd. A drift heads to the southwest at the bottom of the shaft. There is a bank of rubble 7 feet high along the base of the face-up that partially blocks the entrance to the mine. The mine has a waste rock dump that is approximately 30 feet by 25 feet on top and is approximately 8 feet deep and extends about 20 vertical feet downslope. It contains an estimated 270 cubic yards of material. There is a stockpile of about 40 cubic yards of segregated ore on the east side of the dump, making a total estimate of 310 cubic yards of material in the dump. There is a bench or road cut continuing west from the face-up that is about 12'w x 50'l with a cut bank 6-8'h.

Work:
Equipment access to the site is possible on an old road. The objective of the work is to backfill the shaft and the face-up to restore the site to its approximate premining topography. CONTRACTOR shall grub brush and trees from the dump and face-up and salvage available topsoil and cover material. Excavate the rubble bank to clear access to the shaft. Backfill the shaft, using the ore stockpile and barren rock from the dump first. Strip the mine dump down to the native soil beneath and place the dump material in the face-up and bury it with a minimum 18 inches of cover material. Backfill the bench west of the face-up by pulling up soil from the outslope. The final grade should blend with the adjacent hillside and be free of abrupt changes in slope. Scatter the grubbed trees and brush on the surface. Roughen the face-up and dump areas to reduce erosion. An estimated 50 cubic yards of material will be used to fill the shaft, an estimated 200 cubic yards of material will used to backfill the face-up, and an estimated 40 cubic yards of material will be excavated and placed to backfill the bench west of the face-up, for an estimated total of 290 cubic yards of material to be moved. An area estimated at 100 feet by 50 feet (5,000 sf or 0.1 acres) will be disturbed.

1. Site 3100524HO001: (Vernon/Little Valley, Map S4)

Description:
This mine is a large open cut on a hillside easily visible from USFS Road #005 (the Vernon Creek road). There is no adit; any underground workings have been daylighted by the surface work or have caved in. The site consists of an open cut approximately 45 feet wide by 50 feet long by 50 feet high that has a waste rock dump that is approximately ***** 72 feet by 45 feet on top and is approximately ## feet deep and extends about ## vertical feet downslope. The dump contains an estimated ##### cubic yards of material.

Work:
The objective of the work is to backfill the open cut with material from the dump. Grub the vegetation from the dump and stockpile the grubbed vegetation and the surface layer of soil for use later. Place material from the dump in the open cut to restore the approximate premining contour, but with a final slope no steeper than 2h:1v. Grade any remaining dump material upslope towards the cut. The final grade should blend with the adjacent hillside and be free of abrupt changes in slope. Spread the stockpiled soil and grubbed vegetation on the surface. Roughen the pit and dump areas to reduce erosion. An estimated ##### cubic yards of material will be buried. An area estimated at #### feet by #### feet (##### sf or ##### acres) will be disturbed.

1. Site 3100602HO001: (Harker Canyon, Map D2)

Description:
This mine is part of a cluster of openings that also includes 3100602HO002, 3100602SH001, and 3100602SH002. The mine has a waste rock dump that is approximately 35 feet by 60-70 feet on top and is approximately 6-8 feet deep and extends about 20 vertical feet downslope. It contains an estimated 900 cubic yards of material.

Work:
Equipment access to the site is possible on an old road. It will be necessary to cross Harker Creek, which is small at this location. The objective of the work is to bury the mine dump as close to or upslope from its existing location as possible. The soil depth on the slope near the dump is unknown, but it appears shallow, and it may be less than one foot to bedrock. CONTRACTOR shall dig test holes on the north and west sides of the dump, working upslope until a suitable soil depth is found. The burial pit can expose and incorporate the mine portals and subsidence holes. Excavate a burial pit large enough to hold the dump and generate sufficient cover material. Strip the mine dump down to the native soil beneath and place the dump material in the pit or bury it with a minimum 18 inches of cover material from the pit. The final grade should blend with the adjacent hillside and be free of a noticeable hump or

abrupt changes in slope. Scatter any grubbed trees and brush on the surface. Roughen the pit and dump areas to reduce erosion. An estimated 900 cubic yards of material will be buried. An area estimated at 150 feet by 200 feet (30,000 sf or 0.7 acres) will be disturbed.

1. Site 3100602HO003: (Harker Canyon, Map D2)

Description:
This mine is completely caved. It has a face-up trench in deep soil that is approximately 35'l x 12'w x 6'd. It has a waste rock dump that is approximately 30 feet by 30 feet on top and is approximately 6 feet deep and extends about 12-15 vertical feet downslope. It contains an estimated 250 cubic yards of material. The dump is well-vegetated with shrubs and trees, and has one large dead snag.

Work:
Equipment access to the site is possible on an old road and a short overland tram. It will be necessary to cross Harker Creek, which is small at this location. CONTRACTOR shall excavate a burial pit in the face-up and portal location. Excavate a burial pit large enough to hold the dump and generate sufficient cover material. It is possible that this excavation may reopen the mine. Grub the trees from the dump to expose the barren inner rock. Try to salvage some whole live trees with root balls. Strip the mine dump down to the native soil beneath and place the dump material in the pit (or mine, if the workings have been exposed) or bury it with a minimum 18 inches of cover material from the pit. The final grade should blend with the adjacent hillside and be free of a noticeable hump or abrupt changes in slope. Scatter the grubbed trees and brush on the surface. Roughen the pit and dump areas to reduce erosion. An estimated 250 cubic yards of material will be buried. An area estimated at 120 feet by 50 feet (6,000 sf or 0.1 acres) will be disturbed.

1. Site 3100522HC001: (Little Valley North, Map D4)

Description:
This mine consists of a face-up cut below and on the east side of the roadway. *****

Work:
The objective of the work is to fill the head of the face-up cut to reduce the slope and eliminate the abrupt dropoff from the road above. Use material from the adjacent hillside as fill. The final grade should be no steeper than 2h:1v, should blend with the adjacent hillside, and be free of abrupt changes in slope. Roughen the fill area to reduce erosion. An estimated ***** cubic yards of material will be required to fill the mine. An area estimated at #### feet by #### feet (##### sf or ##### acres) will be disturbed.

1. Site 3100522HO001: (Little Valley North, Map D4)

Description:
This mine consists of some underground workings at the east end of an east-west trending open trench. The first 30 feet of the underground portion is a large irregular room 10-12 feet high by 10-25 feet wide, ending with a small drift to the east. The open trench portion is 15-25 wide by 140 feet long. The south side of the trench is a rock ledge about 20-25 feet high; the north side is a rock ledge 10 feet high (east end) or a rubble bank 6-8 feet high (west end). The excavated material has been dumped in the drainageway west of the trench and on the slope north of the trench.

Work:
The objective of the work is to remove the spoil banks from the adjacent slope and drainageway and use them to backfill the underground mine workings and the surface trench. CONTRACTOR shall backfill the entire underground portion of the mine from the small drift out to the suface and the trench from the brow 75 feet west past the alcove on the south side.

The trench fill shall be brought up to match the north side (leaving 10-15 feet of rock ledge exposed on the south side). The final grade should blend with the adjacent hillside to the north and be free of abrupt changes in slope. Re-establish a drainage channel through the work area, routed as directed by OWNER, to tie into the undisturbed reaches above and below. Keep a vehicle crossing. Roughen the pit and dump areas to reduce erosion. An estimated 200 cubic yards of material will be required to fill the mine and another estimated 500 cubic yards will be needed to fill the trench. An area estimated at #### feet by #### feet (##### sf or ##### acres) will be disturbed.

***** extend fill another 70 ft x 6'd to sawbucks (400 cy)? drainage?

1. Site 3100522TR001: (Little Valley North, Map D4)

Description:
This open cut mine is an L-shaped trench with legs approximately 100 feet long each. The east-west leg is 12-20 feet wide and about 15 feet deep; the north-south leg is a sloping ramp about 20 feet wide, sloping from 0-15 feet deep. Excavated material has been cast out of the trench along the sides of the two legs and at the southeast corner.

Work:
CONTRACTOR shall fill the trench back to the approximate original grade, using the adjacent spoil banks. The final grade should blend with the adjacent hillside and be free of abrupt changes in slope. Roughen the pit and dump areas to reduce erosion. An estimated 1200 cubic yards of material will be required to fill the trench. An area estimated at 250 feet by 250 feet (62,500 sf or 1.4 acres) will be disturbed.

1. Site 3100522TR002: (Little Valley North, Map D4)

Description:
This open cut mine is a trench approximately 80 feet long, 12-20 feet wide, and 18 feet deep at the end cut. Excavated material has been cast out of the trench. There is a large area of general ground disturbance with dumps and smaller excavations around the trench.

Work:
CONTRACTOR shall fill the trench back to the approximate original grade, using the adjacent spoil banks and dumps. The final grade should blend with the adjacent hillside and be free of abrupt changes in slope. Roughen the pit and dump areas to reduce erosion. An estimated 600 cubic yards of material will be required to fill the trench. An area estimated at 100 feet by 100 feet (10,000 sf or 0.2 acres) will be disturbed.

1. Site 3100614HO002: (Hard to Beat North, Map D9)

Description:
This mine has a three-lobed waste rock dump that is approximately 60 feet by 90 feet on the top and approximately 45 feet deep. It contains an estimated ##### cubic yards of material. The toe of the dump is in the creek channel. The mine portal discharges water, which is routed in a ditch along the south edge of the dump; there is also seepage through the dump. There are a pile of steel rails and an ore car on the southern end of the pile.

Work:
The objective of the work is to remove the mine dump from the creek channel and regrade it to the slope southwest of the mine portal. The final shape of the reworked dump should mimic that of a typical historic mine dump, but with its toe outside of and above the creek channel. CONTRACTOR shall set the steel rails and ore car aside where they will not interfere with the earthwork. Then excavate a diversion ditch to carry the mine water north so that it runs down the slope between the road cut and the east side of the mine dump. Grub the vegetation from

the hillside southwest of the dump. Strip and stockpile the soil from this area. Grade the dump to the southwest, removing the material from the creek and keeping it out of the creek channel. The final grade should have a "classic" mine dump shape, with a flat top and triangular cross-section. The top of the regraded dump should be at the same elevation as the existing dump. Scatter the grubbed vegetation and salvaged soil on the surface. Roughen the dump to reduce erosion. An estimated #### cubic yards of material will be moved. An area estimated at #### feet by ## feet (##### sf or ## acres) will be disturbed.

1. Site 3100615HO001: (Hard to Beat North, Map D9)

   Description:
   This mine has a waste rock dump that is approximately 40' x 33' on top and is approximately 10' deep and extends about 15 vertical feet downslope. There is a lobe extending to the southwest that is approximately 10'w x 25'l x 10'd. The dump contains an estimated 500 cubic yards of material. There is a large elderberry bush growing on the toe of the dump at the southeast corner.

   Work:
   The objective of the work is to bury the mine dump as close to its existing location and as far upslope as possible (staying away from the creek channel). The soil depth on the slope near the dump is unknown, but it appears shallow, and it may be less than three feet to bedrock. CONTRACTOR shall dig test holes in the clearing on the northeast side of the dump, working upslope and northeast into the chokecherry scrub until a suitable soil depth is found. Excavate a burial pit large enough to hold the dump and generate sufficient cover material. Strip the mine dump down to the native soil beneath and place the dump material in the pit or bury it with a minimum 18 inches of cover material from the pit. Try to preserve the large elderberry bush and other large trees growing on the toe of the dump. The final grade should blend with the adjacent hillside and be free of a noticeable hump or abrupt changes in slope. Scatter the grubbed trees and brush on the surface. Roughen the pit and dump areas to reduce erosion. An estimated 500 cubic yards of material will be buried. An area estimated at 100 feet by 150 feet (15,000 sf or 0.3 acres) will be disturbed.

1. Site 3100615HC004: (Cottonwood, Map D10)

   Description:
   This mine has a waste rock dump that covers the canyon bottom and wraps around both sides of the narrow canyon. The maximum depth of the dump is about 10 feet. There is a spring upcanyon from the mine that produces water that flows over the dump.

   Work:
   The objective of the work is to dig a ditch to carry runoff through the dump quickly and with minimum contact with dump material. CONTRACTOR shall dig by hand a ditch through the dump in its current flow path that ties into the downstream channel. The ditch will have a bottom width of 1 foot and 1h:1v side slopes; the depth will vary with the depth of the dump. Spread the excavated material as a thin layer on the dump surface, rather than in windrows. Access to the site via Cottonwood Canyon requires a 1.5 mile hike through dense scrub; it may be easier to access the site by hiking over the ridge from Hard to Beat Canyon. An estimated 100 lineal feet of ditch will be dug requiring the manual excavation of an estimated 80 cubic yards of material. An area estimated at 100 feet by 30 feet (3,000 sf or 0.1 acres) will be disturbed.

1. Site 3100607HO002: (South Oak Brush, Map D12)

   Description:
   This mine is situated in the southeast corner of a leveled bench area. The portal is partially caved; the bank of sloughed soil in the portal has dammed water behind it, which seeps out

through the fill and forms a muddy area. The mine has a small pile of waste rock near the edge of the leveled bench, but it does not have a defined mine dump like other sites in the project.

Work:
The objective of the work is to seal the mine and develop the mine water discharge into a spring and wetland with water for wildlife and livestock. CONTRACTOR shall ***** install temporary dam so that mine pool does not empty-- drain system, basins, fence??? An area estimated at #### feet by #### feet (##### sf or ##### acres) will be disturbed. *****

F. Revegetation. Revegetate all areas disturbed by reclamation activities in accordance with Section 0290: Revegetation, and as follows:

1. Disturbed areas include staging areas, access routes, backfilled portals and shafts, regraded areas, and backfill borrow areas. Areas of bare rock, rock ledges, and rocky outslopes of mine dumps do not need to be revegetated.

2. Use the Vernon Sheeprocks seed mixture (Appendix D). A total area estimated at *****8 acres will need to be revegetated for the mine closures and a total area estimated at ****** acres will need to be revegetated for the earthwork, for an estimated project total of ***** acres. The actual revegetation area will vary depending on the CONTRACTOR's diligence in executing the work and limiting disturbance.

3. Revegetation shall be considered incidental to installation of the mine closures and earthwork. Revegetation costs shall be incorporated into the costs for Mine Closure and Site Grading/Earthwork. Revegetation is not included as a separate bid or pay item, but is considered subsidiary to the other items of WORK. No separate payment shall be made for Revegetation.

4. Mulch and fertilizer shall not be required.

3.02 CONSTRUCTION SCHEDULING

A. Notice to proceed with construction is contingent upon OWNER receiving authorizations from the USFS and from the U.S. Office of Surface Mining. OWNER expects both authorizations to be in place by the *****April ## bid date. However, if either is lacking, WORK will be postponed accordingly.

B. Work Priorities: CONTRACTOR shall organize the execution of the WORK to reflect these priorities for completion:
   A. Bat gates at 3100609HO003, 3100615HO001, and 3100622HO002
   B. *****
   C. *****

C. The start-up date for resumption of WORK suspended due to adverse weather or other conditions will be determined by OWNER in consultation with CONTRACTOR and will depend upon the nature of the uncompleted WORK.

END OF SECTION 0300

APPENDIX B

List of Mine Features and Proposed Closures

This table corresponds to the Appendix A of the construction specifications that is referenced in Section 0300 of the specifications (see Appendix A of this environmental assessment). This table lists mine closures only; it does not include sites where a closure is subsumed within watershed remediation earthwork (see Section 0300, Part 3.01.E of the construction specifications in Appendix A of this environmental assessment).

Sites are listed in tag number order within each Detail Map area grouping.
See the construction contract specifications for a description of the site identification system, map organization, and closure methods.
UTM coordinates are Zone 12, NAD27.

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
D1 North Oak Brush					
3100604HC001	Private	4,426,061	370,275	None	na
3100604HO001	Private	4,426,063	370,274	NA	na
3100604HO002	Private	4,426,382	369,926	Backfill (Equipment)	30 cy
3100609HC005	USFS	4,425,583	369,769	None	na
3100609HC006	USFS	4,425,826	369,602	None	na
3100609HC007	USFS	4,425,879	369,657	Backfill (Hand)	5 cy
3100609HC008	USFS	4,425,980	369,850	None	na
3100609HC008a?	USFS	4,425,932	369,699	None	na
3100609HC009	USFS	4,425,647	369,549	None	na
3100609HO002	Private	4,425,860	370,253	None	na
3100609HO003	Private	4,425,961	370,210	Bat Gate	30 sf
3100609PR001	USFS	4,425,711	370,015	None	na
3100609PR002	Private	4,425,823	370,291	None	na
D2 Harker Canyon					
3100602HO001	USFS	4,426,113	372,548	None	na
3100602HO002	USFS	4,426,118	372,551	None	na
3100602HO003	USFS	4,426,057	372,553	None	na
3100602PR001	USFS	4,426,097	372,549	None	na
3100602PR002	USFS	4,426,072	372,552	None	na
3100602SH001	USFS	4,426,122	372,546	None	na
3100602SH002	USFS	4,426,128	372,551	None	na
3100603PR001	Private	4,426,118	371,731	None	na

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
3100610HC001	Private	4,425,880	371,456	None	na
3100610HC002	Private	4,425,877	372,082	None	na
3100610HC003	Private	4,425,838	372,032	None	na
3100610HC004	Private	4,425,553	371,366	None	na
3100610HC005	Private	4,425,757		None	na
3100610HC006	Private	4,425,776	371,319	None	na
3100610HC007	Private	4,425,697	371,258	None	na
3100610HO001	USFS	4,425,590	371,960	Backfill (Hand)	20 cy
3100610HO002	USFS	4,425,599	371,975	Backfill (Hand)	15 cy
3100610HO003	USFS	4,425,600	371,981	Backfill (Hand)	10 cy
3100610HO004	USFS	4,425,603	371,983	Backfill (Hand)	8 cy
3100610HO005	USFS	4,425,624	371,993	Shaft Grate	66 sf
3100610HO006	USFS	4,425,589	372,021	Backfill (Hand)	20 cy
3100610HO007	Private	4,425,563	371,376	Backfill (Hand)	5 cy
3100610HO008	Private	4,425,753	371,537	Backfill (Hand)	6 cy
3100610HO009	USFS	4,425,649	371,844	Backfill (Hand)	20 cy
3100610HO010	Private	4,425,743	371,344	Wall (Stone)	30 sf
3100610HO011	USFS	4,425,623	372,001	None	na
3100610HO012	Private	4,425,649	371,344	Bat Gate	42 sf
3100610HO013	Private	4,425,677	371,342	Wall (Stone)	30 sf
3100610HO014	Private	4,425,644	371,264	None	na
3100610HO015	Private	4,425,657	371,105	Wall (Stone)	36 sf
3100610HO016	Private	4,425,822	370,966	Shaft Grate	40 sf
3100610HO017	Private	4,425,765	371,502	Wall (Stone)	30 sf
3100610HO018	Private	4,425,630	371,322	Backfill (Hand)	5 cy
3100610HO019	Private	4,425,684	371,237	None	na
3100610HO020	Private	4,425,751	370,983	Backfill (Hand)	8 cy
3100610IO001	Private	4,425,538	371,373	None	na
3100610IO002	Private	4,425,553	371,384	Backfill (Hand)	10 cy
3100610IO003	Private	4,425,558	371,381	Backfill (Hand)	5 cy
3100610IO004	Private	4,425,714	371,483	Backfill (Hand)	15 cy
3100610IO005	Private	4,425,678	371,345	Shaft Grate	72 sf
3100610IO006	Private	4,425,687	371,374	Backfill (Hand)	20 cy
3100610PR001	Private	4,425,673	371,311	None	na
3100610PR002	Private	4,425,736	371,422	None	na
3100610PR003	Private	4,425,532	371,374	None	na
3100610PR004	Private	4,425,666	371,394	None	na

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
3100610PR005	Private	4,425,656	371,360	Backfill (Hand)	2 cy
3100610PR006	Private	4,425,637	371,332	NA	na
3100610PR007	USFS/ Private	4,425,631	371,305	None	na
3100610PR008	Private	4,425,749	370,984	None	na
3100610PR009	Private	4,425,736	370,986	None	na
3100610PR010	Private	4,425,727	370,985	None	na
3100610PR011	Private	4,425,706	370,999	None	na
3100610PR012	Private	4,425,692	370,963	None	na
3100610PR013	Private	4,425,648	371,062	None	na
3100610PR014	Private	4,425,847	370,972	None	na
3100610PR015	Private	4,425,823	370,955	None	na
3100610PR016	Private	4,425,823	370,938	None	na
3100610PR017	USFS	4,425,890	370,953	None	na
3100610PR018	Private	4,425,770	371,005	None	na
3100610PR019	Private	4,425,746	371,492	None	na
3100610PR020	Private	4,425,631	371,967	None	na
3100610PR021	Private	4,425,633	372,022	None	na
3100610PR022	Private	4,425,607	372,024	None	na
3100610PR023	USFS	4,425,585	371,969	None	na
3100610VO001	Private	4,425,834	372,022	Backfill (Equipment)	50 cy
3100611HC001	Private	4,425,919	372,566	None	na
D3 Bennion					
3100517HO001	USFS	4,422,870	377,050	Backfill (Hand)	7 cy
3100517SH001	USFS	4,422,874	377,054	None	na
3100518HC001	USFS	4,423,354	376,427	None	na
3100518HO001	USFS	4,423,380	376,456	Bat Gate	48 sf
3100518HO002	USFS	4,423,334	376,412	Backfill (Hand)	5 cy
3100518IO001	USFS	4,423,431	376,717	Backfill (Hand)	15 cy
3100518PR001	USFS	4,423,280	376,805	None	na
3100518VC001	USFS	4,423,438	376,722	None	na
3100518VO001	USFS	4,422,945	376,978	Backfill (Equipment)	20 cy
3100518VO002	USFS	4,423,256	376,819	Backfill (Hand)	10 cy
3100613HC001	Private	4,423,644	374,649	None	na
3100613HC002	Private	4,423,619	374,642	None	na
3100613HC003	Private	4,423,627	374,861	None	na
3100613HC004	Private	4,423,673	374,867	None	na
3100613HC005	Private	4,423,597	374,308	None	na

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
3100613HC006	USFS	4,423,517	374,254	None	na
3100613HC007	USFS	4,423,513	374,253	None	na
3100613HC008	USFS	4,423,509	374,245	None	na
3100613HC009	USFS	4,423,505	374,251	None	na
3100613HC010	Private	4,423,379	374,595	Wall (Block)	36 sf
3100613PT001	Private	4,423,663	374,523	None	Na
3100613VO001	Private	4,423,611	374,856	Shaft Grate	80 sf
D4 Little Valley North					
3100520HO001	USFS	4,421,875	377,506	Wall (Block)	24 sf
3100521HO001	USFS	4,422,448	380,134	Bat Gate	15 sf
3100521HO002	USFS	4,422,422	380,134	Shaft Grate	64 sf
3100521VO001	USFS	4,422,448	380,179	Shaft Grate	150 sf
3100521VO002	USFS	4,422,431	380,157	None	na
3100522HC001	USFS	4,422,452	380,261	None	na
3100522HO001	USFS	4,422,436	380,229	None	na
3100522PR001	USFS	4,422,419	380,246	None	na
3100522PR002	USFS	4,422,465	380,282	None	na
3100522PR003	USFS	4,422,464	380,282	None	na
3100522TR001	USFS	4,422,096	380,392	None	na
3100522TR002	USFS	4,422,055	380,291	None	na
3100522VO001	USFS	4,422,392	380,372	Backfill (Equipment)	25 cy
D5 Little Valley South					
3100521VC001	USFS	4,421,278	379,628	Backfill (Equipment)	15 cy
3100528HC001	USFS	4,420,758	379,194	None	na
3100528HC002	USFS	4,420,776	379,244	None	na
3100528IO001	USFS	4,420,906	379,064	Bat Gate	20 sf
3100528PR001	Private	4,420,710	379,221	None	na
3100528PR002	Private	4,420,705	379,209	None	na
3100528PR003	Private	4,420,704	379,199	None	na
3100528PR004	USFS	4,420,859	378,618	None	na
3100528PR005	USFS	4,420,848	378,609	None	na
3100528PR006	USFS	4,420,767	379,277	None	na
3100528VO001	USFS	4,420,853	378,615	Shaft Grate	88 sf
3100529IO001	USFS	4,421,012	378,492	Bat Gate	30 sf
3100529IO002	USFS	4,421,054	378,442	Backfill (Hand)	20 cy
3100529PR001	USFS	4,421,024	378,485	None	na
3100529PR002	USFS	4,421,052	378,486	None	na

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
3100529VC001	USFS	4,421,055	378,419	None	na
3100529VC002	USFS	4,421,055	378,432	None	na
D6 Joes Canyon					
3100624HO001	USFS	4,422,120	374,031	Wall (Block)	32 sf
3100624HO002	USFS	4,422,138	374,084	Bat Gate	24 sf
3100624HO003	USFS	4,421,622	374,461	Backfill (Equipment)	15 cy
3100624PR001	USFS	4,421,435	374,572	None	na
3100624VC001	USFS	4,422,148	374,096	None	na
3100624VO001	USFS	4,421,626	374,480	Backfill (Equipment)	40 cy
3100624VO002	USFS	4,422,148	374,105	Backfill (Hand)	20 cy
D7 Sheeprock					
3100623HC001	USFS	4,421,701	372,785	None	na
3100623HC002	USFS			NA	na
3100623IO001	USFS	4,421,582	372,842	Backfill (Hand)	25 cy
3100623PR001	USFS	4,421,571	372,823	None	na
3100623VC001	USFS	4,421,600	372,766	None	na
D8 Hard to Beat South					
3100621PR001	USFS	4,421,960	369,663	None	na
3100622HO001	USFS	4,421,853	370,863	Wall (Block)	48 sf
3100622HO002	USFS	4,421,742	371,096	Bat Gate	56 sf
D9 Hard to Beat North					
3100614HC001	USFS	4,423,689	373,112	None	na
3100614HC002	USFS	4,422,955	373,234	None	na
3100614HC003	USFS	4,423,670	373,005	None	na
3100614HO001	USFS	4,423,659	373,026	None	na
3100614HO002	USFS	4,423,379	372,209	Wall (Block)	42 sf
3100614VC001	USFS	4,423,651	372,950	None	na
3100614VC002	USFS	4,423,619	373,131	None	na
3100614VO001	USFS	4,423,613	372,956	Backfill (Equipment)	10 cy
3100615HC002	USFS	4,423,248	371,968	None	na
3100615HO001	USFS	4,423,223	371,963	Bat Gate	30 sf
D10 Cottonwood					
3100615HC001	Private	4,423,339	370,878	None	na
3100615HC003	USFS/ Private	4,423,465	371,402	None	na
3100615HC004	Private	4,423,735	371,013	None	na
3100615VC001	Private	4,423,737	370,990	None	na
3100615VC002	Private	4,423,750	370,977	None	na

AMR Site ID	Land Status	UTM Northing (mN)	UTM Easting (mE)	Proposed Closure (11/12/04)	Est. Qty
D11 South Pine					
3100609HC001	Private	4,424,999	369,723	None	na
3100609HC002	Private	4,425,005	369,809	None	na
3100609HC003	USFS	4,424,904	369,467	None	na
3100609HC004	USFS	4,425,232	369,227	None	na
3100609HO001	Private	4,425,040	369,755	Wall (Block)	49 sf
3100609IO001	Private	4,425,164	369,492	Shaft Grate	64 sf
3100609VO001	USFS	4,425,227	369,206	Backfill (Hand)	15 cy
D12 South Oak Brush					
3100607HC001	USFS	4,425,015	366,724	None	na
3100607HC002	USFS	4,425,064	366,342	None	na
3100607HC003	USFS	4,426,058	366,738	None	na
3100607HC004	USFS	4,426,074	366,767	None	na
3100607HO001	USFS	4,425,027	366,700	Bat Gate (CMP)	1 ls
3100607HO002	USFS	4,425,994	366,731	Backfill (Equipment)	50 cy
3100607HO003	USFS	4,426,074	366,716	Wall (Block)	36 sf
3100607HO004	USFS	4,425,475	366,438	Backfill (Equipment)	17 cy
3100607HO005	USFS	4,426,042	366,718	Backfill (Equipment)	15 cy
3100607HO006	USFS	4,425,274	366,308	Backfill (Hand)	1 cy
3100607PR001	USFS	4,425,263	366,753	None	na
3100607PT001	USFS	4,425,500	366,441	None	na
3100607PT002	USFS	4,425,505	366,444	None	na
3100607VC001	USFS	4,425,493	366,438	None	na
3100607VO001	USFS	4,425,222	366,746	Backfill (Equipment)	60 cy
3100607VO002	USFS	4,425,997	366,783	Backfill (Equipment)	200 cy
3100607VO003	USFS	4,425,473	366,440	Backfill (Equipment)	50 cy
3100607VO004	USFS	4,425,043	366,463	Backfill (Equipment)	90 cy
3100607VO005	USFS	4,425,030	366,482	Backfill (Equipment)	110 cy
Sites not in a Detail area					
3090620VO001	USFS	4,431,309	368,147	None	na
3090627IO001	USFS	4,428,532	371,836	Backfill (Equipment)	60 cy
3090627PR001	USFS	4,428,532	371,824	None	na
3090711VO001	USFS	4,433,556	363,593	Backfill (Hand)	30 cy
3100503HC001	USFS	4,426,278	381,720	None	na
3100511HO001	USFS	4,424,615	382,661	Bat Gate	24 sf
3100524HO001	USFS	4,422,477	384,515	None	na

Summary of Proposed Closures:

Sites on National Forest System land are shaded.

Backfill (Hand) – 26 closures, total of 322 cubic yards (range: 1-30 cy)

3090711VO001	3100609HC007	3100610HO007	3100610IO004
3100517HO001	3100609VO001	3100610HO008	3100610IO006
3100518HO002	3100610HO001	3100610HO009	3100610PR005
3100518IO001	3100610HO002	3100610HO018	3100623IO001
3100518VO002	3100610HO003	3100610HO020	3100624VO002
3100529IO002	3100610HO004	3100610IO002	
3100607HO006	3100610HO006	3100610IO003	

Backfill (Equipment) – 17 closures, total of 857 cubic yards (range 10-200 cy)

3090627IO001	3100607HO002	3100607VO003	3100624HO003
3100518VO001	3100607HO004	3100607VO004	3100624VO001
3100521VC001	3100607HO005	3100607VO005	
3100522VO001	3100607VO001	3100610VO001	
3100604HO002	3100607VO002	3100614VO001	

Bat Gate – 11 closures

3100511HO001	3100528IO001	3100609HO003	3100622HO002
3100518HO001	3100529IO001	3100610HO012	3100624HO002
3100521HO001	3100607HO001	3100615HO001	

Shaft Grate – 8 closures

3100521HO002	3100528VO001	3100610HO005	3100610IO005
3100521VO001	3100609IO001	3100610HO016	3100613VO001

Wall (Stone or Block) – 11 closures

3100520HO001	3100610HO010	3100610HO017	3100622HO001
3100607HO003	3100610HO013	3100613HC010	3100624HO001
3100609HO001	3100610HO015	3100614HO002	

Summary of Proposed Closures, continued

None (no closure required or proposed) – 118 sites

3090620VO001	3100602HO003	3100610HC004	3100613HC001
3090627PR001	3100602PR001	3100610HC005	3100613HC002
3100503HC001	3100602PR002	3100610HC006	3100613HC003
3100517SH001	3100602SH001	3100610HC007	3100613HC004
3100518HC001	3100602SH002	3100610HO011	3100613HC005
3100518PR001	3100603PR001	3100610HO014	3100613HC006
3100518VC001	3100604HC001	3100610HO019	3100613HC007
3100521VO002	3100607HC001	3100610IO001	3100613HC008
3100522HC001	3100607HC002	3100610PR001	3100613HC009
3100522HO001	3100607HC003	3100610PR002	3100613PT001
3100522PR001	3100607HC004	3100610PR003	3100614HC001
3100522PR002	3100607PR001	3100610PR004	3100614HC002
3100522PR003	3100607PT001	3100610PR007	3100614HC003
3100522TR001	3100607PT002	3100610PR008	3100614HO001
3100522TR002	3100607VC001	3100610PR009	3100614VC001
3100524HO001	3100609HC001	3100610PR010	3100614VC002
3100528HC001	3100609HC002	3100610PR011	3100615HC001
3100528HC002	3100609HC003	3100610PR012	3100615HC002
3100528PR001	3100609HC004	3100610PR013	3100615HC003
3100528PR002	3100609HC005	3100610PR014	3100615HC004
3100528PR003	3100609HC006	3100610PR015	3100615VC001
3100528PR004	3100609HC008	3100610PR016	3100615VC002
3100528PR005	3100609HC008a?	3100610PR017	3100621PR001
3100528PR006	3100609HC009	3100610PR018	3100623HC001
3100529PR001	3100609HO002	3100610PR019	3100623PR001
3100529PR002	3100609PR001	3100610PR020	3100623VC001
3100529VC001	3100609PR002	3100610PR021	3100624PR001
3100529VC002	3100610HC001	3100610PR022	3100624VC001
3100602HO001	3100610HC002	3100610PR023	
3100602HO002	3100610HC003	3100611HC001	

NA (Not Applicable) – 3 sites (obsolete or invalid site ID's)

3100604HO001
3100610PR006
3100623HC002

Total: 194 sites, 73 closures (50 closures on NFS land)

APPENDIX C

Special Status Species

This table lists species that are protected by law or policy and that may potentially occur in the Vernon Sheeprocks Project area. See the notes at end of table for an explanation of the column headings and abbreviations. See the numbered notes at the end of each taxonomic division for explanations of the numbers in the last column. Shaded species are carried forward and discussed in the body of this environmental assessment.

Species	FS R4 Status	Uinta NF Status	Uinta NF MIS	USFWS To/Ju County	UDWR 02/27/04 Tooele Co.	UDWR 02/27/04 Juab Co.	UNHP 06/05/03 Project	Notes
Mammals								
Pygmy Rabbit *Brachylagus idahoensis*	FS-Sens				SPC	SPC		1, 6
American Beaver *Castor canadensis*			X					1, 4
Western/Townsend's Big-eared Bat *Corynorhinus townsendii pallescens*	FS-Sens	X			SPC	SPC		1, 2
Spotted Bat *Euderma maculatum*	FS-Sens	X						1, 2
North American Lynx *Lynx canadensis*	F-Thr	X						1, 5
Fisher *Martes pennanti*	FS-Sens	X						1, 3, 5
Dark Kangaroo Mouse *Microdipodops megacephalus*					SPC	SPC		1
Fringed Myotis *Myotis thysanodes*						SPC		1, 2
Preble's Shrew *Sorex preblei*					SPC			1
Brown Bear *Ursus arctos*	F-Thr					S-ESA		1, 3
Kit Fox *Vulpes macrotis*					SPC	SPC		1

Notes:
1. Utah Natural Heritage Program has no record of occurrence in project area.
2. Of the three bats listed above, only Townsend's were found by the underground surveys. Bat-compatible closures and mitigation measures will protect all bat species.
3. Known or believed to be extirpated from Utah.
4. UDOGM/AMRP has not observed beaver on any of the perennial streams near the mines.
5. Preferred habitat (mature mountain forest and/or riparian) absent or uncommon near mines.
6. Work areas in appropriate habitat (sagebrush) will be surveyed for burrows prior to construction.

For all mammals listed, direct loss of habitat is the primary mechanism of harm from the project, so bats have the most potential for harm (see Note 2 for bat mitigation measures). Minimizing the area of ground/vegetation

Species	FS R4 Status	Uinta NF Status	Uinta NF MIS	USFWS To/Ju County	UDWR 02/27/04 Tooele Co.	UDWR 02/27/04 Juab Co.	UNHP 06/05/03 Project	Notes
disturbance and preserving mine water discharge (when present) are the chief methods of avoiding adverse effects to mammals.								
Birds								
Northern Goshawk *Accipiter gentiles*	FS-Sens	X	X		CS	CS		1, 4
Grasshopper Sparrow *Ammodramus savannarum*					SPC			1
Short-eared Owl *Asio flammeus*					SPC	SPC	X	2
Burrowing Owl *Athene cunicularia*					SPC	SPC	X	2, 5
Ferruginous Hawk *Buteo regalis*					SPC	SPC	X	2
Swainson's Hawk *Buteo swainsoni*							X	2, 6
Greater Sage-grouse *Centrocercus urophasianus*	FS-Sens	X			SPC	SPC	X	
Lesser Nighthawk *Chordeiles acutipennis*							X	2
Yellow-billed Cuckoo *Coccyzus americanus*				F-Cand	S-ESA	S-ESA		1, 4
Bobolink *Dolichonyx oryzivorus*					SPC	SPC		1, 5
Peregrine Falcon *Falco peregrinus anatum*	FS-Sens	X						1, 6
Whooping Crane *Grus Americana*	F-End	O						1, 3
Bald Eagle *Haliaeetus leucocephalus*	F-Thr	X		F-Thr	S-ESA	S-ESA	X	2, 3
Lewis's Woodpecker *Melanerpes lewis*					SPC	SPC		1
Long-billed Curlew *Numenius americanus*					SPC	SPC	X	2, 5
Flammulated owl *Otus flammeoulus*	FS-Sens	X						1, 4
American White Pelican *Pelecanus erythrorhynchos*					SPC	SPC		1, 3
Three-toed Woodpecker *Picoides tridactylus*	FS-Sens	X	X			SPC		1, 4

Notes:
1. Utah Natural Heritage Program has no record of occurrence in project area.
2. UDWR has no occurrence records near any of the project mines, and only the two hawks have records inside the project boundary. All of the recorded occurrences for these six species are in the valleys north of the Sheeprock range. Most of the occurrence descriptions have very generalized locations (e.g. “Skull Valley” or “Tooele Valley”). While there are no specific known occurrences of these species near proposed work areas, there is suitable

Species	FS R4 Status	Uinta NF Status	Uinta NF MIS	USFWS To/Ju County	UDWR 02/27/04 Tooele Co.	UDWR 02/27/04 Juab Co.	UNHP 06/05/03 Project	Notes
habitat and the potential for them to occur. 3. Preferred habitat rare or uncommon in overall project area and absent near mines. No nesting anywhere near project. May occur as isolated transients (especially eagles in winter). Large, distinctive birds that are readily identified and avoided. 4. Preferred habitat (mature mountain forest and/or riparian) absent or uncommon near mines. 5. Preferred habitat (wet meadow, open grassland, cultivated fields) absent near mines. 6. Species occurred on the 10/24/02 state sensitive species list, but is not listed on the 02/27/04 list. For all birds, construction late in season after fledging will avoid interference with nesting and reproduction. If there is breeding season construction, pre-construction surveys will check for nesting raptors. Active nests will be treated in accordance with raptor guidelines (Romin & Muck, 1999) and work rescheduled. Minimizing the area of ground/vegetation disturbance and preserving mine water discharge (when present) are the chief methods of avoiding adverse effects on nonraptors.								
Herptiles								
Western Toad *Bufo boreas*						SPC		1, 2
Milksnake *Lampropeltis triangulum*							X	3
Columbia Spotted Frog *Rana luteiuentris*	FS-Sens	X			CS	CS		1, 2
Notes: 1. Utah Natural Heritage Program has no record of occurrence in project area. 2. Habitat is springs/seeps or aquatic. 3. Species occurred on the 10/24/02 state sensitive species list, but is not listed on the 02/27/04 list. Most project mines are in dry uplands with ephemeral drainage. Only a few mines have water discharge. For all of the herps listed, minimizing the area of ground/vegetation disturbance and preserving mine water discharge (when present) are the chief methods of avoiding adverse effects.								
Fish								
June Sucker *Chasmistes liorus*	F-End	O						1, 3
Leatherside Chub *Gila copei*						SPC		1
Humpback Chub *Gila cypha*	F-End	O						1, 2
Bonytail Chub *Gila elegans*	F-End	O						1, 2
Least Chub *Iotichthys phlegethontis*					CS	CS		1
Colorado River Cutthroat Trout *Oncorhynchus clarki pleuriticus*	FS-Sens	X	X					1, 2
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*	FS-Sens	X	X		CS	CS		1
Colorado Squawfish/Pikeminnow *Ptychocheilus lucius*	F-End	O						1, 2
Razorback Sucker *Xyrauchen texanus*	F-End	O						1, 2
Notes: 1. Utah Natural Heritage Program has no record of occurrence in project area.								

Species	FS R4 Status	Uinta NF Status	Uinta NF MIS	USFWS To/Ju County	UDWR 02/27/04 Tooele Co.	UDWR 02/27/04 Juab Co.	UNHP 06/05/03 Project	Notes
2. Restricted to the Colorado River system. 3. Restricted to Utah Lake and Provo River. Most project mines are in dry uplands with ephemeral drainage. No proposed work is near a perennial stream with fish. For all fish in the Bonneville/Great Basin watershed, the proposed watershed remediation work will have indirect long-term beneficial effects by improving water quality.								
Invertebrates (Snails)								
California Floater *Anodonta californiensis*					SPC	SPC		1, 2
Southern Tightcoil *Ogaridiscus subrupicola*					SPC			1, 3
Eureka Mountainsnail *Oreohelix eurekensis*					SPC	SPC		1
Lyrate Mountainsnail *Oreohelix haydeni*					SPC			1
Utah Physa *Physella utahensis*					SPC	SPC		1, 2
Southern Bonneville Springsnail *Pyrgulopsis transversa*					SPC			1, 4
Northwest Bonneville Pyrg *Pyrgulopsis variegata*					SPC			1, 4
Notes: 1. Utah Natural Heritage Program has no record of occurrence in project area. 2. Aquatic species. 3. Known from a single collection locality. 4. Habitat is springs/seeps. Based on range maps, collection locales, and habitat affinities, only the Eureka Mountainsnail has much likelihood of occurring in the project area. For all of the snails listed, minimizing the area of ground/vegetation disturbance and preserving mine water discharge (when present) are the chief methods of avoiding adverse effects.								
Plants								
Barneby Woody Aster *Aster kingii* var. *barnebyana*	FS-Sens	X						1, 2
Pohl Milkvetch *Astragalus lentiginosus* var. *pohlii*							X	
Slender Moonwort *Botrychium lineare*	FS-Sens	?						1, 6, 7
Dainty Moonwort *Botrychium crenulatum*	FS-Sens	X						1, 6
Coulter Biscuitroot *Cymopterus coulteri*							X	
Rockcress Draba *Draba densifolia apiculata*	FS-Sens	X						1, 4
Wasatch Jamesia *Jamesia americana macrocalyx*	FS-Sens	X						1, 3
Garrett Bladderpod *Lesquerella garrettii*	FS-Sens	X						1, 4

Species	FS R4 Status	Uinta NF Status	Uinta NF MIS	USFWS To/Ju County	UDWR 02/27/04 Tooele Co.	UDWR 02/27/04 Juab Co.	UNHP 06/05/03 Project	Notes
Clay Phacelia *Phacelia argillacea*	F-End	X						1, 5
Ute Ladies'-tresses *Spiranthes diluvialis*	F-Thr	X		F-Thr				1

Notes:
1. Utah Natural Heritage Program has no record of occurrence in project area.
2. Endemic to Millard and Juab Counties.
3. Habitat mostly on cliffs.
4. Habitat high elevation alpine tundra, sub-alpine meadows, conifer communities above 9,000 feet.
5. Endemic to Utah County.
6. Habitat is damp soils to wetlands.
7. Speculative in Utah.

For all of the plants listed, minimizing the area of ground/vegetation disturbance and preserving mine water discharge (when present) are the chief methods of avoiding adverse effects.

Explanation of Column Headings and Abbreviations Used in this Table

FS R4 Status
US Forest Service Region 4 (Intermountain) list of special status species.
Source: Intermountain Region proposed, endangered, threatened, and sensitive species: known/suspected distribution by forest (December 2003). (MS Word document "r4_tes_lst_03.doc" sent by e-mail from Duane Resare, UNF, to Chris Rohrer 05/12/04; pygmy rabbit added per e-mail from Reese Pope, UNF, to Duane Resare 09/23/04, forwarded to Chris Rohrer, 09/24/04)

F-End Federal Endangered (designated by USFWS under ESA)
F-Thr Federal Threatened (designated by USFWS under ESA)
F-Pro Federal Proposed (designated by USFWS under ESA)
FS-Sens Forest Service Sensitive (designated by FS)

Uinta NF Status
Species on the FS R4 list known or suspected to occur on the Uinta National Forest
Source: Intermountain Region proposed, endangered, threatened, and sensitive species: known/suspected distribution by forest (December 2003). (MS Word document "r4_tes_lst_03.doc" sent by e-mail from Duane Resare, UNF, to Chris Rohrer 05/12/04; pygmy rabbit added per e-mail from Reese Pope, UNF, to Duane Resare 09/23/04, forwarded to Chris Rohrer, 09/24/04)
The Vernon Sheeprocks Project (Vernon Division of Wasatch NF) is administered by the Uinta NF and uses the Uinta NF species listings (per 05/17/04 e-mail from Karen Hartman, UNF, to Chris Rohrer).

X known distribution species and/or habitat
? suspected or potential habitat
O offsite impacts (e.g. downstream)

UNF MIS (Management Indicator Species)
Species identified in the USFS Uinta NF Forest Plan to fulfill requirements of 36CFR Chapter II - 219.19.
Source: E-mail from Karen Hartman, UNF, to Chris Rohrer on 05/17/04.

USFWS To/Ju County
Federally listed (ESA) species known or suspected to occur in Tooele or Juab County
Source: http://dwrcdc.nr.utah.gov/ucdc/ViewReports/te_cnty.pdf (accessed 04/28/03)
Yellow-billed cuckoo listed as "possibly" occurring in Tooele County

Ute Ladies'-tresses listed as "possibly" occurring in Juab County.

F-Thr Federal Threatened
F-Cand Federal Candidate

UDWR- Tooele/Juab County (02/27/04)
State listed species known or suspected to occur in Tooele or Juab County on the Feb. 27, 2004 version of the state sensitive species list Although none of the project area is in Juab County, Juab County listings are included for analysis here because of the proximity of the project area to Juab County.
Source: http://dwrcdc.nr.utah.gov/ucdc/ViewReports/sscounty.pdf (accessed 05/25/04)

S-ESA Federal listed or candidate species under ESA
SPC Species of concern
CS Conservation Species with special management under a Conservation Agreement

UNHP- Project (06/05/03)
State sensitive species with occurrences inside or in the general vicinity of the Vernon Sheeprocks Project.
Source: Utah Natural Heritage Program database (Excel file "vernon.dbf" sent by e-mail from Anne Axel, UDWR, to Chris Rohrer on 06/05/03). This list includes some species that were on the 10/24/02 version of the state sensitive species list, which is superseded by the 2/27/04 sensitive species list.

UNHP data on the presence or absence of these species on the Uinta National Forest are corroborated by survey findings of Forest Service biologists.

Notes
Refers to the numbered notes at the end of each taxonomic section.

Notes on nomenclature:
The UDWR lists use: *Corynorhinus townsendii* = Townsend's big-eared bat.
The USFS list uses: *Corynorhinus townsendii pallescens* = Western big-eared bat.
The UDWR lists use: *Ursus arctos*. = Brown (Grizzly) bear.
The USFS list uses: *Ursus arctos horribilis* = Grizzly bear.
The relevant Yellow-billed cuckoo subspecies in Utah is *Coccyzus americanus occidentalis.*
The UDWR lists use: *Ptychocheilus lucius* = Colorado pikeminnow.
The moonworts are variably spelled *Botrychium* or *Botrichium* (Welsh uses both in *A Utah Flora*).

APPENDIX D

Clearance Letters

Concurrence letter from the Utah State Historic Preservation Office for National Historic Preservation Act Section 106 compliance:

James L. Dykmann to J. Chris Rohrer, Oct. 29, 2004

Concurrence letter from the U.S. Fish and Wildlife Service for Endangered Species Act Section 7 compliance:

Henry R. Maddux to J. Chris Rohrer, Sept. 29, 2004

The determinations made in both of these letters are consistent with the effects disclosed in this environmental assessment.

State of Utah

OLENE S. WALKER
Governor

GAYLE McKEACHNIE
Lieutenant Governor

Department of Community and Economic Development
DAVID HARMER
Executive Director

Division of State History / Utah State Historical Society
PHILIP F. NOTARIANNI
Division Director

October 29, 2004

J. Chris Rohrer
Senior Reclamation Specialist
Abandoned Mine Reclamation Program
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City UT 84114-5801

RE: Vernon Sheeprocks Project AMR/045/910/L

In Reply Please Refer to Case No. 03-2492

Dear Chris:

The Utah State Historic Preservation Office received the referenced information on October 25, 2004. After consideration of the consultation request in behalf of the Division of Oil, Gas & Mining, the Utah Preservation Office provides the following comments per §36CFR800.

Section 106 Consultation OSM; USHPO concurs with the determinations of No Adverse Effect and No Historic Properties Affected for the undertaking.

This information is provided on request to assist with Section 106 responsibilities as specified in §36CFR800. My email address is: jdykman@utah.gov

As ever,

James L. Dykmann
Deputy State Historic
Preservation Officer - Archaeology

JLD:03-2492 OSM/DOEx13/NAEx13/NPx37/NPAx37

United States Department of the Interior

FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE

2369 WEST ORTON CIRCLE, SUITE 50

WEST VALLEY CITY, UTAH 84119

In Reply Refer To

FWS/R6

ES/UT

04-1464

September 29, 2004

Chris Rohrer

Senior Reclamation Specialist

Abandoned Mine Reclamation Program

Utah Division of Oil, Gas & Mining

Box 145801

Salt Lake City, Utah 84114-5801

RE: Vernon Sheeprocks Project, 80 Mines Abandoned in Tooele

Dear Mr. Rohrer:

Based on information provided in your letter of September 20, 2004, we concur with your "no effect" determination for threatened and endangered species and critical habitat. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Only a Federal agency can enter into formal Endangered Species Act section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

We appreciate your interest in conserving endangered species. If further assistance is needed or you have any questions, please contact Chris Witt, at (801) 975-3330 extension 133.

Sincerely,

Henry R. Maddux

Henry R. Maddux

Utah Field Supervisor

RECEIVED

OCT 05 2004

DIV. OF OIL, GAS & MINING

APPENDIX E

Project Maps

See Part 1.04 (Project Organization and Mapping) in Section 0300: Specific Site Requirements of the draft construction specifications (Appendix A of this environmental assessment) for a description of the map layout and organization used for this project.

See Part 1.03.C in Section 0300: Specific Site Requirements of the construction specifications (Appendix A of this environmental assessment) for a description of the site identification system used to label the mine sites on the maps.

The mine closure color-coding for the 1:48,000 scale subarea maps is the same as that in the legend on the 1:100,000 scale proposed mine closure map (Map 2).

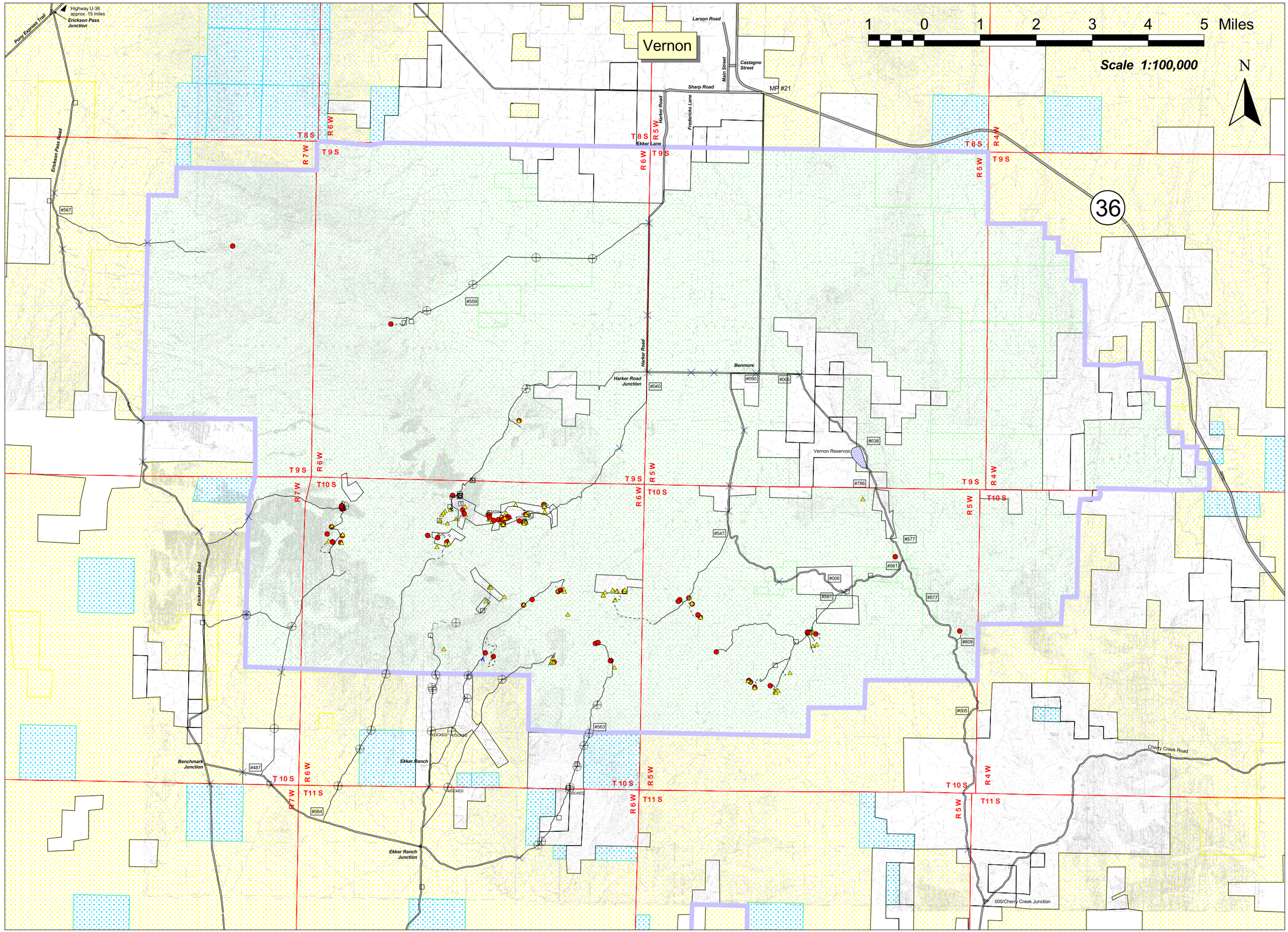
Map No.	Scale	Description
1	1:100k	Project Area: Location of Mines
2	1:100k	Project Area: Proposed Mine Closure Methods
3	1:100k	Project Area: Proposed Watershed Remediation Sites
4	1:100k	Project Area: National Register Eligible Sites
5	1:100k	Project Area: Roadless Areas
6	1:100k	Project Area: Index to Subarea Maps
7	1:100k	Project Area: Index to Detail Maps
S1	1:48k	Subarea Map: Copper Springs
S2	1:48k	Subarea Map: East Government/North Oak Brush/Harker
S3	1:48k	Subarea Map: Bennion
S4	1:48k	Subarea Map: Vernon Creek/Little Valley
S5	1:48k	Subarea Map: Joes/Hard to Beat
S6	1:48k	Subarea Map: South Pine/South Oak Brush
D1	1:12k	Detail Map: North Oak Brush
D2	1:12k	Detail Map: Harker Canyon
D3	1:12k	Detail Map: Bennion
D4	1:12k	Detail Map: Little Valley North
D5	1:12k	Detail Map: Little Valley South
D6	1:12k	Detail Map: Joes Canyon
D7	1:12k	Detail Map: Sheeprock
D8	1:12k	Detail Map: Hard to Beat South
D9	1:12k	Detail Map: Hard to Beat North
D10	1:12k	Detail Map: Cottonwood
D11	1:12k	Detail Map: South Pine
D12	1:12k	Detail Map: South Oak Brush

This table shows the nested relationship between the subarea and detail maps:

Subarea Maps		**Detail Maps**	
Map Scale: 1:48,000 or 1 inch = 4000 feet Map Layout: 8½” x 11”, portrait orientation		Map Scale: 1:12,000 or 1 inch = 1000 feet Map Layout: 8½” x 11”, landscape orientation	
Subarea Number	Subarea Name	Detail Number	Detail Name
S1	Copper Springs	None	None
S2	East Gov’t/No. Oak Brush/Harker	D1	North Oak Brush
		D2	Harker Canyon
S3	Bennion	D3	Bennion
S4	Vernon Ck/Little Valley	D4	Little Valley North
		D5	Little Valley South
S5	Joes/Hard to Beat	D6	Joes Canyon
		D7	Sheeprock
		D8	Hard to Beat South
		D9	Hard to Beat North
		D10	Cottonwood
S6	So. Pine/So. Oak Brush	D11	South Pine
		D12	South Oak Brush

Vernon Sheeprocks Project Overview Map

Map 1



Land Status
- USA - FOREST SERVICE
- USA - BLM
- STATE OF UTAH
- PRIVATE

Mine Openings
- HO, IO, VO
- HC, IC, VC, PR, PT, SH, TR

Misc. Point Features
- Cattle Guard
- Gate
- Structure

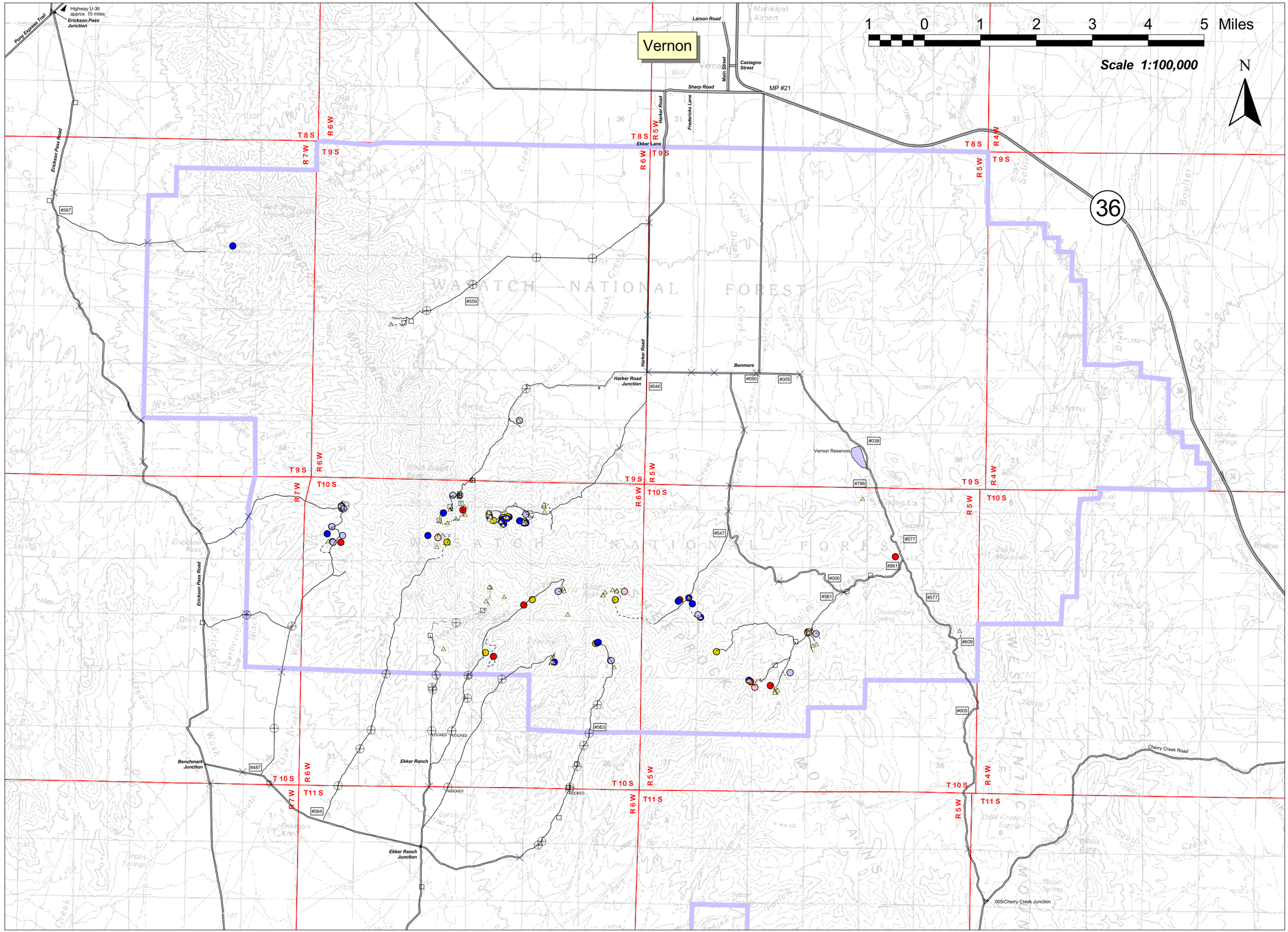
Primary Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot

Project Boundary

Base Topography:
Rush Valley & Lynndyl
100k USGS Quadrangles

Vernon Sheeprocks Project Overview Map

Map 2



Closure Spec 11/12/04

- Backfill (Hand)
- Backfill (Equipment)
- Bat Gate
- Shaft Grate
- Wall (Stone/Block)
- None
- NA

Misc. Point Features

- Cattle Guard
- Gate
- Structure

Primary Roads

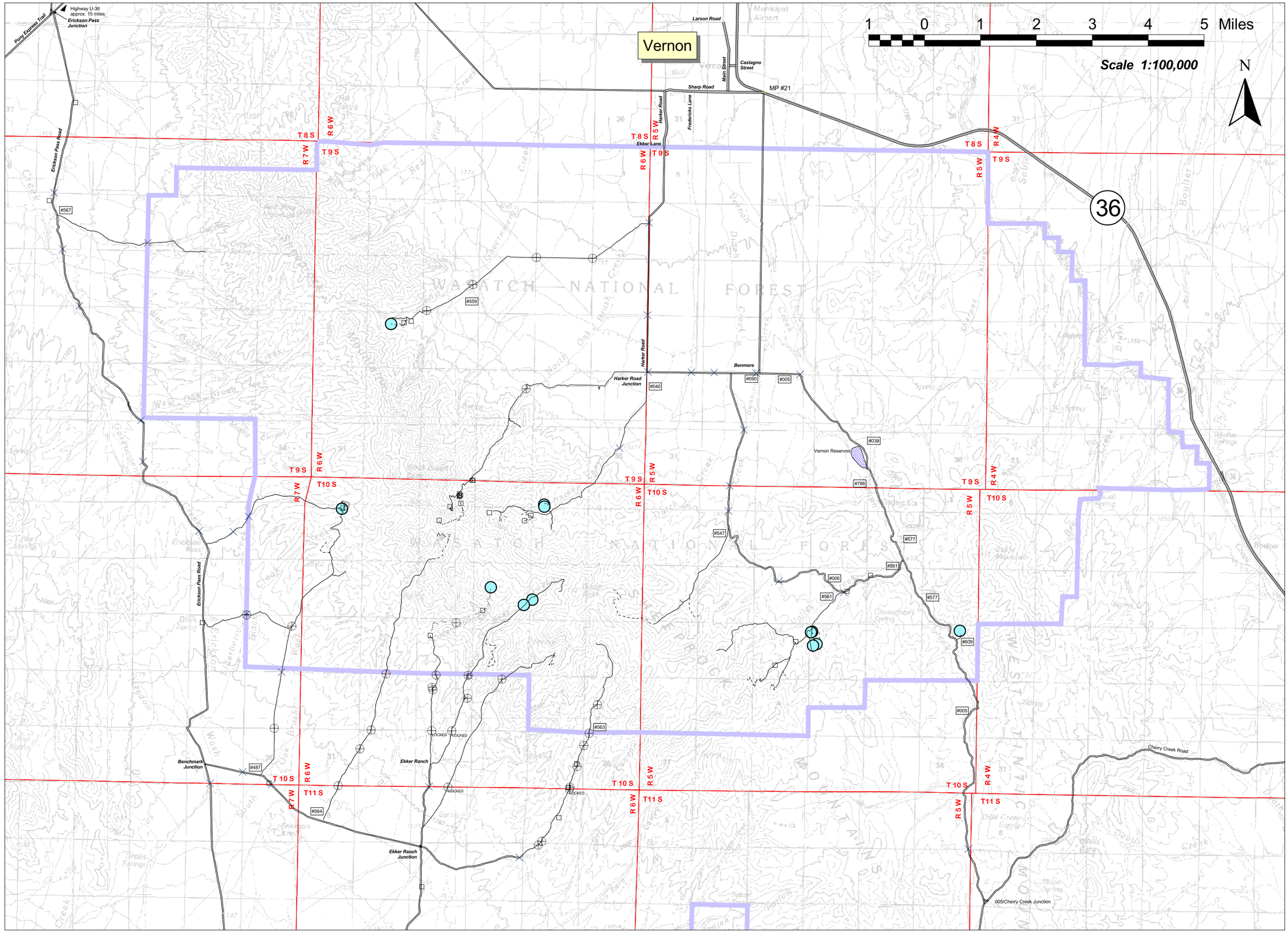
- Paved
- 2WD
- 4WD
- ATV
- Foot

Project Boundary

Base Topography:
Rush Valley & Lynndyl
100k USGS Quadrangles

Vernon Sheeprocks Project Overview Map

Map 3



Proposed Watershed Remediation Site

Misc. Point Features

- Cattle Guard
- Gate
- Structure

Primary Roads

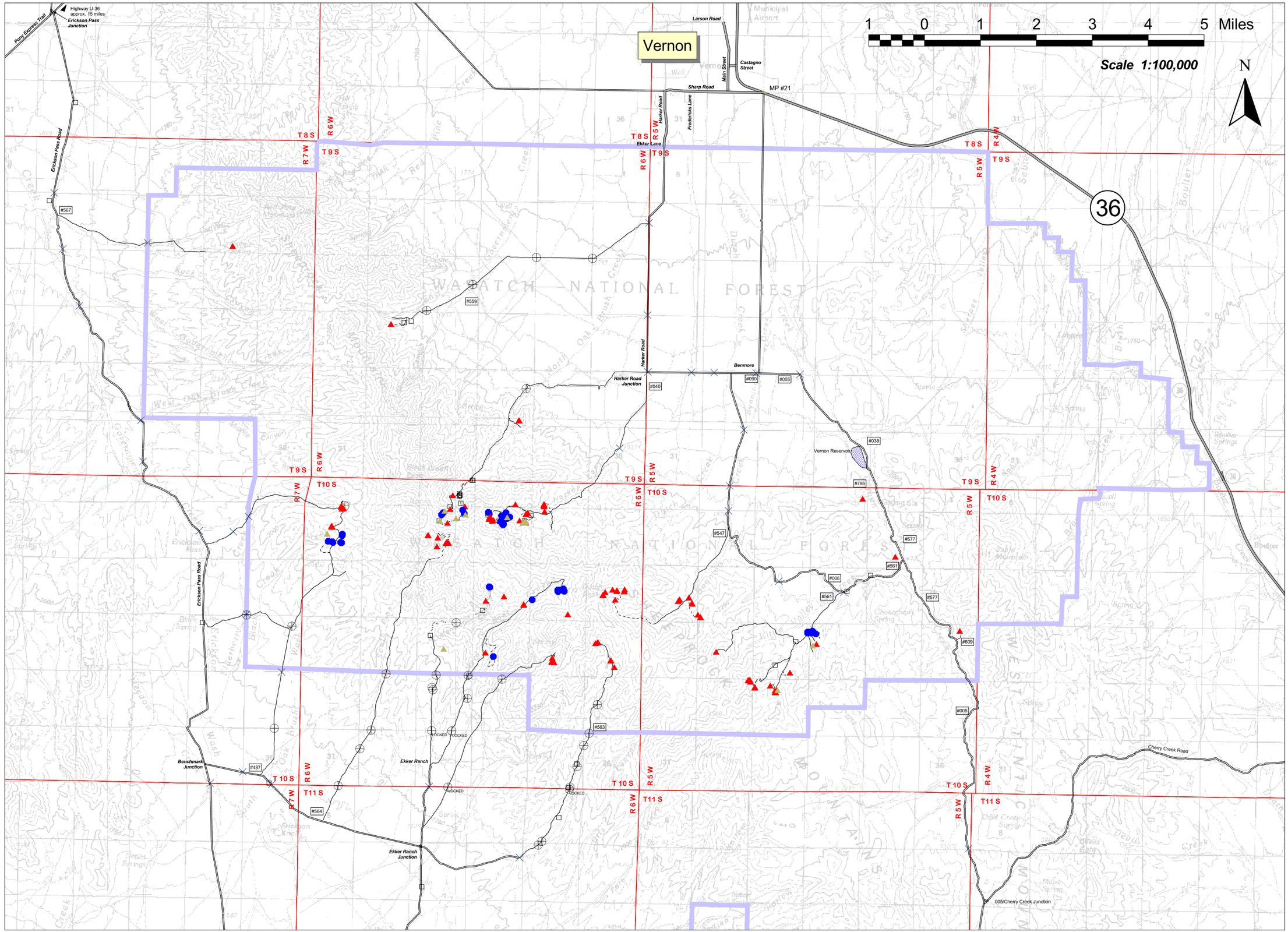
- Paved
- 2WD
- 4WD
- ATV
- Foot

Project Boundary

Base Topography:
Rush Valley & Lynndyl
100k USGS Quadrangles

Vernon Sheeprocks Project Overview Map

Map 4



National Register Status

- Eligible
- Not Eligible
- Undetermined

Mine Openings

- HO, IO, VO
- HC, IC, VC, PR, PT, SH, TR

Misc. Point Features

- Cattle Guard
- Gate
- Structure

Primary Roads

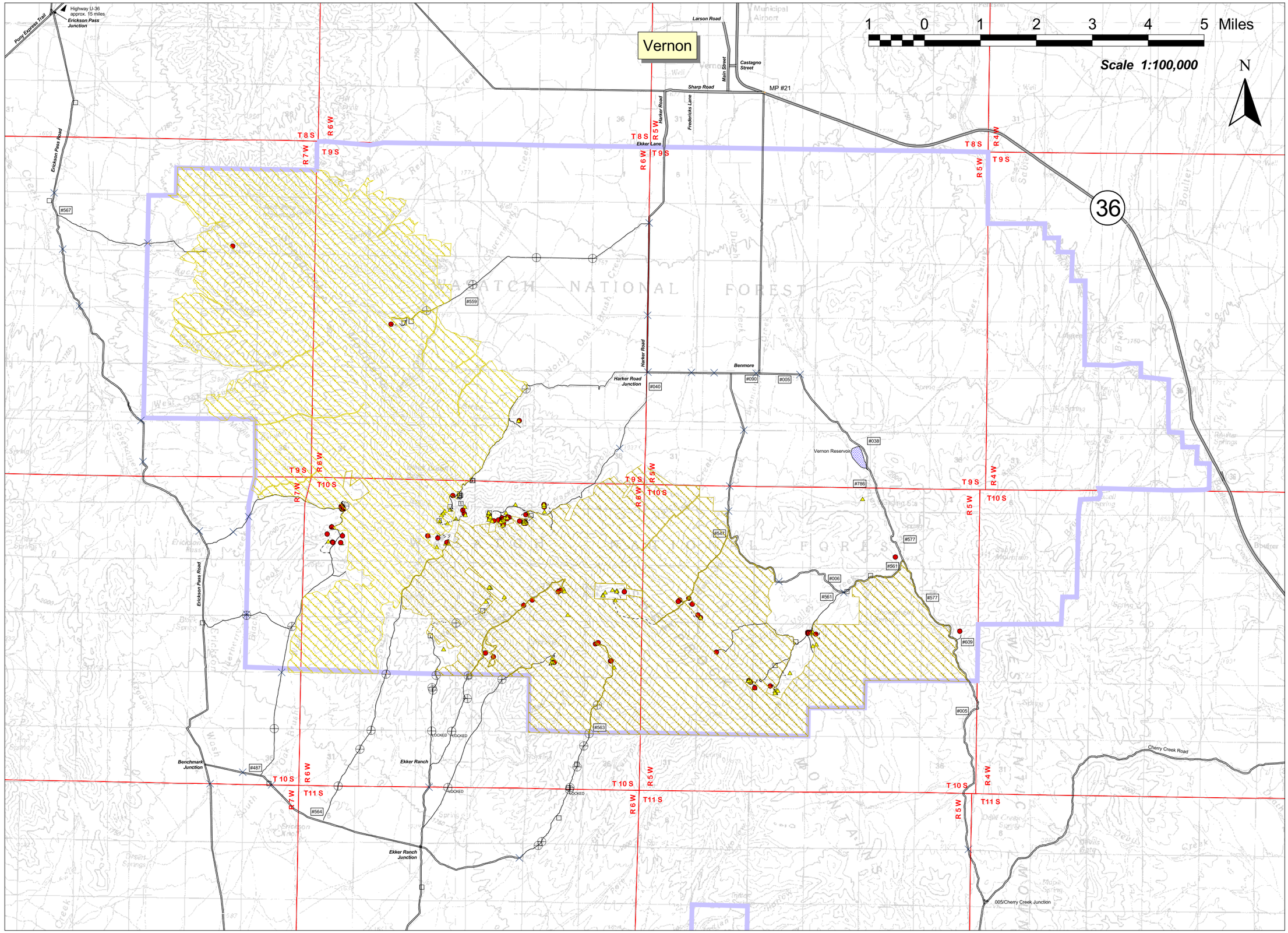
- Paved
- 2WD
- 4WD
- ATV
- Foot

Project Boundary

Base Topography:
Rush Valley & Lynndyl
100k USGS Quadrangles

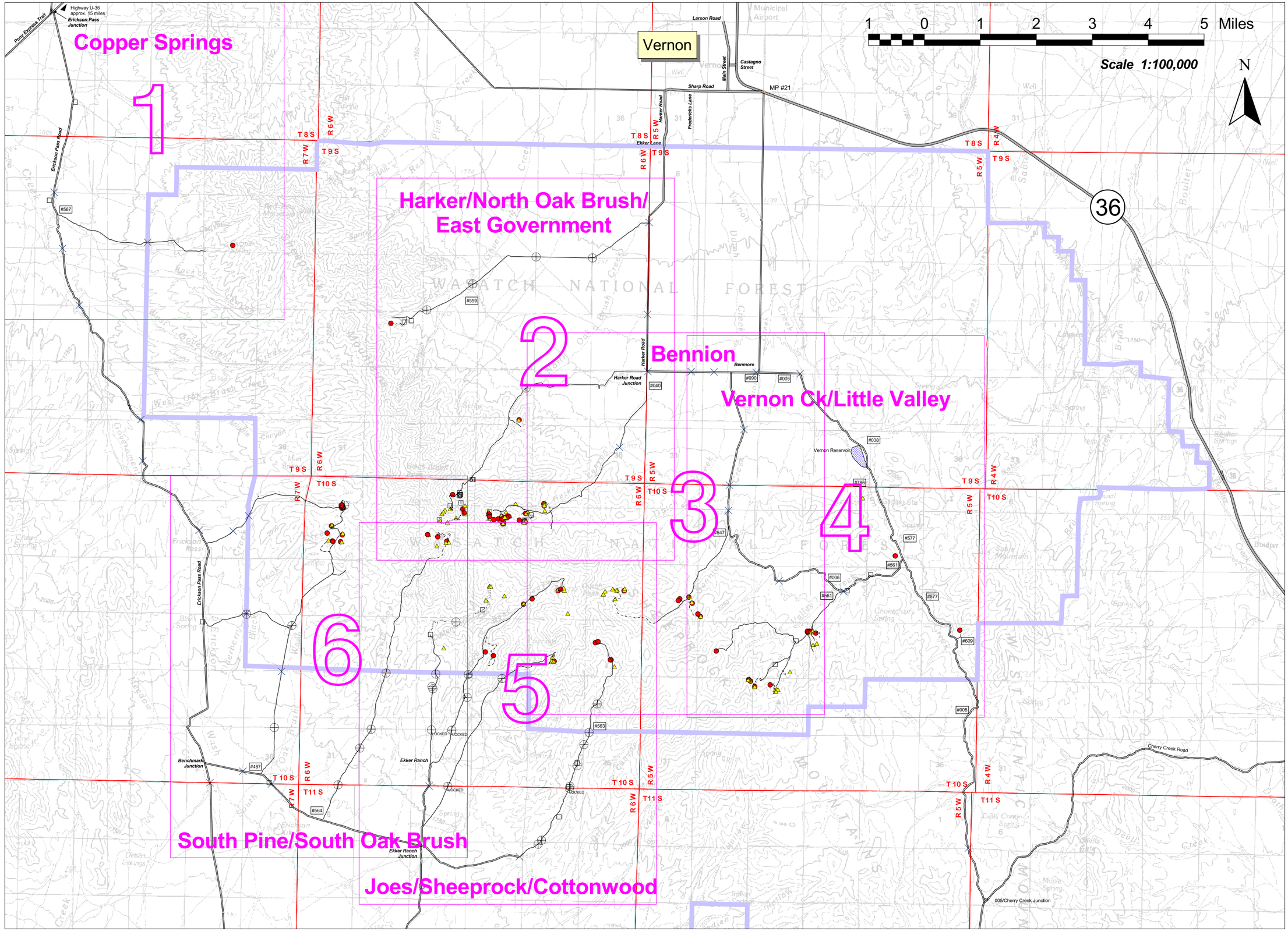
Vernon Sheeprocks Project Overview Map

Map 5



Vernon Sheeprocks Project Overview Map

Map 6



Land Status

- USA - FOREST SERVICE
- USA - BLM
- STATE OF UTAH
- PRIVATE

Mine Openings

- HO, IO, VO
- HC, IC, VC, PR, PT, SH, TR

Misc. Point Features

- Cattle Guard
- Gate
- Structure

Primary Roads

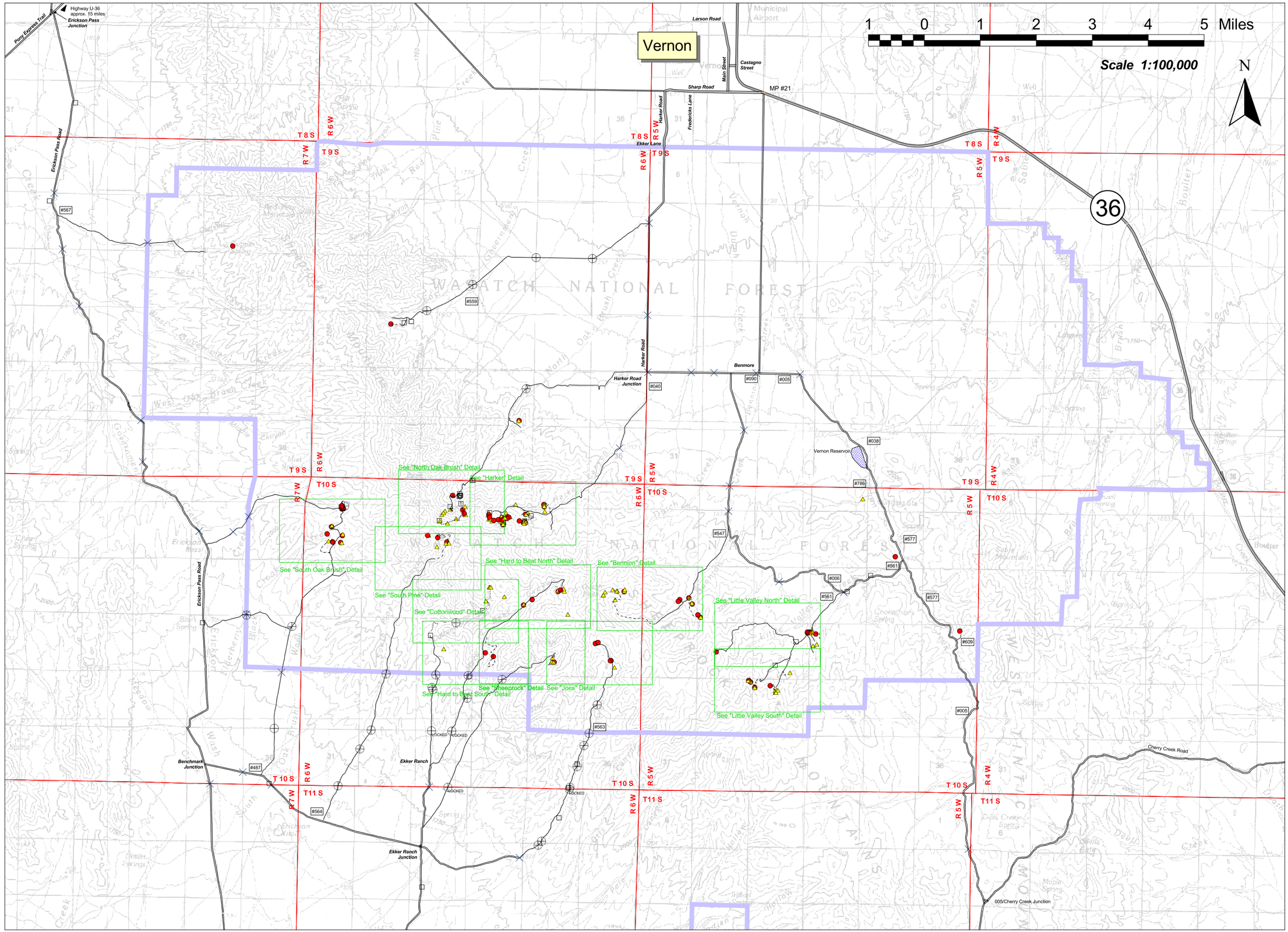
- Paved
- 2WD
- 4WD
- ATV
- Foot

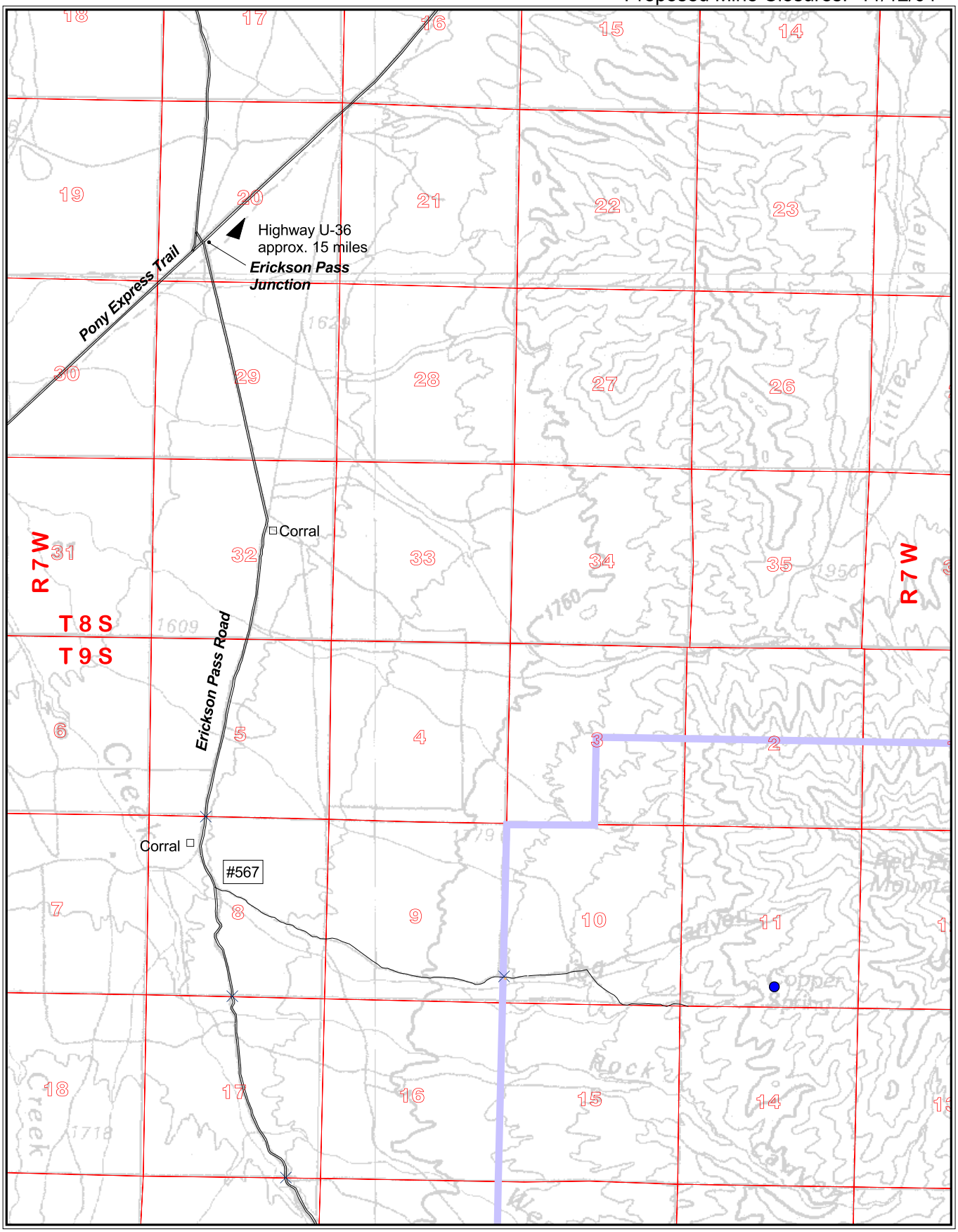
Project Boundary

Base Topography:
Rush Valley & Lynndyl
100k USGS Quadrangles

Vernon Sheeprocks Project Overview Map

Map 7





Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

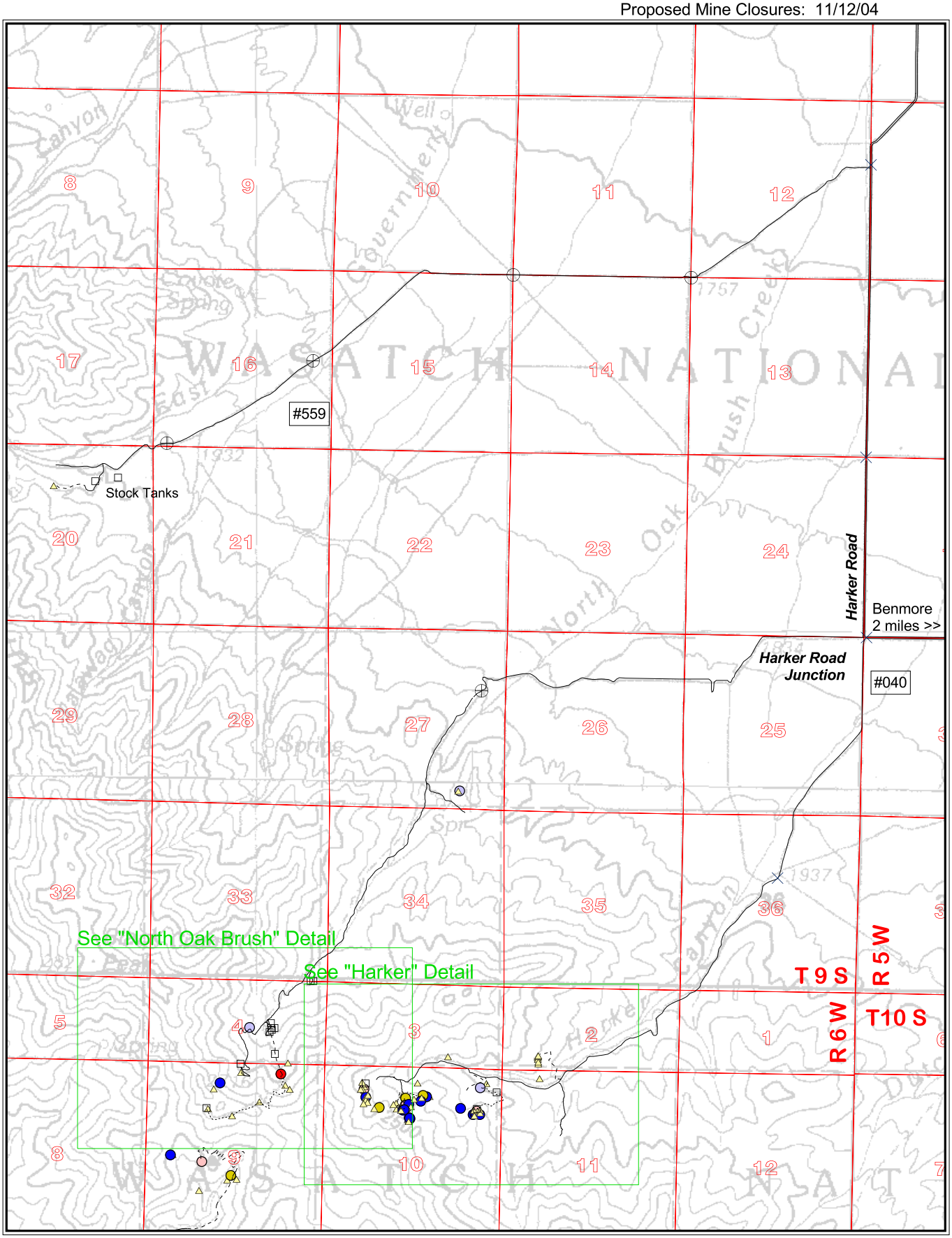
Vernon Sheeprocks Project

AMR/045/910

Subarea Map

Copper Springs

Subarea Map S1 of S6



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

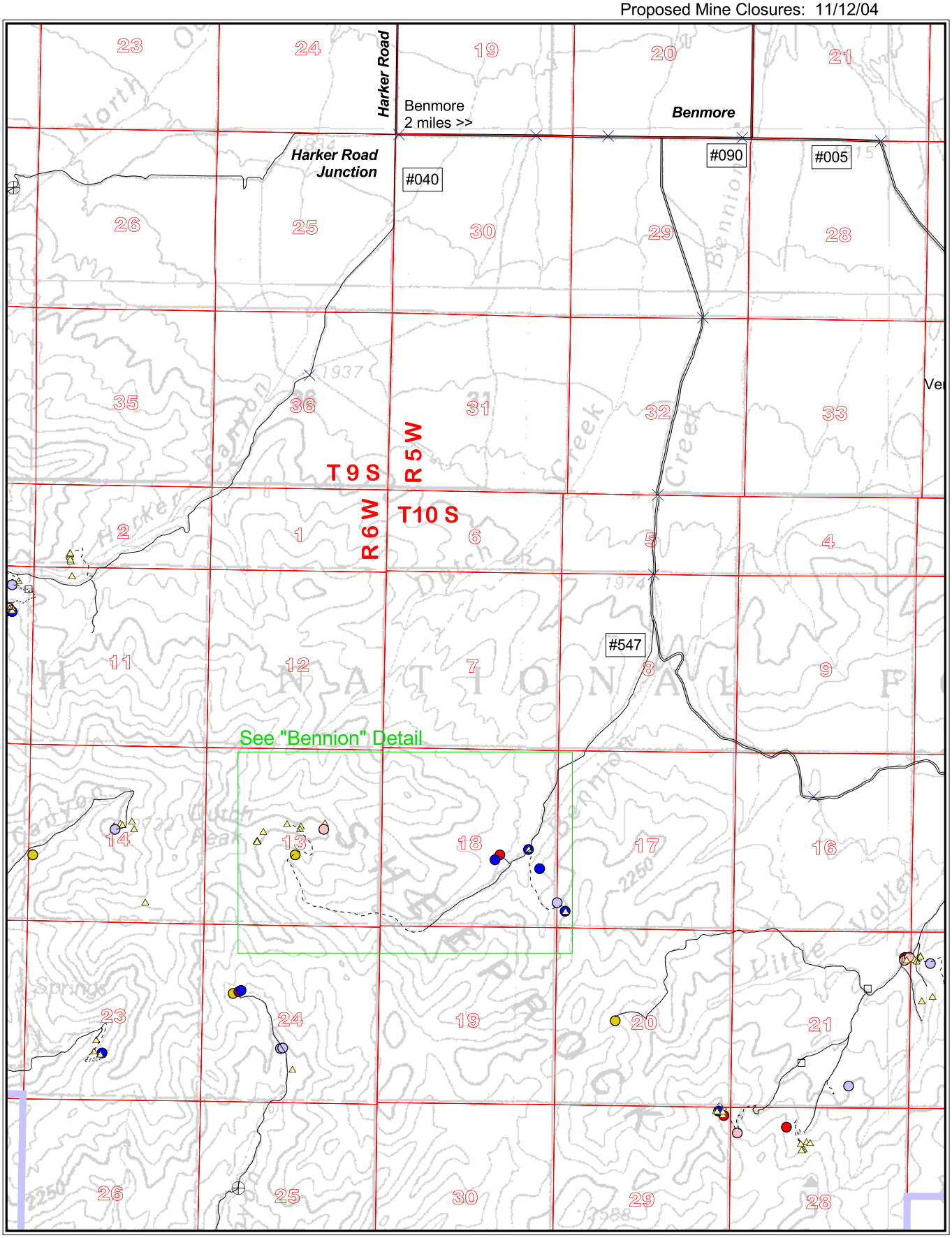
Vernon Sheeprocks Project

AMR/045/910

Subarea Map

East Gov't/No. Oak Brush/Harker

Subarea Map S2 of S6



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

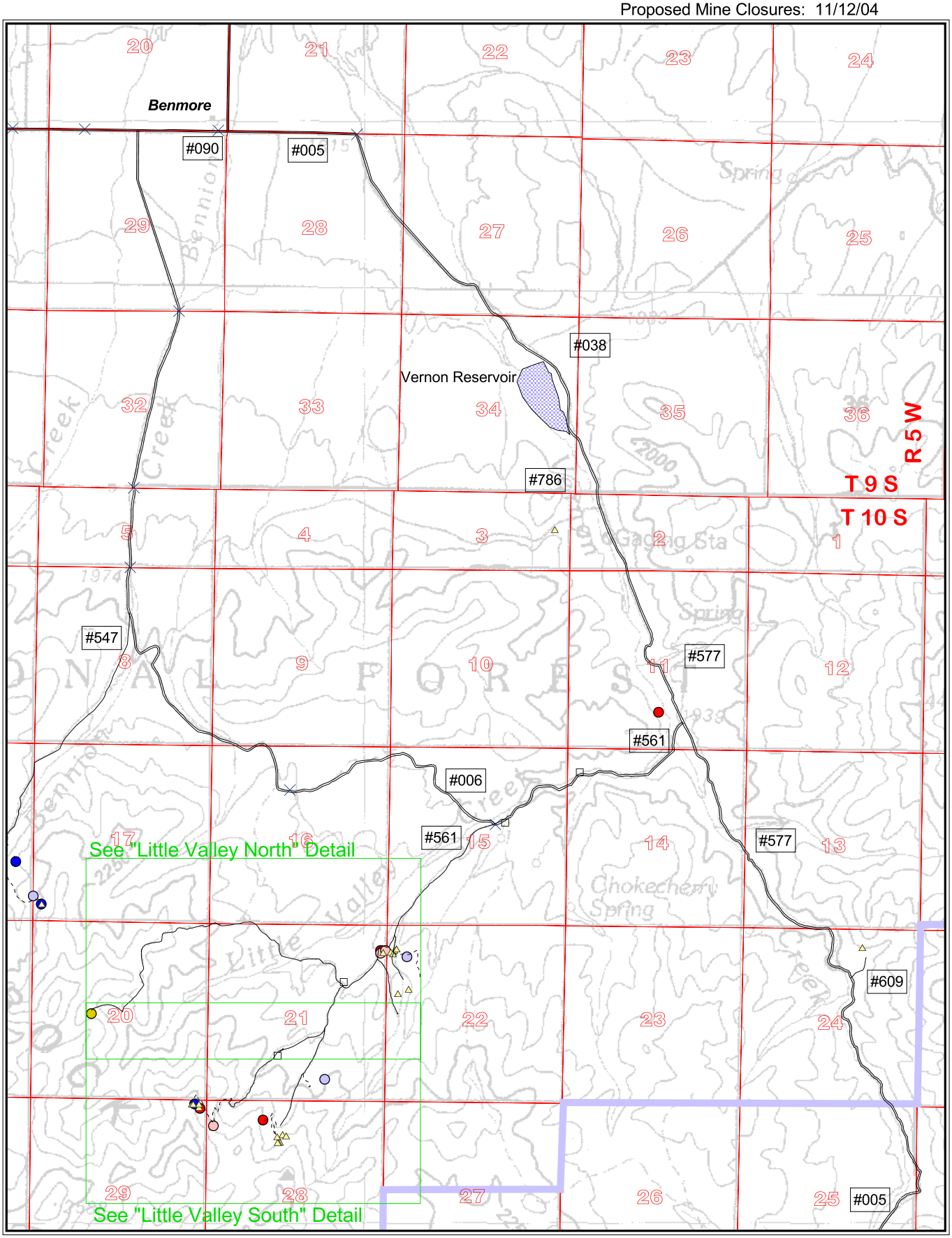
Vernon Sheeprocks Project

AMR/045/910

Subarea Map

Bennion

Subarea Map S3 of S6



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

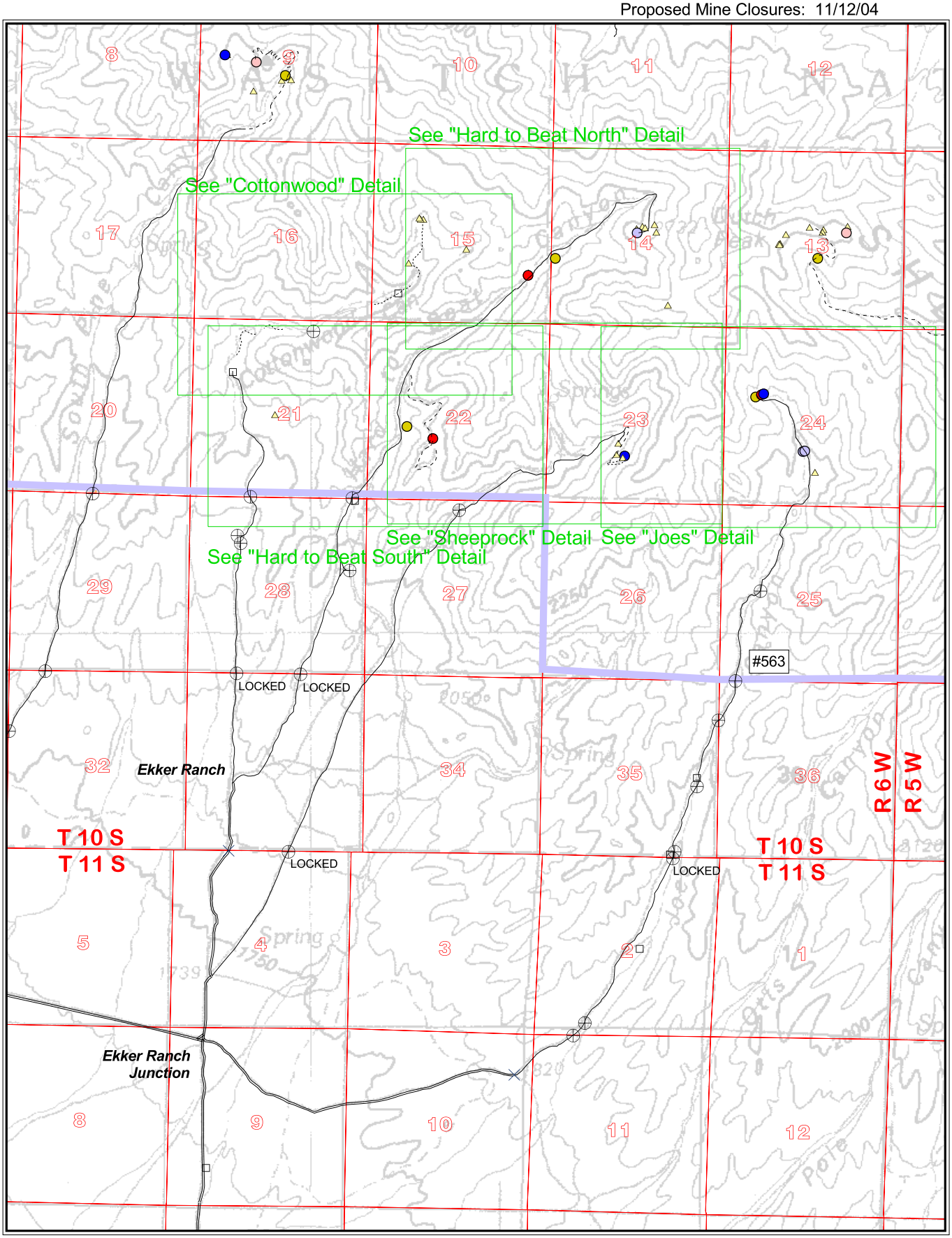
Vernon Sheeprocks Project

AMR/045/910

Subarea Map

Vernon Ck/Little Valley

Subarea Map S4 of S6



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

Vernon Sheeprocks Project

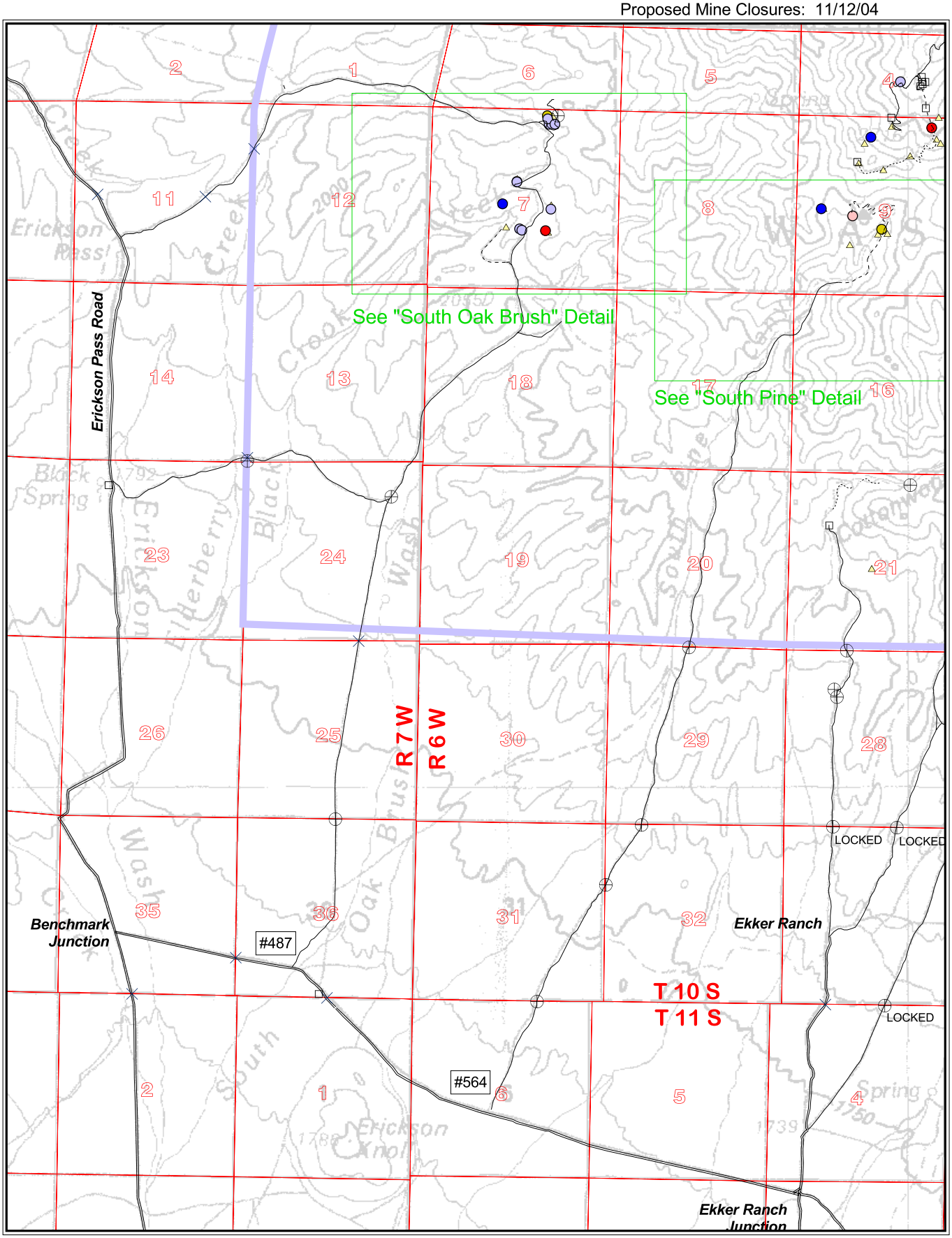
AMR/045/910

Subarea Map

Joes/Hard to Beat

Subarea Map S5 of S6

Proposed Mine Closures: 11/12/04



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 4000Ft

0 1Mi

Scale 1:48,000
1 inch = 4000 feet

Drawn By: JCR/DOGM Plotted: Nov. 15, 2004

Subarea Index

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Cattle Guard
Gate
Structure

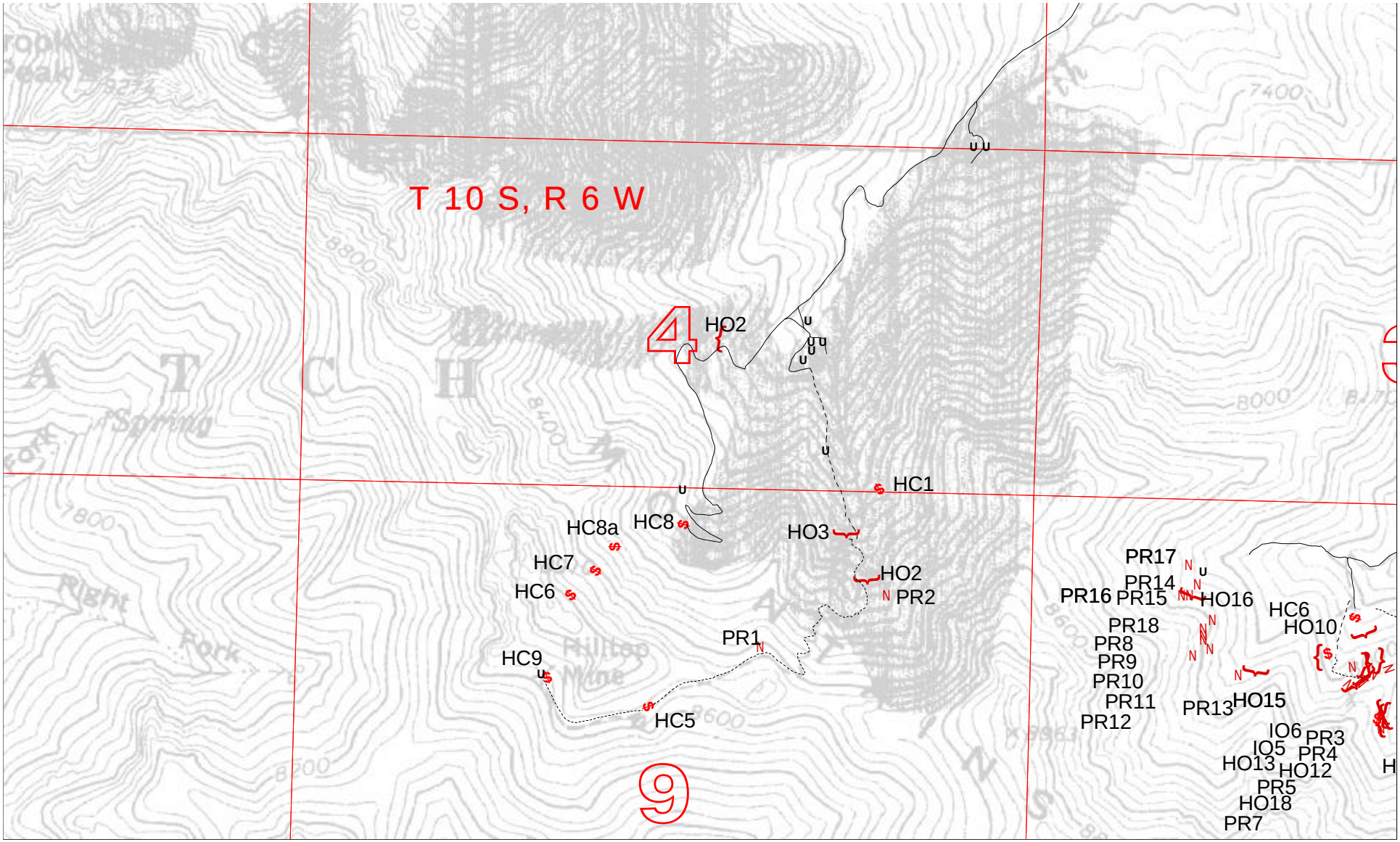
Vernon Sheeprocks Project

AMR/045/910

Subarea Map

So. Pine/So. Oak Brush

Subarea Map S6 of S6



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: Sept. 16, 2003

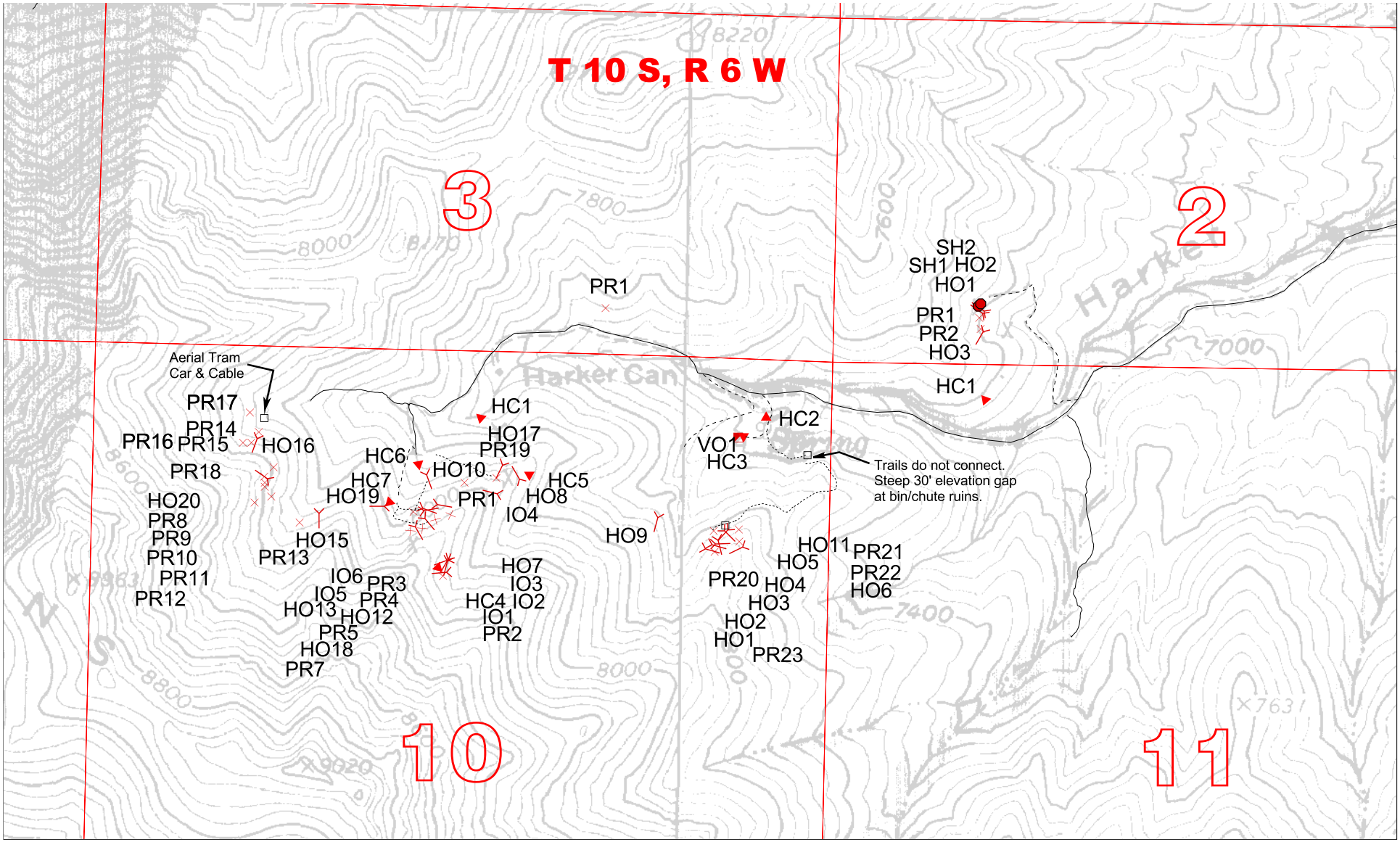
Vernon Sheeprocks Project

AMR/045/910

Detail Map

North Oak Brush

Detail Map D1 of D12
Refer to Subarea Map S2 of S6:
East Gov't/No. Oak Brush/Harker



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: Jan. 9, 2004

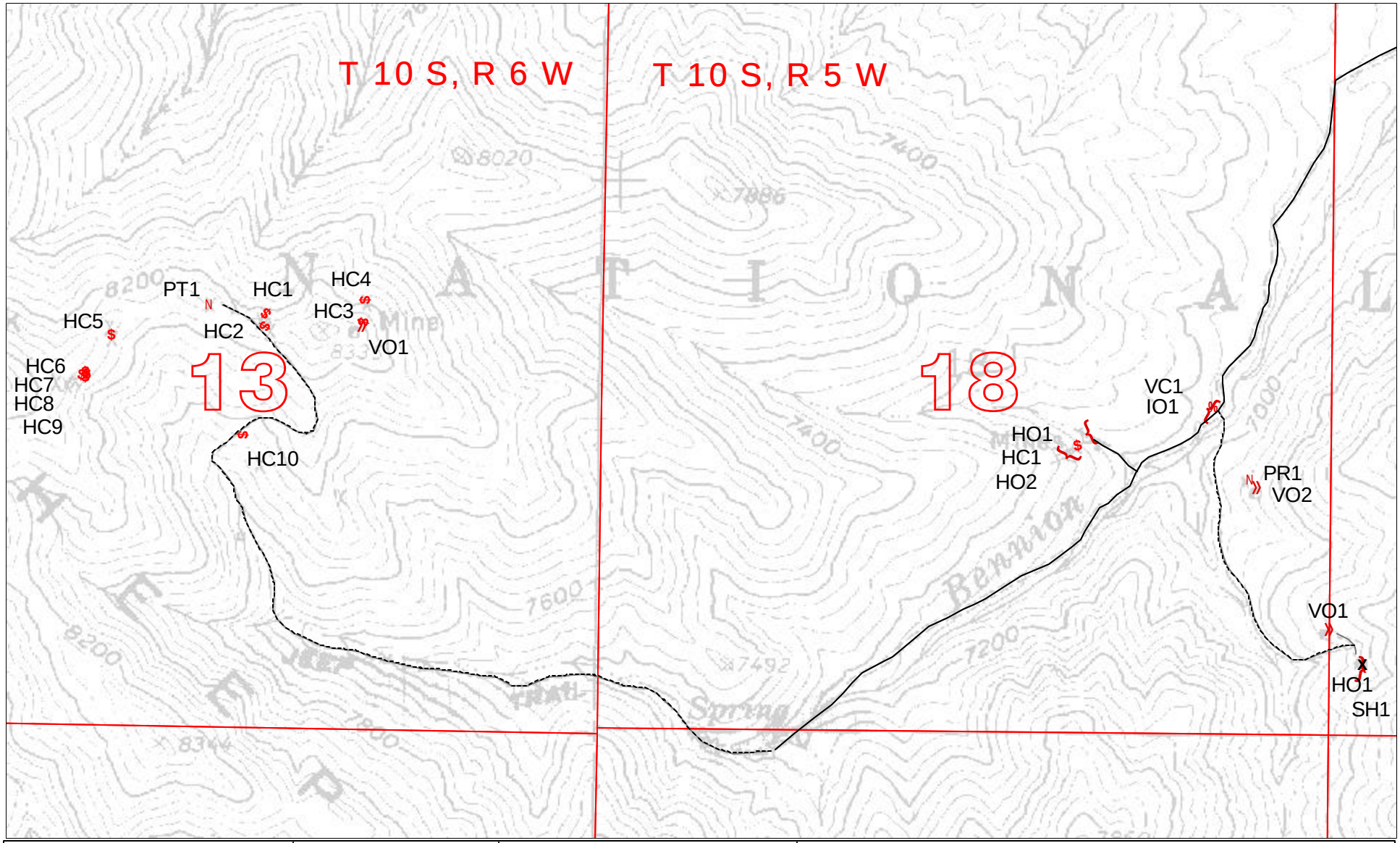
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Harker Canyon

Detail Map D2 of D12
Refer to Subarea Map S2 of S6:
East Gov't/No. Oak Brush/Harker



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: April 30, 2003

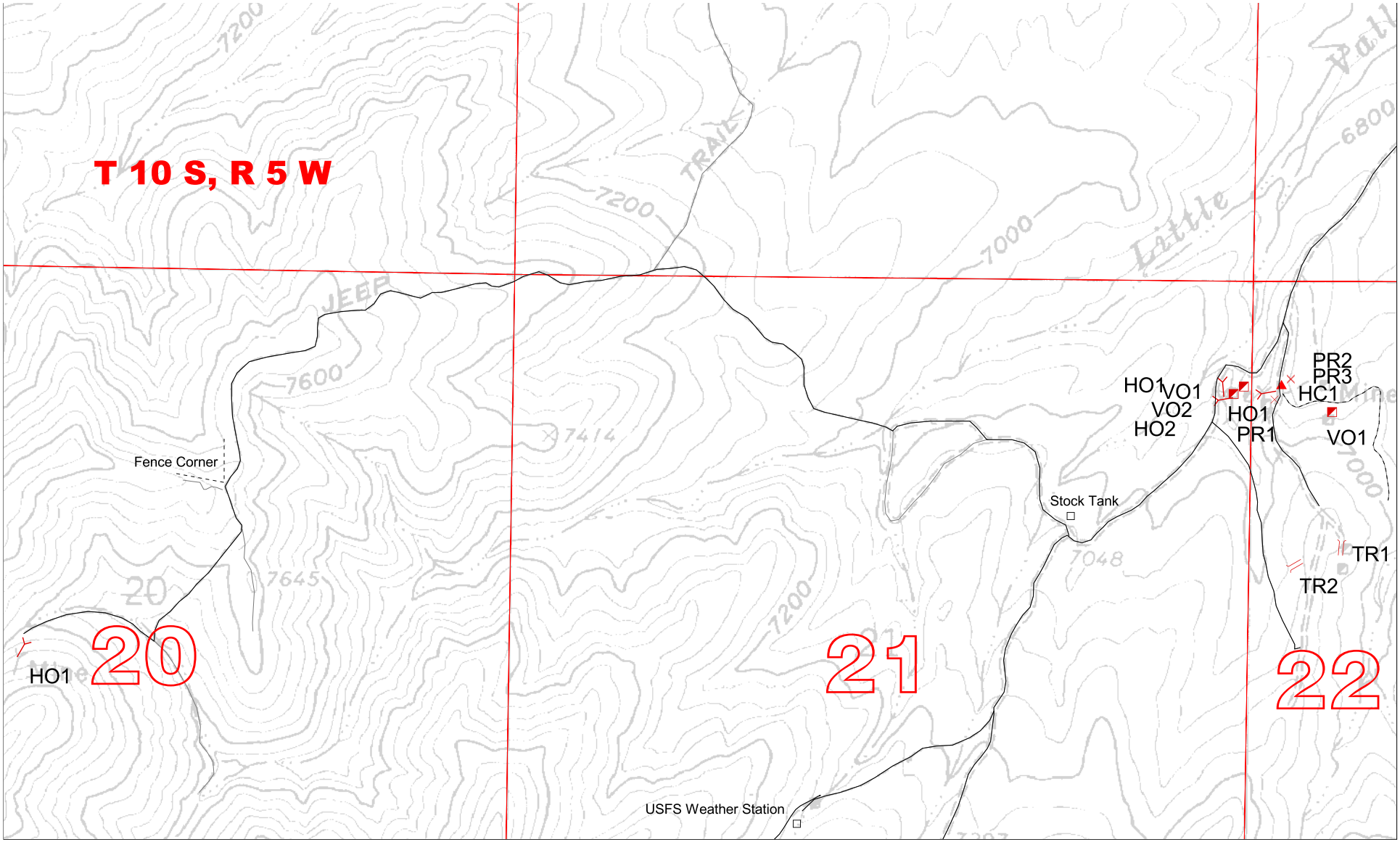
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Bennion

Detail Map D3 of D12
Refer to Subarea Map S3 of S6:
Bennion



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Mine Openings
HO or IO
VO
HC or IC
VC
PT or PR
TR
SH

Drawn By: JCR/DOGM Plotted: Jan. 9, 2004

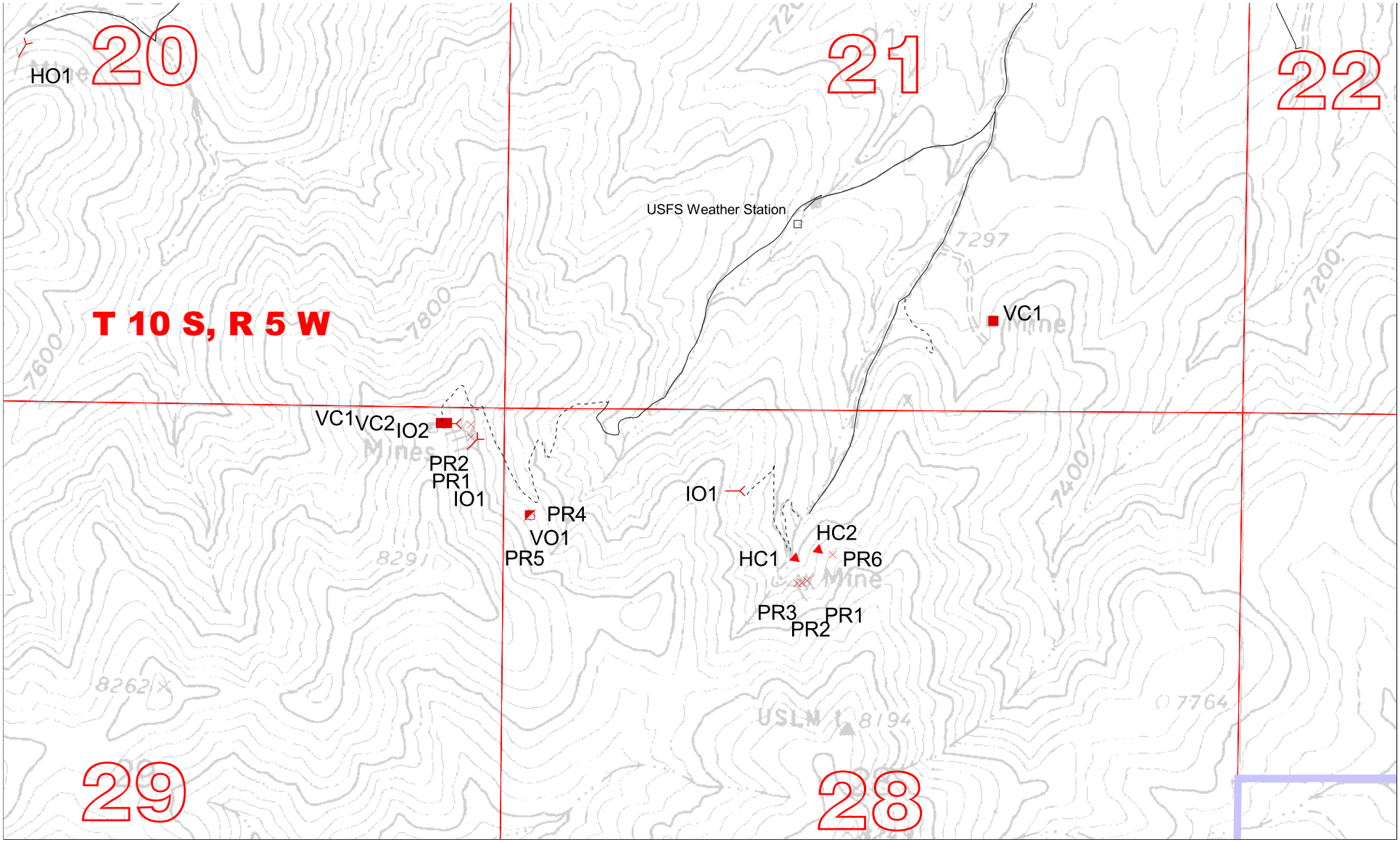
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Little Valley North

Detail Map D4 of D12
Refer to Subarea Map S4 of S6:
Vernon Ck/Little Valley



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: Jan. 9, 2004

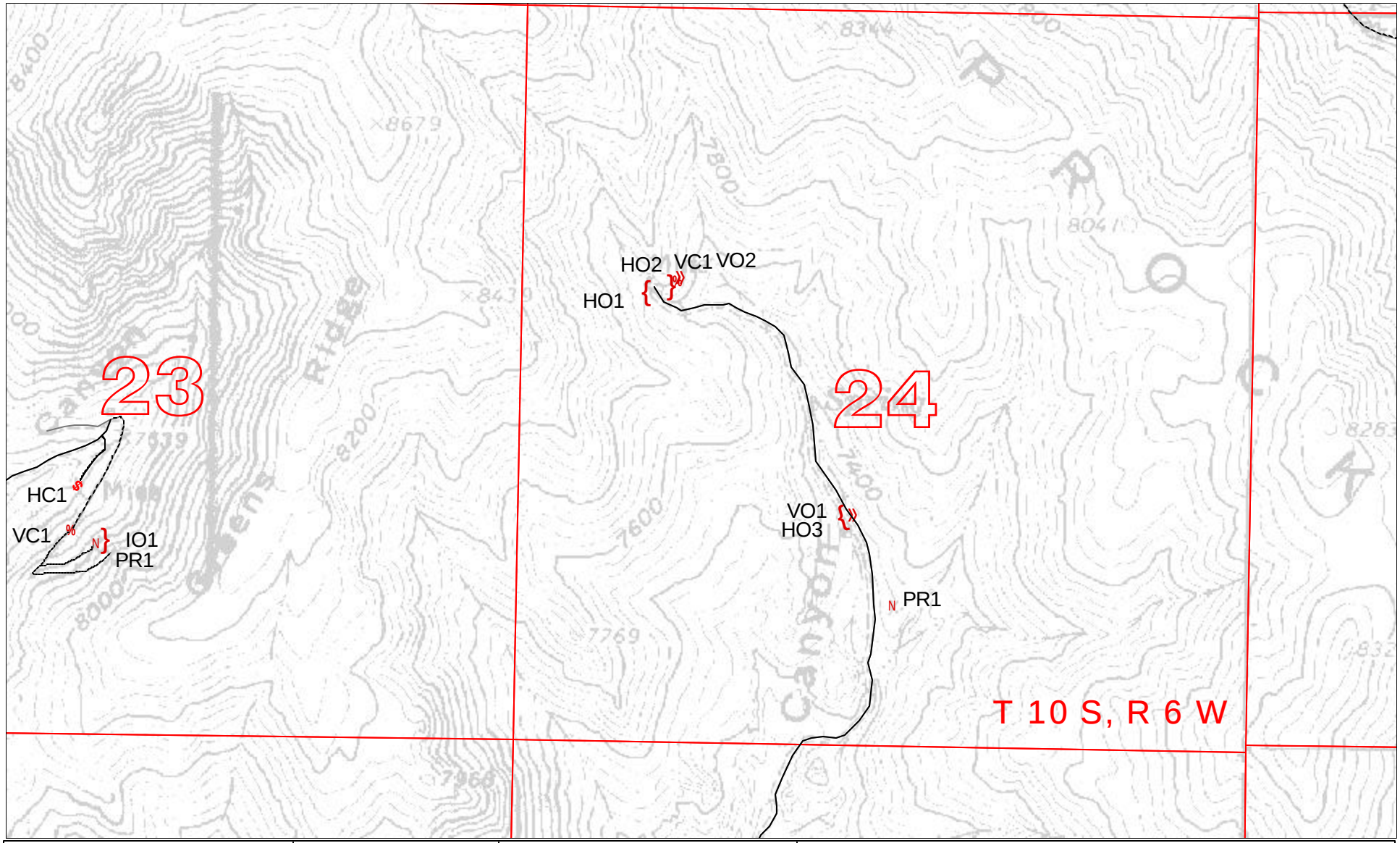
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Little Valley South

Detail Map D5 of D12
Refer to Subarea Map S4 of S6:
Vernon Ck/Little Valley



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: April 30, 2003

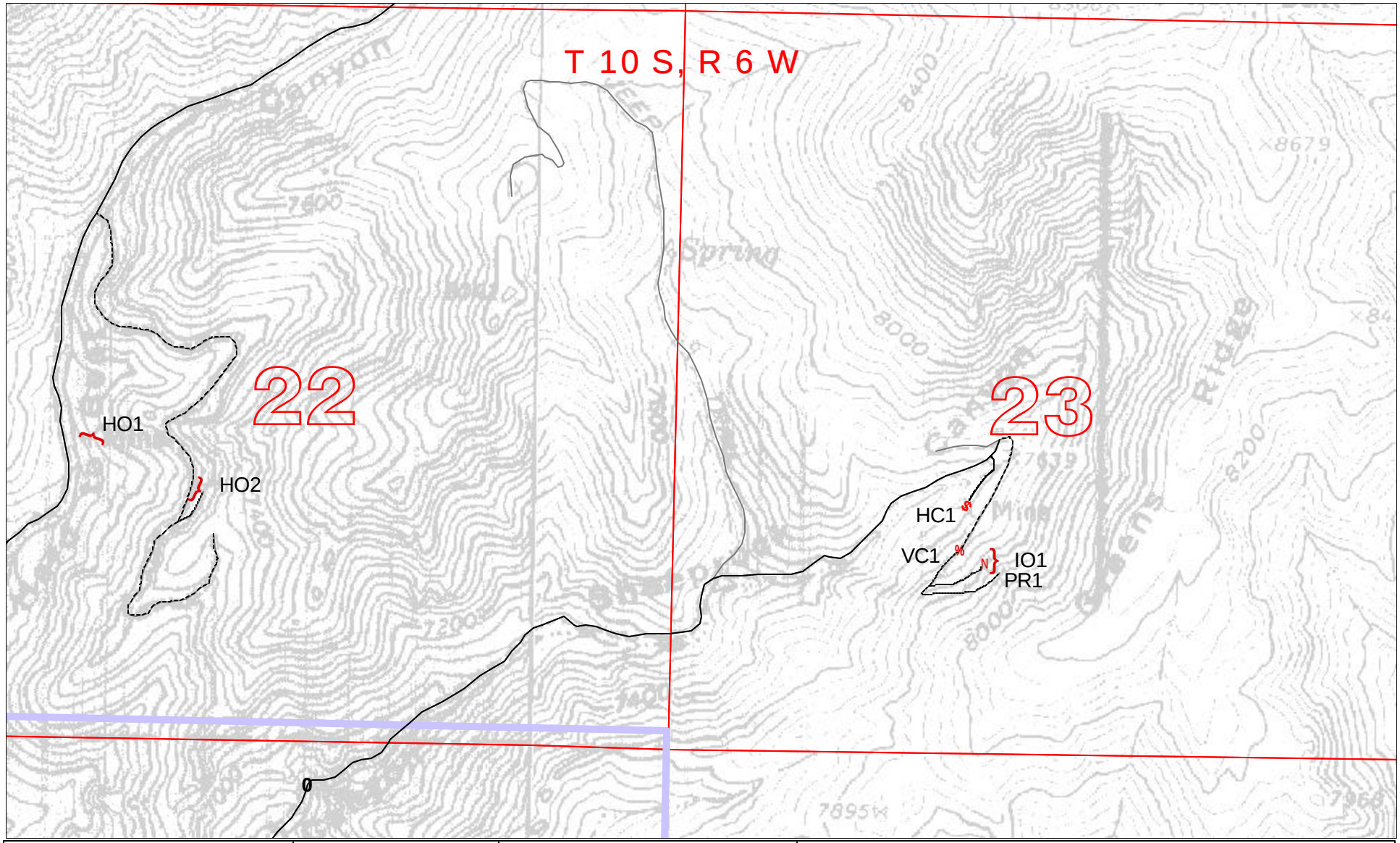
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Joes Canyon

Detail Map D6 of D12
Refer to Subarea Map S5 of S6:
Joes/Hard to Beat



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- $ HC or IC
- % VC
- PT or PR
- TR X SH

Drawn By: JCR/DOGM Plotted: April 30, 2003

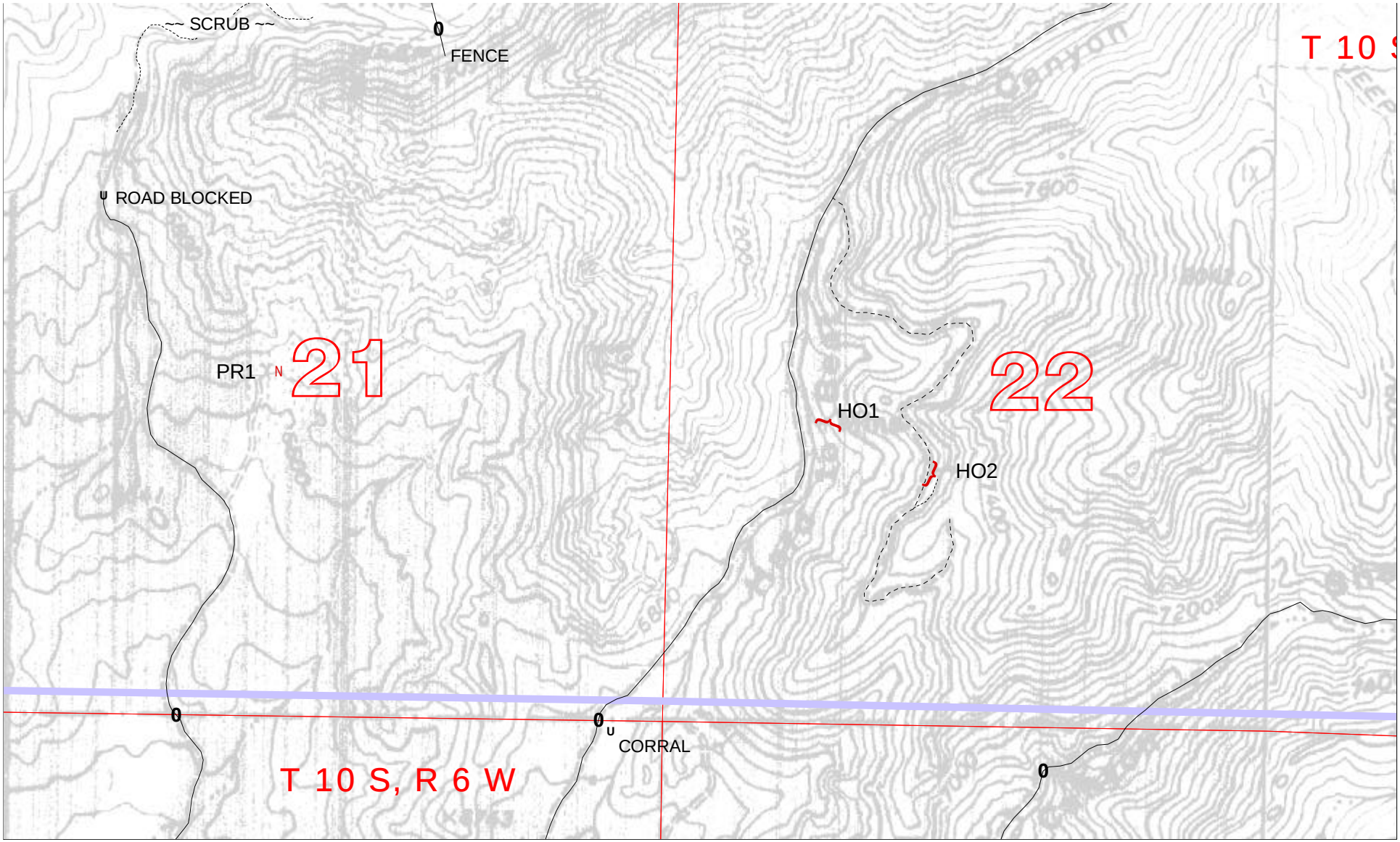
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Sheeprock

Detail Map D7 of D12
Refer to Subarea Map S5 of S6:
Joes/Hard to Beat



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Mine Openings
HO or IO
VO
HC or IC
VC
PT or PR
TR SH

Drawn By: JCR/DOGM Plotted: Sept. 16, 2003

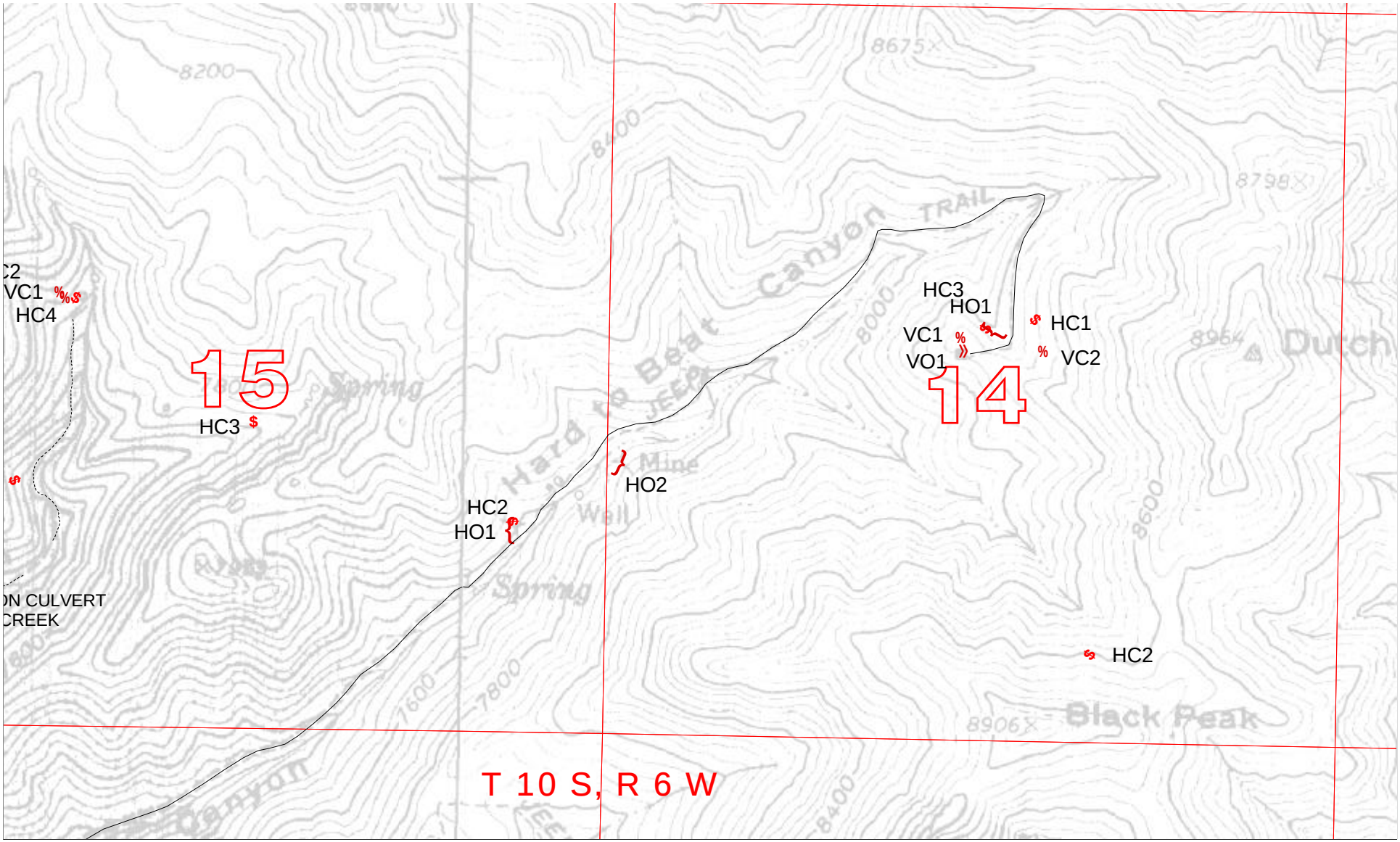
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Hard to Beat South

Detail Map D8 of D12
Refer to Subarea Map S5 of S6:
Joes/Hard to Beat



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
Paved
2WD
4WD
ATV
Foot
Unclassified

Mine Openings
HO or IO
VO
HC or IC
VC
PT or PR
TR SH

Drawn By: JCR/DOGM Plotted: Sept. 16, 2003

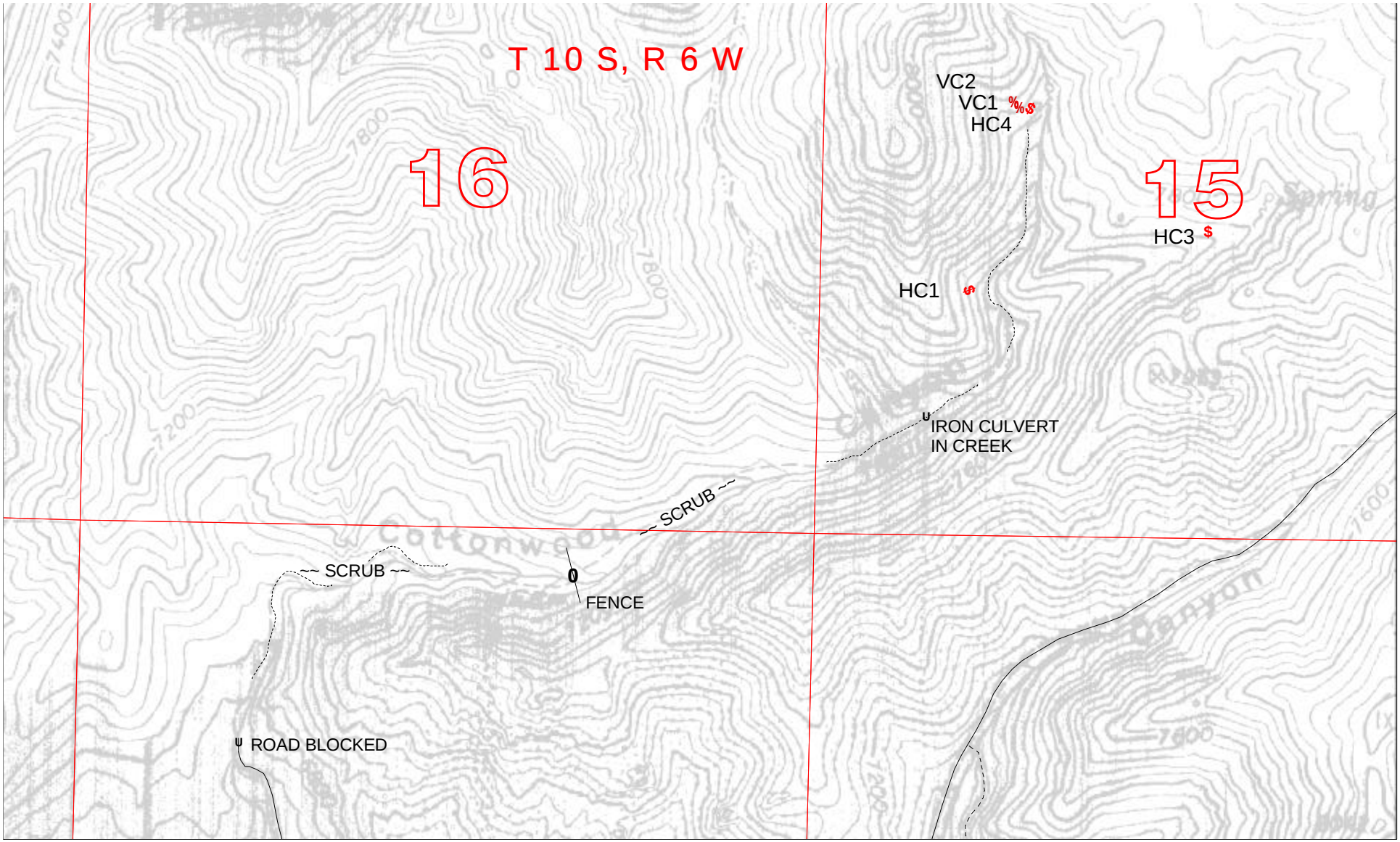
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Hard to Beat North

Detail Map D9 of D12
Refer to Subarea Map S5 of S6:
Joes/Hard to Beat



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: Sept. 16, 2003

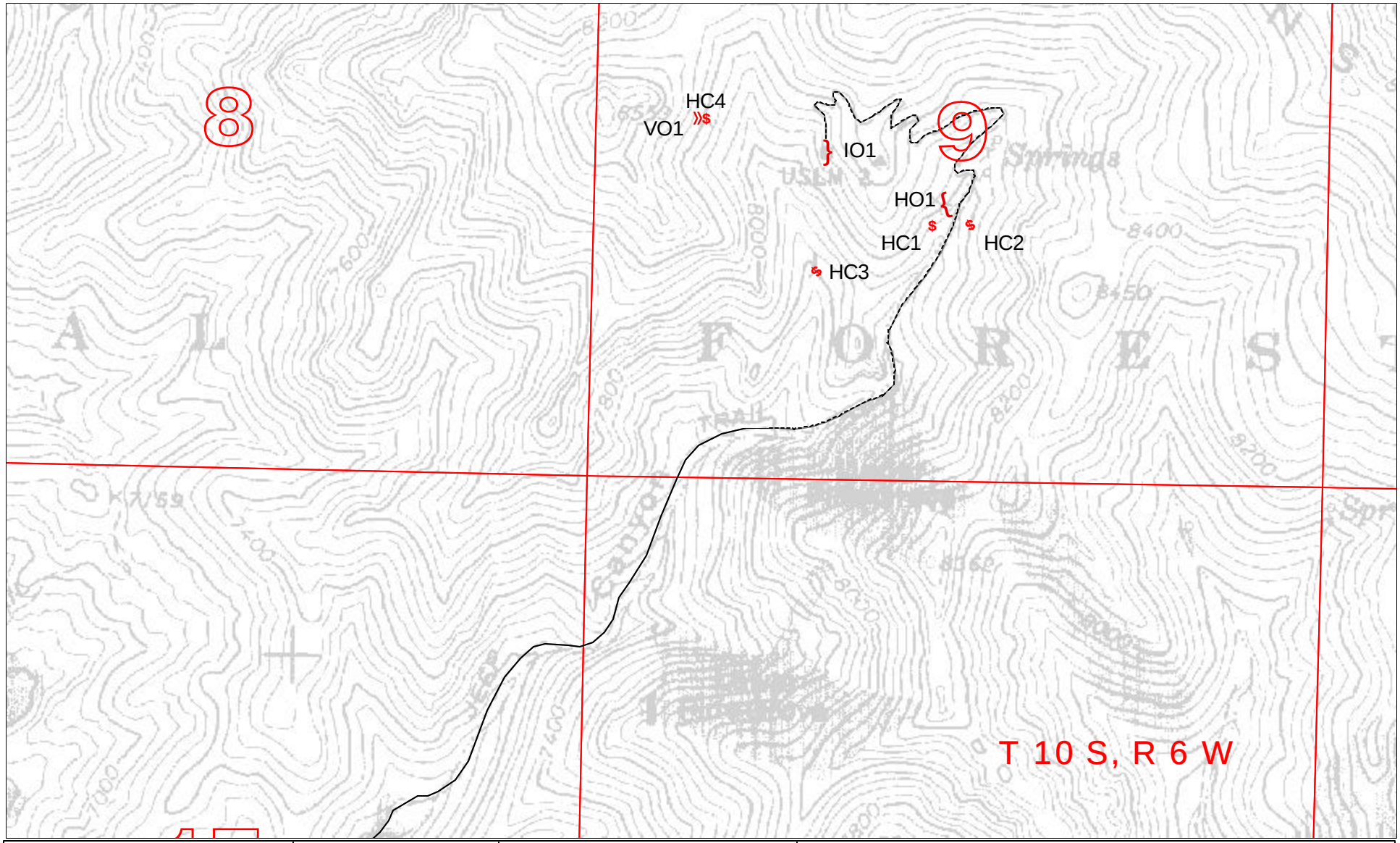
Vernon Sheeprocks Project

AMR/045/910

Detail Map

Cottonwood

Detail Map D10 of D12
Refer to Subarea Map S5 of S6:
Joes/Hard to Beat



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- HC or IC
- VC
- PT or PR
- TR
- SH

Drawn By: JCR/DOGM Plotted: April 30, 2003

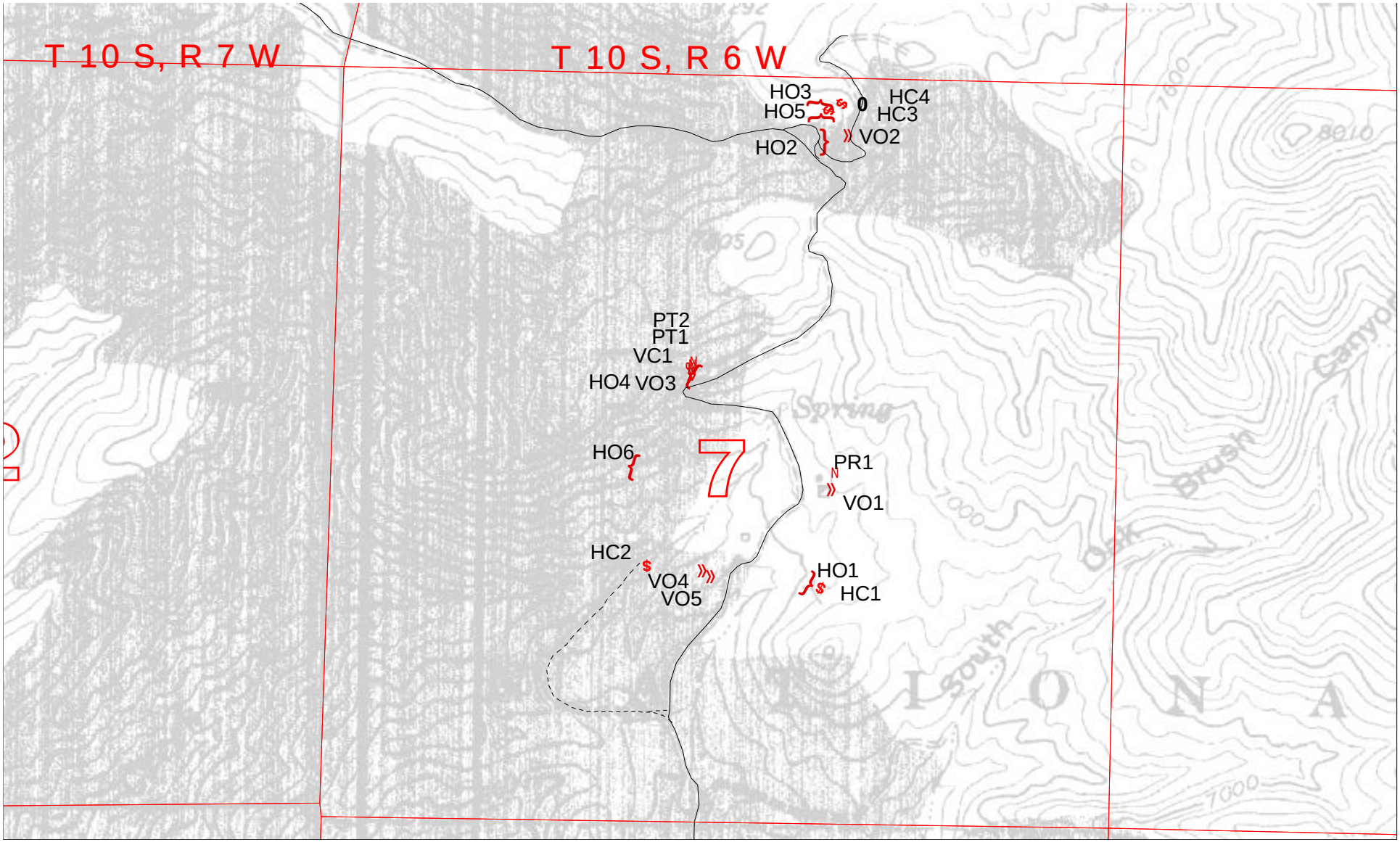
Vernon Sheeprocks Project

AMR/045/910

Detail Map

South Pine

Detail Map D11 of D12
Refer to Subarea Map S6 of S6:
So. Pine/So. Oak Brush



Utah Oil Gas and Mining
Abandoned Mine Reclamation Program

N

0 1000 Ft

Scale 1:12,000
1 inch = 1000 feet

Roads
- Paved
- 2WD
- 4WD
- ATV
- Foot
- Unclassified

Mine Openings
- HO or IO
- VO
- $ HC or IC
- % VC
- PT or PR
- TR X SH

Drawn By: JCR/DOGM Plotted: Sept. 16, 2003

Vernon Sheeprocks Project

AMR/045/910

Detail Map

South Oak Brush

Detail Map D12 of D12
Refer to Subarea Map S6 of S6:
So. Pine/So. Oak Brush