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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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OK

August 30, 2002

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor *PGL*

FROM: Peter H. Hess, Sr. Reclamation Specialist/Engineering *PHH*

RE: Mitigation Plan for Sinkhole #23, Lodestar Energy, Inc., White Oak #1 Mine, C/007/001-02B-1

SUMMARY:

During May of 1986, Valley Camp of Utah was developing entries from the upper O'Connor coal seam through the interburden in an attempt to access the lower O'Connor seam in a section of the mine known as 3rd Left off of 3rd East Declines. In order to access the lower O'Connor, the permittee knew it had to cross a fault with a fairly significant displacement to obtain access to the reserves on the other side. Ground control issues developed, then eventually worsened to the point that when the right hand entry of the three-entry development encountered the fault, a roof anomaly occurred, material flowed from the mine roof into the entry to a height twenty feet above the coal seam. This chimney subsidence was discovered as a surface impact in June of 1988, at which time it was fenced off.

Surface impact #23, as it became designated, was monitored over the next thirteen years as part of the permittees annual subsidence reporting requirements. Permittee's have changed several times, with Lodestar Energy, Inc. becoming the current permittee. During that time period, the impact started to self-heal, with no impacts to wildlife or public safety.

On October 15, 2001, the involved surface management agency (USDA / USFS / Manti-LaSal National Forest) sent the Division a letter identifying surface impact #23 as a "significant safety hazard". This resulted in representatives from the permittee, the Forest Service, and the Division inspecting the impact on June 28, 2002. The outcome of that meeting was that the permittee was required to submit plans to mitigate the damage to meet the requirements of Federal law and the R645 coal rules. The submittal received August 6, 2002 is the proposal designed to mitigate the impact.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The Manti-LaSal National Forest has provided a copy of the clearance document relative to the evaluation of the surface impact #23 area for historic and archeological resources. A determination was made that "no historic properties (were) affected". This document is included as a part of this review.

Findings:

The requirements of R645-301-411.140 have been adequately addressed.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

The aforementioned regulation allows the Division to request information "as necessary to demonstrate that the operation will be conducted in accordance with R645-301-525.300".

There is no mention made of what method of monitoring will be used to monitor the repair of surface impact #23 in the permittee's August 6, 2002 submittal. However, as required by the Utah coal mining rules, a subsidence-monitoring program is described on page 500-10 of the approved mining and reclamation plan. "Monitoring of the subsidence control points and the overlying surface will occur until no longer deemed necessary by the Division and the concerned surface management agency".

The monitoring of the repaired impact should be performed post-snow melt, such that any settling of the material or erosion of the area can be monitored. A post snowmelt evaluation would allow time for preparation to make any necessary repairs of the area before the following snow season.

The 8/06/2002 submittal fails to address how much damage will need to occur before an additional repair may be felt to be necessary. However, the annual monitoring of the impact in the spring, and adequate documentation should provide sufficient evidence to make this call when and if necessary. That decision will be jointly made via the permittee, the Division, and the surface management agency.

Monitoring of the repair should occur at least once a year, and continue through Phase 3 bond release and lease relinquishment. Page 500-10, Volume 1, of the currently approved mining and reclamation plan (See **SUBSIDENCE MITIGATION PLAN**) makes the commitment "to repair any mining induced subsidence to the extent economically and technologically feasible". This commitment is acceptable to repair surface impact #23 again, should the need arise.

Findings:

The information provided is adequate to address the intent of the R645 coal rules.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The submittal contains cross sections that depict a final surface configuration of a slightly concave depression, which will be tapered on the south end so that water will not impound. All fill material will be placed within the void, so stability concerns relative to lateral movement will not be an issue. If the weight of the fill material causes additional funneling into the mine, the annual subsidence evaluation will assess same, and further filling would be required.

This impact is not a highwall situation, as the upper O'Connor coal seam is approximately 240 feet below.

TECHNICAL MEMO

The material in the backfilled area will not exceed any angle of repose, as the fill will be placed to repair a sinkhole. No fill will exist above the edge of the hole. The material will remain static, as the incised configuration of the embankments will hold it in place. Compaction of the material will be achieved by tamping same with the back of the backhoe bucket as it is placed. Additional compaction will be achieved by the weight of the material bearing on the lower fill. The total maximum depth of fill is projected to be nine feet (See Section D-D, Plate B, Appendix RP-1). The fill material will consist of subsoils, with topsoil placed at the surface. This material will absorb and retain some moisture, but excessive pore pressures will not build due to the moderate draining nature of the soils, and the fact that the only precipitation that the impact will receive is that which falls directly upon it. As noted on Page 3, Appendix RP1, under **Sediment Control**, logs may be placed on the slope above the impact to redirect sheet flows from the upper slope around the reclamation area. The area fill has been designed to drain toward the down slope side (southern end); **therefore, "pocking" will not be practiced.** The only roughening that will occur will be that which occurs as the material is placed, and compacted by the bucket of the hoe. This effort to minimize the impounding nature of the final surface will help prevent slides. The relatively free draining material will sustain a high coefficient of static friction. There are no slip planes in the area, which, with pore pressure build-up, could allow the material to slide. The maximum slope angle determined from the examination of Section A-A for the fill is 2.53H / 1V. As mentioned elsewhere, the final surface configuration of the fill is slightly concave; therefore, the finished slope of the fill will actually be more gentle than the calculated 2.53H / 1V.

Sediment and erosion control are provided utilizing the following methods; Curlex matting will be placed over the topsoil to reduce raindrop impact and hold soil in place during periods of wind. Lastly, felled Aspen trees will be strategically placed on the surface upslope of the repair as an attempt to reroute undisturbed drainage around the repair.

The proposed backfilling and grading plan supports the approved post-mining land use, which is the same use as that sustained during the mine's operational phase.

Findings:

The information provided is adequate to meet the intent of the R645 coal rules as they relate to backfilling, grading, and the establishment of approximate original contour.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Removal and Storage / Redistribution

The submittal, Appendix RP1-1, indicates, "topsoil in the area surrounding the sink hole will be pulled back in a depth ranging from 10 to 20 inches. This material will be reserved for placement after rough filling of the sinkhole." Although there is no mention made of the grubbing off of the vegetation (the area is covered with thick grasses), page 3 of the submittal indicates (See **Topsoil Collection**) the entire process will only take one day. Therefore, the grass clumps remaining in the salvaged topsoil will enhance the revegetation process as the grass will be quickly able to re-establish itself (roots will not dry from prolonged atmospheric exposure).

Should the removed topsoil be exposed for a long period, the submitted plan commits to "a sediment fence will be installed on the downhill side of the collected topsoil in order to complete the project", (preserve the resource).

Findings:

The submitted information is adequate. The requirements of the R645 coal rules have been met.

REVEGETATION

Regulatory Reference: R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.330, -301-331, -301-332.

Analysis:

Following the backfilling and contouring process, the stored topsoil will be dispersed over the area. Curlex matting will provide sediment control on the impacted area to reduce the contribution of suspended solids to the undisturbed drainages in the area. As discussed above, grass clumps remaining in the recovered topsoil, as well as seeding will enhance the revegetation process. This area receives ample amounts of precipitation during a normal year; therefore, the re-establishment of a protective cover over the impact should occur quickly.

TECHNICAL MEMO

Page 2 of Appendix RP1 includes Table 1, which is a seed mix for SI #23, as recommended by the USFS. Broadcast methods will be utilized to disperse the varieties specified in Table 1 in the prescribed amounts. The mix must be certified as "weed free" and contain 99 percent pure live seed containing a maximum of 1% weed, none of which are noxious. This is a USFS requirement.

The permittee anticipates that it will take a maximum of four days to complete this project from accessing the site to revegetating it, and then, retreating from the area.

Findings:

The information provided is adequate to address the requirements of the R645 coal rules.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

"All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion. Rills and gullies which form in areas that have been regraded and topsoiled and which either disrupt the approved post-mining land use or the reestablishment of the vegetative cover, or, cause or contribute to a violation of water quality standards for receiving streams, shall be filled, regraded, or otherwise stabilized; topsoil shall be replaced; and the areas shall be reseeded or replanted."

The permittee has submitted a permit amendment that consists of what has been designated as **Appendix RP1-1**. This appendix includes verbiage that describes how machinery capable of handling the necessary work will access the impact without creating a more extensive disturbance, (i.e., cutting a road). The current impact is fifty feet in length, parallel with the dip of the seam, with a maximum width of thirty feet along the strike.

It is the permittee's intent to access the impact from Boarding House Canyon utilizing a 325-track hoe or similar machine. A spring (S36-17) may need to be crossed to access the impact. Should that be the case, Aspen logs will be placed parallel with the drainage to minimize the destruction of the vegetation along the channel. After the reclamation of the impact has been completed, the logs will be removed by the retreating machine.

The area is heavily forested with Aspen as well as conifers; it will be necessary to remove some trees to access the impact. This will be accomplished by either removing them via cutting, or by knocking them down with the boom/bucket of the hoe. Topsoil will be recovered about the

circumference of the sinkhole to a depth ranging from ten to twenty inches. This will be placed in a temporary storage pile adjacent to the site in order to expedite replacement.

Subsoil will then be recovered according to the depths specified on Plate B of Appendix RP1. The drawing depicts a longitudinal cross section A-A and three lateral cross sections, B-B, C-C, and D-D.

Cross Section A-A (longitudinal)

A cut approximately twenty-seven feet long ranging from zero to 3.5 feet in thickness will be made on the downslope side on surface impact #23 in order to provide the necessary volume of fill to return the void to approximate original contour. Although the surface of the repair will be slightly concave, moisture entrapment should be minimal as the fill and the subsoil interface meet at the same elevation. Some settling of the fill will naturally occur, particularly if the area receives a normal snow pack this winter.

The circumference of the disturbance will be extended approximately 25 feet down the slope. The depicted cuts do not appear to make enough fill, but the certifying professional engineer involved explained that the capability of the Serv-Cad computer program is limited by the fact that only one longitudinal cross section was made. The size of the impact is the limiting factor here. The submittal contains mass-balance calculations to support the cut and fill volumes depicted on Plate B. This reviewer feels that since this project involves a very small volume of material (250 cubic yards) and the permittee has committed to fill the void up to the level of the impact's rim, enough material will be gathered to properly fill the void. The permittee must be allowed to have some flexibility in filling the void. It is possible, that when the additional weight of the backfill bears upon the original surface of the sink, that additional failure into the mine could occur.

The plan view depicting the location of all four submitted cross sections depicts both the surface perimeter of the void as well as the extent of disturbance that must be created to make enough fill to eliminate the impact. The disturbance necessary to make enough fill to mitigate the void appears to be at least triple the surface area of the original impact.

Cross Section B-B (lateral section #1, on upslope end of the void)

Cross section B-B transects A-A fifteen south of the north edge of the disturbance. A cut nine feet long tapering from zero to a maximum of one foot in thickness will be made on the east slope. A second cut will be made on the west slope 26 feet in length tapering from zero to a thickness of two feet. The final surface configuration will be a very mild depression (concave) that will approximate the original contour of the area.

TECHNICAL MEMO

Cross Section C-C (lateral section #2)

Cross section C-C bisects A-A thirty feet from the northern edge of the disturbance. SI #23 is depicted in the plan view having almost a rectangular shape, with rounded corners. The corners on the north end are more blunt than those on the south, which blend to the center in a more pleasing fashion. Cuts will be made on the east and west slopes in the following manner; the east slope will be tapered for a distance of seventeen feet, varying from zero to 3.5 feet in depth. The west slope will be tapered back to the west a horizontal distance of thirty-three feet. Depth of this taper will vary from zero to a maximum depth of five feet.

The final surface configuration of Cross Section C-C will also be a very mild depression that will approximate the original surface contour.

Cross Section D-D (lateral section #3)

Cross Section D-D is the southern most trans-sect of A-A, and is located approximately eleven feet north of the south end of the impact. As with the other cross sections, tapered cuts will be made on the east and west slopes, as well as the area about the southern perimeter of the impact. D-D depicts the deepest area of the impact, as this is where the funneling effect of the in-mine roof fall propagated to the surface. A tapered cut twenty-one feet long having a maximum depth of two feet will be made on the east slope. A similar cut (32 feet long, varying in depth from zero to three and a half feet) will be made on the west bank to provide the necessary fill.

As with all other sections, the final surface configuration of the backfilled area will be a slightly concave area that will blend in to achieve approximate original contour.

Findings:

The information provided is adequate.

RECOMMENDATIONS:

This plan should be conditionally approved pending receipt of the goshawk information from the US Forest Service.



State of Utah

Department of Community and Economic Development
Division of State History
Utah State Historical Society



Michael O. Leavitt
Governor
Max J. Evans
Director

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Salt Lake City, Utah 84101-1162
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ushs@history.state.ut.us <http://history.utah.org>

September 11, 2001

Joseph G. Gallagher
Branch Chief
Manti-La Sal National Forest
599 West Price River Drive
Price UT 84501

RE: U-01-FS-0581f (ML-01-0962) Boardinghouse Canyon Coal Subsidence Reclamation

In Reply Please Refer to Case No. 01-1485

Dear Mr. Gallagher:

The Utah State Historic Preservation Office received the above information. The report states that no cultural resources were located in the project area. We, therefore, concur with the report's recommendation of No Historic Properties Affected.

This information is provided on request to assist with Section 106 responsibilities as specified in §36CFR800. If you have questions, please contact me at (801) 533-3555. My email address is: jdykman@history.state.ut.us

As ever,

James L. Dykmann
Compliance Archaeologist

JLD:01-1485 FS/NPnA



United States
Department of
Agriculture

Forest
Service

Manti-La Sal
National Forest

Supervisor's Office
599 West Price River Drive
Price, UT 84501
Phone: (435) 637-2817
Fax: (435) 637-4940

File Code: 2330/2360

Date: September 4, 2001

Mr. Max Evans
Utah Division of State History
300 Rio Grande
Salt Lake City, UT 84101-1182
RE: Survey projects – ML-01-0958, ML-01-0961, ML-01-962, ML-01-0963

Attn: Mr. James Dykmann

Dear Mr. Dykmann:

Enclosed are copies of four project survey reports for your review:

U-01-FS-0582f (ML-01-0958) Horn Mountain Spring Monitoring Sites: 3 spring sites where monitoring stations will be emplaced by the Emery Water Conservancy District. No cultural properties were identified as a result of the project survey conducted by Manti-LaSal National Forest staff.

U-01-FS-0580f (ML-01-0961) Boardinghouse Canyon Gas Well Access Road: reopening of decommissioned road to access a gas well leased by Petroleum Development Corp. Only one isolated find, and no cultural properties were identified as a result of the project survey conducted by Manti-LaSal National Forest staff.

U-01-FS-0581f (ML-01-0962) Boardinghouse Canyon Coal Subsidence Reclamation: reclamation of a subsidence pit formed due to room-and-pillar mining by White Oak Mine. No cultural properties were identified as a result of the project survey conducted by Manti-LaSal National Forest staff.

U-01-FS-0583f (ML-01-0963) PacifiCorp. Coal Drilling, Upper Joes Valley: drilling of coal exploration hole. No cultural properties were identified as a result of the project survey conducted by Manti-LaSal National Forest staff.

The Manti-LaSal N.F. has determined that, based on the nature of these undertakings, anticipated effects and survey results, it is recommended that a finding of *no effect to historic properties* as a result of implementation of each of the above-listed project. As such, your concurrence is requested in regards to these determinations.

We appreciate your review and comments. Please contact Chris Horting, archaeologist at (435) 636-3511 if you have any questions or require additional information.

Sincerely,


JOSEPH G. GALLAGHER

Branch Chief – Recreation, Heritage, and Wilderness

CC: Dale Harber



SHPO COVER PAGE

Must Accompany All Project Reports Submitted to Utah SHPO

Project Name: *Boardinghouse Canyon
Coal Subsidence Reclamation*
Report Date: *Aug. 28, 2001*

State Project No.: *U-01-0581-f*
USFS Project No.: *ML-01-962*

Principal Investigator: *J. Gallagher*

Field Supervisor(s): *Dale Harber*

Acreage Surveyed: Intensive: *2* acres Recon/Intuitive: \emptyset acres

7.5' Series USGS Map Reference(s): *Scotfield, Utah (1979)*

ARCHAEOLOGICAL SITES REPORTED

(Check Columns)	N.R. ELIGIBLE	NEW	REVISIT, UPDATE	REVISIT, NO UPDATE	HISTORIC	PRE-HISTORIC	State Site Number (List)	ML Number (List)
TOTALS	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset		
HIST. STRUCT. 106 form								
TOTAL N.R. ELIGIBLE SITES	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset		

CHECKLIST OF REQUIRED ITEMS:

- One copy of Final Report
- Copy of 7.5' Series USGS Map with surveyed/excavated area clearly identified
- Completed IMACS site inventory forms, including:
 - Parts A and B or C
 - IMACS Encoding form
 - Site sketch map
 - Photographs
 - Copy of the appropriate 7.5' Series USGS map, with site location clearly marked and labeled with Smithsonian Site Number
- Completed COVER PAGE accompanying Final Report and Survey Materials

CULTURAL RESOURCE SUMMARY FORM USFS# ML-01-0962
MANTI-LA SAL NATIONAL FOREST USHPO#
(Attach Narrative Report Form)

FS PROJECT NO.: ML-01-962 Name: Boardinghouse Canyon Coal Subsidence Reclamation

Manti-La Sal Ferron-Price T. 13 S., R. 6 E., Sec 30
Forest Name District T/R/Sec(s)

8/28/2001 FS
Report Date Organization/PI

Benefitting Function:
 Heritage Project 106 Compliance Project Assessment or Resource Assistance (Not a 106 undertaking)

Project Cost: Vehicle/Gas \$21 USFS Amt. \$ 222
Supplies Proponent Amt. \$
Salary \$201 Contributed Amt. \$

(2xvol) Per Diem/Vol TOTAL \$ 222
Other
Overhead

Nature of Work (Check all that apply):

- Survey MOU/Clearance (No new surv)
- Monitoring /Docum. Assessment/Plan
- Evaluation or Mitigation: Excavation or Documentation
- Test Excavation Discovery
- Interpretation Damage Assessment/Vandalism
- Site Protection/ Stabilization
- Other (Explained below)

Total Project Acres: 2
Acres Surveyed: 2
New Sites Recorded: 0
Sites Monitored W/ Documentation:
Project Photographs Catalog #s: _____
Artifacts (isolates) Collection #s: _____
Location of Curation: _____

Tracking Dates (N/A if not required):

To SHPO 9/4/01
Concurrence Rec'd 9/11/01
Mylar Updated 10/3/01
GIS Digitized _____
Proj. Database Entry _____
Accomplishment Report : FY 01

- Not a 106 Undertaking/No ground disturbance
- No Effect; No Sites
- No Effect Through Design or Mitigation Rec's
- Other Effect (See Detail Report)

Determination of Effects on Sites

Certification:			
<i>Paul J. Harbor</i>	<u>8/28/01</u>	<i>Chris Hotting</i>	<u>8/31/01</u>
Reporter's Signature	Date	Reviewer Signature	Date

COMMENTS: A subsidence pit approximately 10 meters square by 6 meters deep has formed above the White Oak Mine, due to room-and-pillar type mining. The operator will be required to reclaim this pit prior to bond release for the mine. Reclamation should have no effect on cultural resources, as no sites were found.

CULTURAL RESOURCES PROJECT REPORT FORM

Manti-la Sal National Forest - Moab/Monticello Ranger District

Report Date: August 28, 2001

USFS Project No. ML-01-962

Project Name: Boardinghouse Canyon Coal Subsidence Reclamation

1. Landowner: USFS X Other:

2. Quadrangle: Scofield 7.5 min.

3. a. Project Effect:

- No Potential to Affect Sites or Historic Properties
- Inventoried: No Sites/Historic Properties in Project Impact Areas or No Eligible Sites
- Clearance Recommended : Sites Present but No Effect Through Project Design or Mitigation
- Other Determination(s)
 - No Adverse Effect Through Mitigation/Design
 - Adverse Effect (Documentation Attached)

4. Project Description:

A subsidence pit approximately 10 meters square by 6 meters deep has formed above the White Oak Mine, due to room-and-pillar type mining. The operator will be required to reclaim this pit prior to bond release for the mine. Reclamation methods have not been determined, but will probably include using a trackhoe to fill the pit and reduce the slope around the pit.

5. Environmental Setting:

The pit is located near the bottom of Boardinghouse Canyon on the south-facing slope. The vegetation is aspen overstory with a grass/forb understory. Ground surface visibility is only 15-20%. The slope averages approximately 40%.

6. Sources Consulted (including Lit., Native American Consultation, and Previous Coverage References):

The Forest files of projects and sites were reviewed, as well as the GLO Plats. A large area northwest of the site was covered by ML-84-357, done in August 1984 by ARCON. Three sites have been identified within 1 mile of the proposed project area, including 2 prehistoric lithic scatters and a historic sheep camp. None have been determined to be eligible for the NRHP.

7. Project Field Methodology:

Acres Surveyed Intensively 2 Acres Non-intensively
 Clearance Only, No Field Survey

A series of transects 5 meters apart were surveyed, covering a 100 meter square with the pit in the center. This coverage should be more than adequate for whatever type of reclamation is decided upon later.

I certify that this report is complete and accurate to the best of my knowledge.

Ralph L. Harbor
Signature of Specialist or P.I.

8/28/01
Date

ML Project No: ML-01-962

8. Findings/Results of Survey:

No cultural resources were found.

9. Recommendations:

Reclaim the subsidence pit. There would be no impact on cultural resources.

10. Attachments:

- Project Location Map
- Project Survey Coverage Map
- Project Site Location Map(s)
- Project Isolated Find Maps
- Site Records
- Isolated Find records/Lists
- SHPO Consultation Documentation
- Other Materials: _____

MLNF April 2000

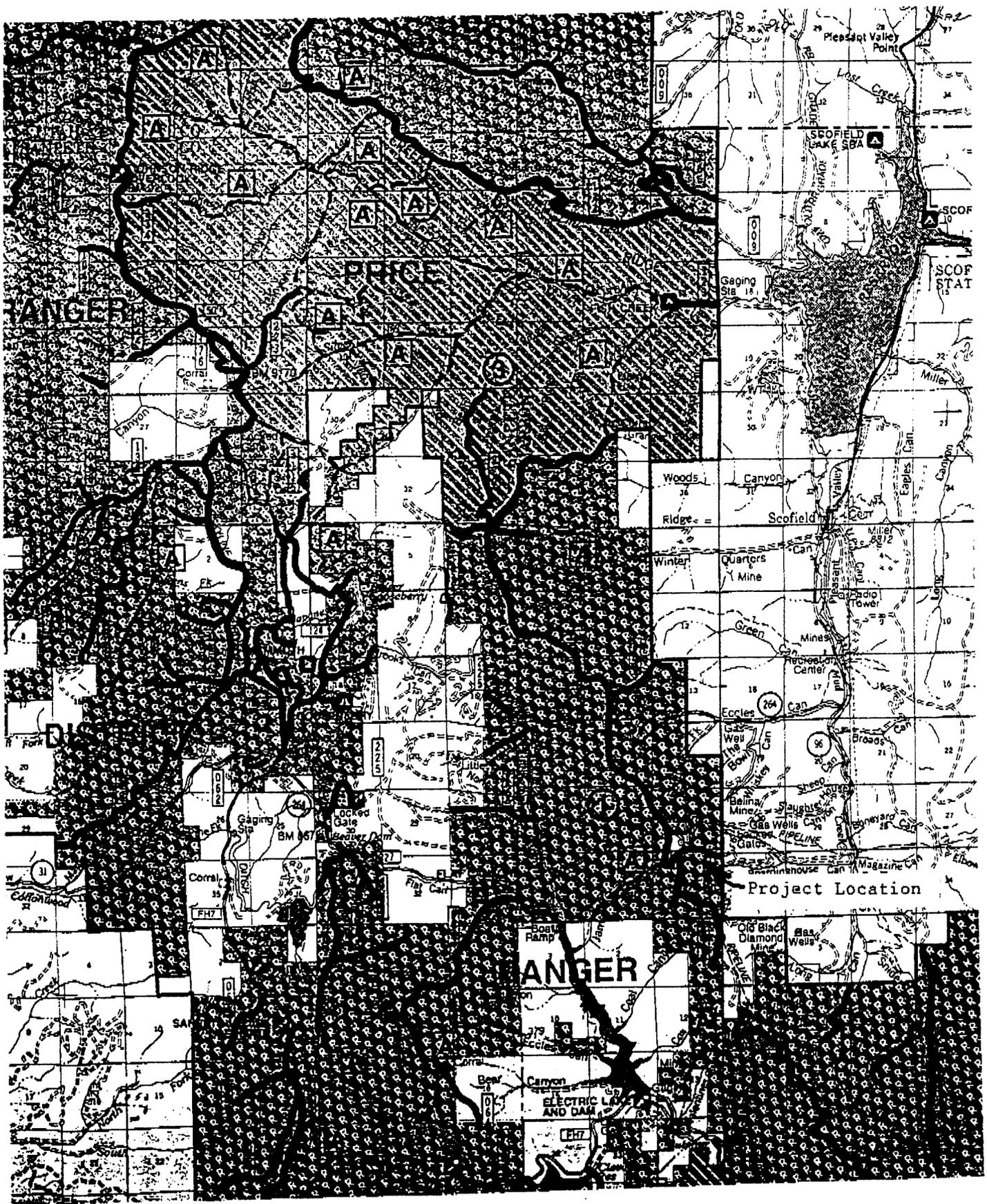


Fig. 1. General Location Map