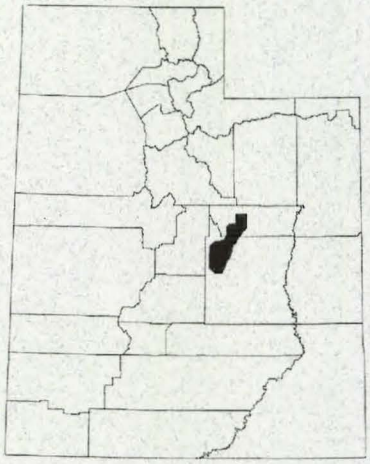
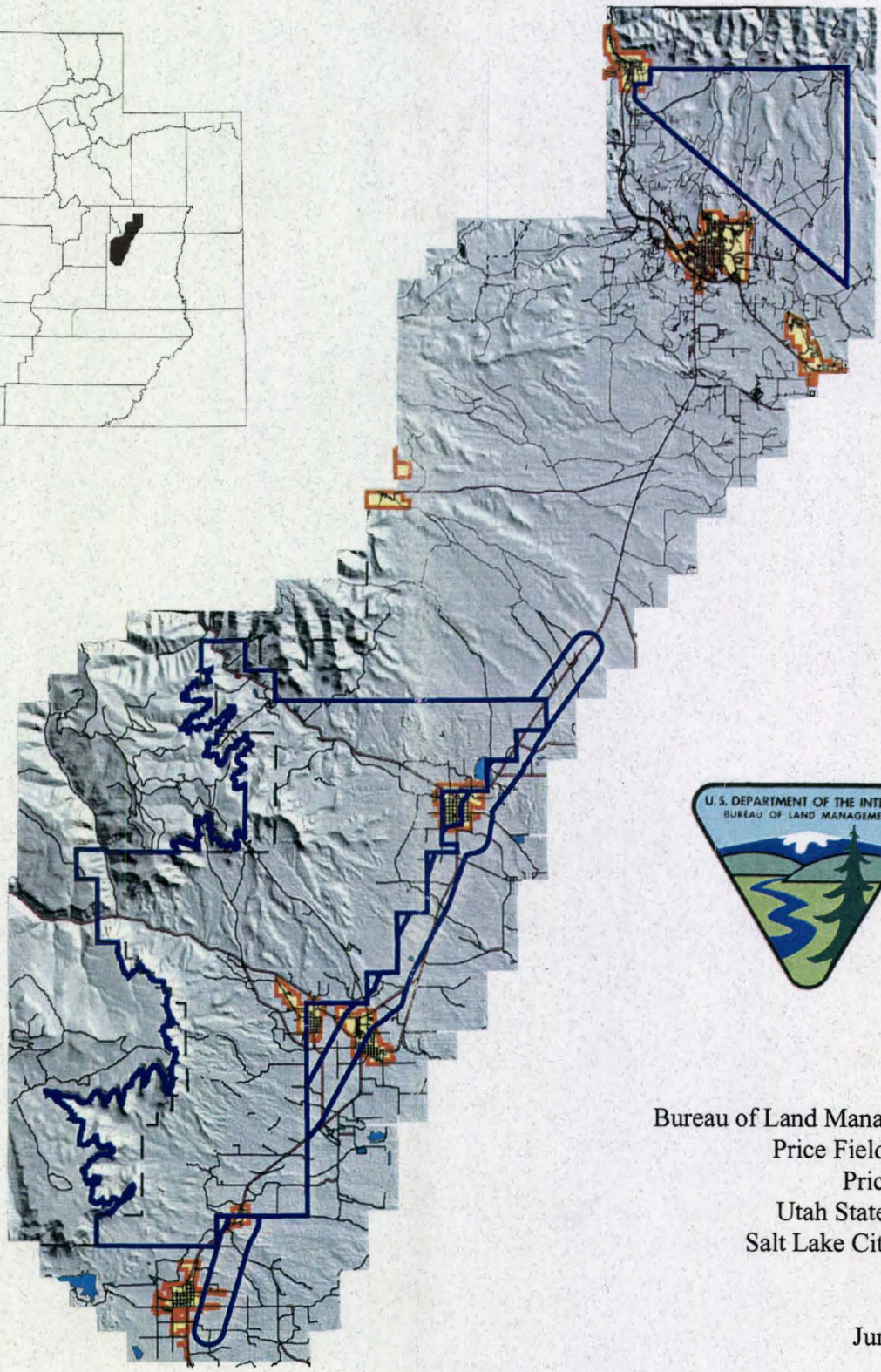
VOLUME II

FINAL ENVIRONMENTAL IMPACT STATEMENT
FERRON NATURAL GAS PROJECT





Bureau of Land Management
Price Field Office
Price, Utah
Utah State Office
Salt Lake City, Utah

June 1999

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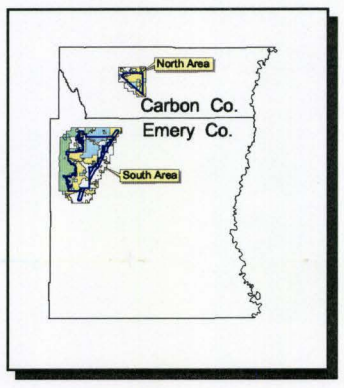
LEGEND

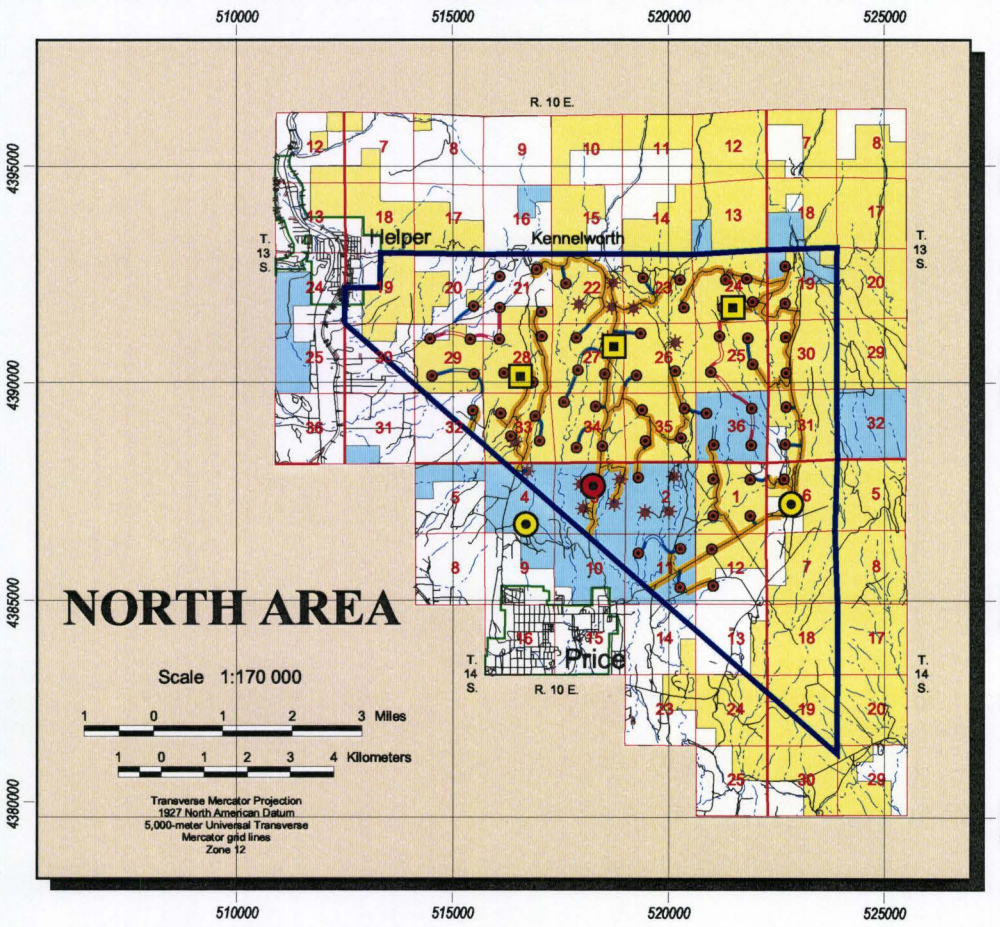
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Local Road
- Proposed Resource Road
- Potentially Upgraded Road
- Proposed Central Production Facility
- Proposed Compressor Station
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

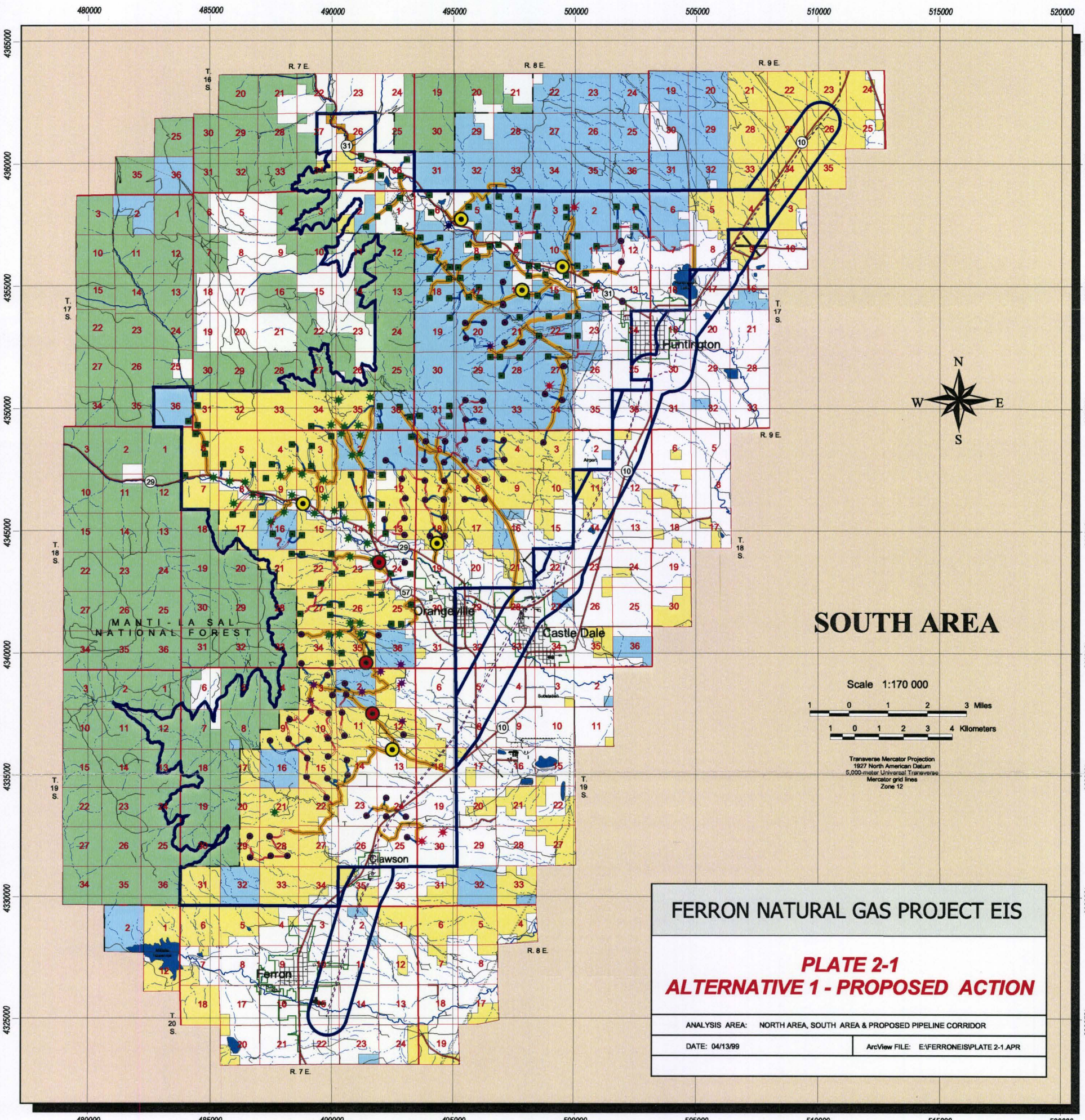
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-1
ALTERNATIVE 1 - PROPOSED ACTION

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99

ArcView FILE: E:\FERRONEIS\PLATE 2-1.APR

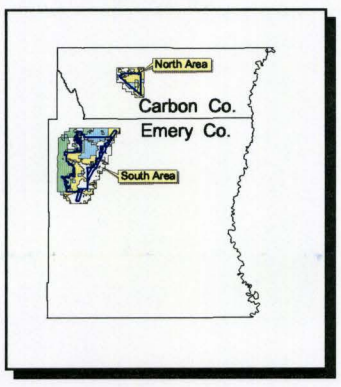
LEGEND

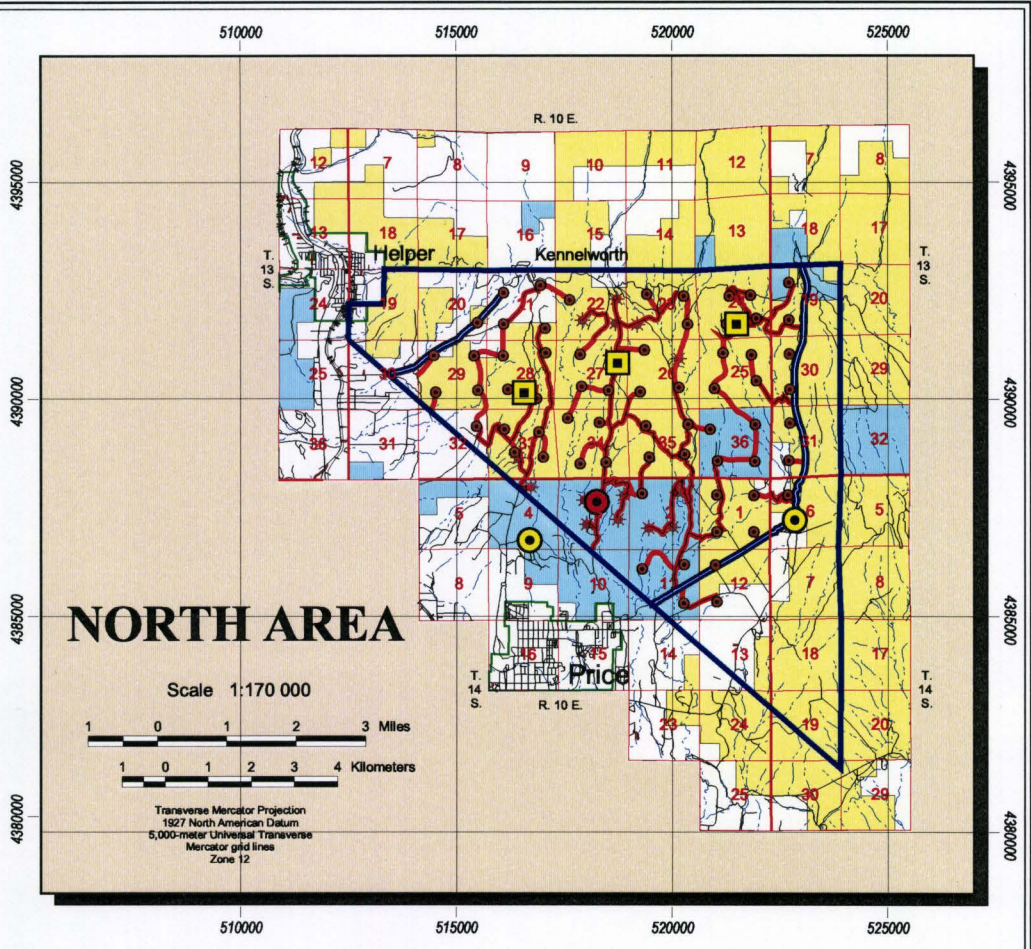
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Above Ground Line
- Existing Above Ground Line
- Proposed Central Production Facility
- Proposed Compressor Station
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

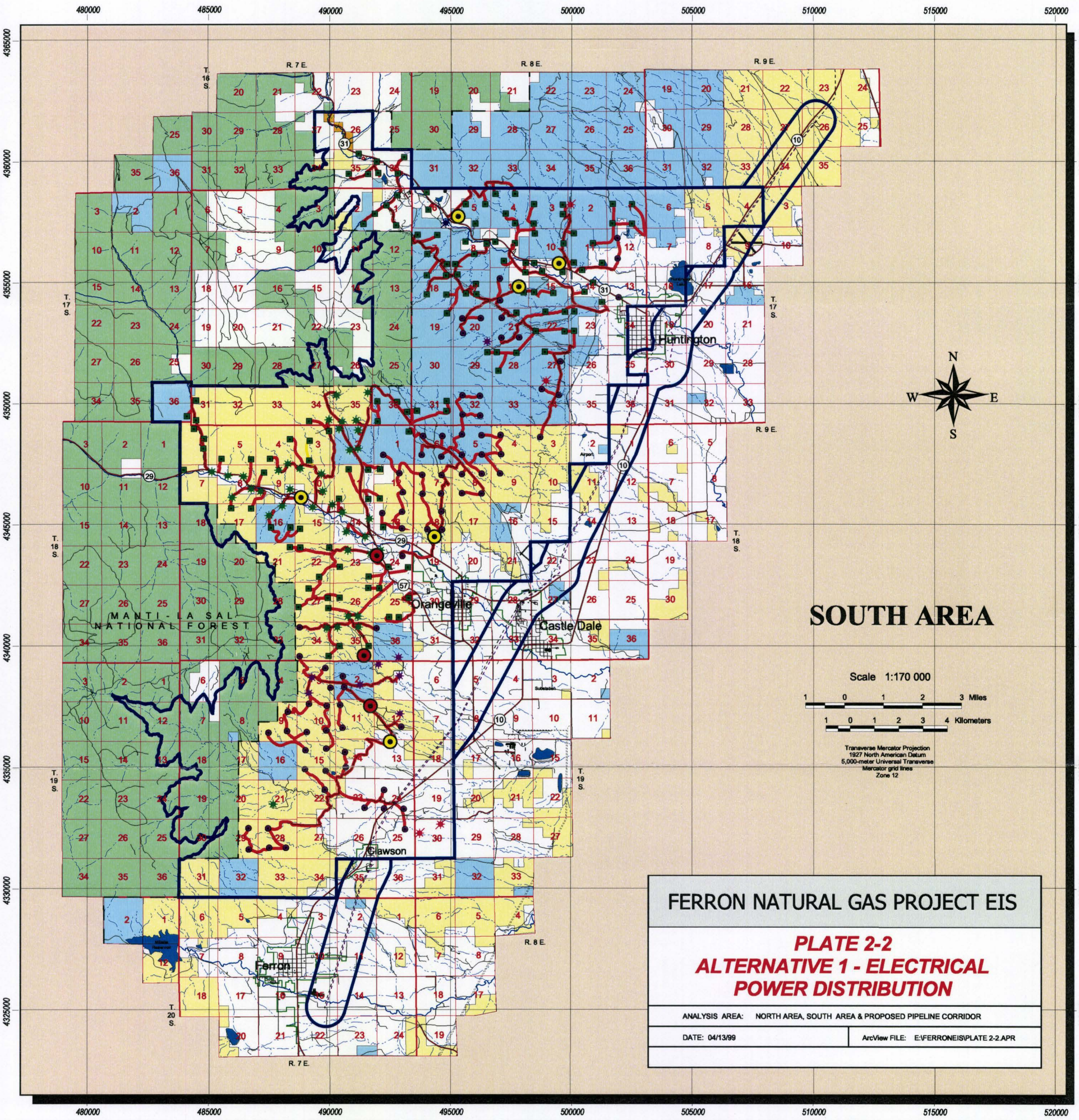
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-2
ALTERNATIVE 1 - ELECTRICAL POWER DISTRIBUTION

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99 | ArcView FILE: E:\FERRONEIS\PLATE 2-2.APR

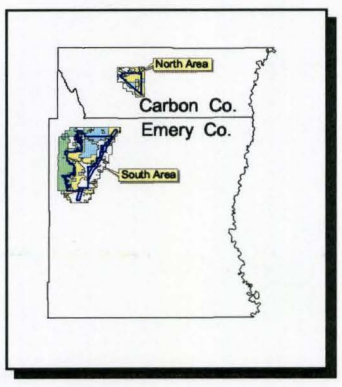
LEGEND

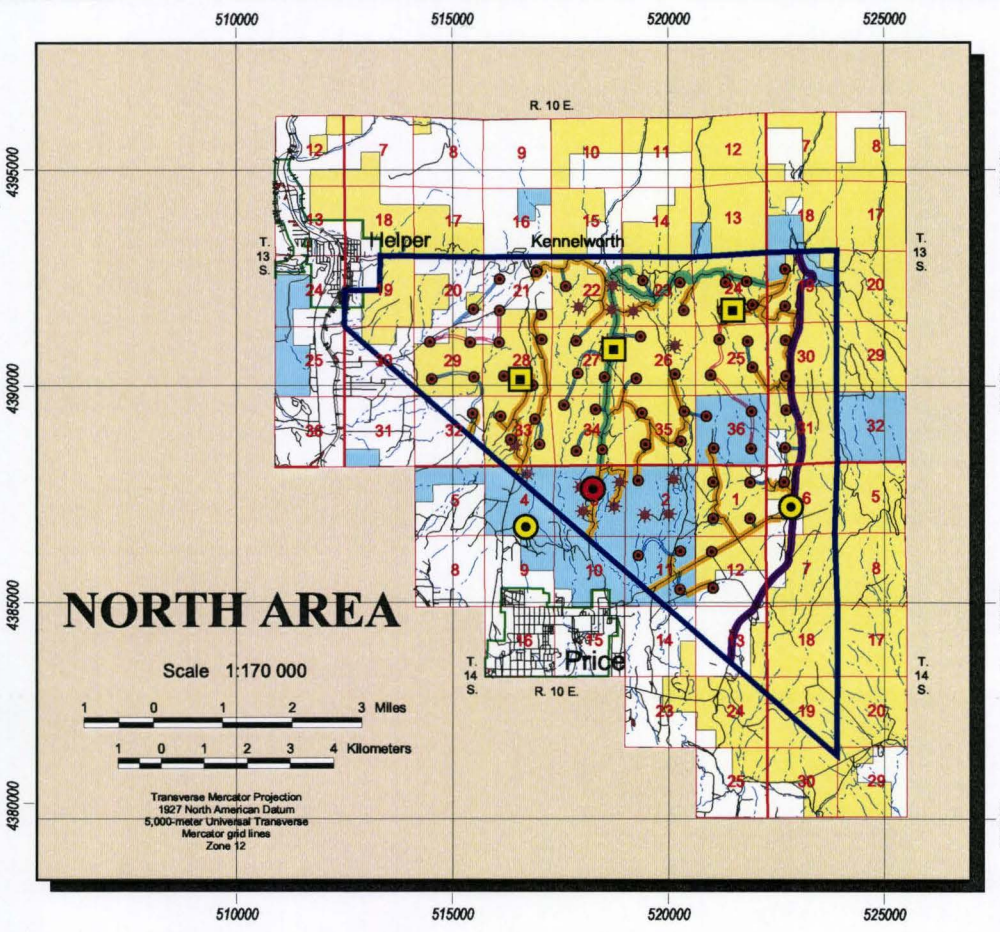
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Local Road
- Proposed Resource Road
- BLM Maintenance
- County Maintenance
- Proposed Central Production Facility
- Proposed Compressor Station
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

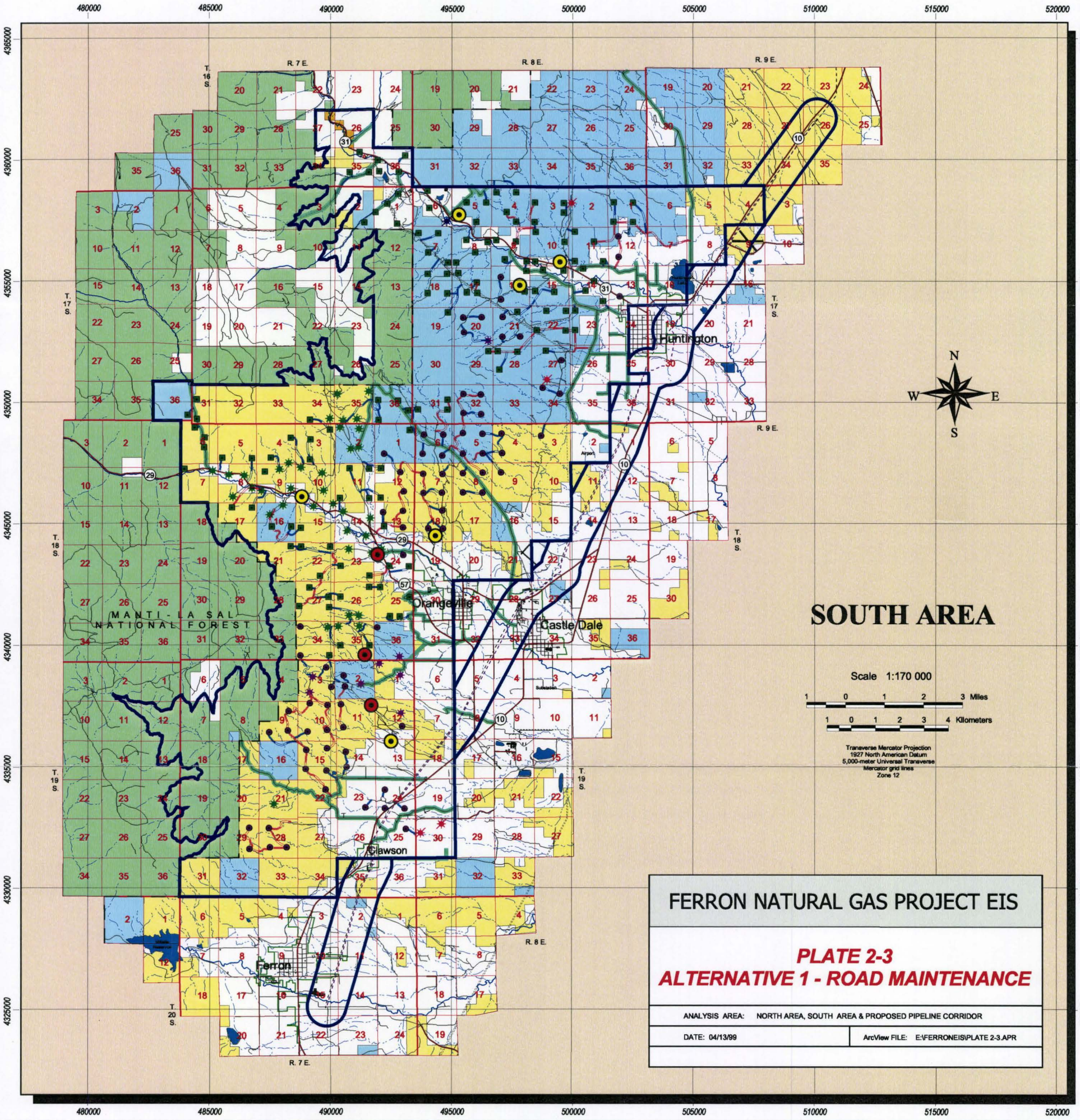
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-3
ALTERNATIVE 1 - ROAD MAINTENANCE

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99

ArcView FILE: E:\FERRONEIS\PLATE 2-3.APR

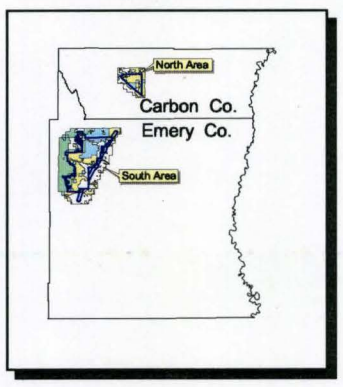
LEGEND

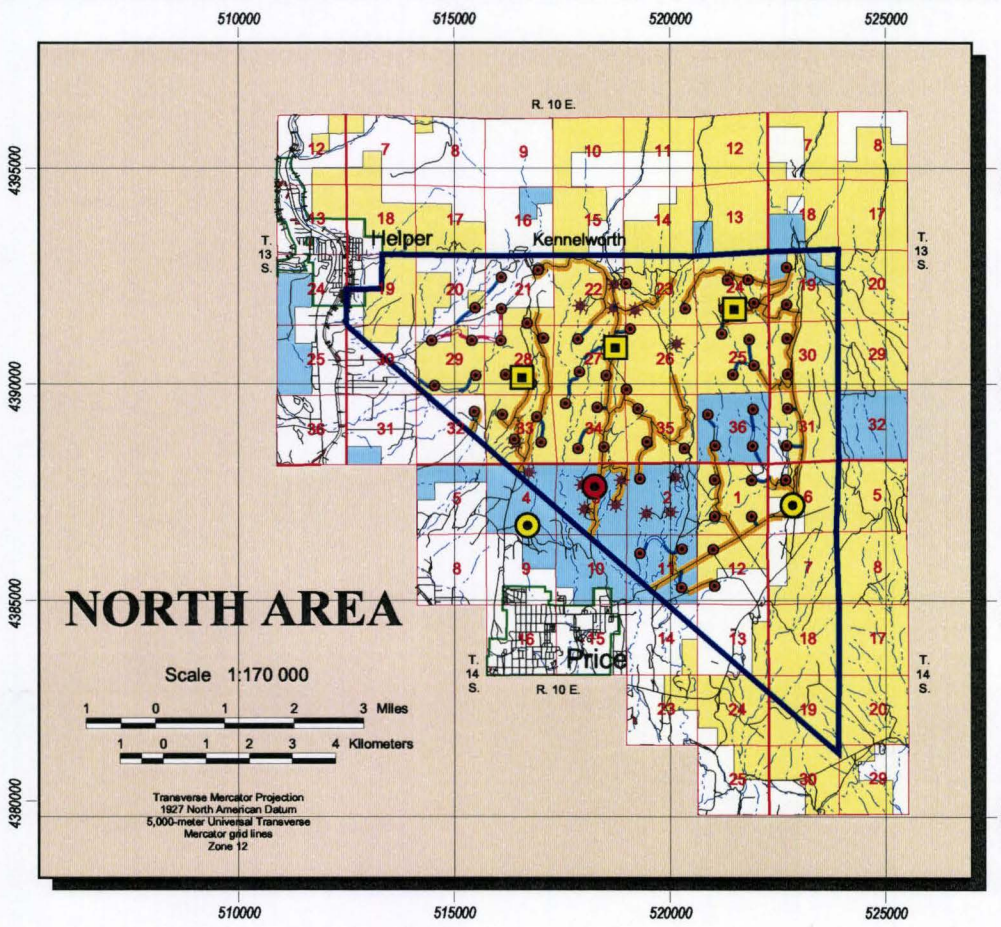
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Local Road
- Proposed Resource Road
- Potentially Upgraded Road
- Proposed Central Production Facility
- Proposed Compressor Station
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

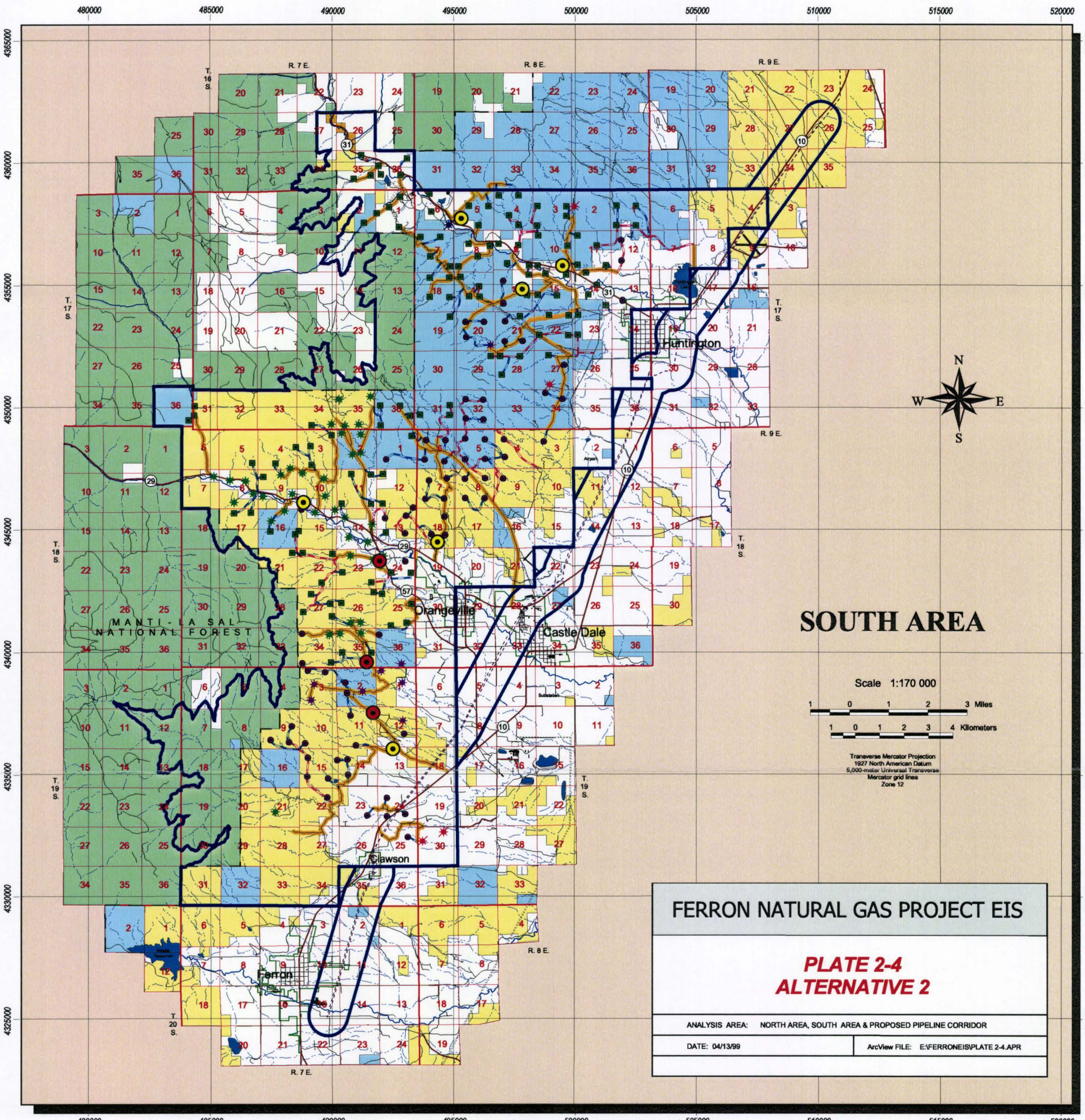
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-4
ALTERNATIVE 2

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99

ArcView FILE: E:\FERRONEIS\PLATE 2-4.APR

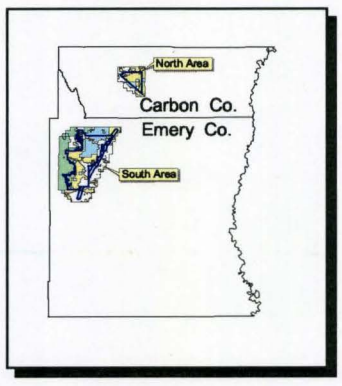
LEGEND

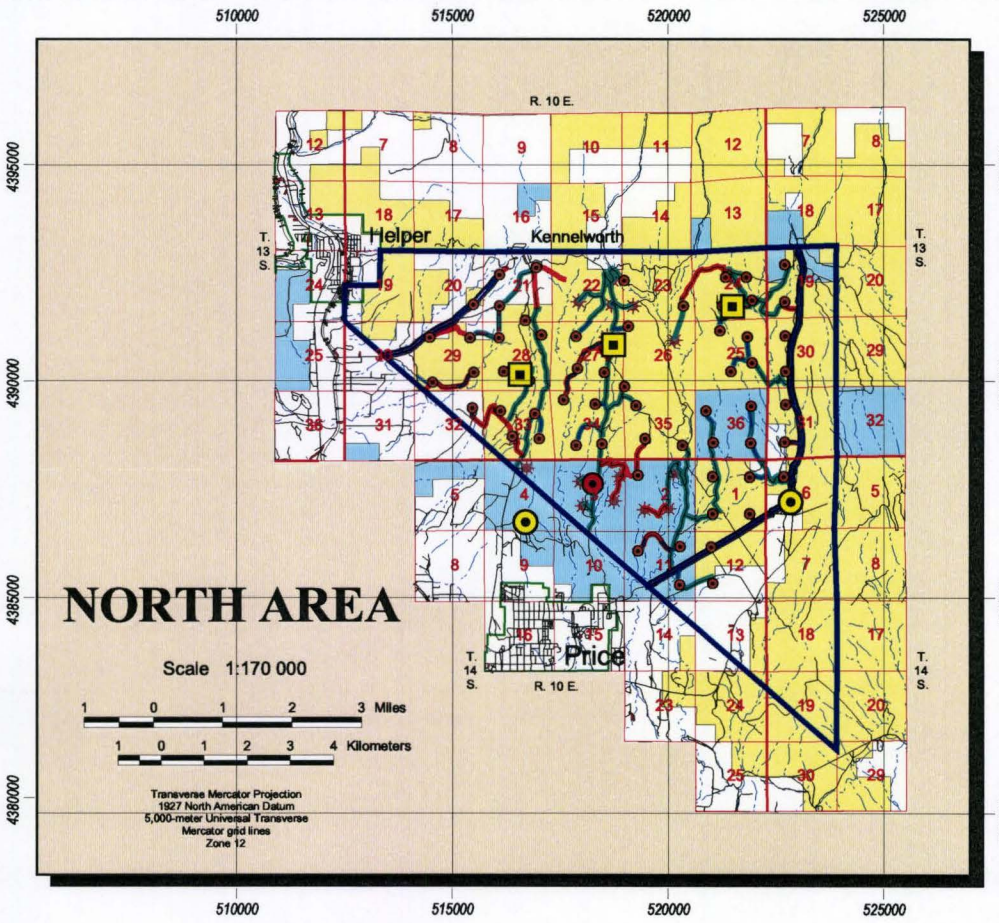
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Burried Line
- Proposed Above Ground Line
- Existing Above Ground Line
- Proposed Central Production Facility
- Proposed Compressor Station
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

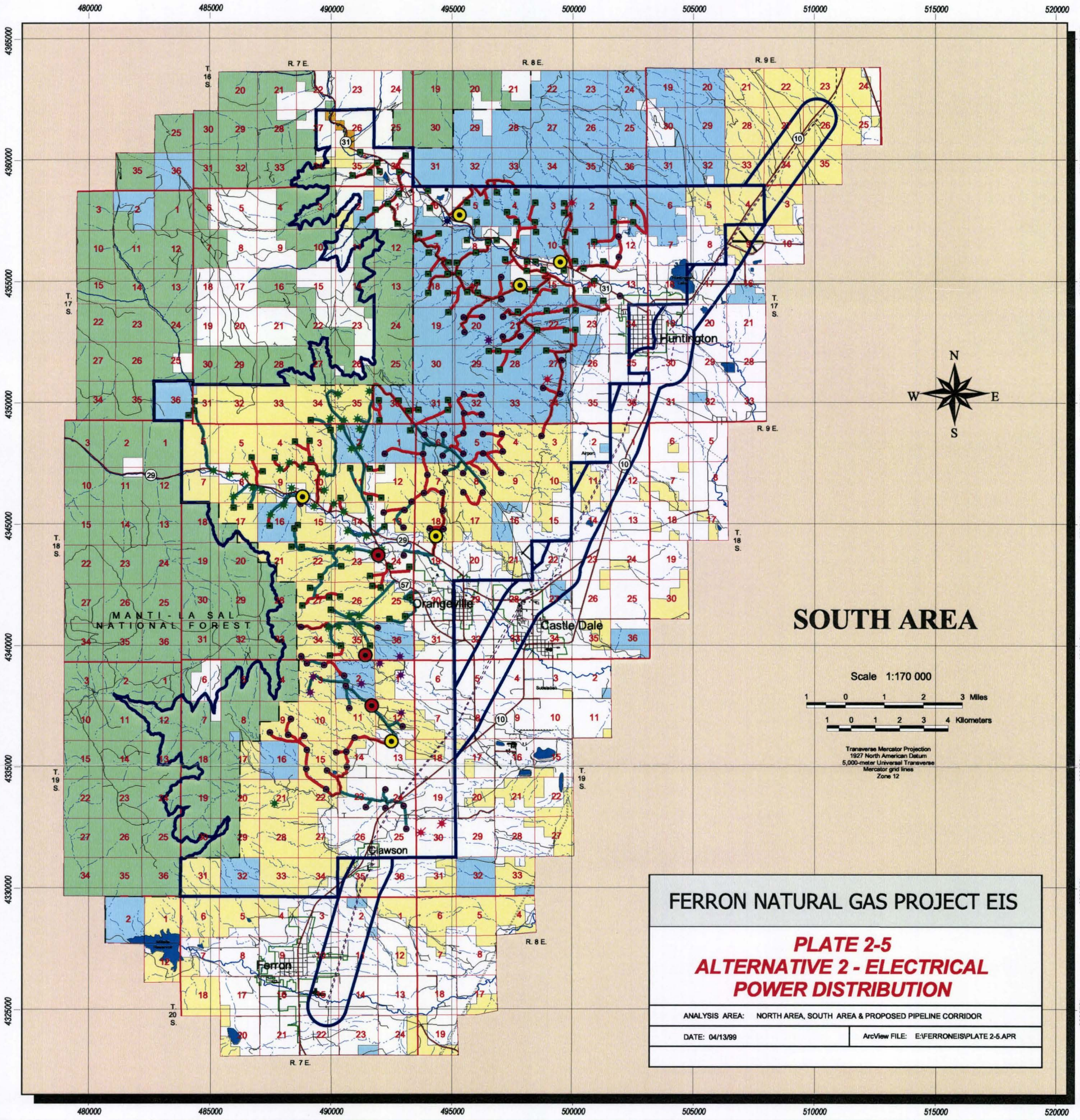
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-5
ALTERNATIVE 2 - ELECTRICAL POWER DISTRIBUTION

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99

ArcView FILE: E:\FERRONEIS\PLATE 2-5.APR

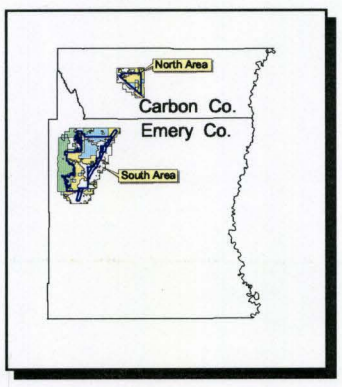
LEGEND

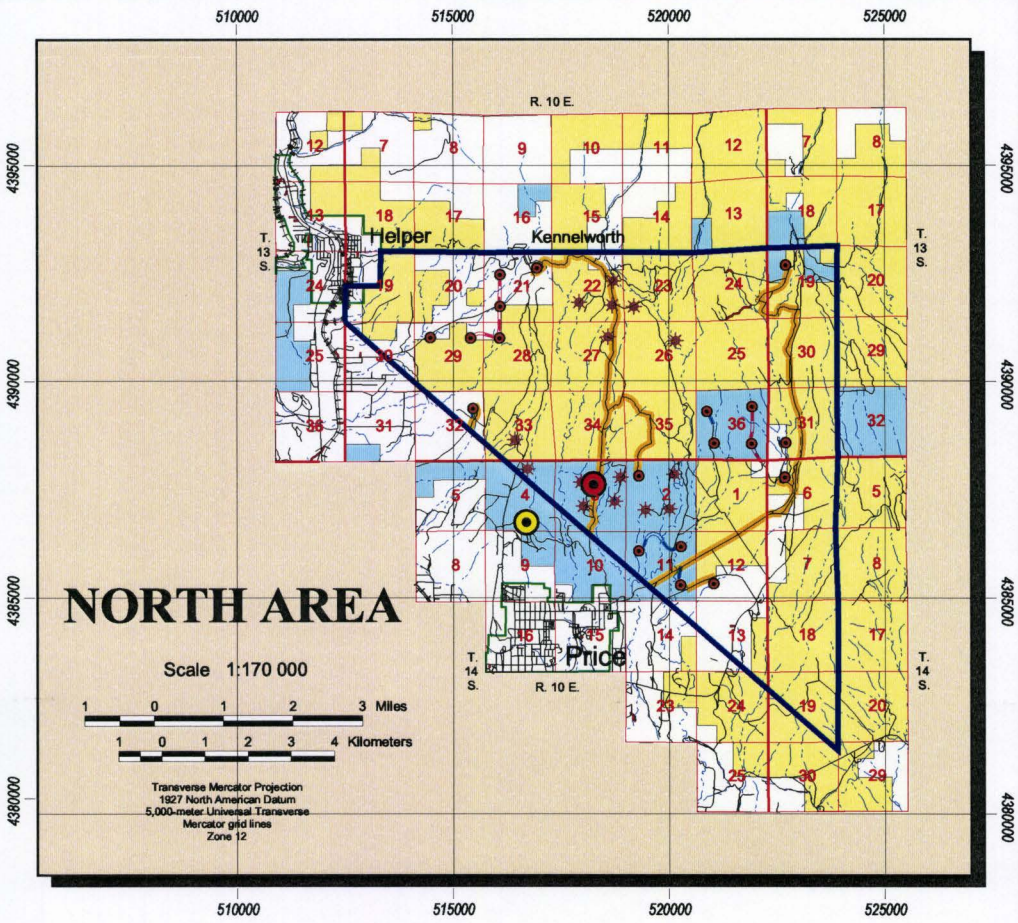
- EIS Project Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/ Unimproved Road
- Railroad
- Proposed Anadarko Well
- Proposed Texaco Well
- Proposed Chandler Well
- Existing Texaco Well
- Existing Chandler Well
- Company Shut-in Well
- Non-company Shut-in Well
- Proposed Local Road
- Proposed Resource Road
- Potentially Upgraded Road
- Proposed Central Production Facility
- Existing Central Production Facility
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

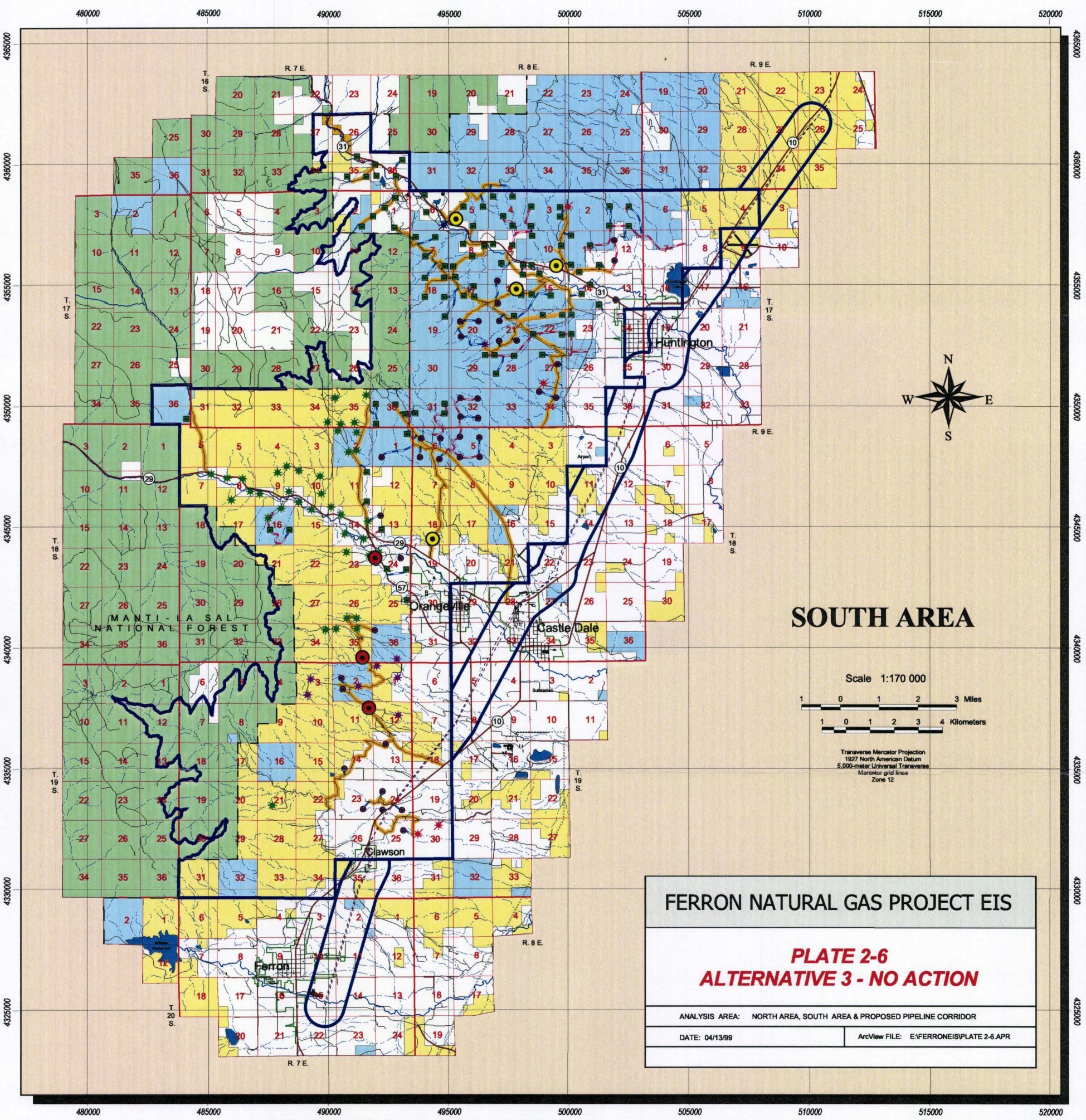
Surface Ownership

- BLM
- BLM/ Public Water Reserve
- Forest Service
- Private
- State

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 2-6
ALTERNATIVE 3 - NO ACTION

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

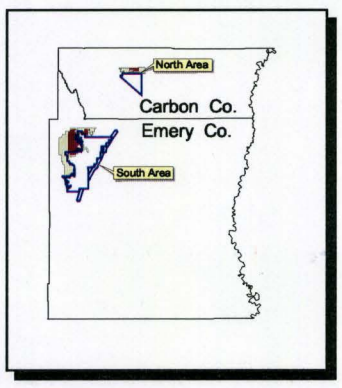
DATE: 04/13/99

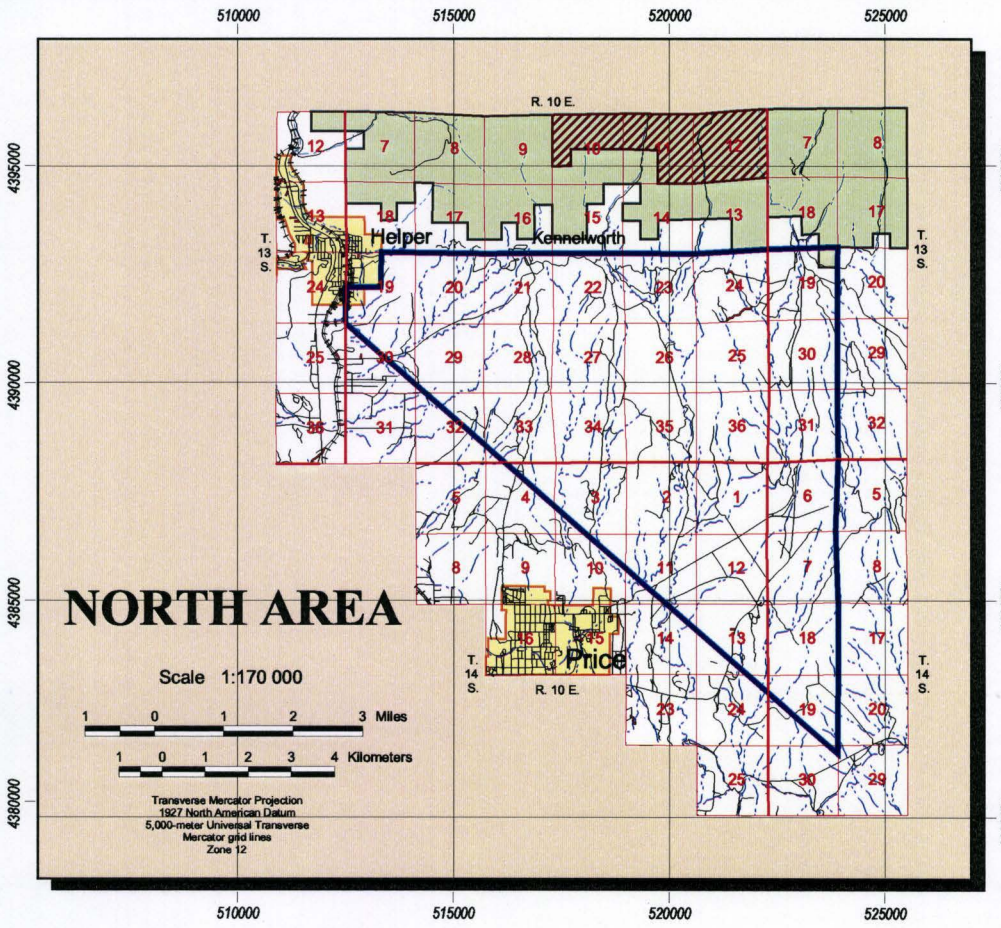
ArcView FILE: E:\FERRONEIS\PLATE 2-6.APR

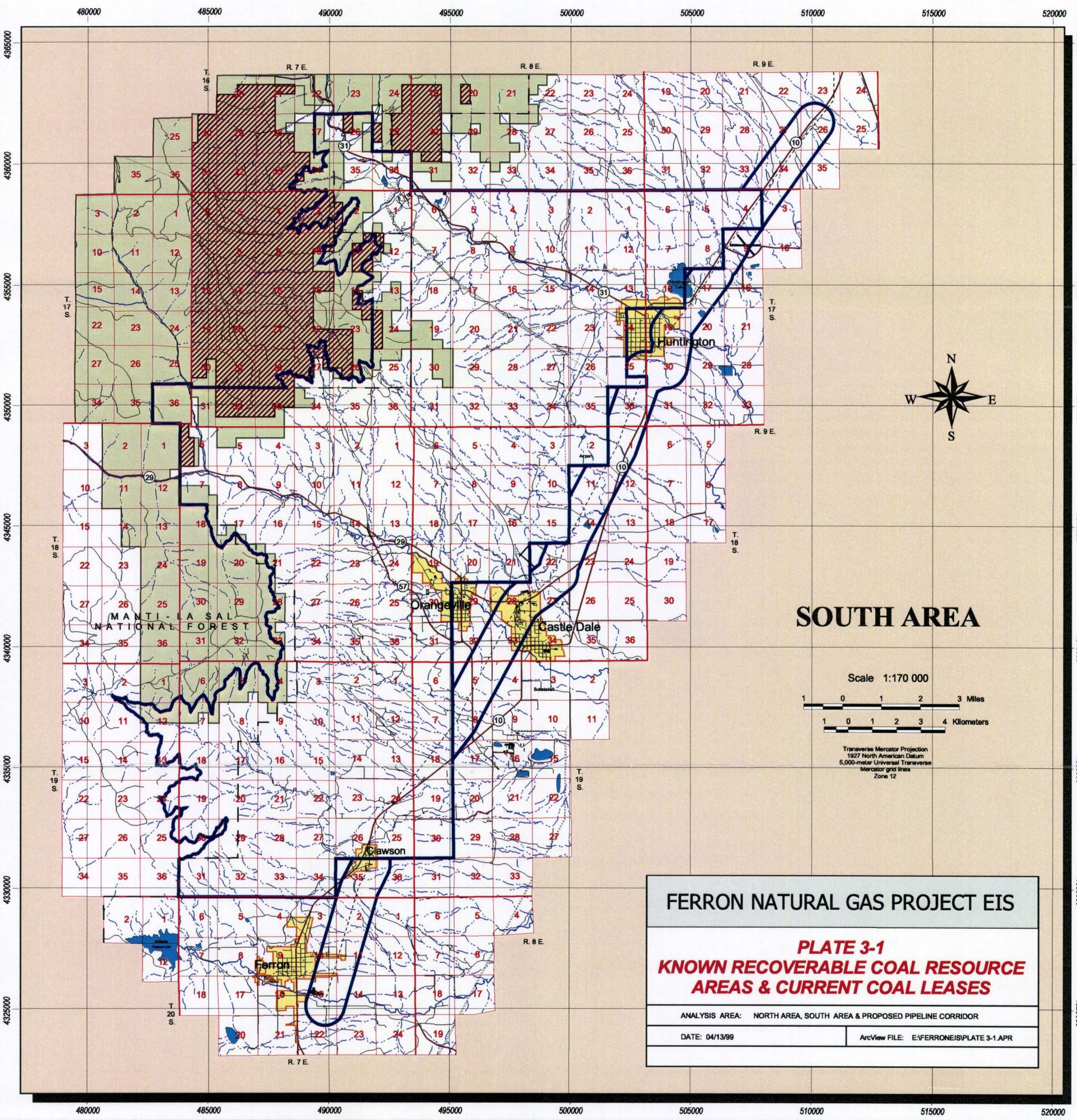
LEGEND

- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary
- Active Coal Leases
- Known Recoverable Coal Resource Area

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-1
KNOWN RECOVERABLE COAL RESOURCE AREAS & CURRENT COAL LEASES

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 04/13/99 | ArcView FILE: E:\FERRONEIS\PLATE 3-1.APR

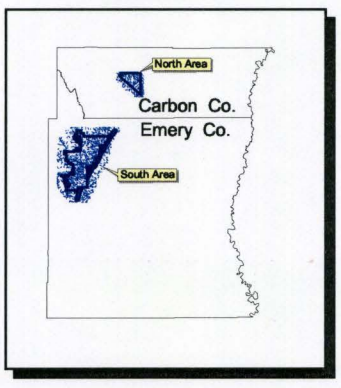
LEGEND

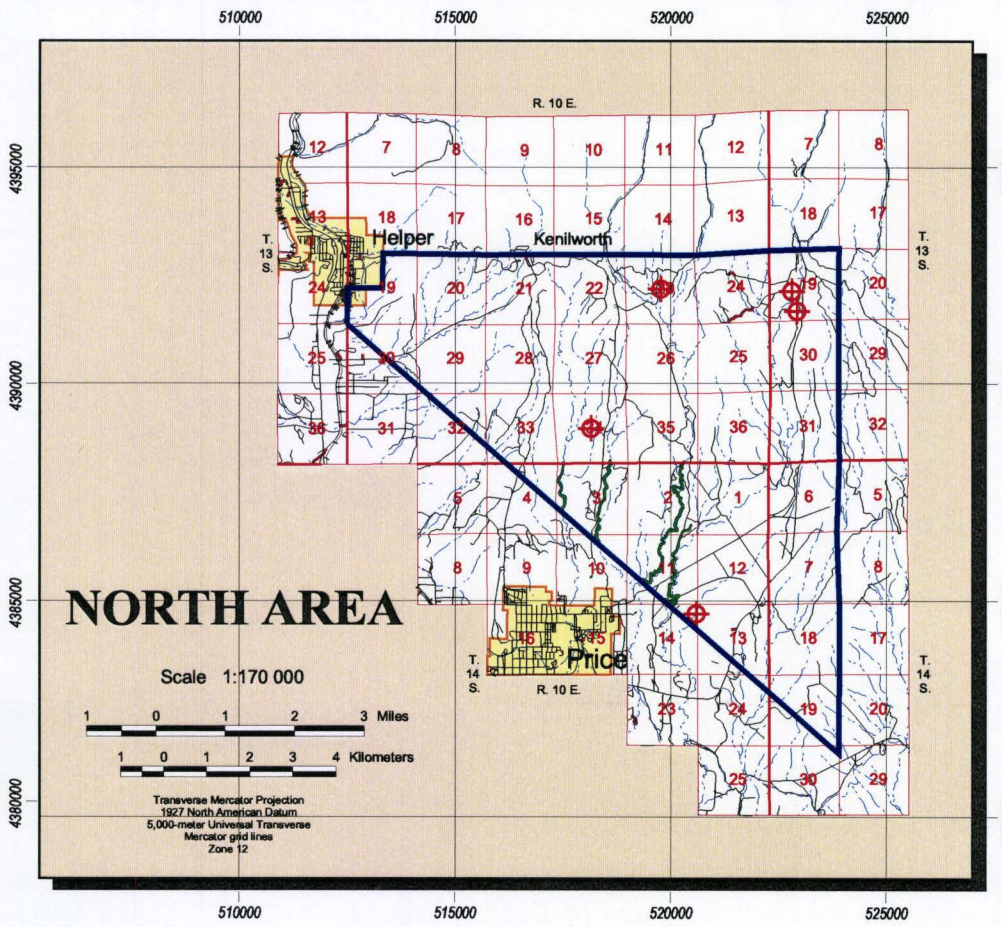
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary
- Springs
- Water Quality Sites
- Municipal Water Supply Sources

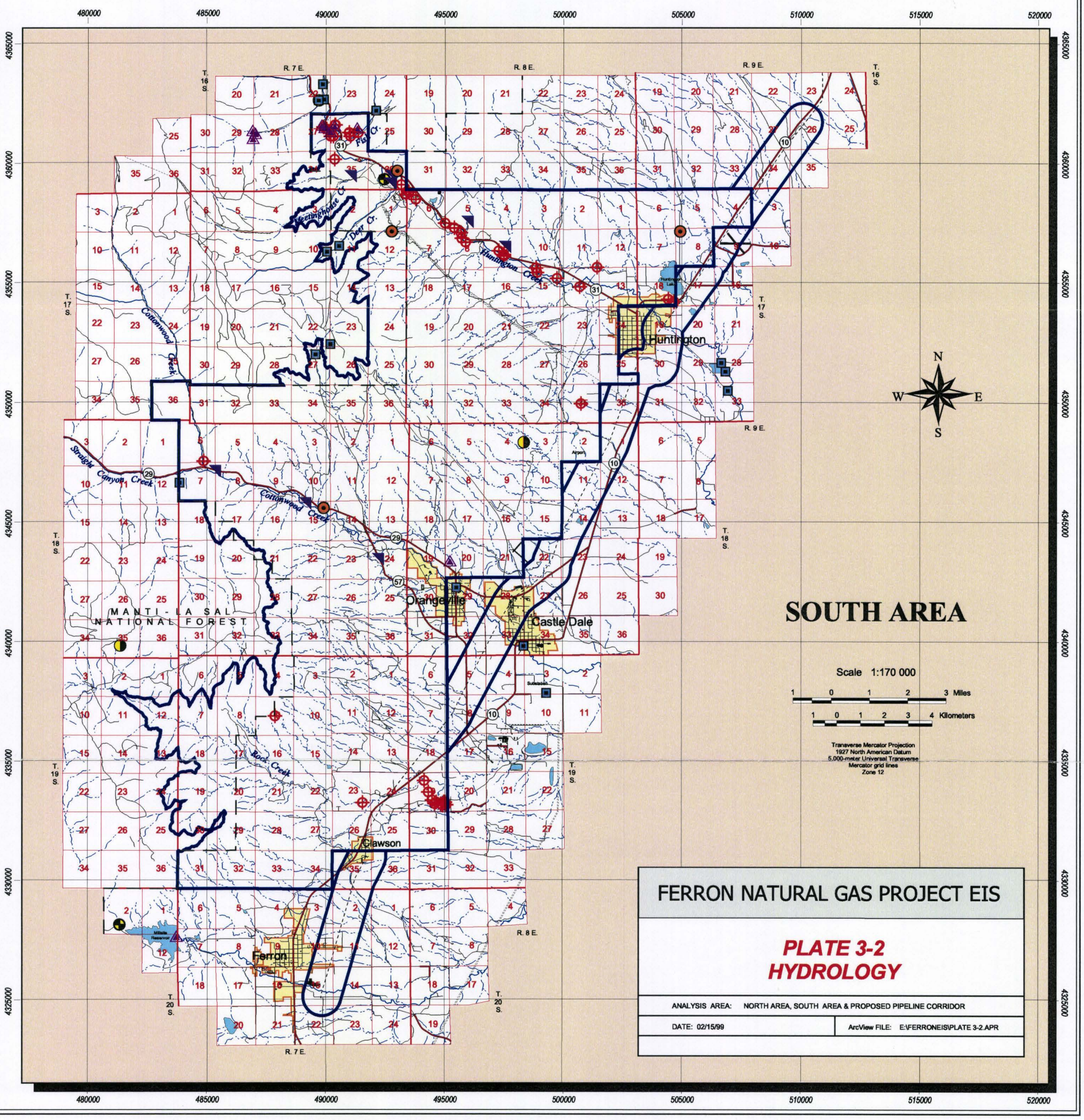
Stream Flow Discharge Sites

- UDWQ
- USGS
- Wells
- Aquatic Sampling Sites
- 100 Year Floodplain

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-2
HYDROLOGY

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

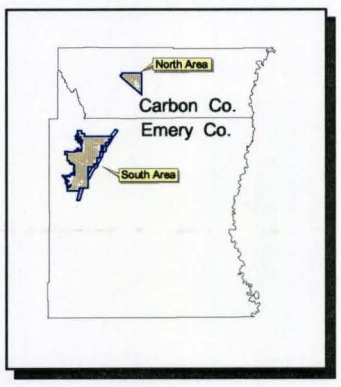
DATE: 02/15/99

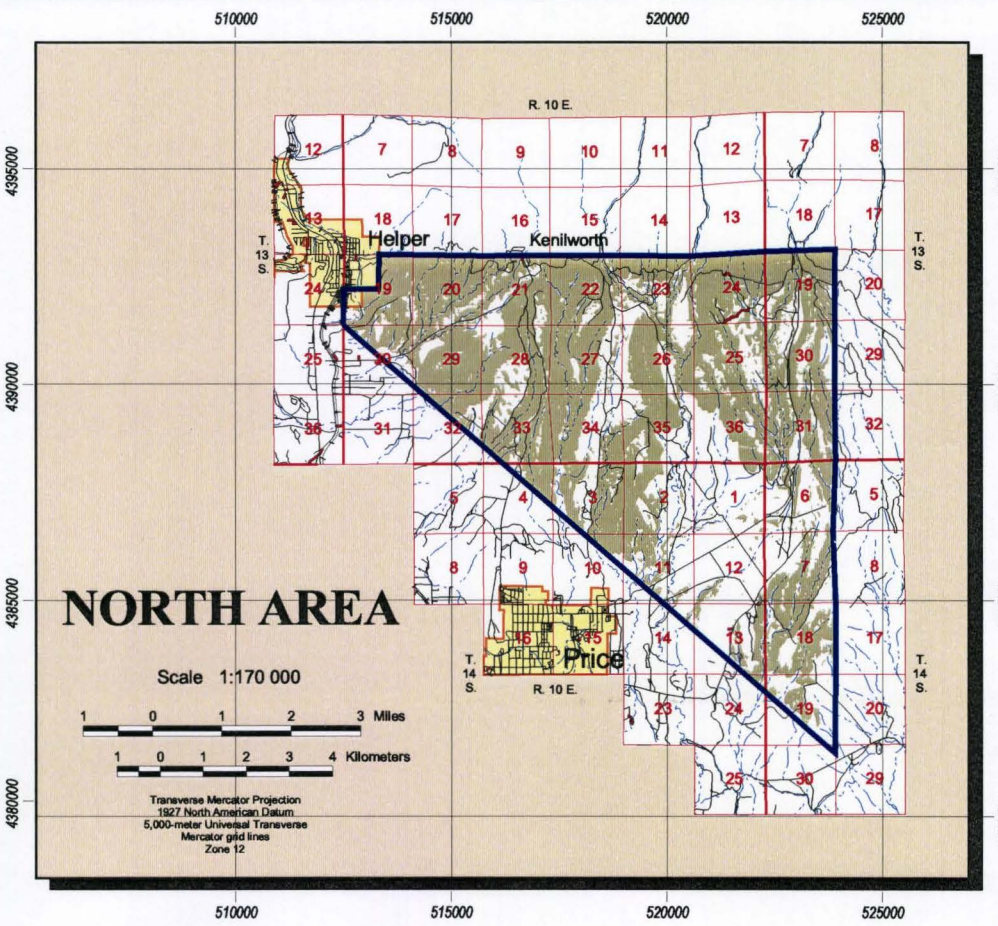
ArcView FILE: E:\FERRONEIS\PLATE 3-2.APR

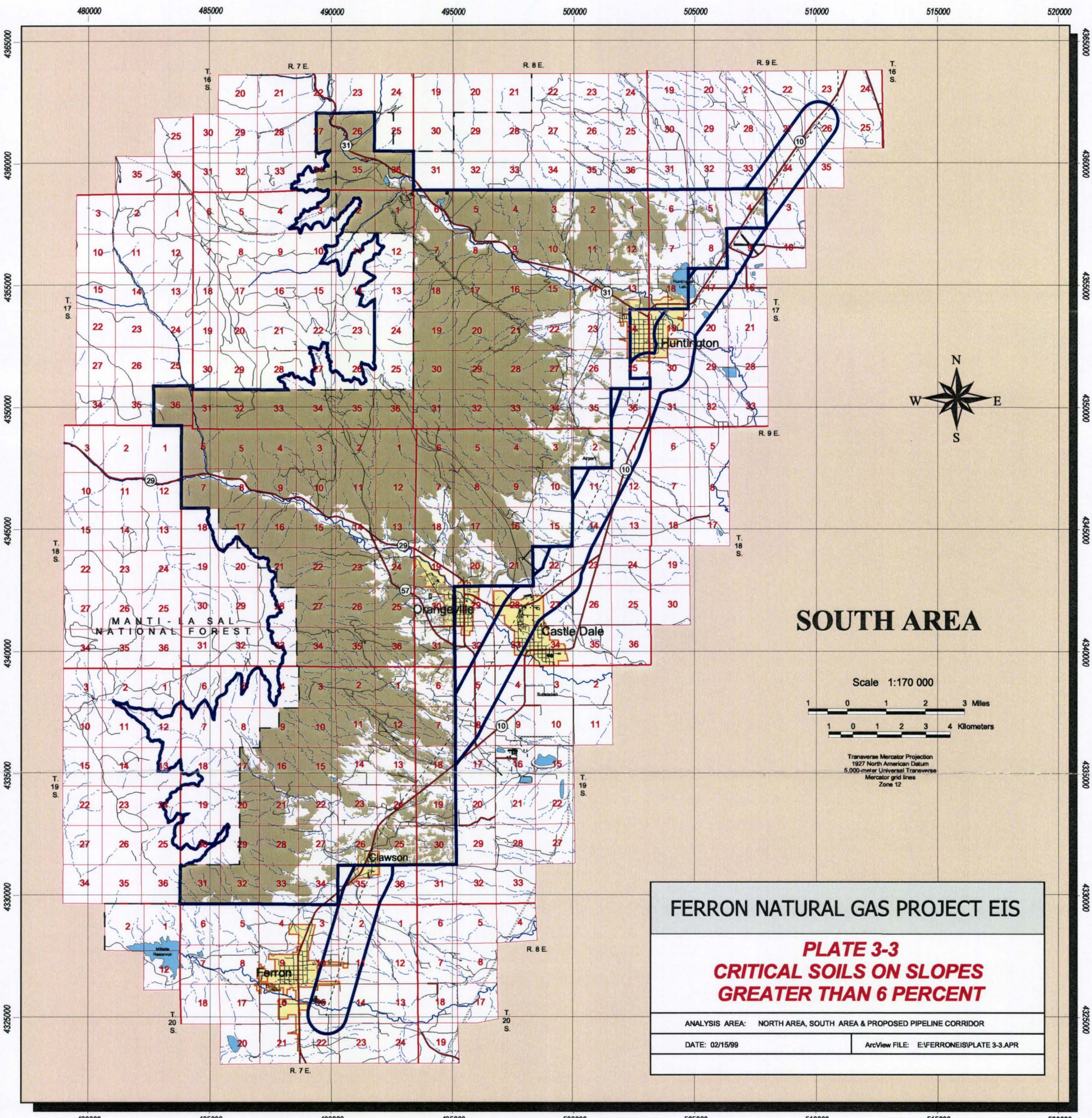
LEGEND

- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Proposed Questar Pipeline
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary
- Critical Soils on Slopes Greater Than 6 Percent

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-3
CRITICAL SOILS ON SLOPES GREATER THAN 6 PERCENT

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-3.APR

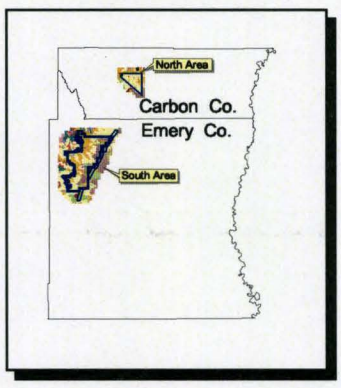
LEGEND

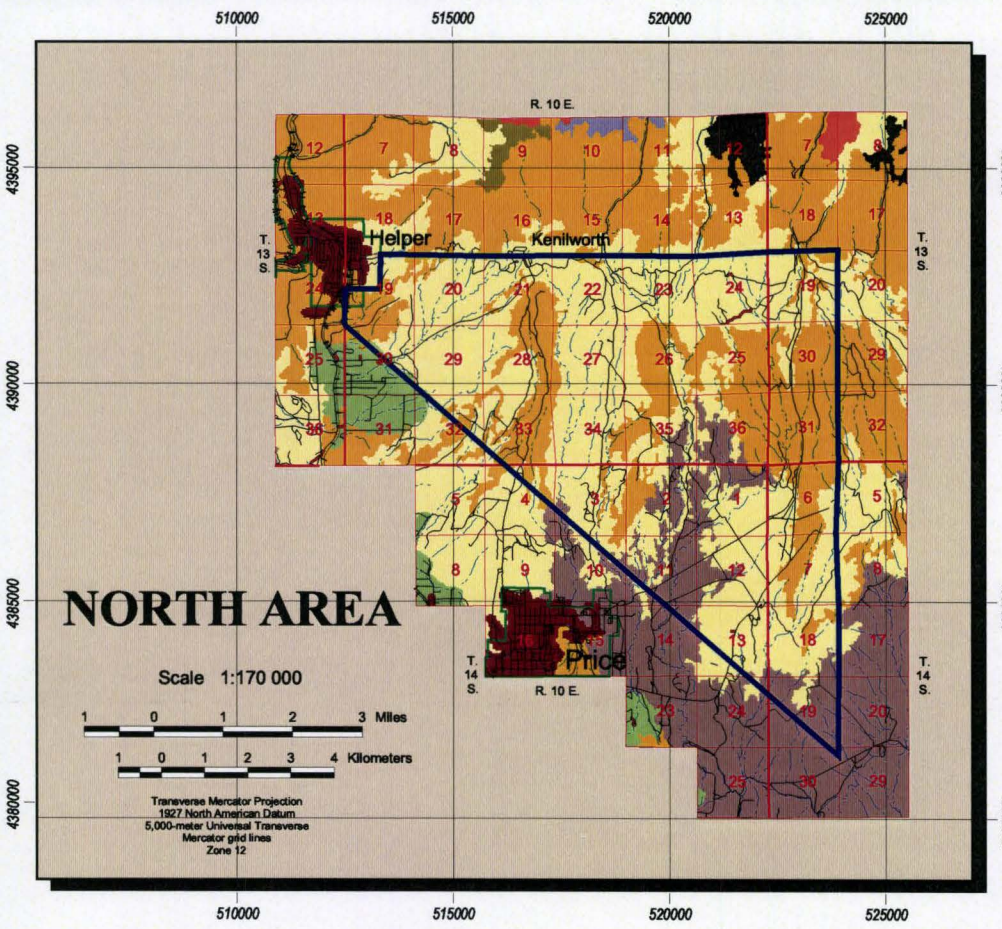
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

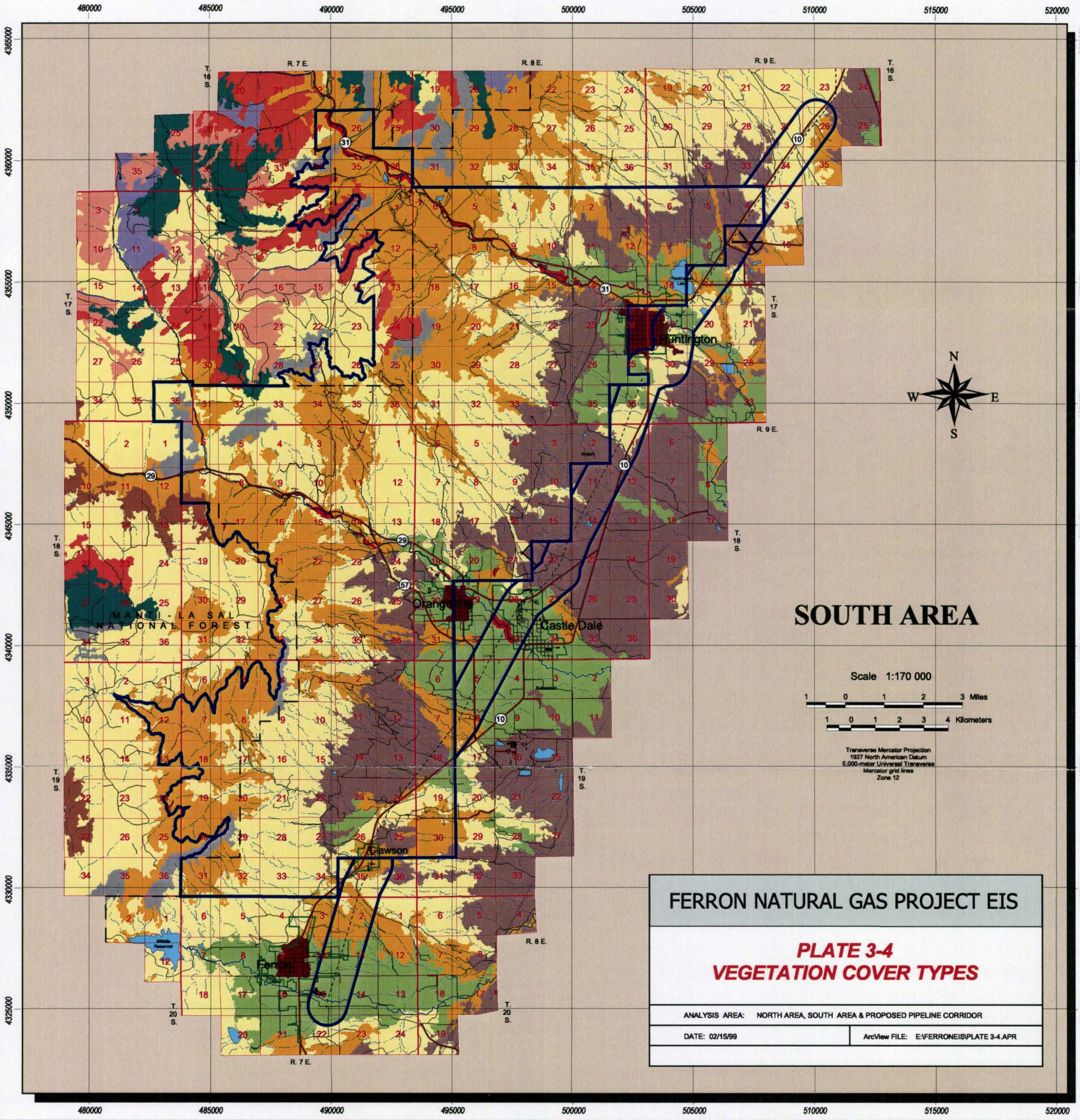
Vegetation Cover Types

- Spruce-Fir
- Mountain Fir
- Pinyon-Juniper
- Aspen
- Mountain Shrub
- Sagebrush/Grassland
- Barren
- Pondarosa Pine/Mountain Shrub
- Agriculture
- Urban
- Salt Desert Scrub
- Oak
- Riparian

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-4
VEGETATION COVER TYPES

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-4.APR

LEGEND

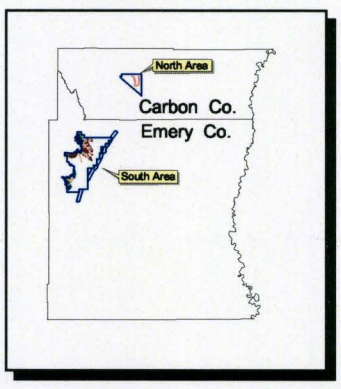
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

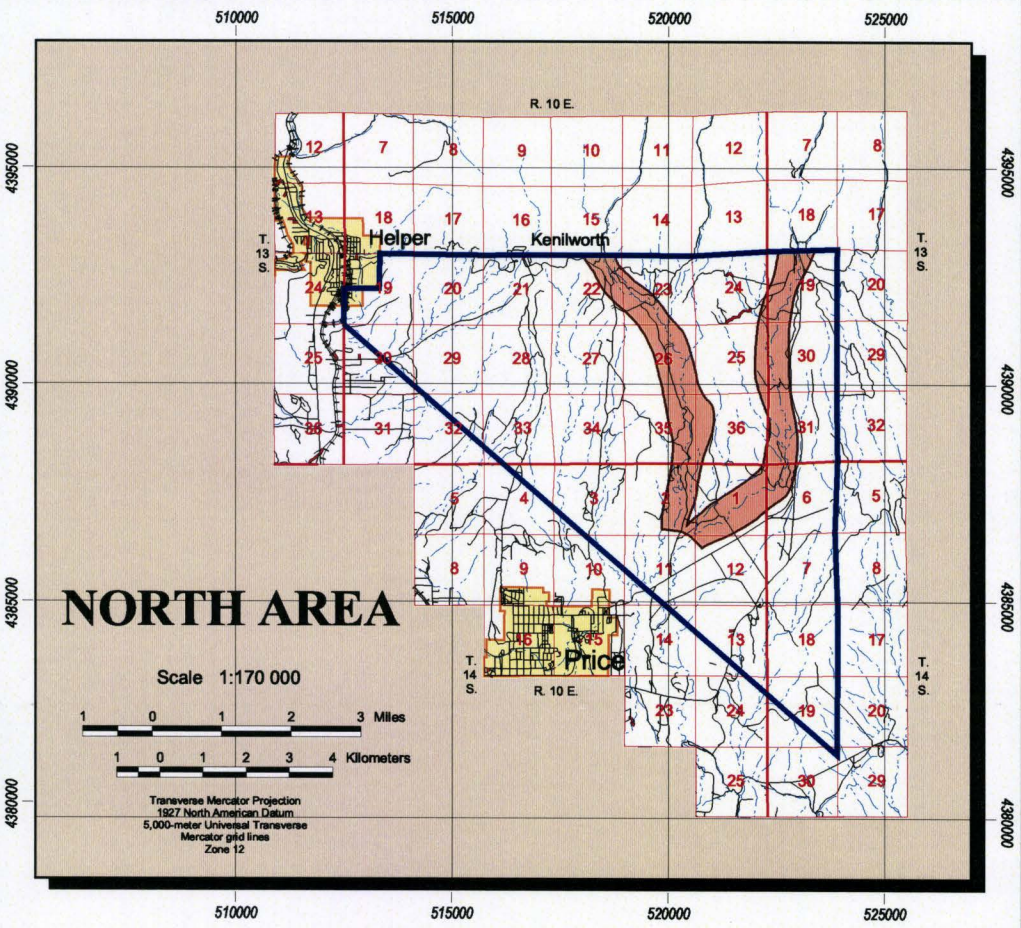
Elk Winter Range

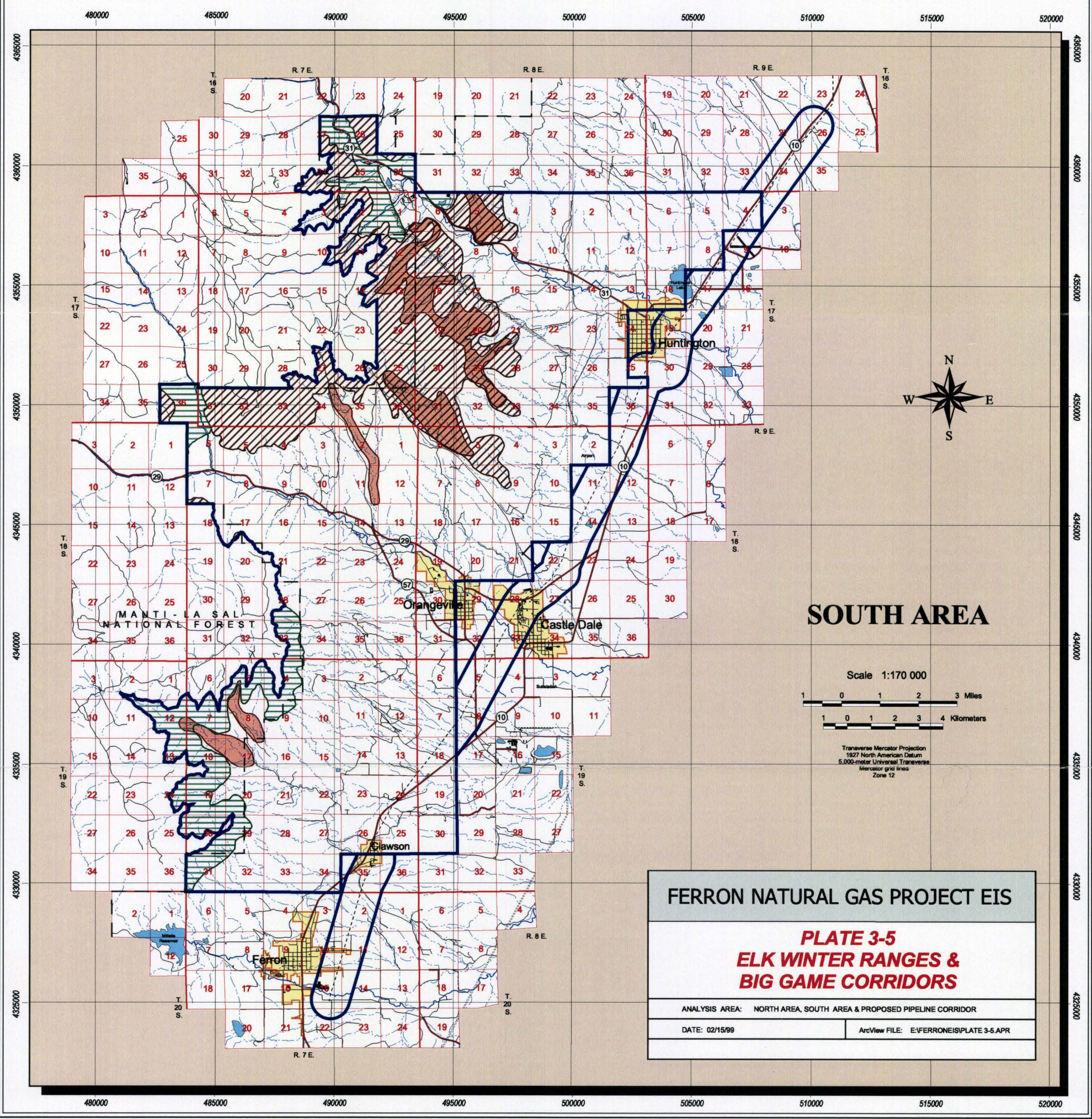
- Crucial Winter Range
- High Priority Winter Range

- Big Game Corridors

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-5
ELK WINTER RANGES & BIG GAME CORRIDORS

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-5.APR

LEGEND

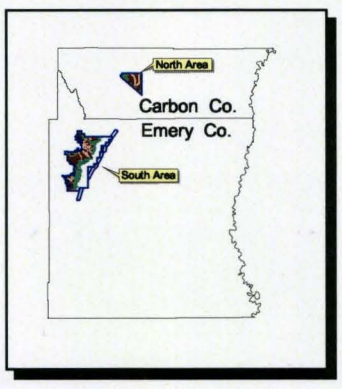
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

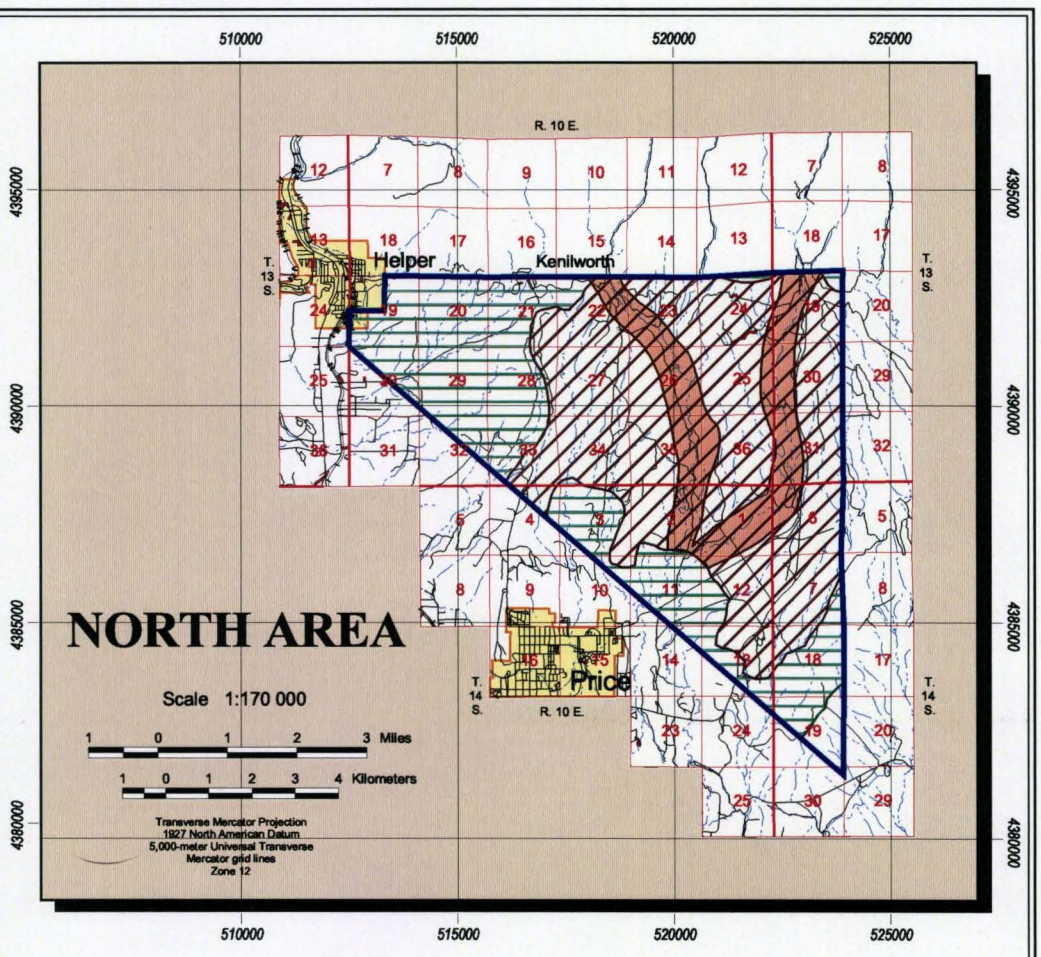
Mule Deer Winter Range

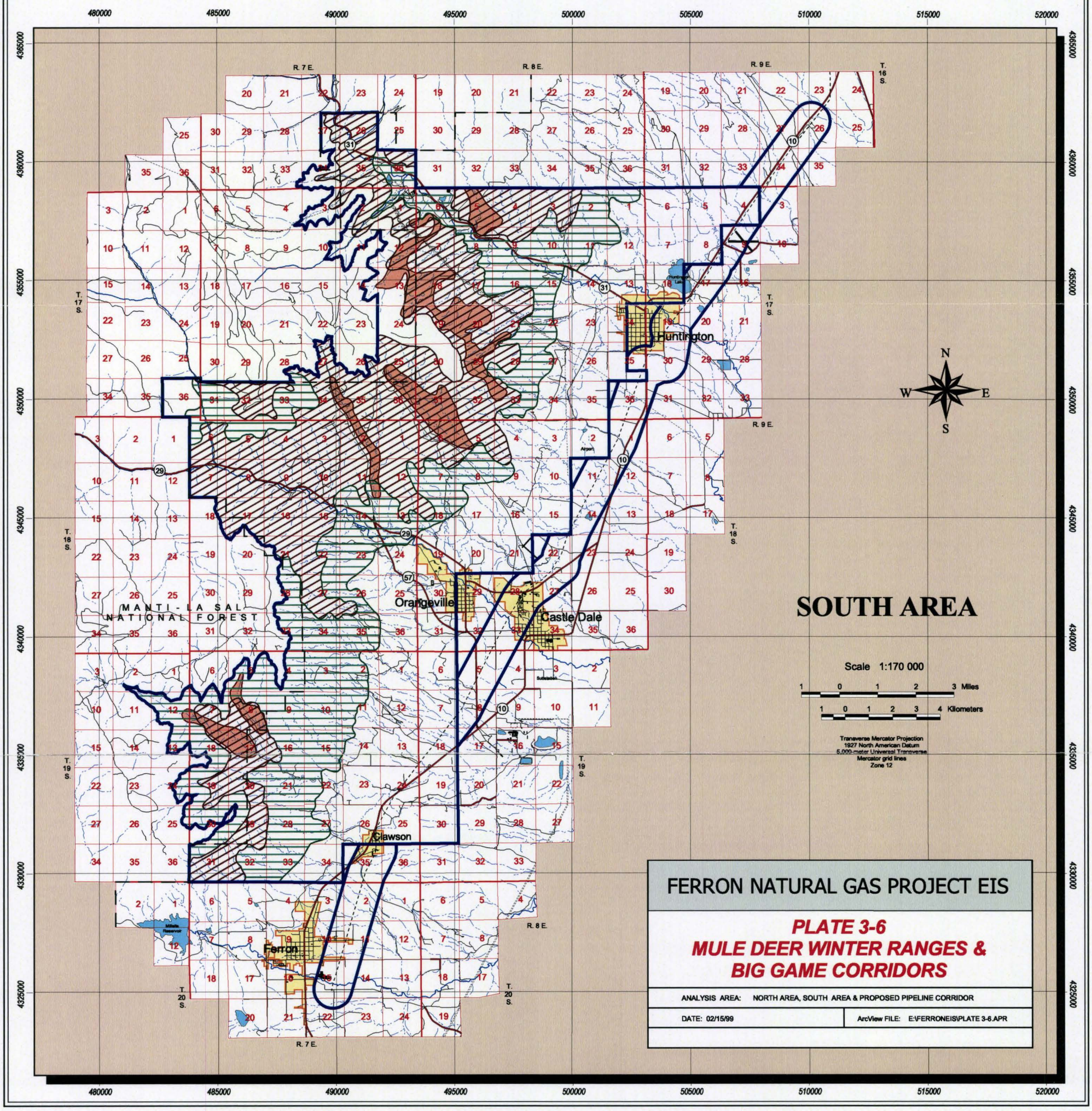
- Crucial Winter Range
- High Priority Winter Range

- Big Game Corridors

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-6
MULE DEER WINTER RANGES & BIG GAME CORRIDORS

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-6.APR

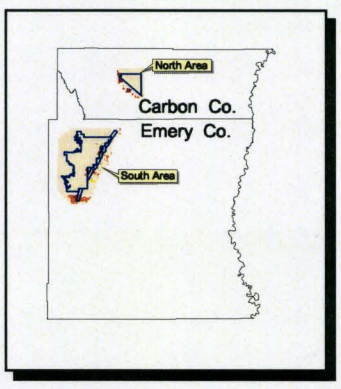
LEGEND

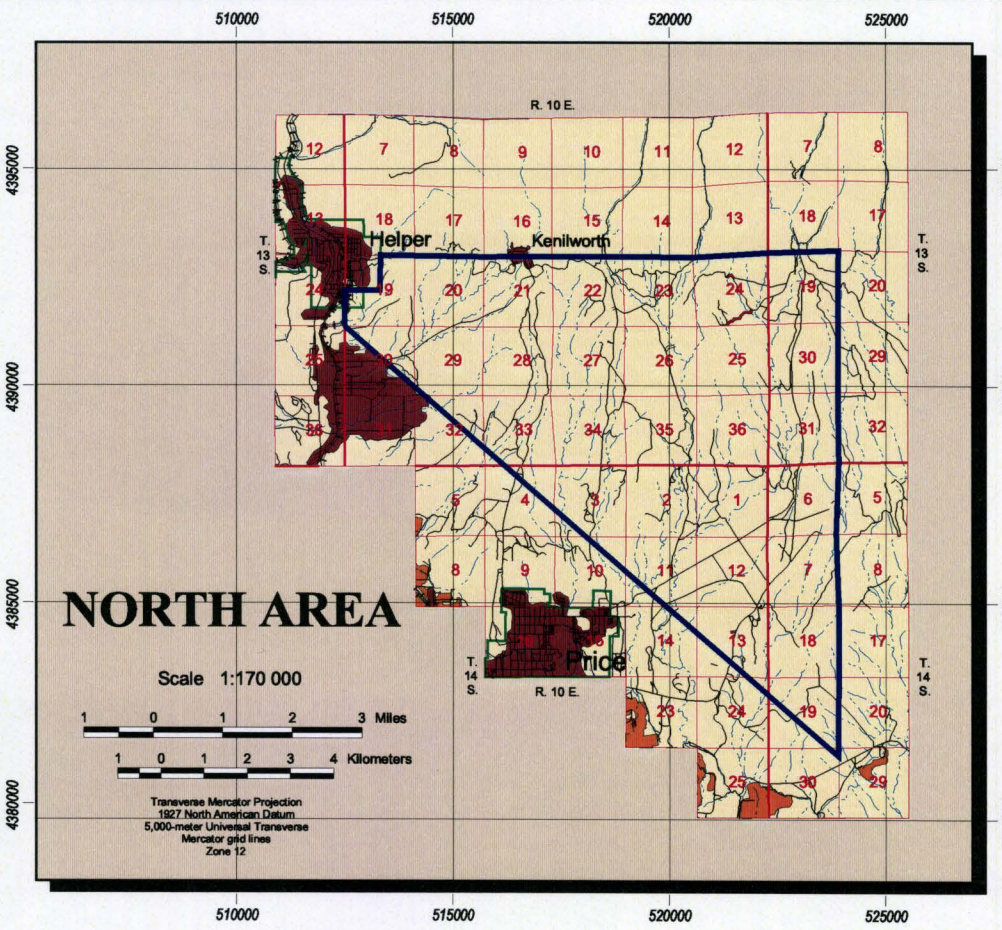
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

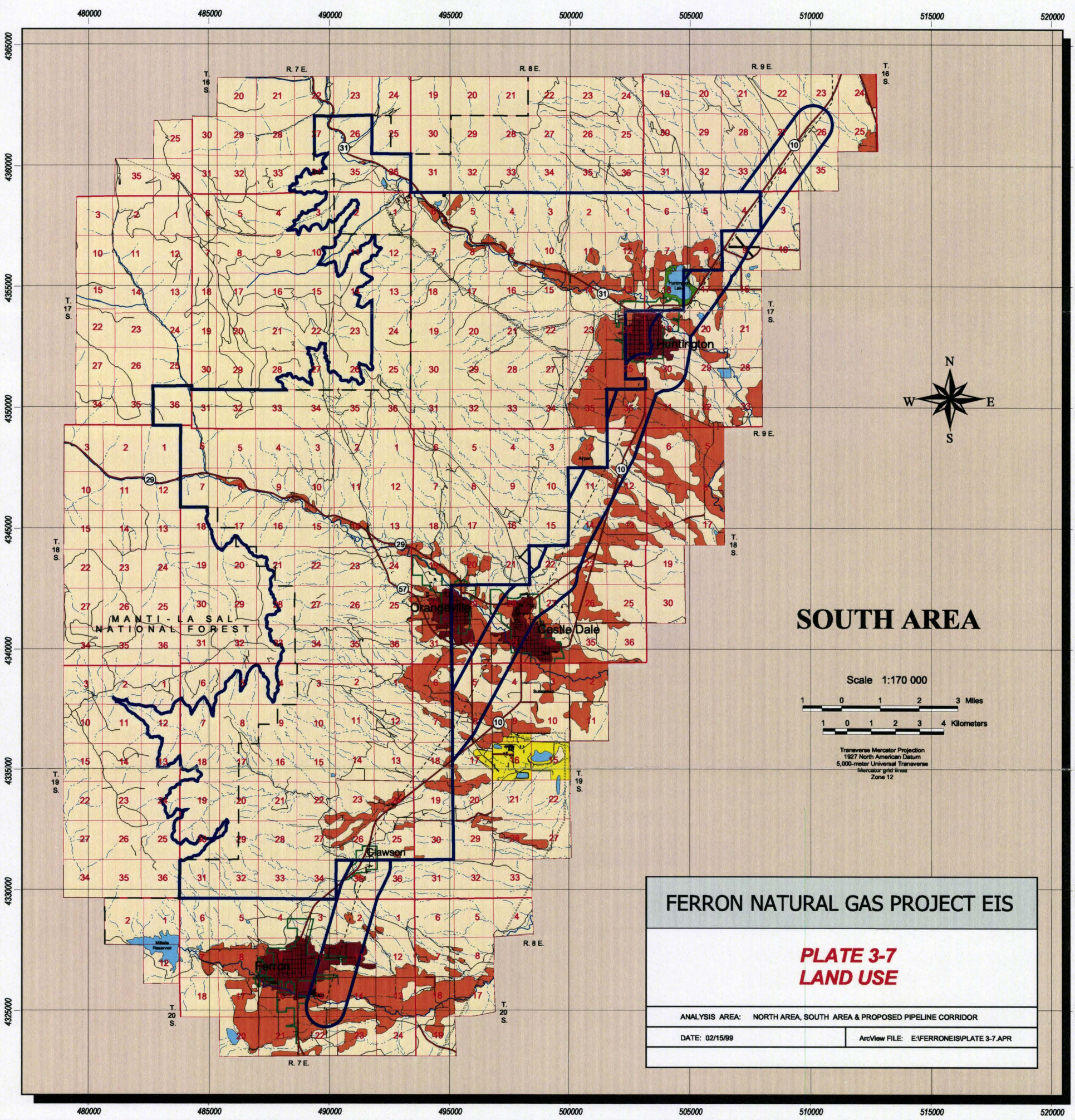
Land Use

- Urban
- Rangeland
- Cropland
- Industrial
- Recreation

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-7
LAND USE

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-7.APR

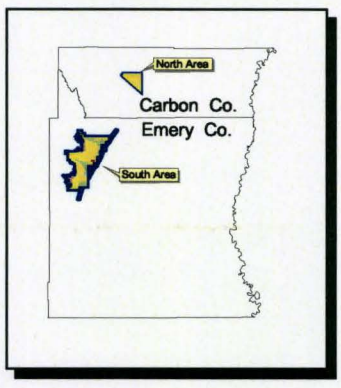
LEGEND

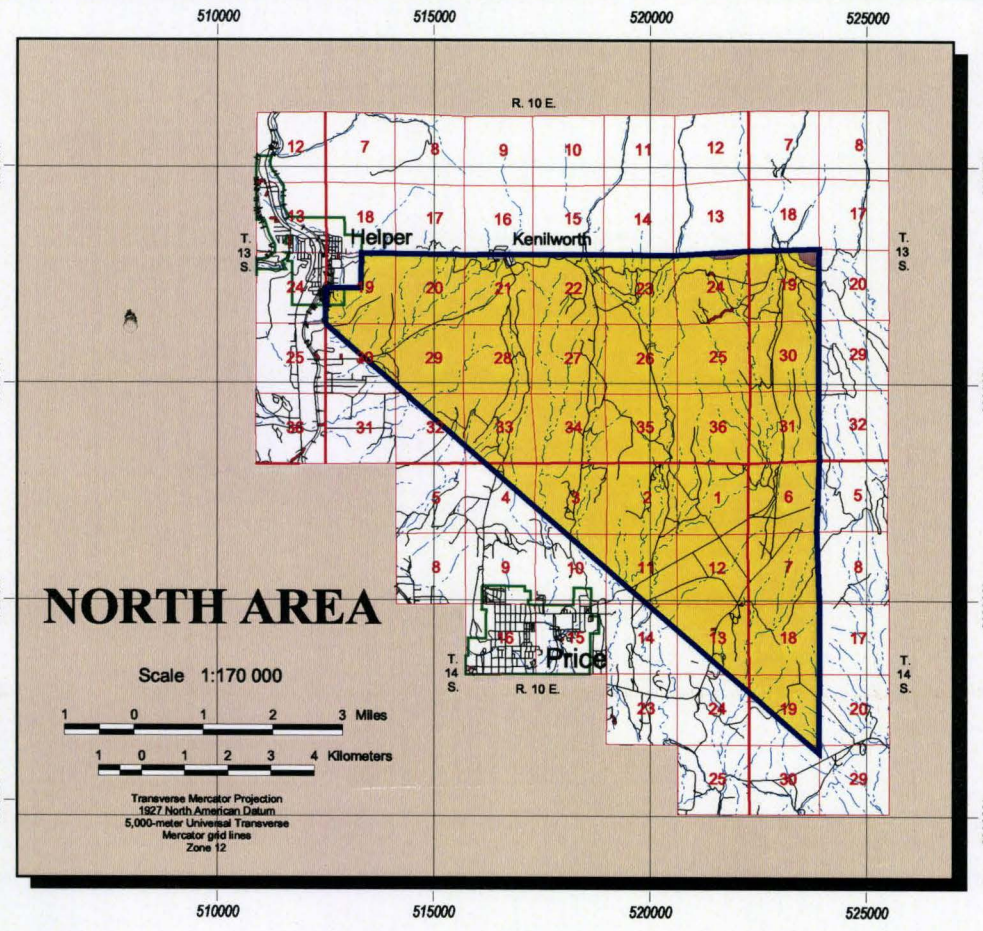
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

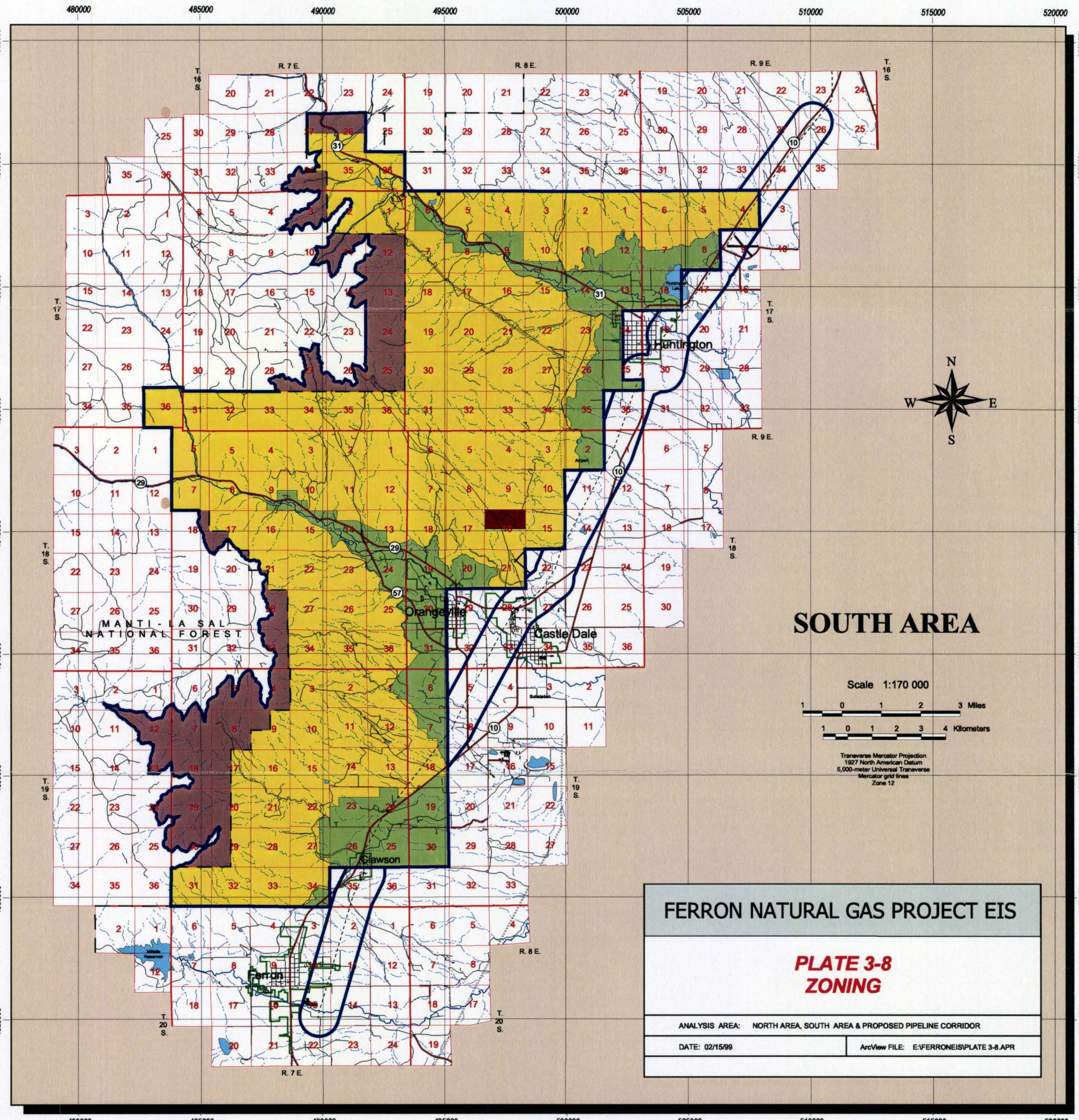
Zoning Districts

- A - 1 (Agricultural)
- CE- 1 (Critical Environmental)
- I - 1 (Industrial)
- M&G (Mining & Grazing)

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-8
ZONING

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99 | ArcView FILE: E:\FERRONEIS\PLATE 3-8.APR

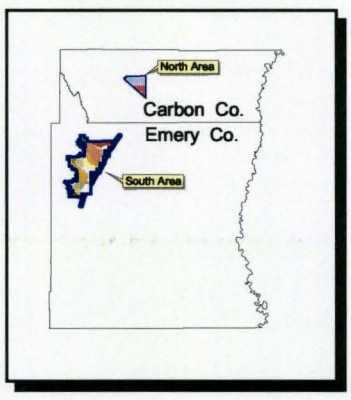
LEGEND

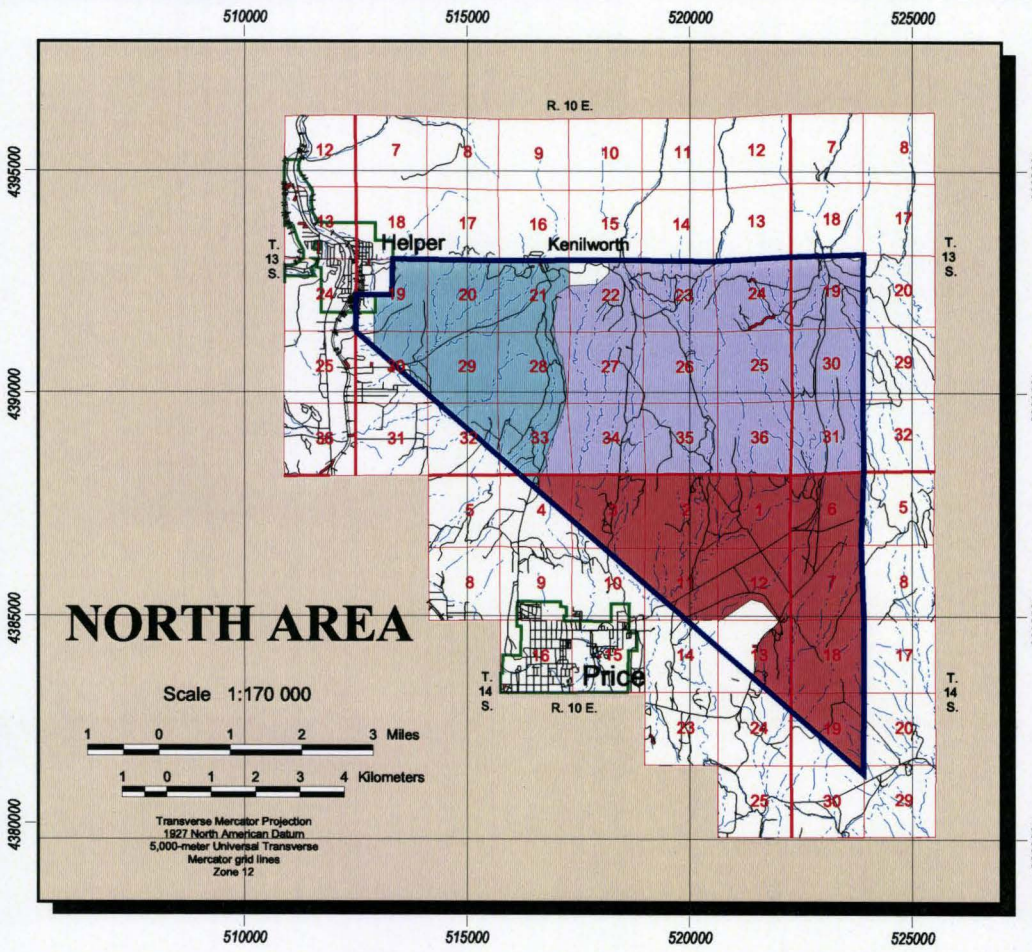
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

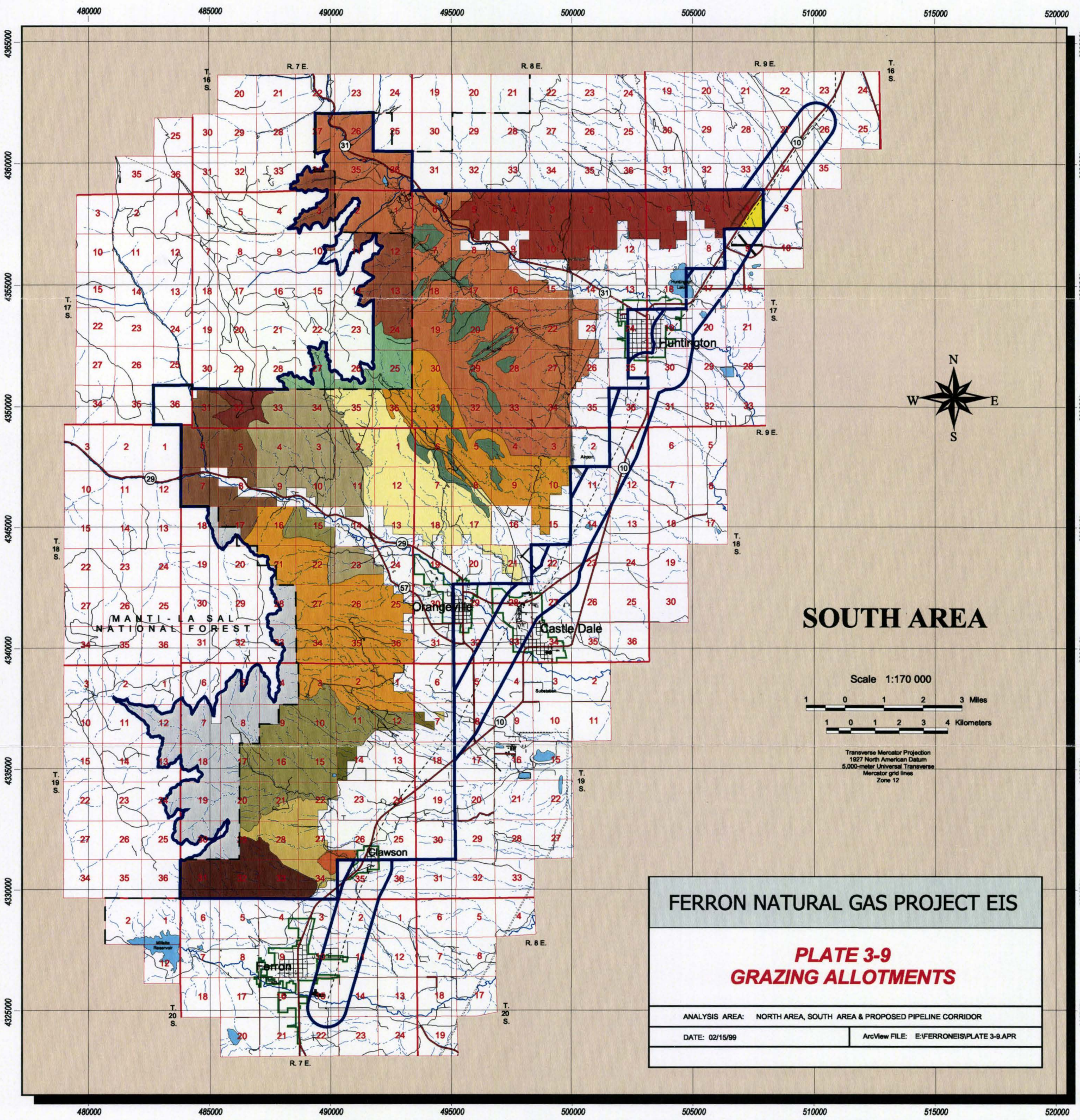
Grazing Allotments

- Clawson Dairy
- Cowley
- Cox
- East Grimes
- Jensen
- N/A
- North Huntington
- North Wolf Hollow
- Northwest Ferron
- Peacock
- Reid
- Rock Canyon
- South Wolf Hollow
- West Grimes
- West Huntington
- West Orangville
- Wilberg
- Wildlife
- East Mountain
- Gentry
- Horn Mountain
- East Mountain
- Gentry
- Horn Mountain
- Coal Creek
- Hayes Wash
- Woodhill

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-9
GRAZING ALLOTMENTS

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-9.APR

LEGEND

- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary
- Kenilworth Trail
- Carbon County Proposed Trail Network

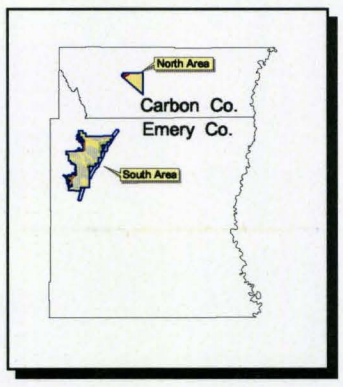
BLM ROS Classes

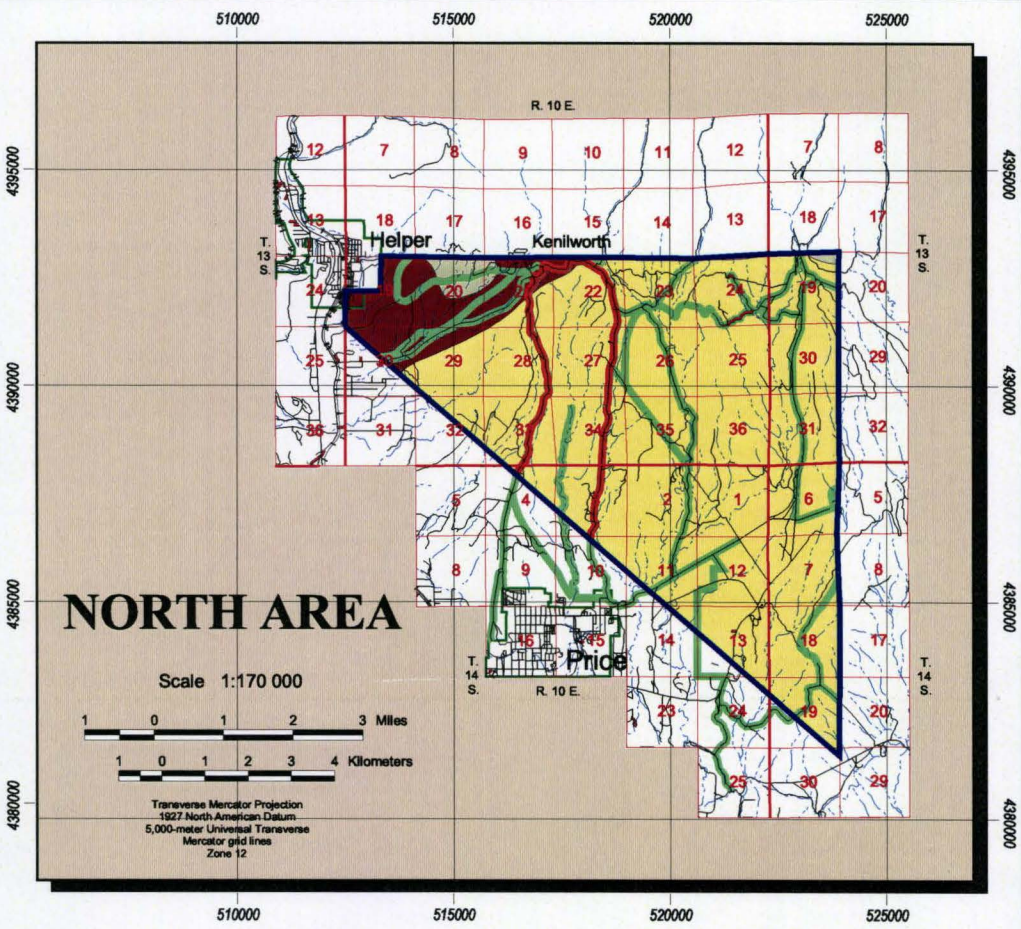
- Roaded Natural
- Rural
- Semiprimitive Motorized
- Urban

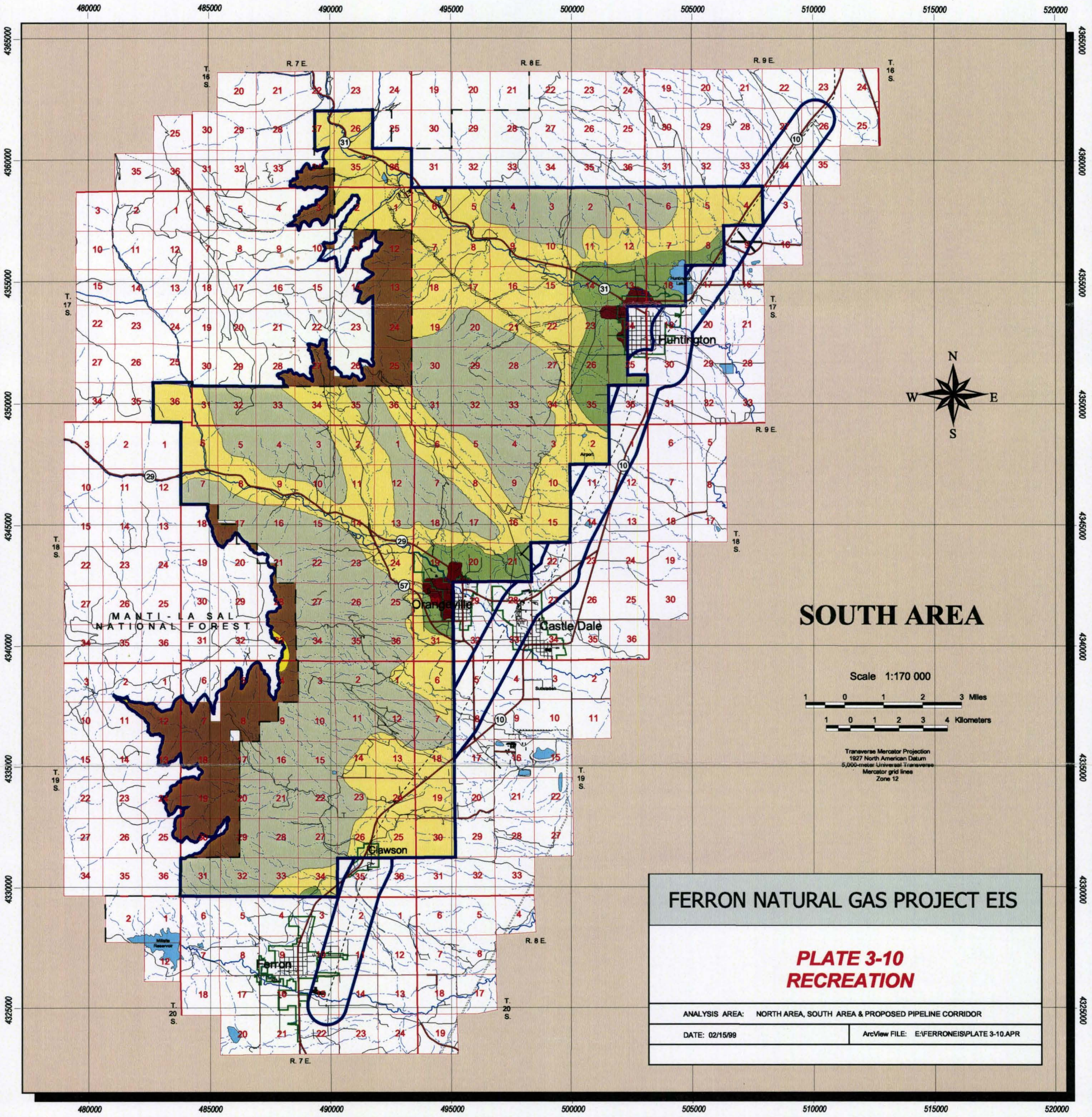
Forest Service ROS Classes

- Roaded Natural
- Semiprimitive Motorized

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 3-10
RECREATION

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-10.APR

LEGEND

- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

BLM VRM Classes

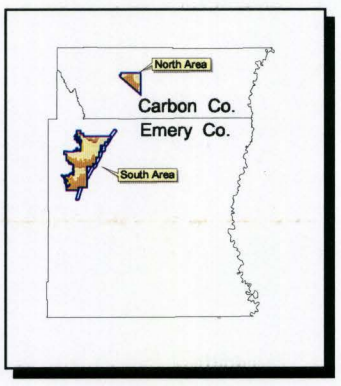
- CLASS II
- CLASS III
- CLASS IV

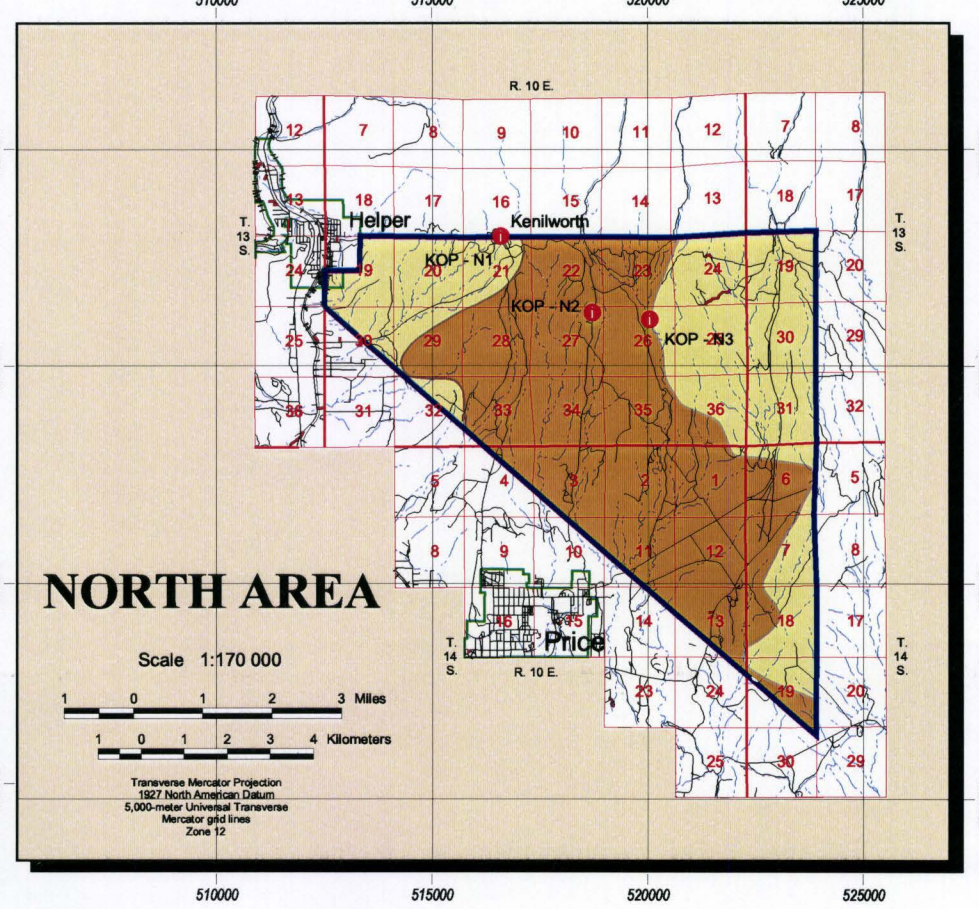
Forest Service VQO Classes and Equivalent BLM Classes

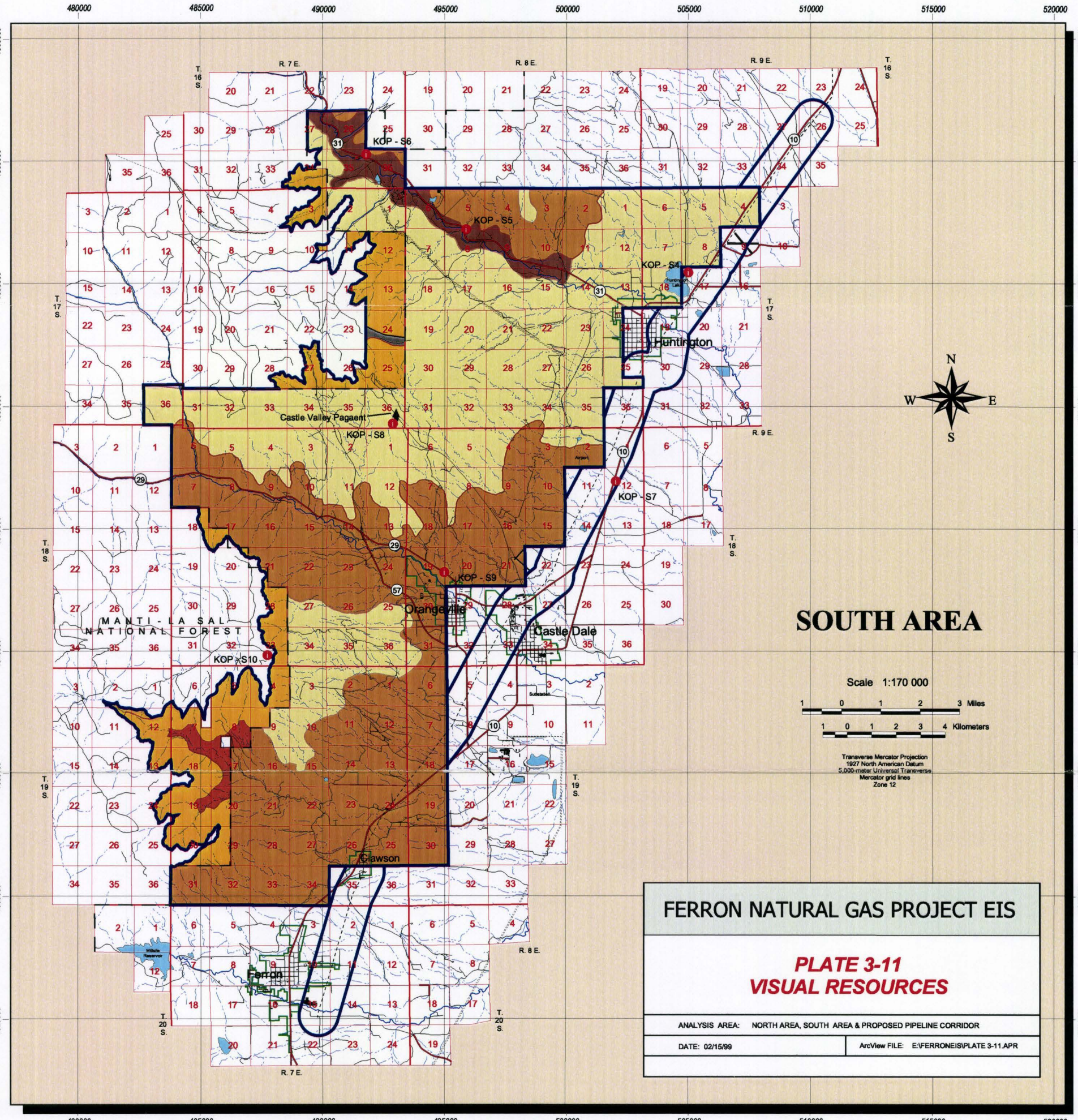
- BLM III
- BLM IV
- fg2B - Potential Retention (Equivalent to BLM Class III)

- KOP - Key Observation Point

Map Location







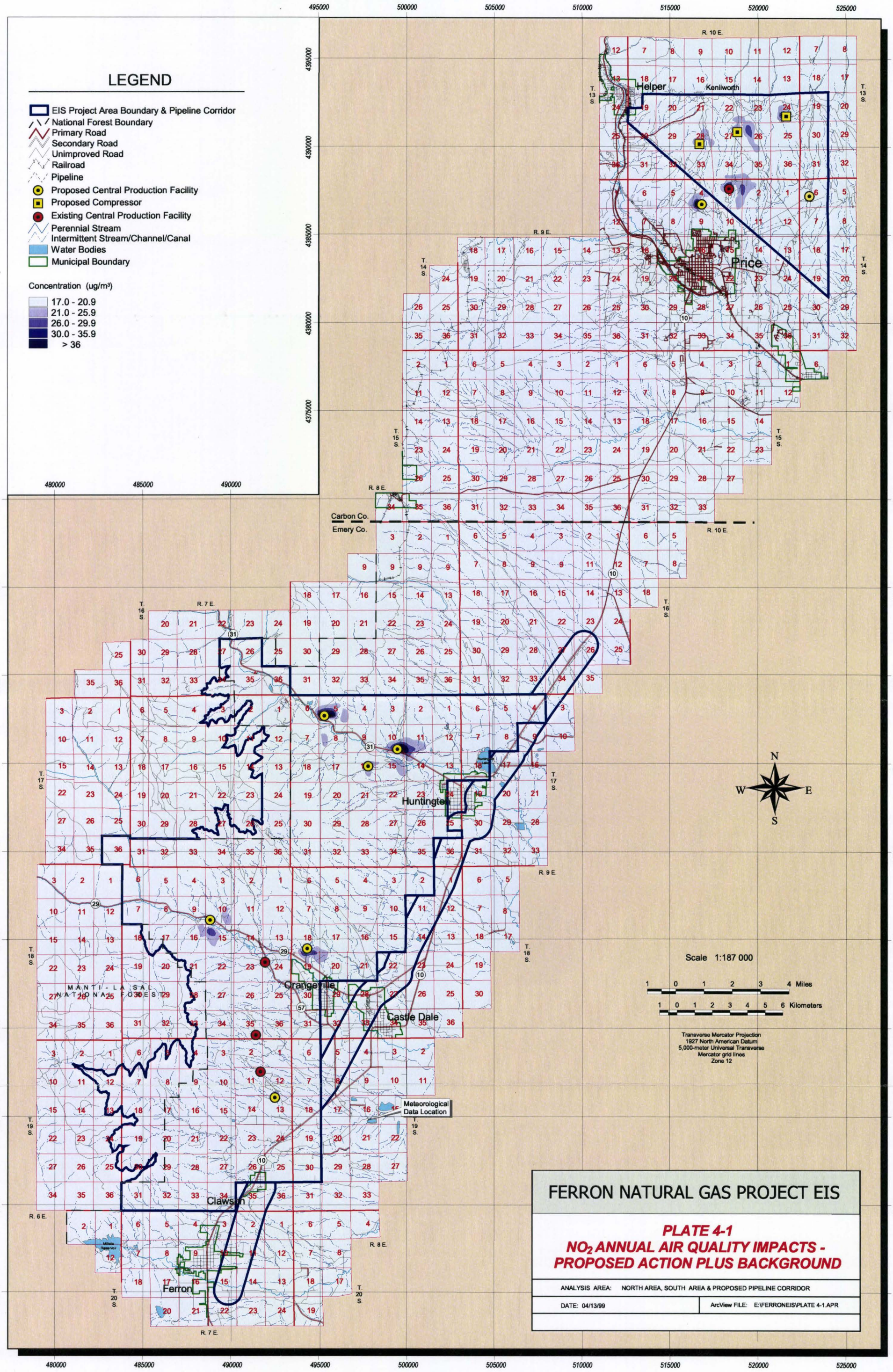
FERRON NATURAL GAS PROJECT EIS

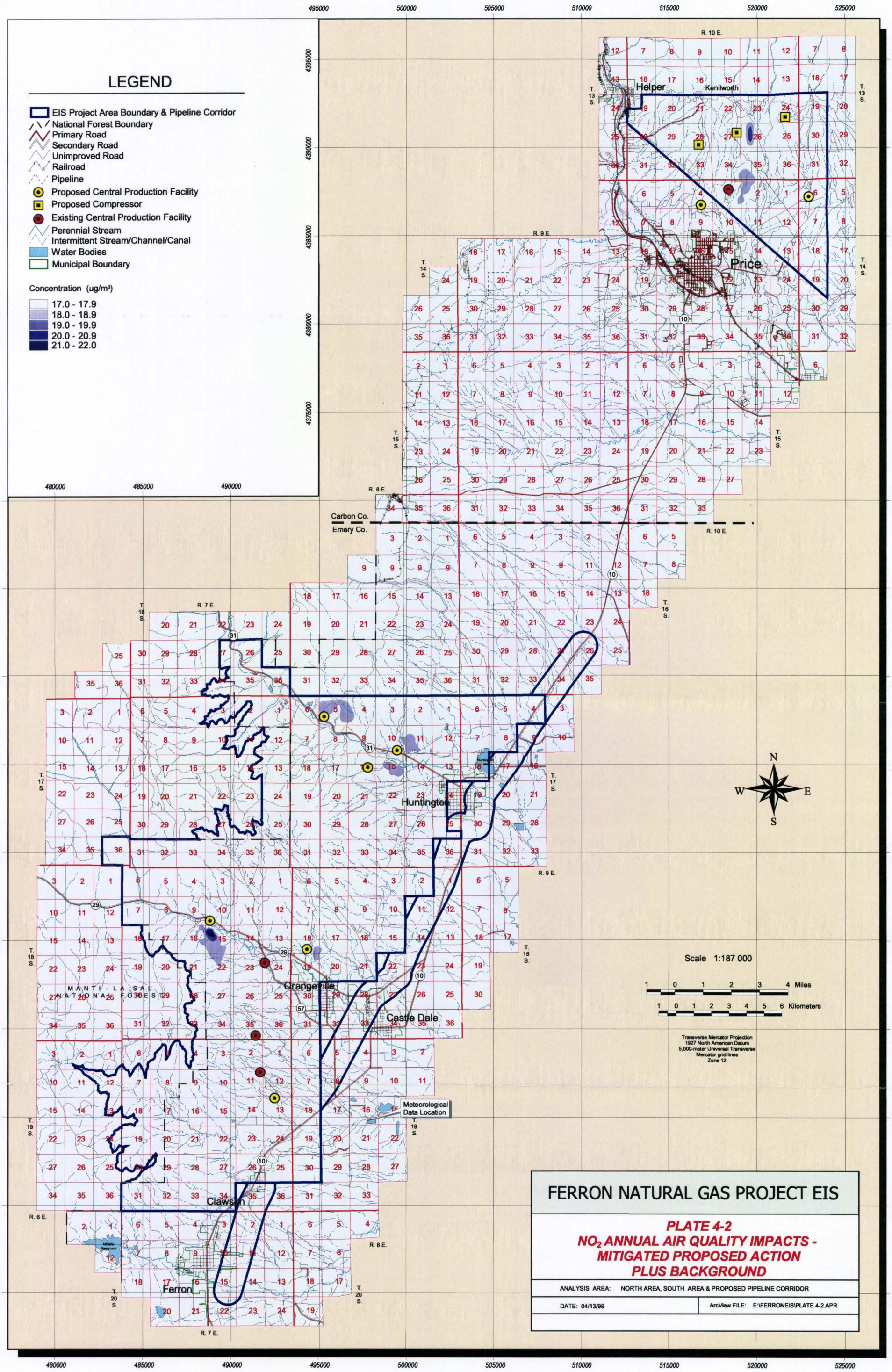
PLATE 3-11
VISUAL RESOURCES

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 3-11.APR


LEGEND
EIS Project Area Boundary & Pipeline Corridor
National Forest Boundary
Primary Road
Secondary Road
Unimproved Road
Railroad
Pipeline
Proposed Central Production Facility
Proposed Compressor
Existing Central Production Facility
Perennial Stream
Intermittent Stream/Channel/Canal
Water Bodies
Municipal Boundary
Concentration (ug/m³)
17.0 - 20.9
21.0 - 25.9
26.0 - 29.9
30.0 - 35.9
> 36
Helper
Kenilworth
Price
Huntington
Orangeville
Castle Dale
Clawson
Ferron
Carbon Co.
Emery Co.
MANTI-LA SAL NATIONAL FOREST
Meteorological Data Location
N
S
E
W
Scale 1:187 000
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 6 Kilometers
Transverse Mercator Projection
1927 North American Datum
5,000-meter Universal Transverse Mercator grid lines
Zone 12
FERRON NATURAL GAS PROJECT EIS
PLATE 4-1
NO2 ANNUAL AIR QUALITY IMPACTS - PROPOSED ACTION PLUS BACKGROUND
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR
DATE: 04/13/99
ArcView FILE: E:\FERRONEIS\PLATE 4-1.APR


LEGEND
EIS Project Area Boundary & Pipeline Corridor
National Forest Boundary
Primary Road
Secondary Road
Unimproved Road
Railroad
Pipeline
Proposed Central Production Facility
Proposed Compressor
Existing Central Production Facility
Perennial Stream
Intermittent Stream/Channel/Canal
Water Bodies
Municipal Boundary
Concentration (ug/m³)
17.0 - 17.9
18.0 - 18.9
19.0 - 19.9
20.0 - 20.9
21.0 - 22.0
Helper
Kenilworth
Price
Carbon Co.
Emery Co.
Huntington
Orangeville
Castle Dale
Meteorological Data Location
Clawson
Ferron
MANTI - LA SAL NATIONAL FOREST
Scale 1:187 000
Miles
Kilometers
Transverse Mercator Projection
1927 North American Datum
5,000-meter Universal Transverse Mercator grid lines
Zone 12
FERRON NATURAL GAS PROJECT EIS
PLATE 4-2
NO_2 ANNUAL AIR QUALITY IMPACTS - MITIGATED PROPOSED ACTION PLUS BACKGROUND
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR
DATE: 04/13/99
ArcView FILE: E:\FERRONEIS\PLATE 4-2.APR

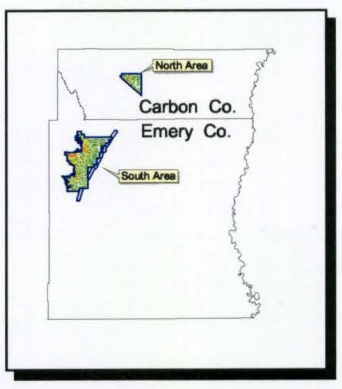
LEGEND

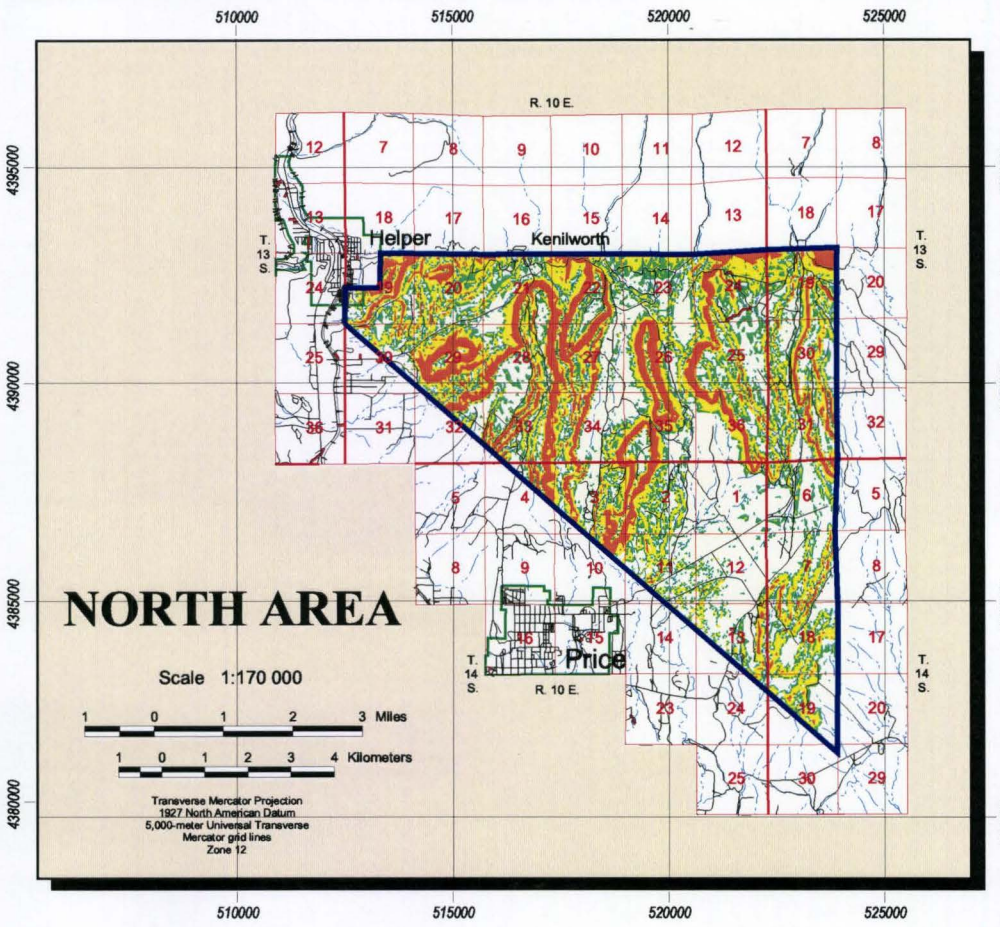
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

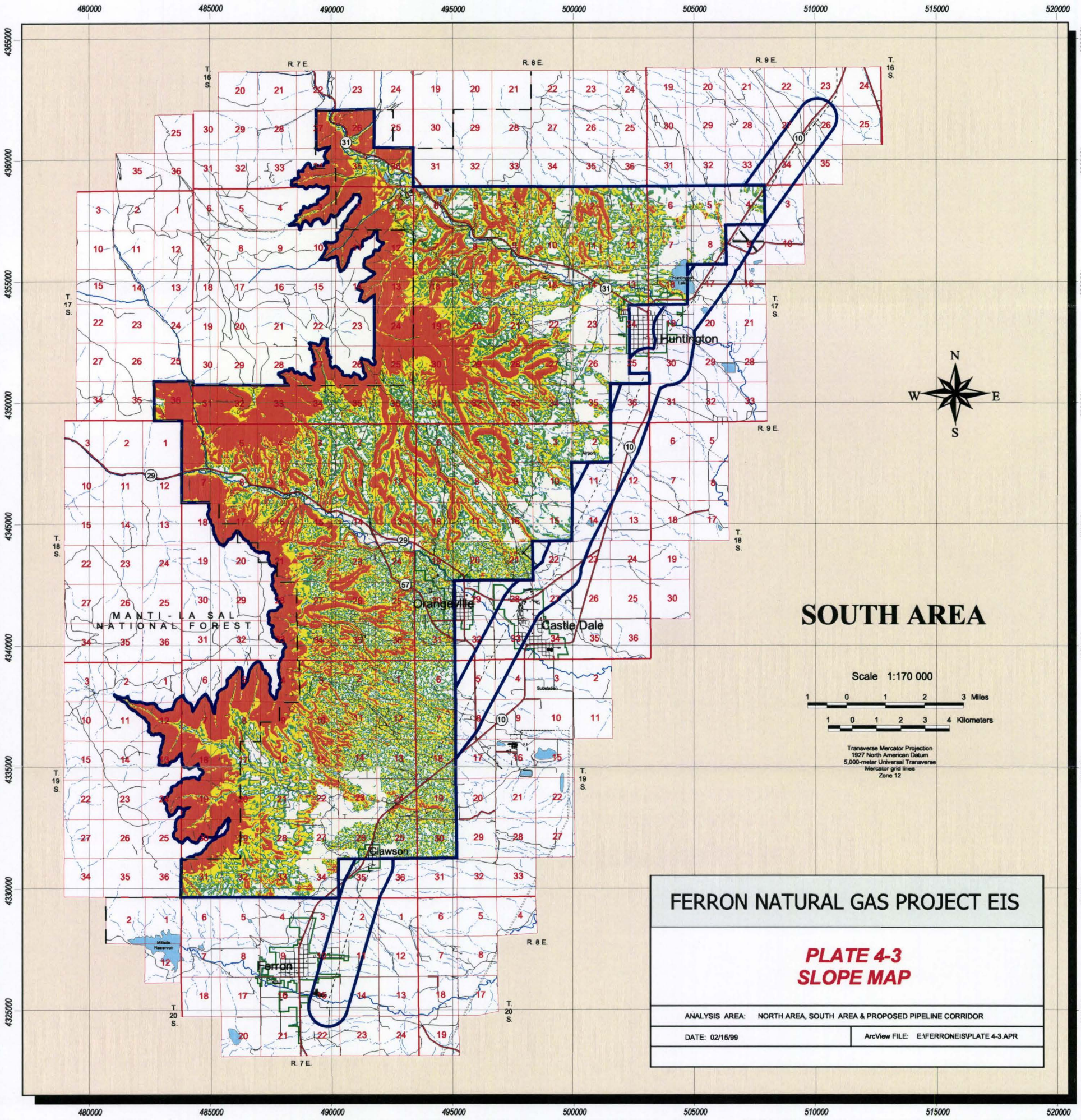
Slope Class

- 0 - 6%
- 7 - 10%
- 11 - 24%
- > 24%

Map Location







FERRON NATURAL GAS PROJECT EIS

PLATE 4-3
SLOPE MAP

ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 4-3.APR

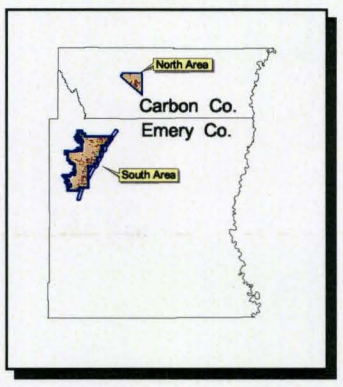
LEGEND

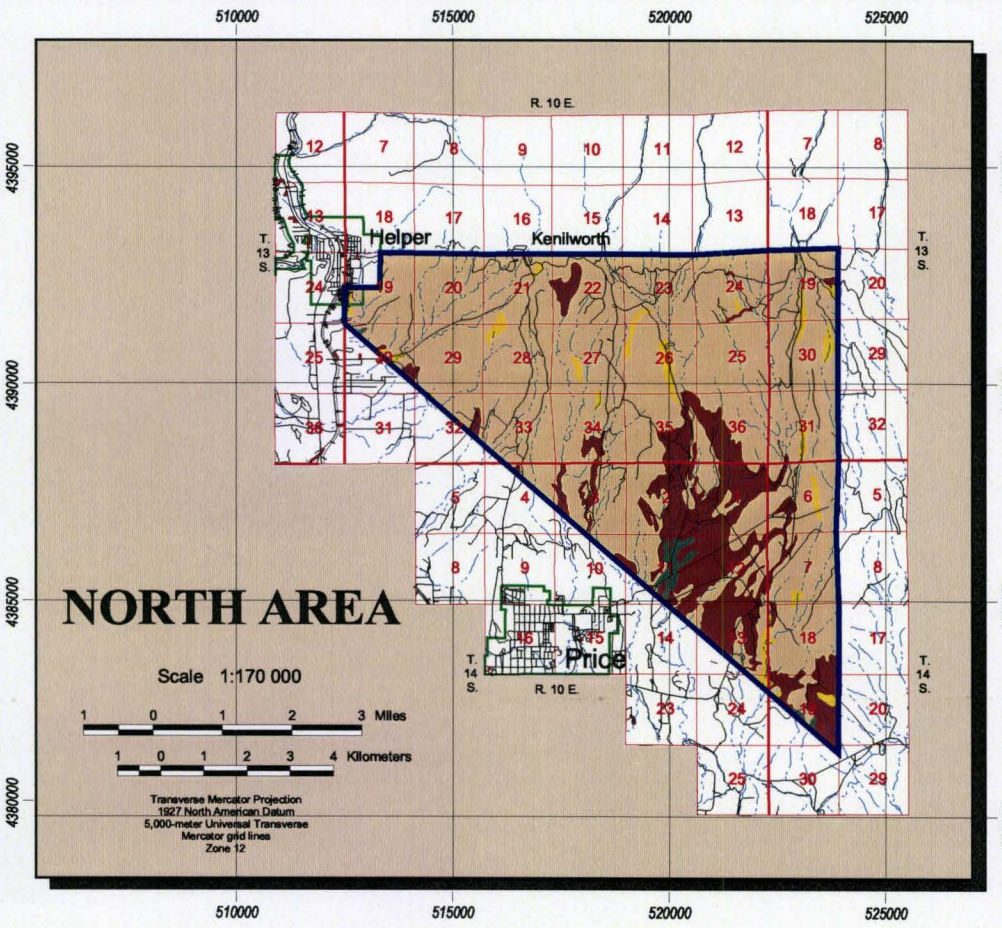
- EIS Analysis Area Boundary & Pipeline Corridor
- National Forest Boundary
- Primary Road
- Secondary/Unimproved Road
- Railroad
- Existing Pipeline
- Powerline
- Perennial Stream
- Intermittent Stream/Channel/Canal
- Water Bodies
- Municipal Boundary

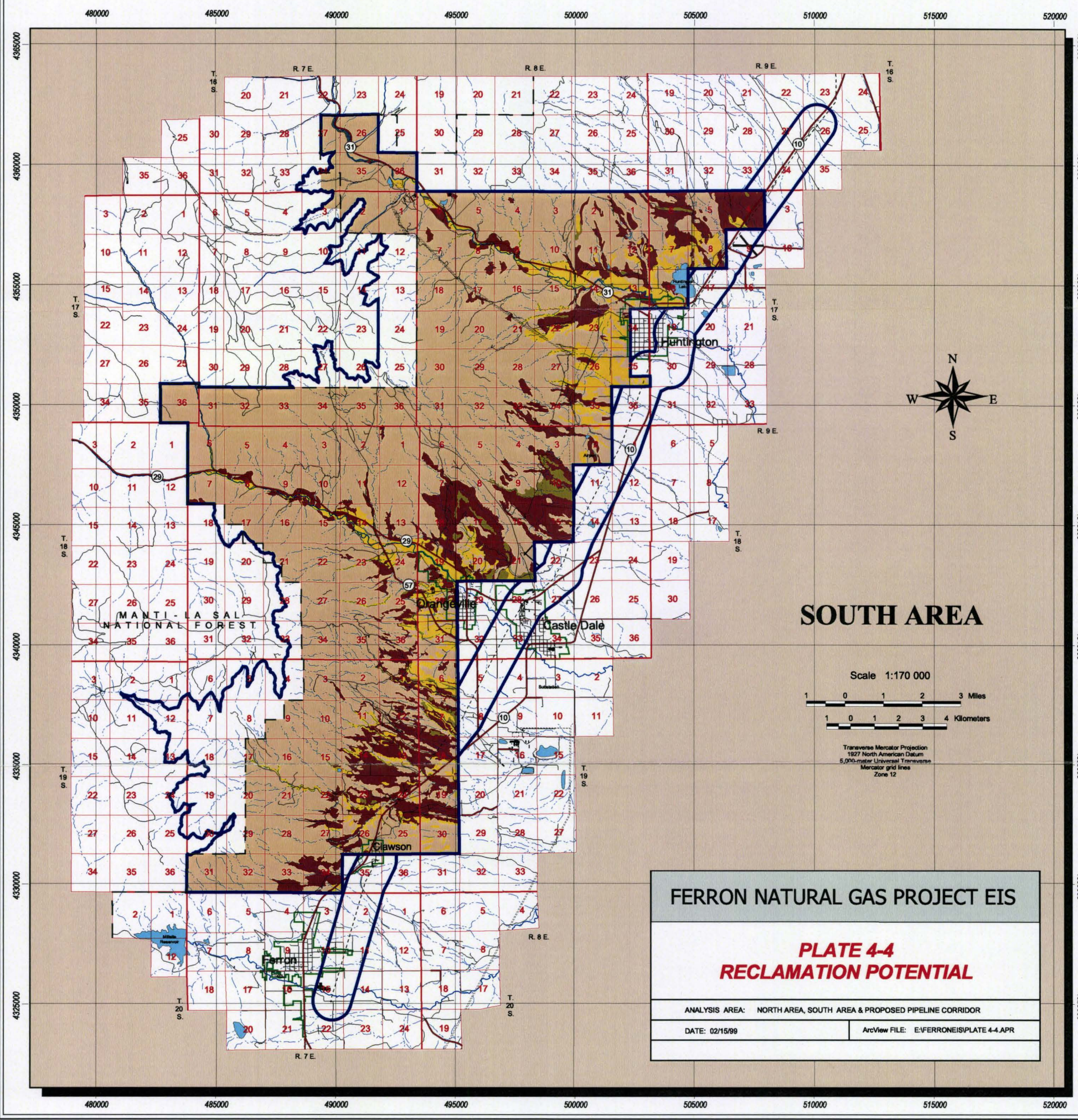
Reclamation Potential

- Good
- Fair
- Poor
- Unsuitable
- Variable

Map Location







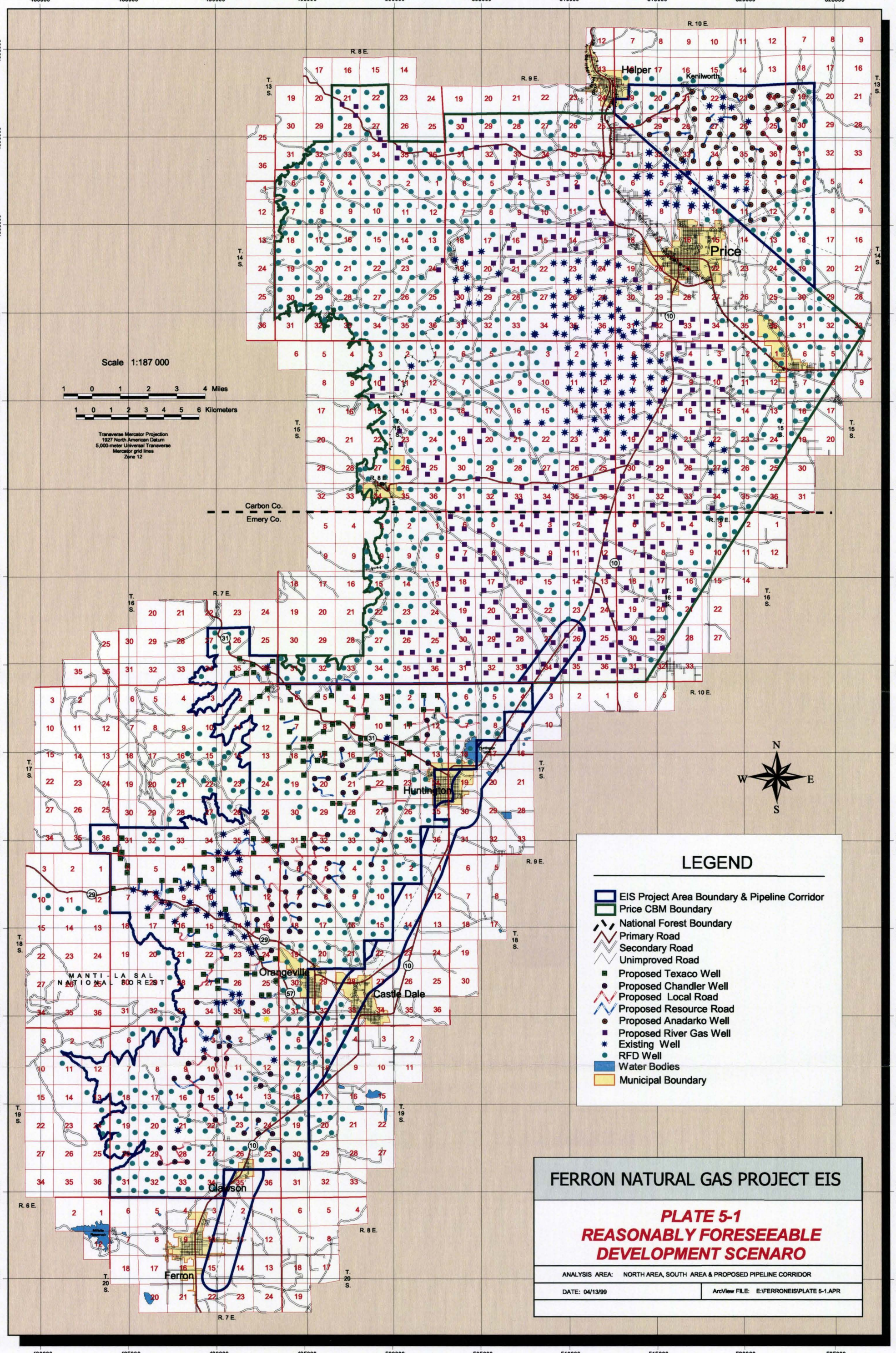
FERRON NATURAL GAS PROJECT EIS

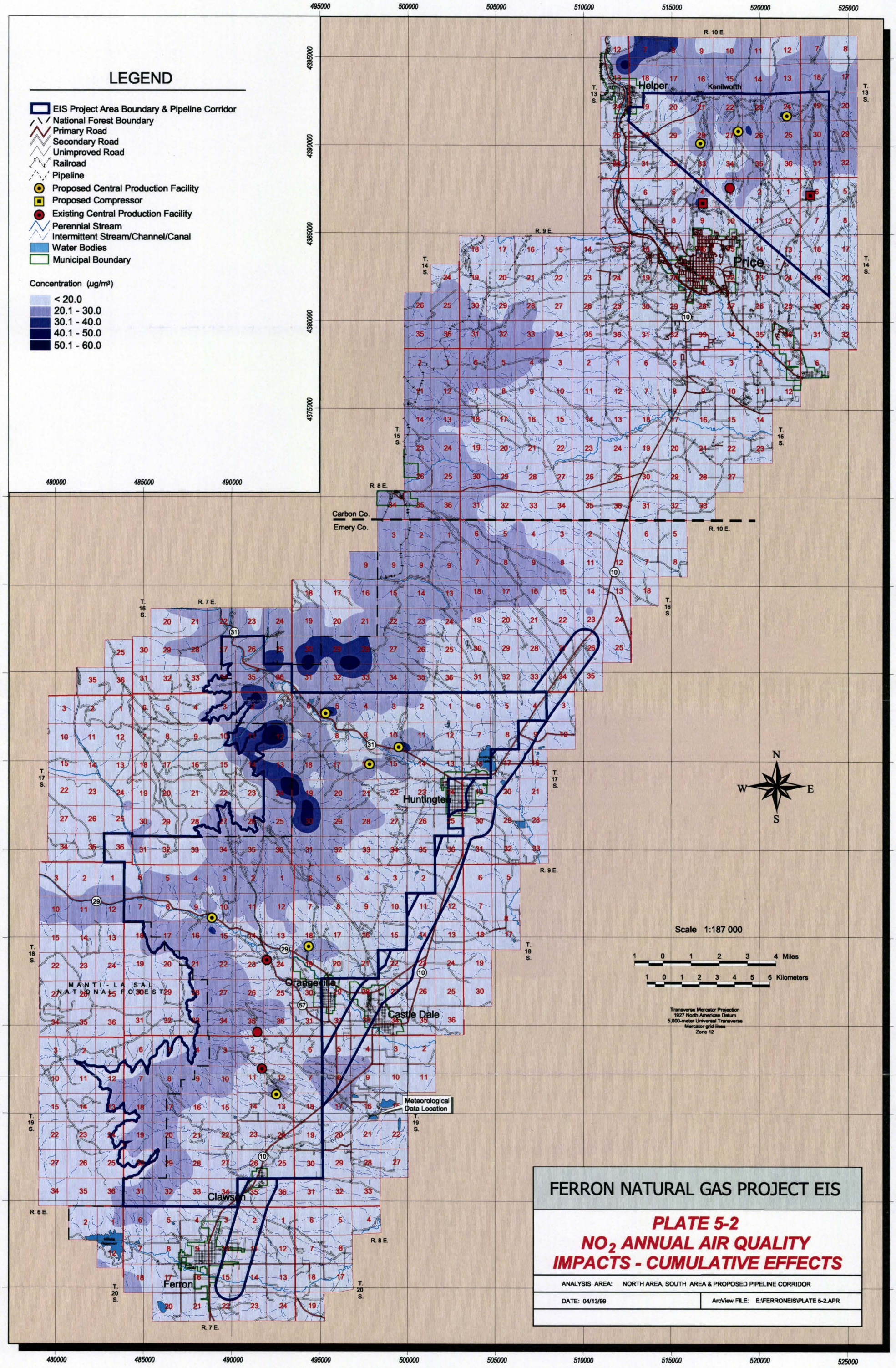
PLATE 4-4
RECLAMATION POTENTIAL

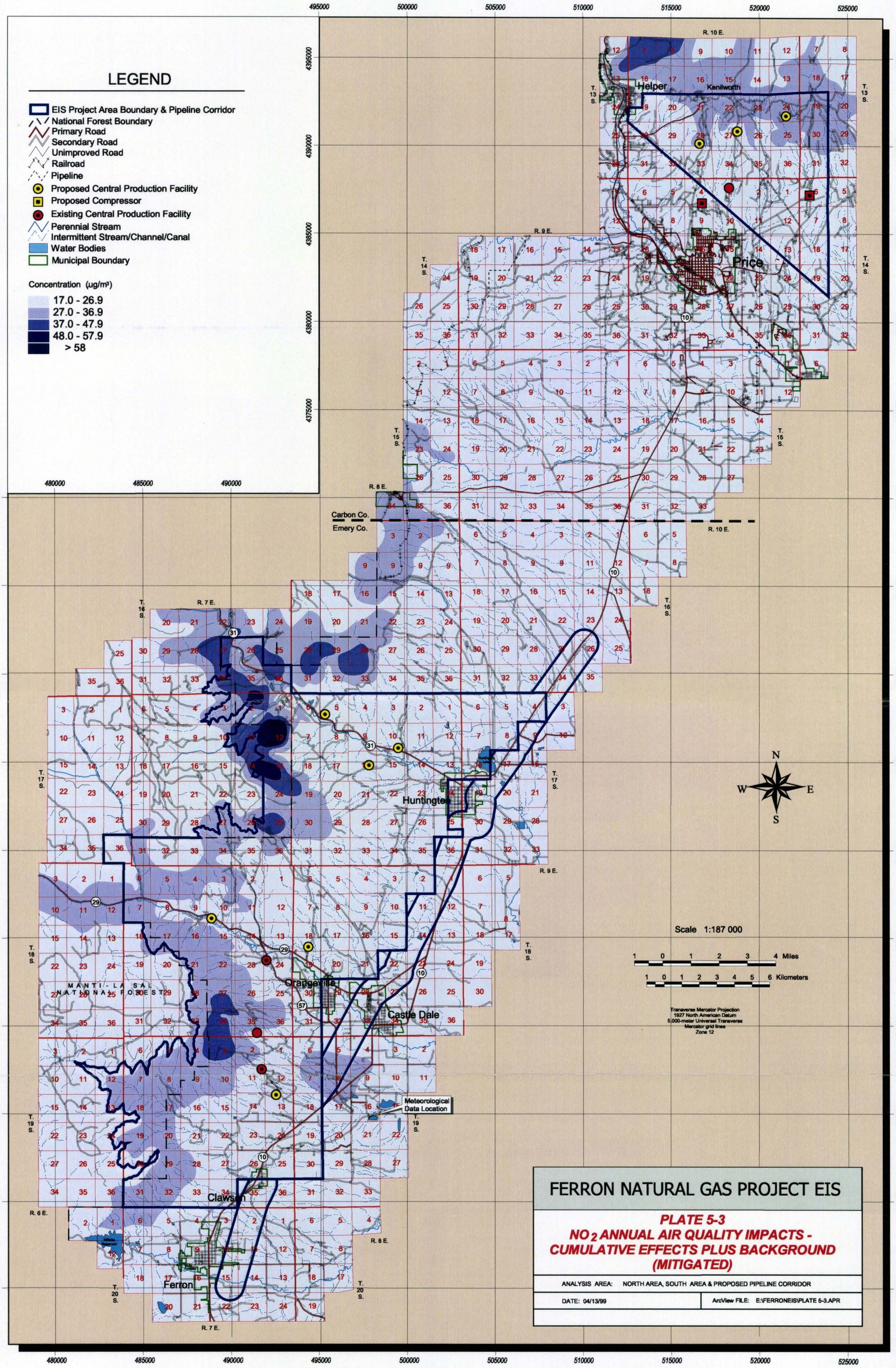
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR

DATE: 02/15/99

ArcView FILE: E:\FERRONEIS\PLATE 4-4.APR


Scale 1:187 000
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 6 Kilometers
Transverse Mercator Projection
1927 North American Datum
5,000-meter Universal Transverse
Mercator grid lines
Zone 12
Helper
Kenilworth
Price
Huntington
Orangeville
Castle Dale
Clawson
Ferron
Carbon Co.
Emery Co.
MANTI-LA SAL
NATIONAL FOREST
R. 8 E.
R. 9 E.
R. 10 E.
R. 7 E.
R. 6 E.
T. 13 S.
T. 14 S.
T. 15 S.
T. 16 S.
T. 17 S.
T. 18 S.
T. 19 S.
T. 20 S.
N
S
E
W
LEGEND
EIS Project Area Boundary & Pipeline Corridor
Price CBM Boundary
National Forest Boundary
Primary Road
Secondary Road
Unimproved Road
Proposed Texaco Well
Proposed Chandler Well
Proposed Local Road
Proposed Resource Road
Proposed Anadarko Well
Proposed River Gas Well
Existing Well
RFD Well
Water Bodies
Municipal Boundary
FERRON NATURAL GAS PROJECT EIS
PLATE 5-1
REASONABLY FORESEEABLE
DEVELOPMENT SCENARO
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR
DATE: 04/13/99
ArcView FILE: E:\FERRONEIS\PLATE 5-1.APR


LEGEND
EIS Project Area Boundary & Pipeline Corridor
National Forest Boundary
Primary Road
Secondary Road
Unimproved Road
Railroad
Pipeline
Proposed Central Production Facility
Proposed Compressor
Existing Central Production Facility
Perennial Stream
Intermittent Stream/Channel/Canal
Water Bodies
Municipal Boundary
Concentration (µg/m³)
< 20.0
20.1 - 30.0
30.1 - 40.0
40.1 - 50.0
50.1 - 60.0
Helper
Kenilworth
Price
Carbon Co.
Emery Co.
Huntington
Orangeville
Castle Dale
Meteorological Data Location
Clawson
Ferron
MANTI-LA SAL NATIONAL FOREST
N
W
E
S
Scale 1:187 000
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 6 Kilometers
Transverse Mercator Projection
1927 North American Datum
5,000-meter Universal Transverse Mercator grid lines
Zone 12
FERRON NATURAL GAS PROJECT EIS
PLATE 5-2
NO2 ANNUAL AIR QUALITY IMPACTS - CUMULATIVE EFFECTS
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR
DATE: 04/13/99
ArcView FILE: E:\FERRONEIS\PLATE 5-2.APR


LEGEND
EIS Project Area Boundary & Pipeline Corridor
National Forest Boundary
Primary Road
Secondary Road
Unimproved Road
Railroad
Pipeline
Proposed Central Production Facility
Proposed Compressor
Existing Central Production Facility
Perennial Stream
Intermittent Stream/Channel/Canal
Water Bodies
Municipal Boundary
Concentration (µg/m³)
17.0 - 26.9
27.0 - 36.9
37.0 - 47.9
48.0 - 57.9
> 58
Helper
Kenilworth
Price
Carbon Co.
Emery Co.
Huntington
Orangeville
Castle Dale
Clawson
Ferron
MANTI-LA SAL NATIONAL FOREST
Meteorological Data Location
R. 10 E.
R. 9 E.
R. 8 E.
R. 7 E.
R. 6 E.
T. 13 S.
T. 14 S.
T. 15 S.
T. 16 S.
T. 17 S.
T. 18 S.
T. 19 S.
T. 20 S.
N
S
E
W
Scale 1:187 000
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 6 Kilometers
Transverse Mercator Projection
1927 North American Datum
5,000-meter Universal Transverse Mercator grid lines
Zone 12
FERRON NATURAL GAS PROJECT EIS
PLATE 5-3
NO2 ANNUAL AIR QUALITY IMPACTS - CUMULATIVE EFFECTS PLUS BACKGROUND (MITIGATED)
ANALYSIS AREA: NORTH AREA, SOUTH AREA & PROPOSED PIPELINE CORRIDOR
DATE: 04/13/99
ArcView FILE: E:\FERRONEIS\PLATE 5-3.APR

APPENDIX A
RECLAMATION PLAN

INTRODUCTION

Anadarko Petroleum Corporation (Anadarko); Chandler and Associates, LLC (Chandler); and Texaco Exploration and Production, Inc. (Texaco) propose to explore and develop natural gas reserves in two separate areas northeast and southwest of Price, Utah totaling about 111,520 acres. The Bureau of Land Management (BLM) has prepared an Environmental Impact Statement (EIS) for the proposed project and this Reclamation Plan, which is included as an appendix to the EIS, provides specific information regarding the reclamation and abandonment of facilities at the end of the Ferron Natural Gas Project's productive life. Detailed descriptions of the proposed action and alternatives, the potential environmental consequences, and proposed mitigation and monitoring measures are provided in the EIS.

Final decommissioning, reclamation, and abandonment of the Ferron Natural Gas Project's facilities would occur at the end of the facilities' economic life. The Companies would reclaim and revegetate each of its facilities (well pads, roads, and central production facilities) according to accepted procedures. Although subject to revision following appropriate standards, general reclamation procedures are described next. These procedures would be finalized for each facility individually during the APD process.

Reclamation of Facilities

Reclamation of individual facilities would involve three primary components. They are backfilling and grading, redistributing soils, and installing structures to control erosion. Each of these components is outlined below.

Backfilling and Grading

Following decommissioning and the removal of the individual facility's surface equipment, reclamation would begin with backfilling, if necessary, and grading of the site to approximate original contours. Specifically:

- Reclamation would start immediately upon completion of construction, unless prevented by weather conditions. Disturbed areas would be restored to approximately the original contour.
- All pits would be reclaimed to a natural condition similar to the rest of the reclaimed area and must be restored to a safe and stable condition.
- Pipelines would be cleaned by filling with water or nitrogen and pigging to remove the water or nitrogen and then abandoned in place to avoid renewed surface disturbance.
- Reclamation and abandonment of pipelines and flowlines would require backfilling original cuts, reducing and grading cut and fill slopes to conform to the adjacent terrain, replacement of surface soil materials, water barring, and revegetation.

- Reclamation of well sites would include recontouring to reestablish natural-appearing contours, where desirable and practical.

- In general, the Companies would leave well pads and roads on federal lands roughed up somewhat to facilitate the capture of water from precipitation.

- After well plugging and abandonment, roads constructed by the operator not required for the landowner's transportation system would be closed. Reclamation may include ripping, scarifying, water barring, and barricading. Stockpiled soil, debris, and fill materials would be replaced on the roadbed.

- Water bars would be constructed on road grades or slopes, if required by BLM. Spacing of water breaks depends on slope and type of soils present. For most soil types, the following spacings would be used:

Slope	**Spacing**
2 percent	200 feet
2–4 percent	100 feet
4–5 percent	75 feet
>5 percent	50 feet

- Temporary erosion control measures such as mulch, jute netting, or other appropriate methods would be used on unstable soils, steep slopes, and wetland areas to prevent erosion and sedimentation until vegetation becomes established.

- Dry holes, depleted producers, and disposal wells would be abandoned according to Onshore Oil and gas Order No. 2.

- Subsurface power lines would be abandoned in place. Aboveground powerlines would be dismantled and removed.

- Access roads would be reclaimed unless the landowner and/or land manager wishes to keep any roads and accept responsibility for future road maintenance.

All disturbed areas would be subject to final grading, but would remain in rough condition to help ensure the stability of topsoil after its redistribution. Leaving the graded surface in a roughened condition would also improve moisture permeability between the soil/spoil interface. Compacted areas, such as roads, would be ripped to a depth of 4 to 12 inches.

Redistribution of Soils

After the site has been backfilled (if necessary) and regraded, topsoils and subsoils that were stripped and stockpiled before the initial construction would be redistributed across the disturbance. The timing of this redistribution would depend on completion of backfilling and grading. It would be advantageous for redistribution to occur before the fall or spring seeding windows.

Before the stockpiled topsoil and subsoil are redistributed, representative samples would be analyzed to identify their physical and chemical characteristics. These characteristics would be used to identify any amendments that may be applied to soils to facilitate the establishment of the vegetative cover.

Topsoil and subsoil would be removed from stockpiles using dozers. Subsoil, if available would be spread evenly over disturbance using dozers working along the contour, when practical. This would be followed by redistribution of topsoil over the subsoil using the same technique and equipment.

Steep slopes may preclude redistribution along the contour in some areas. In these situations, topsoil would be graded to ensure a uniform and stable thickness consistent with reclamation and revegetation requirements. Before seeding, topsoil would be chisel-plowed to alleviate compaction and promote water infiltration.

In general, all topsoil and usable subsoil stripped and stockpiled for each facility would be redistributed evenly across that facility. In the unlikely event that a significant surplus of soil has been stockpiled in a specific location, it would be used to supplement supplies at one or more other sites where topsoils or subsoils are deficient. Additional usable soil may be recovered from areas where mapping shows that less soil or no soil is available. Recovery of this additional soil during stripping would increase the thickness of the respread.

Revegetation

Site-specific revegetation procedures for each facility would be developed by the Companies in coordination with the BLM (Price Field Office), UDWR, and UDOGM. Revegetation procedures and plans would meet applicable requirements outlined in the Surface Operating Standards for Oil and Gas Exploration and Development (BLM and Forest Service 1989), the Environmental Assessment Supplement on Cumulative Impacts on Oil and Gas Categories, Price River Resource Area (BLM 1984a) and the Solid Minerals Reclamation Handbook H–3042–1 (BLM 1992).

All disturbed sites would be reclaimed and revegetated according to 43 CFR Part 3160. The overall goal of reclamation is to establish a diverse, effective, and permanent vegetation cover of the same seasonal variety and utility as the vegetation native to the affected area, and capable of supporting the planned post-well site land uses on disturbed areas. The prompt establishment of a protective plant cover and recovery of productivity levels compatible with the proposed post-well site land uses would be accomplished by implementing the reclamation plan described herein.

The BLM Price Field Office's revegetation goals for the Project Area are as follows:

- Stabilize areas of soil disturbance through erosion and sedimentation control.
- Reestablish a self-sustaining vegetative cover that is within the ecological potential of the area to meet long-term management objectives.
- Restore watershed, wildlife, livestock, recreational and aesthetic values to pre-existing conditions.

The revegetation plan has been designed to meet short- and long-term reclamation goals by: 1) controlling erosion and sedimentation, 2) reestablishing a vegetative cover that is ecologically comparable to native pre-disturbance conditions, and 3) restoring livestock grazing, wildlife, watershed, and aesthetic values to meet pre-operation land use objectives.

Revegetation would occur after final grading and redistribution of subsoil and topsoil activities have taken place. Revegetation communities representative of the native plant communities that existed before the disturbance occurred would be established.

Revegetation would occur in a series of steps. These steps would be:

- Disturbed areas would be revegetated after the site has been satisfactorily prepared. Site preparation may include ripping, contour furrowing, terracing, reduction of steep cut and fill slopes, water barring, or other procedures.

- On all cut slopes, seeding would extend from the bottom of the ditch to the top of the cut slope. On embankment slopes, the seeding would extend from the roadway to the toe of the slope. Seeding all borrow pit areas and all sidecast slopes in areas of full bench construction also would be seeded.

- Seedbed preparation would be conducted immediately after grading, topsoiling, and subsoiling.

- Seeding and/or planting would be repeated until satisfactory revegetation (to pre-disturbance conditions) is accomplished, as determined by the BLM or other landowner. Mulching, fertilizing (if specifically required — in general the BLM would not require the application of fertilizer), fencing or other practices may be required.

- Seeding would be coordinated with other reclamation activities to occur as soon after seedbed preparation as possible and within 90 days of soil redistribution. Interim revegetation of sites to be stabilized before permanent revegetation, such as sediment control structures or topsoil stockpiles, would be conducted as soon after construction as possible.

- Disturbances would be seeded using the appropriate revegetation mixture. Seeding would occur from October 1 to November 15 and from February 1 to March 31.

- Broadcast-seeded areas would be chained, harrowed, cultipacked, dozer-tracked, or raked, as needed, to firm the seedbed and cover seed.

- Certified weed-free hay or straw mulch would be evenly spread over and crimped into the seeded area at rates dependent on seeding method and slope, as needed.

- Revegetated areas would be grazed by livestock at an approved level during the reclamation liability period.

Seedbed Preparation

Seedbed preparation would be conducted immediately after grading, subsoiling, and topsoiling, and if conducted, fertilizer application. On level to gentle slopes, the seedbed would be disked and harrowed along the contour to breakup large clods. On steeper slopes, rocky sites, or on areas too narrow to negotiate equipment, the soil surface would be left in a roughened condition. An irregular seedbed would provide microsites for plant germination and reduce soil movement on steeper slopes.

Alternative techniques include the use of barriers, check dams, erosion stops, matting, and roughened surfaces. These treatments can be implemented with various kinds of straw or hay bales, nettings, and mattings to effectively reduce overland flow. If gullies deeper than 9-inches should form, the gullies would be blocked with one of the above-mentioned treatments and given the opportunity to stabilize naturally, through the growth of vegetation.

Disk/Chisel Plowing

Before seeding, which would be initiated as soon as practical and within 90 days of final grading, topsoiled sites would be ripped or chisel-plowed to alleviate compaction and promote water infiltration. Chisel-plowing is a highly effective means of temporary stabilization prior to vegetation establishment.

Seeding Methods

Drill seeding would be used on most of the disturbed well site areas. This technique results in proper depth placement of seed and promotes good contact between seed and soil. Drill seeding would be done along the contour wherever the surface is not level.

Broadcast seeding would be employed on rocky areas, on steeper slopes, and on small disturbances. Seed would be broadcast using a manually-operated, cyclone-type, bucket spreader; a mechanical blower; or hydroseeder. Seed would be frequently mixed to discourage settling. Where practical, broadcast seeded areas would be chained, harrowed, or cultipacked to cover the seed. Where slope conditions allow, broadcast seeded areas would be dozer-tracked perpendicular to the slope. On small, isolated, or inaccessible sites, hand raking would be used to cover seed and ensure good soil-to-seed contact.

If hydroseeding is used, seed, fertilizer (if used), and mulch at a rate of approximately 250 pounds/acre would be sprayed in one application. Where hydromulching is used, a second application would spray additional mulch and a tackifier at the manufacturer's recommended application rate.

Timing of Seeding

Revegetation would occur after final grading and redistribution of subsoil and topsoil activities have taken place. Seeding would be coordinated with other reclamation activities to occur as soon after seedbed preparation as possible and within 90 days of soil replacement. Fall seeding (September to November) is recommended based on local soil moisture conditions, germination requirements of selected species, and adaptation of seed to soil temperature. Spring seeding (March to May) would be practiced if areas are ready for revegetation and access is possible. Mixed seedings, one seeding to plant cool season plants in early fall and one seeding to plant warm season plants in spring, would be timed to avoid competition between species and avoid seed distribution problems. Interim revegetation of sites (i.e., on the topsoil storage piles to be stabilized before permanent revegetation) would be conducted as soon after construction as possible.

Mulching

Mulching aids in the control of erosion, retention of soil moisture, and addition of supplemental organic material to the soil. Mulch would be evenly distributed over the seeded area at rates dependent on seeding method and slope. Certified weed-free straw or grass hay mulch would be applied at a rate of 1 to 2 tons/acre on drill seeded areas and at least 1.5 tons/acre on steeper slopes of greater than 10 percent. Mulch would be anchored into the seedbed using a mulch crimper or disk, tackifier, or netting. If used, hydromulch would be applied at a rate of at least 1.0 tons/acre. A tackifier would be used on hydromulched areas in the fall and on areas requiring prompt stabilization. A temporary cover crop of a suitable annual grain, such as annual rye, may be seeded to control erosion until a permanent cover can be established.

Reclamation of Roads

Road locations and design criteria are developed to implement the goals of transportation planning. New road construction, or reconstruction, by the operator would be performed to BLM standards consistent with the needs of the users and spelled out in the Surface Operating Standards for Oil and Gas Exploration and Development (BLM and Forest Service 1989). The BLM has designated and defined three classes of roads that may be constructed: Resource, Local, and Collector.

At the request of the landowner, roads would be retained as permanent structures or reclaimed. Roads would be reduced to the designated running surface width and the adjacent roadbed would be ripped, topsoil replaced, and the site revegetated following the cessation of operations. Natural drainage patterns would be restored, all installed crossings would be removed, roadbeds would be ripped and any cut and fills would be blended to conform to existing topography before topsoil replacement and seeding. Light use access roads that predate the well site operation would be left in their existing condition.

Seed Mixtures

The Companies would use seed mixes adapted to different geomorphic and environmental settings to restore vegetation communities. These mixes may be adjusted for site-specific conditions. The general mixes and the vegetation types to which they apply are:

Seed mixtures have been developed for general land types throughout the Project Area. They are based on erosion control, forage production, elevation, soils, vegetation communities and average annual precipitation zones. The mixtures show the plant species and the pounds per acre of pure live seed (PLS) to be planted.

The following seed mixture would be planted along service road borrow ditches, around the edge of drill pads with a production well, and surrounding other production and maintenance facilities. The purpose for this seeding is to provide a "green strip" buffer to minimize fire hazards and prevent invasion and establishment of noxious weeds in areas that will receive continued disturbance for the life of these areas.

Table A–1

Common Plant Name	Scientific Name	Pounds per acre (PLS)*
Forage kochia	*Kochia prostrata*	2
Wyoming big sagebrush	*Artemisia tridentata wyomingensis* var. Gordon Creek	1
Douglas low rabbitbrush	*Chrysothamnus viscidiflorus*	1
	TOTAL	**4**

The following seed mixtures are for areas that would receive final reclamation. Areas would be planted to protect them from soil erosion and to restore forage production.

Table A–2

Common Plant Name	Scientific Name	Pounds per acre (PLS)[1]
Salt Desert Areas		
Grasses		
Indian ricegrass	*Stipa hymenoides*	2
Squirreltail	*Elymus elymoides*	2
Galleta	*Hilaria jamesii*	2
Forbs		
Lewis flax	*Linum perenne lewisii*	1
Palmer penstemon	*Penstemon palmerii*	1
Gooseberryleaf globemallow	*Sphaeralcea grossulariifolia*	0.5
Shrubs		
Forage kochia	*Kochia prostrata*	2
Rubber rabbitbrush	*Chrysothamnus nauseosus*	1
Fourwing saltbush	*Atriplex canescens*	2
Winterfat	*Krascheninnikovia (Eurotia) lanata*	2
	TOTAL	**15.5**
Sagebrush/Grass Areas		
Grasses		
Indian ricegrass	*Stipa hymenoides*	2
Squirreltail	*Elymus elymoides*	2
Thickspike wheatgrass	*Elymus lanceolatus*	1
Crested wheatgrass	*Agropyron desertorum*	2
Forbs		
Lewis flax	*Linum perenne lewisii*	1
Palmer penstemon	*Penstemon palmerii*	1
Small burnet	*Sanguisorba minor*	1
Shrubs		
Forage kochia	*Kochia prostrata*	2
Whitestem rabbitbrush	*Chrysothamnus nauseosus albicaulis*	1
Fourwing saltbush	*Atriplex canescens*	2
	TOTAL	**15**

Table A–2 (continued)

Common Plant Name	Scientific Name	Pounds per acre (PLS)[1]
Pinyon-Juniper Areas		
Grasses		
Thickspike wheatgrass	*Elymus lanceolatus*	1.5
Intermediate wheatgrass	*Elytrigia intermedia*	1.5
Squirreltail	*Elymus elymoides*	2
Crested wheatgrass	*Agropyron desertorum*	2
Forbs		
Lewis flax	*Linum perenne lewisii*	1
Palmer penstemon	*Penstemon palmerii*	1
Shrubs		
Forage kochia	*Kochia prostrata*	2
Fourwing saltbush	*Atriplex canescens*	2
Wyoming big sagebrush	*Arternesia tridentata wyomingensis* var. Gordon Creek	1
Antelope bitterbrush	*Purshia tridentata*	1
	TOTAL	**15**
Mountain Brush Areas		
Grasses		
Sheep fescue	*Festuca ovina*	2
Smooth brome	*Bromus inermis*	2
Slender wheatgrass	*Elymus trachycaulus*	2
Intermediate wheatgrass	*Elytrigia intermedia*	1.5
Russian wildrye	*Psathyrostachys juncea*	1
Forbs		
Lewis flax	*Limum perenne lewisii*	1
Rocky Mt. penstemon	*Pensternon strictus*	1
Sainfoin	*Onobrychis viciifolia*	0.5
Shrubs		
Forage kochia	*Kochia prostrata*	2
Wyoming big sagebrush	*Artemesia tridentata wyomingensis* var. Gordon Creek	0.5
Antelope bitterbrush	*Purshia tridentata*	1
Mountain big sagebrush	*Artemisia tridentata* var. *vaseyana*	0.5
True Mt. mahogany	*Cercocarpus montanus*	1
	TOTAL	**16**

Table A–2 (continued)

Common Plant Name	Scientific Name	Pounds per acre (PLS)[1]
Riparian Areas		
Grasses and Grasslike		
Reed canarygrass	*Phalaris arundinacea*	2
Streambank wheatgrass	*Elymus lanceolatus riparium*	4
Nebraska sedge[2]	*Carex nebrascensis*	
Baltic rush[2]	*Juncus balticus*	
Shrubs		
Coyote willow[2]	*Salix exigua*	
Skunkbush sumac	*Rhus trilobata* var. *trilobata*	2
Trees		
Narrowleaf cottonwood[2]	*Populus angustifolia*	
	TOTAL	**8**

Notes:

1. Seeding rate is listed as pounds per acre of pure live seed (PLS) drilled. Rate is increased by 50 percent if broadcast seeded.
   Formula: pure live seed (PLS) = % seed purity x % seed germination.
2. Sedge and rush root mass plugs, willow cuttings and cottonwood bare stock plantings would be done the spring, within one month after high water flows, when the riparian water table and soil moisture would ensure planting success.

Rate of plantings per linear feet of disturbed stream bank is as follows: sedge and rush root mass plugs, one 4-inch diameter plug per 5 linear feet; willows, one cutting per linear foot; and cottonwood stock, one cluster planting of 7 trees per 25 linear feet. Individual cottonwood stock, within a planting cluster would be spaced two feet apart. The willows and cottonwoods would be planted adjacent to the stream bank in moist soil, yet above the normal water line.

Shrub seed sources would be from the states of Colorado or Utah and from areas above elevations of 4,000 feet above sea level. Seed from these sources would provide more winter tolerant plants, thus, increasing over-winter survival rates.

APPENDIX B
HAZARDOUS SUBSTANCES MANAGEMENT PLAN

INTRODUCTION

Anadarko Petroleum Corporation (Anadarko); Chandler and Associates LLC (Chandler); and Texaco Exploration and Production, Inc. (Texaco) propose to explore and develop natural gas reserves in two separate areas northeast and southwest of Price, Utah totaling about 111,520 acres. Also, Questar Pipeline Company proposes to construct a natural gas transmission pipeline in a 27-mile long corridor that encompasses 261 acres, which brings the total area encompassed by the Proposed Action to 111,781 acres. The Bureau of Land Management (BLM) has prepared an Environmental Impact Statement (EIS) for the proposed project and this Hazardous Substances Management Plan (HSMP), which is included as an appendix to the EIS, provides specific information regarding the types and quantities of hazardous and extremely hazardous substances the Companies expect to produce or use for the project. Detailed descriptions of the proposed action and alternatives, the potential environmental consequences, and proposed mitigation and monitoring measures are provided in the EIS.

This HSMP is provided pursuant to BLM Instruction Memoranda, which require that all National Environmental Policy Act (NEPA) documents list and describe any hazardous and/or extremely hazardous substances that would be produced, used, stored, transported, or disposed of as a result of a proposed project. Hazardous substances, as defined herein, are those substances listed in the Environmental Protection Agency's (EPA's) *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*. Extremely hazardous substances are those identified in the EPA's *List of Extremely Hazardous Substances* (40 Code of Federal Regulations 355). The Companies have reviewed these lists and substances included on either list that could be present in any amount over the life of the proposed project are listed and/or discussed in this appendix.

Some potentially hazardous substances that may be used in small, unquantifiable amounts have been excluded from this HSMP. These substances may include: wastes, as defined by the Solid Waste Disposal Act, wood products, manufactured items and articles that do not release or otherwise result in exposure to a hazardous substance under normal conditions of use (e.g., steel structures, automobiles, and tires), food, drugs, tobacco products, and other miscellaneous substances (e.g., WD–40, gasket sealants, and glues). No unauthorized use or disposal of these substances by project personnel would occur during implementation of the project. Additionally, all project personnel would be directed to properly dispose of these substances in an appropriate manner. Solid wastes generated at well sites would be collected in approved waste containers (e.g., trash baskets or dumpsters) and each well site would be provided with one or more such containers during drilling and completion. Solid wastes would be regularly removed from well sites and transported off the Project Area to approved disposal facilities.

HAZARDOUS SUBSTANCES

A list of all relevant known hazardous and extremely hazardous substances that may be used, produced, stored, or disposed of during implementation of the project is provided herein. Where possible, the quantities

of these substances have been estimated on a per-well basis and their use, storage, and disposal methods described.

PRODUCTION PRODUCTS

The purpose of the proposed project is to extract natural gas from the Ferron Sandstone Member of the Mancos Formation. Water also would be produced as a byproduct of gas extraction operations. **Table B–1** lists and quantifies, where possible, the hazardous and extremely hazardous substances that may be found in these production products.

Storage of production products is not expected to occur. As natural gas and produced water are brought to the surface, they would be separated and discharged into the respective pipelines for transport to the CPF. From here, the natural gas would be transported to the transmission pipeline. The produced water would be discharged into a disposal well. Thus, neither product would be stored.

Natural Gas

Natural gas primarily containing methane would be produced from almost 350 wells at rates of up to a million cubic feet per day (mmcfd). No extremely hazardous substances are anticipated to be produced with the gas stream. Although the hazardous substance hexane (CAS Number 110–54–3) would be present in the gas stream, it would be present at concentrations well below those that would be of regulatory concern (**Table B–1**). In addition, the gas would likely contain small amounts of potentially-hazardous polycyclic organic matter and polynuclear aromatic hydrocarbons. No other hazardous substances are known to occur in the natural gas stream.

The gas produced from the Ferron Natural Gas Project would be transported from each location through newly-constructed pipelines linking wells to existing or newly-constructed gas production facilities. Ultimately, the natural gas would be delivered to consumers for combustion. Small quantities of natural gas may be vented or flared into a flare pit pursuant to BLM's rules and regulations (Notice to Lessees [NTL]–4A) and UDOGM's rules and regulations. BLM's approval would be obtained before flaring or venting operations. No natural gas storage is anticipated.

Industry standard pipeline equipment, materials, techniques, and procedures in conformance with all applicable regulatory requirements would be employed during construction, testing, operation, and maintenance of the project to ensure pipeline safety and efficiency. All necessary authorizing actions for natural gas pipelines would be addressed before installation. These actions include:

- Carbon County and Emery County special use permits,
- BLM rights-of-way (ROWs) applications, and
- Conformance with U.S. Department of Transportation (DOT) pipeline regulations (49 CFR 191–192).

Produced Water

Initially, produced water from the Ferron Natural Gas Project's wells is expected to average about 350 barrels per day for most wells (**Table B–1**). The quality of produced water from the wells would vary and would be monitored periodically. Based on analyses of samples, no hazardous substances. are known to be present in the produced water. However, hydrogen sulfide, an extremely hazardous substance, occurs in

Table B–1
Hazardous and Extremely Hazardous Materials Potentially Produced by the Ferron Natural Gas Project

Production Product	Hazardous Constituents[1]	Extremely Hazardous Constituents[2]	Quantity Produced per Well[3]
Natural Gas		None	
	Hexane		0.05 percent Reportable quantity = 5,000 lbs.)
Produced Water			350 barrels per day
		Hydrogen Sulfide	11 ppm

Notes:
1. The hazardous constituents listed, are to the best of our present knowledge, those that are or may be present in the production products and are listed under the Environmental Protection Agency's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, as amended.
2. Extremely hazardous materials are those defined in 40 CFR 355.
3. mmcfd = million cubic feet per day, gpd = gallons per day, percent = percent by volume, ppm = parts per million

Sources: Cox, 1998; Schlotterback, 1998.

small amounts (80–90 ppm below the minimum level of 100 ppm at which it is regulated under Onshore Order No. 6).

Produced water would be piped from the wells to central production facilities for disposal in the Navajo Formation. All necessary authorizing actions would be met before disposal of the produced water.

CONSTRUCTION, DRILLING, PRODUCTION, AND RECLAMATION

Known hazardous or extremely hazardous substances that may be used during construction, drilling, production, and reclamation operations for the Ferron Natural Gas Project are listed at the end of this appendix. Hazardous or extremely hazardous substances used during typical project implementation fall into one of seven categories. They are fuels, lubricants, coolant/antifreeze and heat transfer agents, drilling fluid additives, fracturing fluids, cement and additives, and miscellaneous materials. These categories of substances are described in more detail below.

Storage of materials used for construction, drilling, production, and reclamation would depend upon the material. Materials for construction and drilling would be brought in by drillers, used relatively quickly, and stored on site for only a comparatively short time. Materials used by the Companies for production would be stored at the Companies' facilities.

Fuels

Gasoline (CAS 8006–61–9), diesel fuel (CAS 68476–30–2), and natural gas are the fuels proposed for use on the project. All contain substances deemed hazardous. Gasoline would be used to power vehicles providing transportation to and from the Project Area. Diesel fuel would be used to power transport vehicles,

drilling rigs, and construction equipment and would be a component of fracturing fluids. Natural gas would be used to power pipeline compressors.

Gasoline

Gasoline would be used to power vehicles traveling to, from, and within the Project Area. The hazardous substances present in gasoline include benzene (CAS 71–43–2), toluene (CAS 108–88–3), ethylbenzene (CAS 100–41–4), xylene (CAS 130–02–07), m-xylene (CAS 108–38–3), o-xylene (CAS 95–47–6), methyl tert-butyl ether (CAS 1634–04–4), polynuclear aromatic hydrocarbons, and polycyclic organic matter.

Gasoline would be purchased from regional venders and would primarily be stored and transported in vehicle gas tanks. Some additional gasoline storage may be provided in appropriately-designed and labeled 1 to 5-gallon containers for supplemental use as vehicle fuel. Gasoline would be used exclusively as a fuel for transport vehicles, being burned in internal combustion engines. No large-scale storage of gasoline is anticipated.

Diesel Fuel

Diesel fuel for vehicles would be used, transported, and stored as described above under gasoline. Additional diesel fuel would be used to power drilling rigs, workover rigs, and road maintenance and reclamation equipment. Diesel fuel also would be used as a minor fracturing fluid constituent.

Diesel fuel primarily consists of hydrocarbons containing from 15 to 25 carbons. It may contain hazardous substances, including benzene, toluene, ethylbenzene, p-xylene, m-xylene, o-xylene, methyl tert-butyl ether, naphthalene, polynuclear aromatic hydrocarbons, and polycyclic organic matter. No extremely hazardous substances are known to be present in diesel fuel.

During drilling operations, each well site would have an aboveground storage tank containing diesel fuel. These tanks would be filled as needed by a qualified, licensed fuel supplier. The use, transport, and storage of diesel fuel would be conducted according to all relevant state and federal rules, regulations, and guidelines.

Natural Gas

An unknown volume of natural gas would be burned to provide power for the natural gas compressors required for efficient functioning of the pipelines. The natural gas used to power compressors would be produced by the Ferron Natural Gas Project. The only hazardous substance identified in natural gas from the Ferron is hexane. Further details on the transportation of natural gas as a result of the proposed project and the relevant authorizing actions are discussed above.

Lubricants

Various lubricants, including motor oils, hydraulic oils, transmission oils, compressor lube oils, and greases, would be used for project-required vehicles, rigs, compressors, and other machinery. Some of these lubricants would likely contain polynuclear aromatic hydrocarbons and polycyclic organic matter. Also, some may contain compounds of lead, cadmium, nickel, copper, manganese, barium, zinc, and/or lithium. No extremely hazardous substances are known to be present in the lubricants required for the proposed project.

The exact quantity of each lubricant stored, transported, and disposed of is unknown. However, all lubricants would be used, stored, transported, and disposed of following manufacturer's guidelines. No unauthorized disposal of lubricants (e.g., disposal of used motor oil) would occur in connection with the project.

Coolant/Antifreeze and Heat Transfer Agents

Ethylene glycol (CAS 107–21–1) and triethylene glycol (CAS 112–27–6) would be utilized as coolant/antifreeze and heat transfer agents in association with this project. Ethylene glycol would be used as an engine coolant/antifreeze in automobiles, construction equipment, gas dehydrators, and drilling and workover rigs. An unspecified volume of this substance would be stored and transported in engine radiators. In addition, both ethylene glycol and triethylene glycol would be used as heat transfer fluids during well completion and maintenance operations. While the exact total volume of ethylene glycol to be used, stored, transported, and disposed of for the proposed project is unknown, any disposal of ethylene glycol and/or triethylene glycol would be conducted in accordance with all relevant federal and state rules and regulations.

Drilling Fluids and Additives

Fresh water would be used for drilling the disposal wells. Drilling fluids consist of clays and other additives that are used in standard industry procedures. All drilling operations would be conducted in compliance with applicable BLM rules and regulations.

All known hazardous substances that may be present in the proposed drilling fluids and additives are listed at the end of this appendix. No extremely hazardous substances are known to be present in any of the drilling fluids and additives.

Drilling fluid additives would be transported to well locations during drilling operations in appropriate sacks and containers in compliance with DOT regulations. Water-based drilling fluids, cuttings, and water would be stored in reserve pits and pits would be fenced to protect wildlife from exposure.

When the reserve pit is no longer required, its contents would be evaporated and the pit backfilled, as approved by the BLM. If necessary under special, unanticipated circumstances, reserve pit contents would be removed and disposed of at an appropriate facility in accordance with all relevant state and federal regulations.

Fracturing Fluids

Hydraulic fracturing is expected to be performed at many Ferron wells to augment gas flow rates. The hazardous substances present in fracturing fluid components are listed at the end of this appendix. No extremely hazardous substances are known to be present in any of the fracturing fluid additives.

Fracturing fluids and additives would be transported to well locations in bulk or in appropriately designed and labeled containers. All transportation of fracturing fluids and additives would be in adherence with DOT rules and regulations.

During fracturing, fluids are pumped under pressure down the well bore and out through perforations in the casing into the formation. The pressurized fluid enters the formation and induces hydraulic fractures. When the pressure is released at the surface, a portion of the fracturing fluids would be forced to the well bore and up into a tank or pit. The fracturing fluids would then be transferred to reserve pits and evaporated, or hauled

away form the location and reused or disposed of at an authorized facility. Decisions regarding the appropriate disposal of fracturing fluids would be made by the BLM or UDOGM on a case-by-case basis.

Cement and Additives

Well completion and abandonment operations would entail cementing and plugging various segments of the well bore to protect freshwater aquifers and other down-hole resources. Materials potentially used for cementing operations include: cement, calcium hydroxide, calcium chloride, pozzlans, sodium bicarbonate, and potassium chloride. An unknown quantity of cement and additives, which may contain the hazardous material classes of fine mineral fibers, polycyclic organic matter, and polynuclear aromatic hydrocarbons, would be transported in bulk to each well site by a qualified cement supply company. Small quantities may be transported and stored on-site in 50 pound sacks. Wells would be cased and cemented as directed and approved by the BLM (for federal minerals) and UDOGM (for state and patented minerals). No extremely hazardous substances are known to be present in the cement and additives proposed for use on this project.

Amine Fluids

Amine plants would be used to remove excess carbon dioxide from the wellhead gas stream. Amine fluid (methyldiethanolamine, CAS# 000105–59–9) would be used in a 50/50 ratio with water. The process would start in a gas stripping tower where the amine fluid would be contacted with the natural gas flow. The amine fluid would strip the carbon dioxide from the gas stream , the gas stream would flow to the transmission pipeline, and the amine fluid, with the carbon dioxide in solution, would then be transferred to the amine stripper. At this point, the solution would be heated, the carbon dioxide vented off and small amounts of amine gas would be vented, and the amine fluid would be circulated back to the gas stripper until the amine fluid is spent.

The Companies would store the amine fluid and water in 13,000-gallon tanks. The monthly usage would average approximately 300 gallons per month. Therefore, the total consumption would be 3,600 gallons per month for the 12 amine units proposed for the Ferron Natural Gas Project. The spent amine fluid would be stored in barrels and then transported to an approved disposal site.

Miscellaneous Materials

Miscellaneous materials, potentially containing hazardous and/or extremely hazardous substances which may be used for the proposed project include methanol and corrosion inhibitors. These substances would be transported to the site by qualified service and supply companies and would be used and disposed of following manufacturer's guidelines.

An unknown quantity of methanol (CAS 67–56–1) would be used to de-ice well bores and as a hydrate preventer during completion and natural gas transport operations. Methanol is a listed hazardous chemical and would be stored, transported, used, and disposed of in adherence with all applicable federal and state rules, regulations, and guidelines.

Combustion Emissions

Combustion emissions from gasoline and diesel engines, as well as flaring natural gas, will occur as a result of this project. The complete oxidation of hydrocarbon fuels yields only carbon dioxide and water as

combustion products; however, complete combustion is seldom achieved. Unburned hydrocarbons, particulate matter (e.g., carbon, metallic ash), carbon monoxide, nitrogen oxides, and possibly sulfur oxides would be expected as direct exhaust contaminants. Secondary contaminants would likely include the formation of ozone from the photolysis of nitrogen oxides. A listing of the hazardous and extremely hazardous substances potentially present in combustion emissions is provided in **Table B–2**.

Table B–2
Hazardous and Extremely Hazardous Materials Potentially Present in Combustion Emissions of the Ferron Natural Gas Project

Emission	Hazardous Constituents[1]	Extremely Hazardous Constituents[2]
Hydrocarbons	—	None
	PAHs[3]	
Particulate Matter	—	None
	Lead	
	Cadmium	
	Nickel	
	Copper	
	Manganese	
	Barium	
	Zinc	
	Lithium	
Gases	—	—
	Nitrogen dioxide	Nitrogen dioxide
	Sulfur dioxide	Sulfur dioxide
	Sulfur trioxide	Sulfur trioxide
	Ozone	Ozone

Notes:
1. The hazardous constituents listed are, to the best of our present knowledge, those that are or may be present in the production products and are listed under the EPA's Consolidated List of Chemicals Subject to reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, as amended.
2. Extremely hazardous materials are those defined in 40 CFR 355.
3. PAHs = polynuclear aromatic hydrocarbons.

Unburned hydrocarbons may contain potentially hazardous polynuclear aromatic hydrocarbons, and particulate matter may contain metal-based particulates from metallic lubricating oil additives and engine wear particulates. Hazardous substances in the particulate matter may therefore include compounds of lead, cadmium, nickel, copper, manganese, barium, zinc, and/or lithium.

Nitrogen dioxide (CAS 10102–44–0), sulfur dioxide (CAS 7446–09–5), sulfur trioxide (CAS 7446–11–9) and ozone (CAS 10028–15–6) are probable combustion emissions, all classified as extremely hazardous substances in large quantities and are analyzed in the air quality section of Chapter 4. These substances would be either directly released in minor quantities from internal combustion engines, or would be formed in the combustion of natural gas that would fuel the compressors. No releases of these or other materials would occur in excess of those allowed for Prevention of Significant Deterioration Class II areas. Also, releases would not occur that jeopardize National Ambient Air Quality Standards for the Project Area. Particulate matter emissions and larger unburned hydrocarbons would eventually settle out on the ground

surface, whereas gaseous emissions would react with other air constituents as components of the nitrogen, sulfur, and carbon cycles.

Management Policy and Procedure

The Companies and their contractors would ensure that all production, use, storage and disposal of hazardous and extremely hazardous substances as a result of the proposed project would be in strict accordance with all applicable existing, or hereafter promulgated federal, state, and local government rules, regulations, and guidelines. All project-related activities involving the production, use, storage and/or disposal of hazardous or extremely hazardous substances would be conducted in such a manner as to minimize potential environmental impacts.

The Companies would comply with emergency reporting requirements for releases of hazardous substances. Any release of hazardous or extremely hazardous substances in excess of the reportable quantity, as established in 40 CFR 117, would be reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980, as amended. The substances for which such notification must be given are the extremely hazardous substances listed under the *Emergency Planning and Community Right to Know* Section 302 and the hazardous substances designated under Section 1102 of CERCLA, as amended. If a reportable quantity of a hazardous or extremely hazardous substance is released, prompt notice of the release would be given to the BLM's Authorized Officer and all other appropriate federal and state agencies. Additionally, notice of any spill or leakage (i.e., undesirable event), as defined in BLM NTL–3A, would be given by the operators to the Authorized Officer and other such federal and state officials as required by law.

The Companies have evaluated field operations in the project area and have prepared or would prepare and implement plans and/or policies to ensure environmental protection from hazardous and extremely hazardous substances. These plans/policies include, where applicable:

- spill response plans;
- inventories of hazardous chemical categories pursuant to Section 312 of the SARA, as amended; and
- emergency plans.

Development operations in the Project Area would be in compliance with regulations promulgated under the Resource Conservation and Recovery Act (RCRA), Federal Water Pollution Control Act (Clean Water Act), Safe Drinking Water Act (SWDA), Toxic Substances Control Act (TSCA), Occupational Safety and Health Act (OSHA), and the Federal Clean Air Act (CAA). In addition, project operations would also comply with all attendant state rules and regulations relating to hazardous substance reporting, management, and disposal. **Table B–3** lists potential hazardous chemical categories for the oil and gas industry.

Table B–3
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Acids	Immediate (Acute)	10–50
Hydrochloric acid (<30%)(CAS#7647–01–0)		
Alkalinity and pH Control Materials	Immediate (Acute)	500–1,000 lbs.
Calcium hydroxide (CAS#1305–62–0)		
Potassium hydroxide (CAS#1310–58–3)		
Soda ash (CAS#497–19–8)		
Sodium bicarbonate (CAS#144–55–8)		
Sodium carbonate (CAS#497–19–8)		
Sodium hydroxide (CAS#1310–73–2)		
Biocides	Immediate (Acute), Fire	2–20
Amines		
Glutaraldehyde (CAS#111–30–8)		
Isopropanol (CAS#67–63–0)		
Thiozolin		
Acrolein (CAS#107–02–8)	Fire, sudden release of pressure,	1–2
Anhydrous ammonia	Immediate (Acute)	1–2
Formaldehyde	Sudden release of pressure, Immediate (Acute), Fire, Immediate (Acute), Delayed (Chronic)	2–20
Breakers	Immediate (Acute), fire	0–500 lbs
Ammonium persulfate (CAS#7727–54–0)		
Benzoic acid (CAS#65–85–0)		
Enzyme		
Sodium acetate (CAS#127–09–3)		
Sodium persulfate (CAS#7772–27–1)		
Buffers	Immediate (Acute)	500–1000
Sodium acetate (CAS#127–09–3)		
Sodium bicarbonate (CAS#144–55–8)		
Sodium carbonate (CAS#497–119–8)		
Sodium deacetate		
Carbon Dioxide Removal Materials	Immediate (Acute)	13,000 gallons
Methyldiethanolamine (CAS#000105–59–9)		
Calcium Compounds	Immediate (Acute)	1000–3000 lbs.
Calcium bromide (CAS#71626–99–8)		
Calcium hypochlorite (CAS #7778–54–3)		
Calcium oxide (CAS#1305–78–8)		
Gypsum (CAS#10101–41–4)		
Lime (CAS#1305–78–8)		
Cement (CAS#65997–15–1)	Immediate (Acute)	1000–1500 lbs.

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Cement Additives – Accelerators Calcium chloride (CAS #10035–04–8) Gypsum (CAS#10101–41–4) Potassium chloride Sodium Chloride (CAS#7647–14–5) Sodium metasilcate	Immediate (Acute)	5000–20,000 lbs.
Cement Additives – Fluid Loss Cellulose polymer Latex	Immediate (Acute)	50–1000 lbs.
Cement Additives – Miscellaneous Cellulose flakes (CAS#9004–34–6) Coated aluminum Gilsonite (CAS#12002–43–6) Lime (CAS#1305–78–8) Long chain alcohols	Immediate (Acute)	0–500 lbs.
Cement Additives – Retarders Cellulose polymer Lignosulfonates	Immediate (Acute)	0–1000 lbs.
Cement Additives – Weight Modification Barite (CAS#7727–43–7) Bentonite Diatomatious earth (CAS#68855–54–9) Fly ash Glass beads Hematite (CAS#1317–60–8) Ilmenite Pozzoians	Immediate (Acute)	500–20,000 lbs.
Corrosion Inhibitors 4–4' Methylene dianiline (CAS#101–77–9) Acetylenic alcohols Amine Formulations Ammonium bisulfite (CAS#10192–30–0) Basic zinc carbonate (CAS#3486–35–9) Gelatin Ironite sponge (CAS#1309–37–1) Sodium chromate (CAS#7775–11–3) Sodium dichromate (CAS#10588–01–9) Sodium polyacrylate Zinc lignosulfonate Zinc oxide (CAS#1314–13–2)	Immediate (Acute), Delayed (chronic), Fire	2–20
Crosslinkers Boron Compounds Organo-metallic complexes	Immediate (Acute), Fire	300–500 lbs.

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Defoaming Agents Aluminum stearate Fatty acid salt formation Mixed alcohols Silicones	Immediate (Acute)	1–5
Deflocculants Acrylic polymer Calcium lignosulfonate Chrome-free lignosulfonate Chromium lignosulfonate Iron lignosulfonate Quebracho Sodium acid pyrophosphate (SAPP) Sodium hexametaphosphate (CAS#10124–56–8) Sodium phosphate (oilfos) Sodium tetraphosphate Styrene, maleaic anhydride co-polymer salt Sulfo-methylated tannin	Immediate (Acute)	500–1000 lbs.
Detergents/Foamers Amphoteric surfactant formulation Ethoxylated phenol Detergents	Immediate (Acute), Fire	2–20
Explosives Charged well jet perforating gun, Class C explosives Detonators; Class A explosives Explosive power device, Class B	Sudden release of pressure	0–100 lbs.

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Filtration Control Agents Acrylamide AMPS copolymer Aniline formaldehyde copolymer hydrochlorite Causticized leonardite Sulfomethylated phenol formaldehyde Leonardite Partially hydrolyzed polyacrylamide Polyalkonalamine ester Polyamine acrylate Polyanionic cellulose Potassium lignite Preserved starch Sodium carboxymethyl cellulose (CAS#9004–32–4) Starch (CAS#9005–25–8) Vinylsufonate copolymer	Immediate (Acute)	20–200
Friction Reducers Acrylamide methacrylate copolymers Sulfonates	Immediate (Acute)	2–20
Fuels Diesel (CAS#68476–34–6) Fuel oil Gasoline (CAS#8006–61–9) Kerosene (CAS#8008–20–6) Propane (CAS#74–98–6)	Immediate (Acute), Delayed (Chronic), Fire	200–400
Gelling Agents Cellulose and guar derivatives	Immediate (Acute)	1500–5000 lbs
Gel Stabilizers Sulfites Thiosulfates	Immediate (Acute)	1–2
Heat Transfer Fluids Ethylene Glycol (CAS #107–21–1) Freon	Immediate(Acute), Delayed (Chronic)	20–200
Herbicides	Immediate (Acute)	2–20
Hydraulic Fluids	Fire, Immediate (Acute)	2–20
Inert Gases Carbon Dioxide (CAS#124–38–9) Nitrogen (CAS#7727–37–9)	Immediate (Acute), Sudden release of pressure	0–400 tons

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Lost Circulation Materials Cane fibers Cedar fibers Cellophane fibers Corn cob Cottonseed hulls Mica (CAS#12001–26–2) Nut shells Paper Rock wool Sawdust	Immediate (Acute)	0–1000 lbs
Lubricants, Drilling Mud Additives Graphite (CAS#7782–42–5) Mineral oil formations Organo–fatty acid salt Vegetable oil formulations Walnut shells	Immediate (Acute)	2–20
Lubricants, Engine Motor oil Grease	Immediate (Acute)	2–20
Miscellaneous Drilling Additives Diatomaceous Earth (CAS#68855–54–9) Oxalic acid (CAS#144–62–7) Potassium acetate (CAS#127–08–2) Zinc bromide (CAS#7699–45–8)	Immediate (Acute), Delayed (Chronic)	100–500 lbs.
Odorants Mercaptans, aliphatic	Immediate (Acute)	0–1
Paint and Paint Thinner	Fire, Delayed (Chronic)	5–50 gals.
Pipe Joint Compound	Delayed (Chronic)	1–2 lbs.
Organic Acids Acetic acid (CAS#64–19–7) Acetic anhydride (CAS#108–24–7) Benzoic acid (CAS#65–85–0) Citric acid (CAS#5949–29–1) Formic acid (CAS#64–18–6) Organic acid salts	Immediate (Acute), Fire	2–20
Produced Hydrocarbons Condensate Crude oil (CAS#8002–05–9) Natural Gas	Immediate (Acute), Delayed (Chronic), Fire, Sudden release of pressure	2000–20,000

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Proppants Bauxite (CAS#1318–16–7) Resin coated sand Zirconium proppant	Immediate (Acute)	50,000–600,000 lbs.
Resin and Resin Solutions Melamine resins Phenolic resins Polyglocol resins	Immediate (Acute), Fire	1–2
Salt Solutions Aluminum chloride (CAS#7446–70–0) Ammonium chloride (CAS#12125–02–9) Calcium bromide (CAS#17626–99–8) Calcium chloride (CAS#10035–04–8) Calcium sulfate (CAS#778–18–9) Ferrous sulfate (CAS#7782–63–0) Potassium chloride (CAS#7447–40–7) Sodium chloride (CAS#7647–14–5) Sodium sulfate (CAS#7757–82–6) Zinc bromide (CAS#7699–45–8) Zinc chloride (CAS#7646–85–7) Zinc sulfate	Immediate (Acute)	2000–20,000
Scale Inhibitors Ethylenediaminetetraacetic acid (EDTA) (CAS#60–00–4) Inorganic phosphates Isopropanol (CAS#67–63–0) Nitrilotriacetic acid (NTA) (CAS#139–13–9) Organic phosphates Polyacrylate Polyphosphates	Immediate (Acute), Fire	20–200
Shale Control Additives Hydrolyzed polyacrylamide polymer Organo-aluminum complex Polyacrylate polymer Sulfonated asphaltic residuum	Immediate (Acute)	20–200
Silica	Immediate (Acute), Delayed (Chronic)	2000–20,000 lbs.

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Solvents 1,1,1–Trichloreoethane (CAS#71–55–6) Acetone (CAS#67–64–1) Aliphatic hydrocarbons Aromatic naphtha (CAS#8032–32–4) Carbon tetrachloride (CAS#56–23–5) Diacetone alcohol Ethylene glycol monobutyl ether (CAS#111–76–2) Kerosene (CAS#8008–20–6) Isopropanol (CAS#67–63–0) Methyl ethyl ketone (MEK) (CAS#78–98–3) Methyl isobutyl ketone (MIBK) (CAS#108–10–1) Methanol (CAS#67–56–1) t–Butyl alcohol (CAS#75–65–0) Toluene (CAS#108–88–3) Turpentine (CAS#8006–64–2) Xylene (CAS#1330–20–7)	Immediate (Acute), Delayed (Chronic), Fire	20–200
Spotting Fluids Nonoil base spotting fluid Oil base spotting fluid (diesel oil base) Oil base spotting fluid (mineral oil base) Sulfonated vegetable ester	Immediate (Acute), Fire	20–200
Surfacants – Corrosive Alcohol ether sulfates Amines Quarternary polyamine Sulfonic acids	Immediate (Acute)	2–20
Surfactants Ethylene Diamine (CAS#107–15–3)	Fire, Immediate (Acute)	2–20
Surfactants – Flammable Amines Ammonium salts Fatty alcohols Isopropanol (CAS#67–56–1) Oxylalkytated phenols Petroleum naphtha (CAS#8030–30–5) Sulfonates	Immediate (Acute), Fire	2–20
Surfactants – Miscellaneous Amine salts Glycols Phosphonates	Immediate (Acute)	2–20

Table B–3 (continued)
Generic List of Hazardous Chemical Categories for the Oil and Gas Exploration and Production Industry

Hazardous Chemical Category (with examples of representative chemicals)	Physical and Health Hazards	Approx. Quantity Onsite (BBLS, unless noted otherwise)
Temporary Blocking Agents	Immediate (Acute)	2–20
Benzoic acid (CAS#65–85–0)		
Naphthalene (CAS#91–20–3)		
Petroleum wax polymers		
Sodium chloride (CAS#7647–14–5)		
Tracers	Fire	2–20
Ammonium Nitrate		
Potassium Nitrate		

APPENDIX C
WEED/VEGETATION MANAGEMENT PLAN

PURPOSE

This Weed/Vegetation Management Plan was developed as a part of the EIS for the Ferron Natural Gas Project with the goal of controlling the establishment of populations of noxious weeds on federal (BLM) lands within the Project Area. Under the Noxious Weed Acts, County, State, and Federal agencies are charged with the responsibility to identify and control invasive plant species that are harmful to public health, crops, livestock, land, or other property.

The methods and procedures of this management plan have been derived from the final EIS for vegetative treatment on BLM land in 13 western states (BLM 1991a).

Weed species addressed by this Plan are those designated as species of concern by the Utah Commissioner of Agriculture, (Title 4–17–1). The 17 species of noxious weeds and 15 species of new and invading weeds addressed in this plan are listed in **Table C–1**. However, the list of weeds may change over time as species are added to or removed from the list.

Although this plan specifically applies to the Companies and their facilities, most of the roads in the Project Area would be open to the public. Through this access, the potential for the public to introduce weeds into the Project Area also exists.

APPROACH

This Weed/Vegetation Management Plan is based upon an approach in which two primary stages of management (identification and treatment) are used to achieve weed control. To control a weed species under this approach does not always mean to eradicate the plant from a particular area, nor does the mere presence of a weed always warrant control efforts. Control means to suppress or reduce the species to a level below the threshold of damage. This threshold refers to the level of unacceptable damage or threat that an infestation poses. When populations are above the threshold of damage, treatment is warranted.

During the APD on-site inspection, existing populations of weeds would be identified within the area proposed for disturbance and in areas beside the disturbance (within 250 feet). If present, the species and its extent would be noted. Treatment of these populations of weeds would be the BLM's responsibility. Starting with initial construction on the site, the Companies would monitor the disturbances and areas within 100 feet of the disturbances. If new populations of weeds develop, the Companies would treat them with herbicides.

The Companies could use any herbicide approved for the planned use by the county and BLM at the time of application. The Companies would submit a BLM Pesticide Use Proposal (PUP) to document their use of herbicide on BLM-administered lands and a pesticide application report within 24 hours of application. Examples of these forms are included as **Appendix A** to this Plan. The current list of BLM-approved herbicides is included as **Appendix B** to this Plan.

Table C–1
Weedy Species of Concern

Common Name	Scientific Name
Noxious Weeds	
Bermudagrass	*Cynondon dactylon*
bindweed	*Convulvulus arvensis*
broad leaved peppergrass	*Lepidium latifolium*
Canada thistle	*Cirsium arvense = Breea arvense*
diffuse knapweed	*Acosta diffusa*
dyers woad	*Isatis tinctoria*
perennial sorghum	*Sorghum halepense*
leafy spurge	*Euphorbia esula*
medusahead	*Taeniatherum caput-medusae*
musk thistle	*Carduus nutans*
quackgrass	*Elytrigia repens*
Russian knapweed	*Acroptilon repens*
Scotch thistle	*Onopordum officinale*
spotted knapweed	*Acosta maculosa*
squarrose knapweed	*Centaurea squarrosa*
whitetop	*Cardaria pubescens*
yellow starthistle	*Centaurea solstitialis*
New and Invading Species	
black henbane	*Hyoscyamus niger*
yellow toadflax	*Linaria vulgaris*
yellow nutsedge	*Cyperus esculentus*
camel thorn	*Alhagi pseudalhagi*
water hemlock	*Cicuta maculata*
wild proso millet	*Panicum miliaceum*
dalmation toadflax	*Linaria dalmatica*
St. Johnswort	*Hypericum perforatum*
velvetleaf	*Abutilon theophrasti*
goatsrue	*Galega officinalis*
purple starthistle	*Centaurea calcitrapa*
silverleaf nightshade	*Solanum elaegnifolium*
jointed goatgrass	*Aegilops cylindrica*
poison hemlock	*Conium maculatum*
purple loosestrife	*Lythrum salicaria*
Additional Species	
houndstongue	*Cynoglossum officinale*
whorled milkweed	*Asclepias subverticullata*
buffalobur	*Solanum rostratum*
chicory	*Chicorium intybus*
Russian olive	*Elaegnus angustifolia*

Source: Utah Noxious Weed Act, Emery County (R68–9–2)

APPENDIX A

Ferron Weed / Vegetation Management Plan

PUP / Pesticide Application Package / Herbicide Report Form

U.S. DEPARTMENT OF INTERIOR

BLM PESTICIDE USE PROPOSAL

PROPOSAL NUMBER: _____

EA NUMBER: _____

STATE: _____ DISTRICT: _____

RESOURCE AREA: _____ COUNTY: _____ DATE: _____

LOCATION: _____

DURATION OF PROPOSAL: _____

I. PESTICIDE APPLICATION (including mixtures and surfactants and colorants):

TRADE NAME(s): _____

COMMON NAME(s): _____

EPA REGISTRATION NUMBER(s): _____

MANUFACTURER(s): _____

FORMULATION: Liquid _____\ Dry _____\

METHOD OF APPLICATION: _____

MAXIMUM RATE OF APPLICATION:

USE UNIT IN EIS: _____ USE UNIT ON LABEL: _____

POUNDS ACTIVE INGREDIENT/ACRE: _____

INTENDED RATE OF APPLICATION: _____

APPLICATION DATE(S): _____

NUMBER OF APPLICATIONS: _____

II. PEST (List specific pest(s) and reason(s) for application):

III. MAJOR DESIRED PLANT SPECIES PRESENT:

IV. TREATMENT SITE: (Describe land type or use, size, stage of growth of target species, slope and soil type).

ESTIMATED ACRES _____

V. **SENSITIVE ASPECTS AND PRECAUTIONS:** (Describe sensitive areas [e.g., marsh, endangered, threatened, candidate and sensitive species habitat] and distance to treatment site. List measures taken to avoid impact to sensitive areas).

_____

_____

_____

_____

_____

_____

VI. **NONTARGET VEGETATION:** (Describe impacts to nontarget vegetation in the project area).

_____

_____

_____

_____

_____

VII. **INTEGRATED WEED MANAGEMENT:** (Describe other aspects of the IWM program that are being used in addition to this chemical application in the project area).

_____

_____

_____

_____

_____

_____

Originator's Signature:_____

Date:_____ Telephone Number:_____

Originator's Company Name:_____

Certified Pesticide Applicator's Signature:_____

BLM Office Weed\Pesticide
Coordinator's Signature: _____ Date:_____

BLM Manager's Approval:_____ Date:_____

State Coordinator's Signature _____ Date: _____

Deputy State Director's Approval:_____ Date:_____

_____ CONCUR OR APPROVED _____ NOT CONCUR OR DISAPPROVED

_____ CONCUR OR APPROVED WITH MODIFICATIONS

Modifications: Any changes to this proposal by the State Pesticide Coordinator will be listed in an attached memo to the Manager requesting approval from the Deputy State Director.

Washington Office Approval:_____ Date:_____

Instructions for Pesticide Use Proposal Submissions

A pesticide use proposal (PUP) package contains copies of labels of any chemicals and surfactants proposed for use, MSDS's Material Safety Data Sheets for any chemicals and surfactants proposed for use, and a properly and completely filled out proposal including any specific attachments.

The PUP is a Departmental requirement, and its purpose is to enable the bureaus or agencies in the Department of the Interior to pass specific information about pesticide use on lands administered in those bureaus or agencies back to the Department. This BLM format is designed to provide the Department with precise information on pests, chemicals, rates of application, locations of application, and how sensitive situations are handled. It is also designed to help provide the site specific information for environmental assessments that is required as a condition of approval of our program EIS efforts. One proposal is not designed to cover all the general weed problems in one Resource Area or District. A proposal that provides site specific information is more likely to meet Department, Bureau, and State Office standards for pesticide use than a proposal that generalizes about weed situations and potential pesticide use.

Instructions on how to fill out each section of the proposal are included below. The examples in this information concerning specific labels and products are current in January 1994, but labels do change on a regular basis.

Proposal Number

The proposal number is one used to track each proposal. Typically, each office keeps a log. The office Pesticide Coordinator assigns a unique number based on year, state, office code, and the number of proposals issued in that office each year. This number needs to be written on both pages of the proposal. **The State Pesticide Coordinator will not approve a proposal without a current proposal number.**

EA Number

This number cites the number of the EA in which this pesticide application was specifically addressed. This number needs to be written on both pages of the proposal. **The State Pesticide Coordinator will not approve a proposal without an EA number listed in this section of the proposal.** *The Records of Decision for the Vegetation Treatment on BLM Lands in Thirteen Western States* requires site specific analysis for all pesticide use. It is also required by the Northwest Area Noxious Weed Program FEIS and SEIS, the California Vegetation Management FEIS, and the Western Oregon Program Management of Competing Vegetation. If you are using an Administrative Determination, each proposal must have a unique AD number.

Location

Refers to the Specific site (township, range, section, and portion of a section where this application will take place.) More than one site is possible per PUP if the same chemical in the same amount is to be sprayed at each site. If several sites will be covered with one PUP, such as within a weed management area, list the exact locations and the estimated acreage of each site to be sprayed on a separate page. Label the page with the proposal number and the reference number and attach the sheet to the PUP. In oil and gas fields, rather than listing the location of each pad, provide a location of the field and include a map. Estimate the number of acres to be sprayed in each field. Maps of the location(s) of each application are not necessary in other proposal submissions, however, they do provide a good framework for impact analysis, especially cumulative impact analysis across space.

Duration of Proposal

The State Pesticide Coordinator can approve proposals for up to three years. Most State Coordinators approve PUP's for a one to three year term. If more than one year's approval is desired, state the years in which the herbicide will be reapplied.

I. Pesticide Application (include mixtures and surfactants)

Mixtures of herbicides can be approved if at least one of the labels states that mixture is compatible and if the mixture, or one of the chemicals in the mixture, is labeled to control the specific pest listed on the proposal.

Trade Name(s)

The trade name is the same as the brand name and is listed on the herbicide label. For example, the trade name of the most commonly used tebuthiuron for sagebrush control is Spike 20P. "Spike" alone is not the trade name. Dow/Elanco also makes Spike 80W, Spike 5G, Spike 1G, Spike 40P, and Spike Brush Pellets. Provide the information for any surfactants requested as well as for any chemicals.

Common Name(s)

The front page of every label has a section that states what the active ingredient in the herbicide is. On the Spike 20P label, tebuthiuron is the common name. It is followed by the chemical name N-[5-(1,1-dimethylethly)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea. It is not necessary to put the chemical name on a PUP. The Banvel label lists its active ingredient as "dimethylamine salt of dicamba." *The Record of Decision for the Vegetation Treatment of BLM Lands on Thirteen Western States* shortened the common name to "Dicamba." **Only those active ingredients listed in the Records of Decision for the locally used EIS as "Herbicides Approved For Use" can be approved by the State Pesticide Coordinator.** These are listed on page 3 of the ROD for the *Vegetation Treatment of BLM Lands on Thirteen Western States.*

EPA Registration Number

All herbicides are registered with the Environmental Protection Agency (EPA). The registration number is one of the best ways a specific product can be identified. All herbicide labels have an EPA registration number; it is typically listed on the front page of a label. As with most other information on herbicide labels, EPA registration numbers can change. If you are not using the most currently available herbicide supply, include both the new number and state with the old number that you are using previously registered herbicide material, and include both the old and the most recent labels in your proposal package.

Manufacturer(s)

The manufacturer is the company which produces the herbicide. The manufacturer's name is always listed on the front page of a herbicide label.

Formulation

The type of formulation is listed on the label. Emulisifible concentrates, solutions, flowables, aerosols, invert emulsions, and fumigants are considered "liquid" formulations. "Dry" formulations include dusts, baits, granules, pellets, wettable powders, soluble powders, microencapsulation, and water-dispersible granules.

Method of Application

There are numerous types of application equipment, including hand sprayers, small motorized sprayers, generators, foggers, fumigators, dusters, wiper applicators, etc. If you will be using a sprayer attached to a type of aircraft, please state you will be using aircraft. Certain herbicides sprayed by aircraft require Washington Office approval because

of the increased potential drift problems. For more information on applicators, see *Applying Pesticides Correctly, A Guide for Private and Commercial Applicators.*

Maximum Rate of Application

Fill in the maximum amount of chemical that can be applied according to the EIS you tier to and according to the label. *The maximum rate of application refers to the maximum amount of herbicide in measurable amounts (use unit on label) and inactive ingredients that a label states can be used for specific target weed species listed as the pest on the proposal. The maximum amount of active ingredient is a ratio calculation. When calculating the rates of application, do not round numbers up. Rounding up may result in stating a number on your proposal that exceeds the label or BLM maximum. Refer to the EIS in your area for Maximums.*

Use Unit on Label

Typically, labels have several different species lists with different rates of application. For example, if a proposal states you will be using "Escort" to control common mullein, the maximum rate of application is ½ ounce per acre. The "Escort" label also states that 4 ounces of product may be used to control Kudzu. But this information is irrelevant for this proposal, since the target species is common mullein. Another example: if the target species on a proposal to use "Banvel" is bull thistle, the maximum rate of application use unit on label on pasture, rangeland and non-cropland areas is 3 pints. Bull thistle a biennial (it is on the list of biennials that "Banvel" will control). The maximum amount of product that may be used for biennials on the label is 3 pints for those that are bolting.

Pounds (or Ounces) of Active Ingredient Per Acre

Active ingredient is typically listed in pounds per acre. There is a trend in the chemical companies to manufacture chemicals which require introducing as little chemical as possible into the environment, because of public concern over chemical use. There are many chemicals now that have rates of application in ounces. If the active ingredient is listed in ounces, it is not necessary to convert that number back to pounds. In the Active and Inert Ingredients section on a label of a <u>liquid formulation</u> of a herbicide, there is a statement about how many pounds per gallon of active ingredient may be found in the herbicide. For example, the "Banvel" label states that this product contains 4 pounds per gallon of active ingredient. If the target species on the proposal to use "Banvel" is bull thistle, and the maximum rate of application use unit is 3 pints, then the maximum amount of active ingredient per acre is the amount of active ingredient contained in 3 pints of Banvel. (If there are 4 pounds active ingredient in a gallon, there is one pound in a quart of Banvel and ½ pound in a pint of Banvel.) Therefore, the maximum rate of application pounds of active ingredient per acre is 1 and ½ (1.5) pounds for control of bull thistle.

On labels of <u>dry formulations</u> of herbicides, there isn't always a statement about how many pounds of active ingredient per pound is found in the herbicide. The "Spike 20P" label does state that the product contains 0.2 pounds of active ingredient per pound, but the "Escort" label simply states that by weight, the active ingredient makes up 60 percent of the product. If you propose to use ½ ounce per acre, as the "Escort" label states is the maximum for control of common mullein, the maximum amount of active ingredient that may be applied per acre is 0.3 ounce.

Intended Rate of Application

Herbicide labels state a range of amounts including the maximum amount of material that may be applied. Often, depending on soil type, organic matter, amount of soil moisture, air temperature and humidity at the time

of application, etc., it is more cost-effective and environmentally sound to use less than that maximum amount of herbicide to control the pest. In this section, state the amount of herbicide you actually apply per acre. Table E2-3 in the EIS lists the maximum rates allowed on BLM. **The intended rate of application may not exceed the rates listed in table E2-3.** *End of the Year reports require reporting the amount of active ingredient that has been applied per acre. You may also want to do that ratio calculation here, to simplify the reporting process later.*

II. Pest (List specific target pest(s) and reason for application.)

When deciding which herbicide to use it is critical to identify the target pest(s) so that the most useful and cost-effective application may be chosen. **If target pest(s) are not identified, the proposal will not be approved by the state pesticide coordinator.** Herbicides are rigorously tested and their labels list a number of species that the product is known to control. If the specific target pest(s) are not listed on the label, attach documentation from a recent scientific source stating that the product proposed is known to control the specific target species. For example, if you desire to control the target species of showy milkweed with Banvel, you will note that the Banvel label lists several milkweeds, but not showy milkweed. *The 1993-94 Montana, Utah, Wyoming Weed Control Handbook* does list dicamba or Banvel with four pounds of active ingredient per gallon as a known treatment for showy milkweed. **Documentation must be attached for species not listed on the label, for approval of the proposal by the State Pesticide Coordinator. Documentation must also be supplied for mixtures, if the mixture is not listed on the label as one that controls the specific target pest(s).** Use the standardized common names of plant pest species <u>or</u> their scientific names in this section of the PUP. List the specific reason for this pesticide application.

III. Major Desired Plant Species Present

List the species which define the natural plant community at the site where the chemical is to be applied. If the natural plant community is not what the site is being managed for, also list the key management species, or state that you are managing for bare ground.

IV. Treatment Site

Describe the land uses in the treatment area, the stage of growth of the target pest species, the slope and soil type and other factors that relate to specific information found on the chemical label.

Estimated Acres

Estimate the number of acres to be treated chemically at each specific site. (This will be included on an attached sheet when one pup covers more than one site.) The size of the acreage to be treated determines who the final authorizing official will be. **This section of the PUP must be completed for approval by the State Pesticide Coordinator.**

V. Sensitive Aspects and Precautions

Describe any sensitive areas, including wetlands and riparian areas, endangered, threatened, candidate and sensitive species habitat, and distance to the treatment site. List measures to be taken to avoid impact to any sensitive areas. **If an Administrative Determination is used and documented in the EA Number section of the proposal, this section of the PUP must be filled out before the State Pesticide Coordinator will approve the PUP.**

VI. Nontarget Vegetation

Since chemicals are not selective at a species level, there will be some loss of species that are considered desirable. Describe the associated and cumulative impacts and mitigation associated with the loss of non target vegetation on the site where this chemical application is

occurring. **If an Administrative Determination is used and documented in the EA Number section of the proposal, this section of the PUP must be filled out before the State Pesticide Coordinator will approve the PUP.**

VII. Integrated Pest Management

The ROD and the Vegetation Treatment on BLM Lands in 13 Western States says that we want to take an integrated vegetation management approach. The techniques proposed for use in an integrated management program include: Preventive actions, biological control, mechanical control such as prescribed burning, cultural control, such as changing grazing time, numbers, or type of grazing animal, manual practices, such as hand pulling or mowing, chemical control, and restoration practices. Vegetation management priorities (page 2 ROD): preventive, nonchemical, combination of preventative, nonchemical and chemical, then sole chemical use in that order. Because of these priorities, please document what is being done besides this chemical application to manage undesirable species in the project area. **If an Administrative Determination is used and documented in the EA Number section of the proposal, this section of the PUP must be filled out before the State Pesticide Coordinator will approve the PUP.**

Originators Signature

The originator is the person who first asks for approval to do a chemical treatment. It may be a Bureau employee such as a range conservationist who will apply the chemical himself in an allotment he manages, or an employee, such as a realty specialist who fills out the form for a utility company when weed control is part of the approval for a permit. It may also be someone from outside the Bureau, such as a county weed supervisor or an oil and gas company representative. It is always best if someone within the BLM provides guidance to our customers as they supply information required by the BLM and the Department of Interior.

Originators Company

If the project is initiated by BLM employees, the originator's company is not applicable. In all other cases, state the company or firm who holds the BLM permit, such as Conoco, Moffat County, etc. This space is <u>not</u> intended to document an originator's contractor.

Certified Pesticide Applicators Signature

This is the signature of the person who will oversee the pesticide application on the ground. This person must be currently certified by the Bureau (in NTC Course 9000-01 that is offered once yearly in Lakewood and is coordinated by the Bureau Weed Specialist) or must have a current state certification. If a customer plans to contract out this pesticide application and does not know who the applicator will be at the time the proposal is submitted, then a BLM Certified applicator may sign and require that the customer send a copy of a State certification of the chosen applicator the to the BLM office's Pesticide\Weed coordinator before the pesticide application takes place. The State Office Pesticide Coordinator keeps a list of currently certified BLM employees and will not **approve a proposal if the Certified Applicators signature is missing or if it is signed by someone whose certification has expired.**

BLM Office Pesticide\Weed Coordinator's Signature

This is the signature of the person in the District or Resource Area Office who has been assigned the duty of reviewing that office's proposals before they are forwarded to the State Office. This person should also keep a file of copies of State Certifications and is responsible for submitting Annual Pesticide Use Reports to the District Office.

Managers Approval

The Resource Area Manager or District Manager, or one acting for the Manager must sign this proposal. **The State Pesticide Coordinator will not approve any proposal that does not have a Manager's signature.**

State Pesticide Coordinator's Signature

The State Office Coordinator will sign here after reviewing the proposal. The State Office Coordinator must be currently certified by the BLM. (not state)

Deputy State Director's Approval

The Deputy State Director will sign in this blank. Once the PUP has been approved, the original PUP will be returned to the Office requesting approval. **If the PUP is <u>not</u> approved, it will be returned to the originating office without the signatures of the State Coordinator or the DSD.** If a PUP must be modified, the DSD will sign, and the State Pesticide Coordinator will submit a memo with the concerns in the proposal to the DSD. The DSD will then send the memo to the Manager whose office originated the PUP. The EA, labels, material safety data sheets, and any attachments will not be returned. They will be kept on file in the State office with a copy of the original PUP so that the State Office can answer as many information requests as possible without asking the Districts or Resource Areas to re-supply that information.

Washington Office Approval

The person designated to sign the proposal for the Washington Office will sign here. The State Pesticide Coordinator will forward any proposal requiring WO approval.

ADDENDIX B

Ferron Weed / Vegetation Management Plan

Approved Herbicides

IN REPLY TO:

Please note that if two or more different chemicals of the formulations listed below are approved as a tank mixture on one or more of the labels or have written recommendations for tank mixture from a University, College of Agriculture, Cooperative Extension Service or State Department of Agriculture then it is okay to tank mix these chemicals for a spray program.

CALIFORNIA STATUS ON USE OF THE HERBICIDES LISTED BELOW (CA STAT):

Y - Registered for Use N - Not Registered for Use NA - Registration Not Required

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REG. NUMBER	SPECIAL NOTES	CA STAT
Atrazine	*Dupont	~~Atrazine 4L~~	~~352-490~~	No longer manufactured	N
	Ciba-Geigy	AAtrex 80W	100-439		N
	Ciba-Geigy	AAtrex Nine-0	100-585		Y
	Ciba-Geigy	AAtrex 4L	100-497		Y
	Ciba-Geigy	Atratol 90	100-622		N
	Setre	Atrazine 4 L	5905-470-38167		N
	Setre	Atrazine 90DF	35915-3-38167		N
Bromocil	*Dupont	Hyvar X	352-287		Y
	*Dupont	Hyvar XL	352-346		N
Bromacil + Diuron	*Dupont	~~Krovar II~~	~~352-351~~	No longer manufactured	Y
	*Dupont	~~Krovar I~~	~~352-352~~		Y
	*Dupont	Krovar II DF	352-440		Y
	*Dupont	Krovar I DF	352-505		Y
	*Riverdale	DiBro TM 4+4	228-235		N
	*Riverdale	DiBro TM 2+2	228-227		N
Chlorsulfuron	*Dupont	Telar	352-404		Y
Clopyralid	*DowElanco	Reclaim	62719-83		N
	*DowElanco	Stinger	62719-73	Former Registration # 464-600	N
	*DowElanco	Transline	61719-73		N
Clopyralid + 2,4-D	*DowElanco	Curtail	62719-48		N

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REG NUMBER	SPECIAL NOTES	CA STAT
2,4-D	*Rhone-Poulenc	Aqua-Kleen	264-109-AA	Granular	Y
	*Rhone-Poulenc	Esteron 99C	62719-9-264		N
	*Rhone-Poulenc	Formula 40	62719-1-264		N
	*Rhone-Poulenc	WEEDAR 64	264-2AA		Y
	*Rhone-Poulenc	Weedone 170 Brushout	264-222ZB		N
	*Rhone-Poulenc	Weedone LV-4	264-20ZA		N
	*Rhone-Poulenc	Weedone LV-6	264-271AA		Y
	Platte Chem.	CL. Cr. Amine 4	34704-5 CA	California Only	Y
	Platte Chem.	SALVO LV ester	34704-609		N
	Platte Chem.	2,4-D 4# Amine Weed Killer	34704-120		N
	Platte Chem.	Cl. Cr. LV4 ES	34704-124		N
	Platte Chem.	SAVAGE DF	34704-606		N
	Platte Chem	SWORD (MCPA)	228-267-34704		N
	Cornbelt Chem	Weed Pro 4#AM	10107-31		N
	Cornbelt Chem	Weed Pro 4#LV	10107-27		N
	Cornbelt Chem	Weed Pro 6#LV	10107-40		N
	PBI/Gordon	Hi-Dep	2217-703		N
	PBI/Gordon	Dymec	2217-633		Y
	*CENEX/LAND O'LAKES/AGRI. CO.	MCP Ester	1381-98		N
	*CENEX/LAND O'LAKES/AGRI. CO.	LV6 2,4-D	1381-101		N
	*CENEX/LAND O'LAKES/AGRI. CO.	LV4 2,4-D	1381-102		N
	*CENEX/LAND O'LAKES/AGRI. CO.	Amine4 2,4-D	1381-103		N
	*CENEX/LAND O'LAKES/AGRI. CO.	MCP Amine	1381-104		N
	*Wilbur-Ellis	Amine 4	228-145-2935		N
	*Wilbur-Ellis	Lo Vol-4	228-139-2935		N
	*Setre	2,4-D Amine	44215-108-5905		N
	*Wilbur-Ellis	Lo Vol-6 Ester	228-95-2935		N

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA NO.	SALE NOTES	NOT STAT
	*Setre	2,4-D LV4	5905-90		N
2,4-D	*Setre	2,4-D LV6	5905-93		N
	*Setre	Barrage LV Ester	5905-504-38167		N
	*Riverside/ Terra Corp.	2,4-D LV 6	9779-256		N
	*Riverside/ Terra Corp.	2,4-D Amine 4	9779-263		N
	*Riverdale	2,4-D LV 6 Ester	228-95		N
	*Riverdale	DP-4 Ester	228-196		N
	*Riverdale	2,4-D 4 Amine IVM	228-145		Y
	*Riverdale	Solution Water Soluable IVM	228-260		Y
	*Riverdale	MCPA-4 Amine IVM	228-143		Y
	*Universal	2,4-D Amine	1386-43		N
	*Universal	2,4-D Lo-V Es	1386-60		N
	*Universal	2,4-D Lo-V 6E	1386-616		N
Dicamba	*Sandoz	Banvel Herb.	55947-1		Y
	*Sandoz	Banvel 4S	55947-4	No longer manufactured	N
	*Sandoz	Banvel 4WS	55947-18		N
	*Sandoz	Banvel CST	55947-32		N
	*Sandoz	Vanquish	55947-46		N
	*Sandoz	Banvel SGF	55947-28		N
	*Sandoz	Banvel 720	55947-20		Y
	*Riverdale	Veteran CST	55947-32 or 228-297		N
Dicamba + 2,4-D	*Sandoz	Weedmaster	55947-24		Y
	PBI/Gordon	Brush Kill 4-41	2217-644		N
	PBI/Gordon	Brush Kill 10-5-1	2217-543		N
	*Riverdale	Veteran TM 720	55947-20-228		N
	*Riverdale	Veteran TM 2010	228-296 or 55947-7-228		N
Diuron	*Dupont	Karmex DF	352-508		Y
	*Wilbur-Ellis	Diuron-DF	00352-00-508-02935	Former Registration # 19713-274-295	N

ACTIVE INGREDIENT	CHEMICAL COMPANY	PROD[illegible]	[illegible]	[illegible] NOTES	CA STAT
	*Griffin	Direx 4L	1812-257		N
	*Griffin	Direx 4L-CA	1812-257	For California Only	Y
	*Griffin	Direx 80DF	352-508-1812		Y
Diuron	*Platte	Diuron 80WDG	34704-648		N
	*Riversde/ Terra Corp.	Diuron 80 DF	9779-318		N
Diuron + Imazapyr	American Cyanamid	Topsite	241-344		N
	*Americann Cyanamid	Sahara DG	241-372		N
	*American Cyanamid	Sahara CP	Diuron:19713-274-241 Imazapyr:241-346		N
	*American Cyanamid	Sahara II CP	Diuron:9779-318-241 Imazapyr:241-346		N
Diuron + Tebuthiuron	SSI MOBLEY	SpraKil SK-13 Granular	34913-15		N
	*SSI MOBLEY	SpraKil SK-26 Granular	34913-16		Y
Fosamine Ammonium	*DuPont	Krenite S	352-395 * *W.OR VM EIS	If used in other areas other than western Oregon refer to Western Oregon EIS Risk Assessment 1989 Program - Management of Competing Vegetation	N
Glyphosate	*Monsanto	Accord	524-326		Y
	*Monsanto	E-Z-Ject	524-435		Y
	*Monsanto	Expedite	524-432		Y
	*Monsanto	Honcho	524-326	Not approved in all states	Y
	*Monsanto	Rodeo	524-343		Y
	*Monsanto	~~Roundup XL~~	~~524-343-ZA~~	No longer commercially available	Y
	*Monsanto	Roundup	524-445	Former Registration # 524-308-AA	Y
	*Monsanto	Roundup Pro	524-475	Same product but labelled for different uses	Y
	*Monsanto	Roundup Ultra	524-475		Y

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REG. NUMBER	SPECIAL NOTES	CA STAT
	*Monsanto	Roundup RT	524-454	Not approved in all states	N
	*Monsanto	Ranger	524-382		N
	*Monsanto	Pondmaster Aquatic Herb	524-308		N
	*Wilbur-Ellis	Ruler	524-326-2935		N
	Setre	Rattler	524-326-3816		N
	Platte	Mirage	524-326-34704		N

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REG NUMBER	SPECIAL NOTES	CA STAT
Glyphosate + 2,4-D	*Monsanto	Landmaster BW	524-351		N
	*Monsanto	Campaign	524-351		N
	*Monsanto	~~Landmaster II~~	~~524-376~~	No longer commercially available	N
Glyphosate + Dicamba	*Monsanto	Fallowmaster	524-390		N
Hexazinone	*Dupont	Velpar	352-378		Y
	*Dupont	Velpar ULW	352-450		N
	*Dupont	Velpar L	352-392		Y
	*Pro-Serve	Pronone MG	33560-21		Y
	*Pro-Serve	Pronone 10G	33560-21		Y
	*Pro-Serve	Pronone 25G	33560-45		Y
	*Pro-Serve	Pronone Power Pellet	33560-41		N
Imazapyr	Amer. Cyanamid	Arsenal	241-273		N
	Amer. Cyanamid	Arsenal	241-295		N
	Amer. Cyanamid	Arsenal RTU	241-330		N
	Amer. Cyanamid	Arsenal App Con	241-299		N
Imidazolinone	Amer. Cyanamid	Plateau	241-365	**FOR EXPERIMENTAL USE ONLY-Must be used only in cooperation with University Weed Scientist or Chemical Representative. At present time only registered for Rights -of-Way and other noncrop areas. The size of each plot must not exceed 5 acres and no more that 3 plots per Field Office**	N
Mefluidide	PBI/Gordon	Embark 2-S	7182-7		N
Metsulfuron methyl *	Dupont	Escort	352-439		N

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REGISTRATION NUMBER	SPECIAL NOTES	CA STAT
Picloram	*DowElanco	Tordon 22K	62719-6	Former Registration # 464-323	N
	*DowElanco	Tordon K	62719-17	Former Registration # 464-421	N
Picloram	*DowElanco	Grazon PC	62719-181	Former Registration # 820002 for NM, OK, TX only	N
Picloram + 2,4-D	*DowElanco	Tordon 101M	62719-5	Former Registration # 464-306	N
	*DowElanco	Tordon 101R Forestry	62719-31	Former Registration # 464-510	N
	*DowElanco	Tordon RTU	62719-31	Former Registration # 464-510	N
	*DowElanco	Pathway	62719-31		N
	*DowElanco	Access	61719-57		N
Simazine	Ciba-Geigy	Princep 80W	100-437		Y
	Ciba-Geigy	Princep 4 L	100-526		Y
	Ciba-Geigy	Princep Cali 90	100-603		Y
Sulfometuron methyl	*Dupont	Oust	352-401		Y
Tebuthiuron	*DowElanco	Spike 80W	62719-107	Former Registration # 1471-97	Y
	*DowElanco	Spike 5G	1471-103	No longer manufactured	N
	*DowElanco	Spike 1G	1471-104		N
	DowElanco	Spike 20P	62719-121	Former Registration # 1471-123	Y
	EliLilly & Co.	Spike 20P	1471-123		Y
	*DowElanco	Spike 40P	62719-122	Former Registration # 1471-124	Y
	*DowElanco	Spike Brush Bullets	1471-129	No longer manufactured	N
	*SSI Mobley	SpraKil S-5 Granules	34913-10		N
Triclopyr	*DowElanco	Garlon 3A	62719-37	Former Registration # 464-546	Y
	*DowElanco	Garlon 4	62719-40	Former Registration # 464-554	Y

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	REG. NUMBER	SPECIAL NOTES	CA STAT
	*DowElanco	Remedy	62719-70		Y
	*DowElanco	Pathfinder II	62719-176		Y
Triclopyr + 2,4-D	*DowElanco	Crossbow	62719-260		Y

SURFACTANTS AND DYES APPROVED FOR USE ON BLM LANDS

SURFACTANT OR COLORANT	*COMPANY*	*PRODUCT NAME*	*REGISTRATION NUMBER*	*SPECIAL NOTES*	*CA STAT*
Colorant	Precision	Signal	N/A		N/A
Colorant *	Becker-Underwood	Hi-Light	N/A		N/A
Colorant *	Becker-Underwood	Hi-Light WSP	N/A		N/A
Deposition & * Retention Agent	Wilbur-Ellis	Bivert	CA St. Reg. 2935-50157AA		Y
Penetrator Activator *	Wilbur-Ellis	R-900	N/A		N
Spreader Activator *	Wilbur-Ellis	R-11	CA St. Reg. 2935-50142		Y
Organic * Based Buffer	Wilbur-Ellis	Trifol	CA St. Reg. 2935-50152		Y
Absorption Activator *	Wilbur-Ellis	Cayuse	N/A		N
Defoaming Agent *	Wilbur-Ellis	No foam	CA St. Reg. 2935-50137		Y
Spray Tank Cleaner *	Wilbur-Ellis	Neutral-Clean	N/A		N/A
Foam * Concentrate for Marker	Wilbur-Ellis	R-160	N/A		N
Surfactant (for insect- icide & fungicide) *	Wilbur-Ellis	R-56	CA St. Reg. 2935-50144		Y
Crop Oil * Concentrate	Wilbur-Ellis	ROC- Rigo Oil Conc.	N/A		N
Crop Oil * Concentrate	Wilbur-Ellis	Mor-Act	CA St. Reg. 2935-50098		Y
Penetrating Surfactant	Loveland	LI-700	CA St. Reg. 36208-50022		Y
Standard nonionic surfactant	Loveland	Ortho X-77	CA St. Reg. 36208-50023		Y
Nonionic penetrating surfactant	Loveland	Activator 90	CA St. Reg. 36208-50014		Y
Silicone Surfactant	Loveland	Silwet L-77	CA St. Reg. 36208-50025		Y
Campatibility Agent	Loveland	E Z - MIX	CA St. Reg. 36208-50006		Y
Spreader Sticker	Loveland	Bond	CA St. Reg. 36208-50005		Y

SURFACTANTS AND DYES APPROVED FOR USE ON BLM LANDS

SURFACTANT OR COLORANT	*COMPANY*	*PRODUCT NAME*	*EPA REG. NUMBER*	*SPECIAL NOTES*	*CA STAT*
Nonionic surfactant with Nitrogen sol.	Loveland	Dispatch	N/A		N
Nonionic Surfactant	Setre	Induce	N/A		N
Nonionic Surfactant	Setre	Induce pH	N/A		N
Nonionic Surfactant	Setre	Kinetic	CA St. Reg. 38167-50012		Y
Spreader Sticker	Setre	Lastick	N/A		N
Deposition Aid	Setre	Sta Put	N/A		N
Water Conditioning Agent	Setre	Quest	N/A		N
Compatibility & Stabilizing Agent	Setre	Blendex	N/A		N
Silicone Defoamer	Setre	Foam Buster	N/A		N
Nonionic * Surfactant	Cornbelt	Spray Fuse 90	N/A		N
Nonionic * Surfactant	Cornbelt	X-90	N/A		N
Surfactant *	Cornbelt	Access Penetrator	N/A		N
Defoaming Agent *	Cornbelt	Defoamer	N/A		N
Tank Cleaner & Neutralizer *	Cornbelt	Tank-Aid	N/A		N
Esterfied Veg. Oils + Emulsif *	Wilbur-Ellis	HASTEN	N/A		Y
Paraf & Min Oils + Emulsif *	Wilbur-Ellis	REDI-VERT	N/A		N

NOTE: As other formulations of the above chemicals become available and are cleared through the BLM Washington Office, they will be considered for use on BLM-administered lands.

*Surfactant and dyes approval may vary according to Individual State Registration.

SOIL GAS SURVEY OF THE FERRON SANDSTONE MEMBER OF THE MANCOS SHALE, NORTHERN EMERY COUNTY, UTAH

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Ann Marie Aubry
Al McKee
Chris Wehrli
June 1998

ABSTRACT
A soil gas survey was performed to determine the presence and concentration of methane along a portion of the Ferron Sandstone Member of the Mancos Shale outcrop. The outcrop surveyed is adjacent to the proposed Ferron Natural Gas Project South Area. Procedures and equipment utilized ensure repeatability, allowing for future trend analysis. This study concludes methane is not currently present or escaping from this portion of outcrop.

INTRODUCTION
During the scoping process for the Ferron Natural Gas Environmental Impact Statement (FNG EIS) issues were raised about the possibility of methane gas at the surface. Gas released at the surface could potentially affect the health and safety of residents and/or wildlife of the area.

The proposed Ferron Natural Gas project involves extracting natural gas from both sandstone and coal intervals in the Ferron Sandstone Member of the Mancos Shale (Ferron Sandstone). To extract gas from coal intervals, water must first be removed or pumped out. As water is pumped out, gas is released from the coalbeds. This gas is refered to as coalbed methane (CBM). Gas then flows to the wellbore or areas of low pressure. The concern is that gas will also migrate updip in the Ferron Sandstone to the outcrop and then be released at the surface.

To address the lack of baseline data, public and agency concerns, and potentially serious impacts from the CBM production, it was determined that a soil gas survey was necessary.

PROCEDURE
Equipment and procedures were designed to ascertain the gross presence of methane, and provide a means for future repeatability and trend analysis if necessary. A methodology for initial baseline studies was established based upon soil gas studies performed in other CBM areas (especially the San Juan Basin, Colorado and New Mexico). This involved an inital review of infra-red aerial photos followed by a field inventory.

Infra-Red Aerial Photo Review
Infra-red aerial photos (1974) are available for most of the survey area. These color enhanced photos show vegetation in red. Gross variations in surface temperature may also be detected in this type of photograph.

Vegetation loss or anomalous lack of vegetation may identify methane seeps. Unusual variations in surface temperature may indicate near- surface combustion of methane.

The study area, as well as the surrounding areas, is sparsely vegetated due to poor soil characteristics. Therefore, potential methane seeps could not be identified using this procedure. No unusual surface temperatures were noted on the photos, indicating no sub-surface combustion was occurring.

Field Inventory

The field inventory was conducted October 20-21, 1997, on a 25 mile section of the Ferron Sandstone outcrop. All accessible sites with Ferron Sandstone outcrop adjacent to the FNG EIS South Area were included in the survey. Figure #1 shows the location of the sample sites. The Ferron Sandstone is not exposed adjacent to the North Area of the FNG EIS.

A total of 70 sites were sampled, approximately 400 meters apart. Sample sites are numbered sequentially, starting with #1 located at the NE corner. Each site was precisely located with a global positioning system unit, and permanently marked on the ground.

Sites with no outcrop were not sampled. The survey crossed several large washes and low spots where the outcrop was covered with alluvium. The silty sandstone facies of the Ferron Sandstone pinched out to the south. Another area not sampled is the Hunter power plant facility, due to lack of access.

In addition to sampling the lower explosive level of methane (LEL CH_4), concentrations of methane (CH_4), carbon monoxide (CO), hydrogen sulfide (H_2S), and oxygen (O_2) were recorded for each site. Carbon monoxide is a by-product of methane combustion. Hydrogen sulfide is a gas which may be found in concert with methane.

Other information recorded for each site included general surface characteristic (alluvium, bedrock, rubble, soil), slope (cliff, flat, hillside, hilltop), whether any residences were within one mile, and pertinent GPS data. Attachments #1 and #2 list this data for each sample site.

Equipment Used:

An Industrial Scientific TMX 412 Multi-Gas Monitor was equipped with a gas pump, tubing and an inverted funnel to obtain a sample directly from the outcrop. This monitor provides repeatable measurements in a field-ready unit.

Prior to field use, the monitor was calibrated. A methane standard was utilized to ensure that the monitor was in operating condition and properly calibrated. This operational test was performed twice daily after oxygen sensor zeroing, prior to use in both the morning and afternoon data collection periods.

The position of the site was located using a resource-grade Global Positioning Survey (GPS) unit (accuracy of ±5 meters). Gas Monitor data, along with general surface characterization remarks, were entered into the GPS unit, as well as recorded manually in a logbook. The sites were staked with rebar, marked with orange paint, and uniquely identified for reference and possible future trend analysis.

DATA RESULTS

Neither methane, carbon monoxide, nor hydrogen sulfide was detected at any of the sample sites. Oxygen was detected at average levels for this elevation, with normal diurnal fluctuations.

RELATED STUDIES

The U.S. Geological Survey is conducting an ongoing survey of gases in soil as well as shallow ground water in the area of current and proposed CBM development near Price, Utah (USGS, 1998). The majority of samples are located several miles west of the Ferron Sandstone outcrop.

A total of 121 samples at 96 sites have been taken since 1995. The average methane concentration has been less than 0.005 mg/L (the detection limit). The two highest concentrations occurred within 30' of active wells. Samples taken within 50' of the same wells showed no detectable methane. These sites were resampled at a later date, with no detectable methane levels at either distance from the wells.

The U.S. Geological Survey is also involved in developing a regional fluid flow model in relationship to methane production for the Ferron Sandstone. No information from this study has yet been released.

COMPARISIONS WITH SAN JUAN BASIN CBM PROJECTS

Coalbed methane production in the San Juan Basin, Colorado/ New Mexico (near Durango, Colorado) may have increased the amount of methane seeping to the surface, creating problems with water quality, loss of vegetation, fire hazards, etc. This has caused some concern about the FNG project.

The geologic setting and water sources in the San Juan Basin differ significantly from the setting in the FNG EIS area. There is little potential for similar problems to occur locally. These differences are discussed briefly below.

<u>San Juan Basin</u>

There is a documented history of gas seeps throughout the San Juan Basin. There is no true caprock above the gas producing horizons. Coalbeds and other gas producing intervals are exposed at the surface near residences. There is a constant natural flow of water through the gas producing zones up to the surface (Quinn). Sources of residential water and springs are the same rock units that are producing gas.

FNG EIS Area

In the FNG EIS area, there are no known gas seeps. There is a substantial caprock (+/- 2000' of impermeable Mancos Shale) between the surface and the gas producing zone. Ferron coalbeds pinchout several miles west of the outcrop in this area, and are not exposed at the surface.

CONCLUSIONS

The survey data indicates methane, carbon monoxide and hydrogen sulfide are not currently escaping along the Ferron outcrop. Near-surface combustion is not occurring along or near the outcrop. Due to different geologic settings and water sources, the problems of the San Juan Basin should not occur in the FNG EIS area.

SAMPLE SITE LOCATIONS

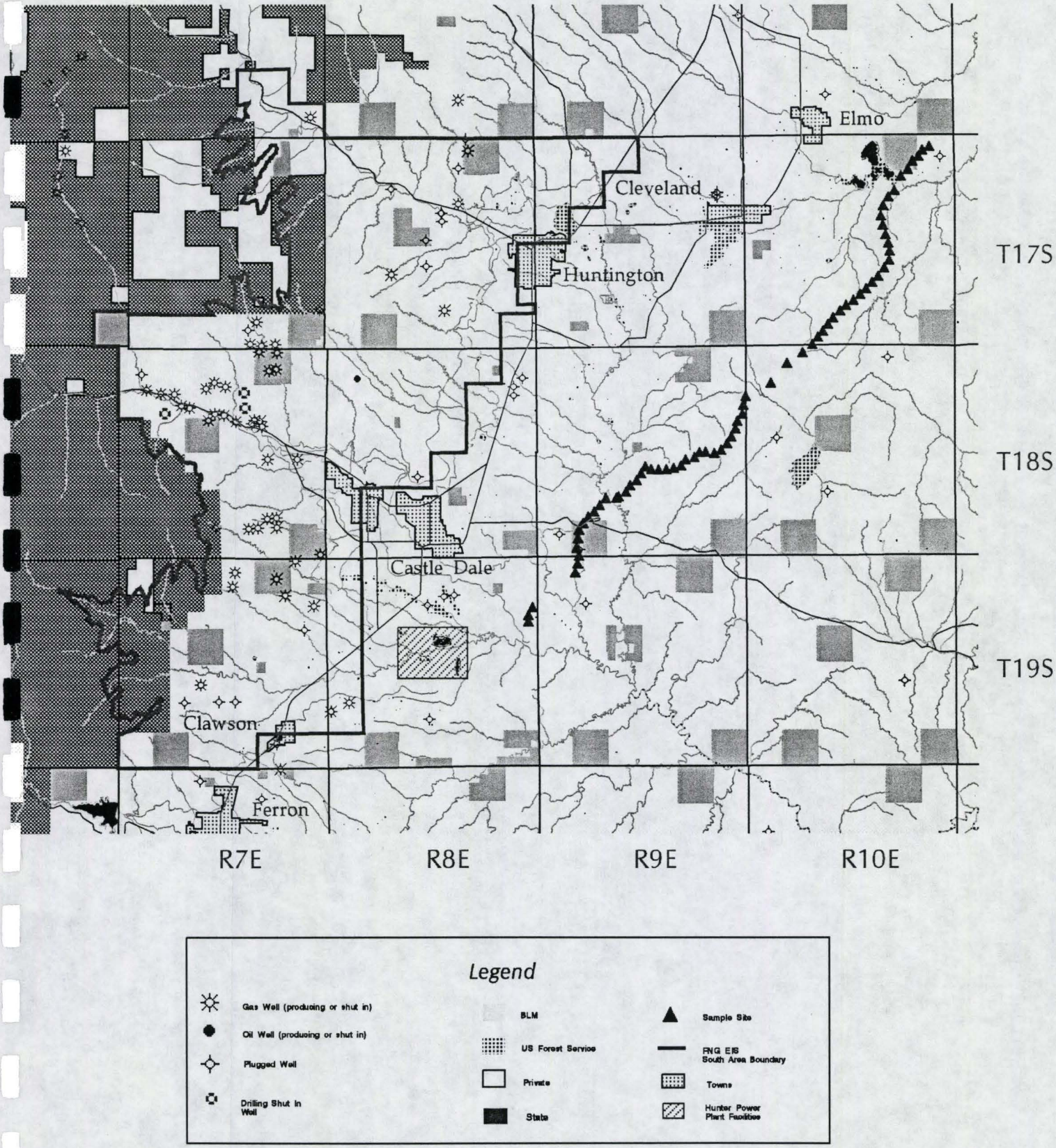


FIGURE #1

AM Aubry
4-8-98

REFERENCES

Chafin, D.T., Swanson, D.M., Grey, D.W., 1996, Methane-Concentrattion and methane-isotope data for ground water and soil gas in the Animas River Valley, Colorado and New Mexico, 1990-91, U.S. Geological Survey Water-Resources Investigations Report 93-4007, 49 p.

Chafin, D.T., 1994, Sources and migration pathways of natural gas in near-surface ground water beneath the Animas River Valley, Colorado and New Mexico, U.S. Geological Survey Water-Resources Investigations Report 94-4006, 56 p.

Chafin, D.T., Swanson, D.H., and Grey, D.W., 1993, Methane-concentration and methane-isotope data for ground water and soil gas in the Animas River Valley, Colorado and New Mexico, 1990-1991: U.S. Geological Survey Water-Resources Investigations Report 93-4007, 86 p.

Fassett, J.E., 1997, Geology and structure of the Pine River, Florida River, Carbon Junction, and Basin Creek gas seeps, La Plata County, Colorado, U.S. Geological Survey Open- File Report 97-59

Lines, G.C., Morrissey, D.J., 1983, Hydrology of the Ferron Sandstone aquifer and effects of proposed surface coal mining in Castle Valley, Utah, USGS Water Supply Paper 2195

Naftz, D.L., Hadley, H.K., Hunt, G.L. 1998, Determination of methane concentrations in shallow ground water and soil gas near Price, Utah, U.S. Geological Survey Fact Sheet FS-191-97, 4 p.

Quinn, J.C., Marinello, S.A., 1994, Desorption of methane from coal stringers in shallow aquifer regimes *in* 1994 Rocky Mountains Symposium on environmental issues in oil and gas operations, soft footprints for the '90s, Colorado School of Mines & U.S. Bureau of Land Management.

ATTACHMENT #1

Site_id	Ch4_%	Co_ppm	H2s_ppm	O2_%	Sfc_char	Slope	Remarks
1	0.00	0	0	21.00	RUBBLE	FLAT	
2	0.10	0	0	20.90	RUBBLE	HILLSIDE	CH4 -0.1 ?
3	0.00	0	0	21.00	RUBBLE	FLAT	50 FT NORTH OF FENCE LINE
4	0.00	0	0	21.00	RUBBLE	FLAT	ANTHILL
5	0.00	0	0	21.00	RUBBLE	FLAT	LAST SITE OF FILE
6	0.00	0	0	21.00	RUBBLE	FLAT	ADDITION TO MONDAYAM FILE
1	0.00	0	0	21.10	BEDROCK	FLAT	50 FEET SOUTHEAST OF ROAD
7	0.00	0	0	21.00	RUBBLE	HILLTOP	CHECK SEQUENCE
8	0.00	0	0	21.00	RUBBLE	HILLSIDE	SEC CRNR
9	0.00	0	0	21.00	RUBBLE	HILLTOP	SKUNK
10	0.00	0	0	21.00	RUBBLE	FLAT	
11	0.00	0	0	21.10	RUBBLE	HILLSIDE	
12	0.00	0	0	21.00	ALLUVIUM	FLAT	
13	0.00	0	0	21.10	RUBBLE	HILLTOP	
14	0.00	0	0	21.00	RUBBLE	HILLTOP	
15	0.00	0	0	21.00	RUBBLE	CLIFF	
16	0.00	0	0	21.10	RUBBLE	CLIFF	
17	0.00	0	0	21.00	RUBBLE	HILLSIDE	
18	0.00	0	0	21.00	RUBBLE	FLAT	
19	0.00	0	0	21.00	RUBBLE	FLAT	
20	0.00	0	0	21.00	RUBBLE	FLAT	
21	0.00	0	0	21.00	RUBBLE	HILLSIDE	
22	0.00	0	0	21.00	RUBBLE	FLAT	
23	0.00	0	0	21.10	RUBBLE	FLAT	
24	0.00	0	0	21.00	SOIL	FLAT	
25	0.00	0	0	21.10	RUBBLE	HILLTOP	
26	0.00	0	0	21.00	RUBBLE	FLAT	
27	0.00	0	0	21.10	SOIL	FLAT	
28	0.00	0	0	21.00	SOIL	FLAT	NO OUTCROP
29	0.00	0	0	21.00	RUBBLE	HILLTOP	FENCE LINE/ANTELOPE
30	0.00	0	0	21.10	SOIL	FLAT	
31	0.00	0	0	21.00	RUBBLE	FLAT	
32	0.00	0	0	21.00	RUBBLE	HILLSIDE	NO OUTCROP
33	0.00	0	0	21.00	RUBBLE	HILLTOP	
34	0.00	0	0	21.00	RUBBLE	HILLSIDE	
35	0.00	0	0	21.00	RUBBLE	HILLSIDE	
36	0.00	0	0	21.00	RUBBLE	FLAT	
37	0.00	0	0	21.00	RUBBLE	HILLTOP	
38	0.00	0	0	21.00	RUBBLE	HILLTOP	
39	0.00	0	0	21.00	RUBBLE	FLAT	
40	0.00	0	0	21.00	BEDROCK	HILLSIDE	
41	0.00	0	0	21.00	RUBBLE	HILLSIDE	
42	0.00	0	0	21.00	RUBBLE	HILLSIDE	
43	0.00	0	0	20.90	RUBBLE	HILLSIDE	
44	0.00	0	0	20.90	RUBBLE	HILLSIDE	
45	0.00	0	0	20.90	RUBBLE	HILLSIDE	
46	0.00	0	0	20.60	RUBBLE	HILLSIDE	TOPO BREAK
47	0.00	0	0	20.50	RUBBLE	HILLSIDE	
48	0.00	0	0	20.50	RUBBLE	HILLSIDE	
49	0.00	0	0	20.50	RUBBLE	HILLSIDE	
50	0.00	0	0	21.00	RUBBLE	HILLTOP	POWER LINE
51	0.00	0	0	21.00	RUBBLE	HILLTOP	
52	0.00	0	0	21.00	RUBBLE	HILLTOP	
53	0.00	0	0	21.00	RUBBLE	HILLTOP	BUCKHORN MARKER

Site_id	Ch4_%	CO_ppm	H2S_ppm	O2_%	Sfc_Char	Slope	Remarks
54	0.00	0	0	21.00	RUBBLE	HILLTOP	
55	0.00	0	0	21.00	RUBBLE	HILLTOP	
56	0.00	0	0	21.10	RUBBLE	CLIFF	
57	0.00	0	0	21.00	RUBBLE	HILLTOP	TOPO CHANGE
58	0.00	0	0	21.00	RUBBLE	HILLSIDE	
59	0.00	0	0	21.00	RUBBLE	HILLTOP	
60	0.00	0	0	21.10	RUBBLE	HILLTOP	
61	0.00	0	0	21.10	RUBBLE	CLIFF	
62	0.00	0	0	21.10	RUBBLE	HILLTOP	
63	0.00	0	0	21.10	RUBBLE	HILLSIDE	
64	0.00	0	0	21.10	RUBBLE	HILLTOP	VALET PARKING
65	0.00	0	0	21.10	RUBBLE	HILLTOP	
66	0.00	0	0	21.10	RUBBLE	HILLSIDE	
67	0.00	0	0	21.10	RUBBLE	HILLSIDE	
68	0.00	0	0	21.10	RUBBLE	HILLSIDE	
69	0.00	0	0	21.00	RUBBLE	HILLSIDE	

ATTACHMENT #2

Site_id	Date	Max_pdop	Filt_poe	Std_dev	Gps_height
1	19971020	2.3	65	0.139018	5676.677
2	19971020	2.5	162	0.185023	5670.106
3	19971020	2.3	188	0.270666	5652.046
4	19971020	2.6	65	0.678250	5644.271
5	19971020	1.8	118	0.086538	5625.147
6	19971020	2.1	104	0.250640	5605.532
1	19971020	2.7	72	0.407415	5617.932
7	19971020	2.5	35	0.094747	5653.440
8	19971020	2.4	77	0.293280	5662.278
9	19971020	2.2	83	0.118732	5712.849
10	19971020	2.2	43	0.138362	5720.768
11	19971020	3.1	51	0.162510	5740.873
12	19971020	3.4	45	0.105275	5760.157
13	19971020	3.3	70	0.317850	5792.619
14	19971020	2.2	57	0.105558	5816.439
15	19971020	3.1	68	0.145026	5831.346
16	19971020	3.1	49	0.229464	5833.131
17	19971020	1.9	41	0.130308	5824.515
18	19971020	2.0	80	0.510139	5812.560
19	19971020	2.0	65	0.286458	5808.742
20	19971020	2.0	34	0.133602	5830.127
21	19971020	2.1	36	0.054971	5850.172
22	19971020	2.1	36	0.847139	5861.020
23	19971020	3.2	53	0.270029	5846.999
24	19971020	3.2	31	0.330092	5870.256
25	19971020	3.1	50	0.840613	5911.572
26	19971020	3.7	37	0.075209	5893.265
27	19971020	2.9	46	0.064591	5891.721
28	19971020	2.8	89	0.300754	5930.419
29	19971020	5.2	109	0.312916	5953.070
30	19971020	5.5	87	1.175426	5881.651
31	19971020	2.7	63	0.255649	5865.603
32	19971020	2.8	82	0.206075	5896.763
33	19971020	2.9	36	0.069045	5921.528
34	19971020	3.0	33	0.118881	5913.683
35	19971020	3.2	44	0.110103	5897.995
36	19971020	2.8	103	0.346639	5917.173
37	19971020	2.8	75	0.614983	5945.345
38	19971020	3.4	70	0.109070	5958.520
39	19971020	3.9	39	0.611623	5943.173
40	19971020	4.3	61	1.073465	5892.466
41	19971020	3.9	54	0.347963	5842.078
42	19971020	3.8	31	0.212946	5852.117
43	19971020	3.2	41	0.249243	5819.298
44	19971020	3.5	54	1.303582	5850.563
45	19971020	3.1	75	0.419871	5806.409
46	19971021	2.8	96	0.227151	5569.642
47	19971021	2.2	46	0.086160	5627.154
48	19971021	2.2	53	0.088166	5705.489
49	19971021	2.3	42	0.120643	5779.784
50	19971021	2.0	52	0.088886	5825.177
51	19971021	2.3	39	0.187925	5835.227
52	19971021	2.5	51	0.073167	5840.118
53	19971021	2.8	70	0.100871	5861.342

Site_id	Date	Max_bdbp	Filt_pos	Std_dev	Gps_height
54	19971021	3.1	38	0.070065	5826.188
55	19971021	3.3	46	0.052101	5810.528
56	19971021	3.2	38	0.203329	5759.726
57	19971021	2.0	56	0.103507	5682.842
58	19971021	2.0	40	0.079564	5670.584
59	19971021	2.1	55	0.096809	5680.872
60	19971021	3.1	68	0.088267	5807.157
61	19971021	1.9	49	0.294062	5759.339
62	19971021	2.0	34	0.085979	5733.097
63	19971021	2.0	32	0.097706	5717.792
64	19971021	2.1	38	0.132695	5660.776
65	19971021	3.2	51	0.233312	5683.492
66	19971021	3.2	48	0.267435	5655.563
67	19971021	3.2	47	0.165259	5632.286
68	19971021	3.1	35	0.076938	5573.484
69	19971021	2.8	41	0.117194	5560.292

APPENDIX E
SOIL LOSS, SEDIMENT PRODUCTION AND SALT DELIVERY CALCULATIONS

Soil loss, sediment production, and salt delivery rates for the alternatives in the North and South Areas were calculated using the methods and some of the assumptions and scenarios presented in Appendix 4A-1 to the Price CBM EIS, prepared by the BLM (1997c). **Tables E–1** through **E–6** summarize soil loss, sediment production, and salt delivery rates for existing conditions, Alternative 1 (Proposed Action), Alternative 2 (Proposed Action with additional Environmental Protection Measures), and Alternative 3 (No Action).

SOIL LOSS

The Revised Universal Soil Loss Equation (RUSLE) was used to evaluate sediment loss from long-term disturbances in the North and South Areas. The various types of long-term disturbances used to calculate the amount of soil loss for each alternative include soils disturbed by well pads; transportation corridors, including roads, pipelines, and electrical transmission lines; and central production facilities. RUSLE also forms the basis for estimating sediment and salt delivery. The RUSLE equation is A = RKLSCP, where:

A = soil loss in tons per acre per year.

R = an erosivity factor related to rainfall intensity and runoff. Rainfall is based on data collected from the National Weather Service and is measured in inches per acre per hour per year. The R value for the North and South Areas is 15.

K = the soil erodibility constant K is a function of soil texture, structure, permeability and organic matter. K values ranging from 0.10 to 0.49 were provided in the Carbon Area soil survey for each soil series in the North and South Areas. For the purpose of the evaluation of the estimated soil loss, the highest K values of identified soils for each slope category in the North and South Areas were employed in the analysis.

L = is the length parameter L within the RUSLE equation, and reflects the length of overland flow within a watershed. Overland flow occurs for a short distance at the top of a watershed and is followed by channel flow unless there is a reduction in slope and deposition occurs. Length parameters are based on best professional judgement after examining the slopes in each individual subwatershed. In both the North and South Areas, L was estimated to be 100 feet on slopes with angles of 10 percent or less, and 50 feet for all others. These estimates were based on the BLM environmental protection measure that requires the construction of water bars on slopes greater that 2 percent.

Table E-1

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 1
North Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare grnd)	(w/ cover)
0-5% slopes	77.22	0.45	0.39
6-10%slopes	23.52	1.08	1.35
11-24% slopes	28.12	4.41	3.72
>25%	12.13	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity Class	% Dist Area	% of Soil
	%	%
Very High	0.00%	4.67%
High	9.53%	3.50%
Moderate	7.19%	1.50%
Low	83.28%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ac/yr) w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0	Very High	0	0.0	0.0		0	0	0	0	0.0	0.0
0-5%	0.43	High	2.84	1.6	0.1		5	0	2	0	0.2	0.0
0-5%	0.49	Moderate	8.57	1.8	0.1		16	1	6	0	0.7	0.0
0-5%	0.49	Low	65.81	1.8	0.1		120	7	48	3	5.6	0.3
			77.22	*5.2*	0.3	*Subtotals>*	*140*	*8*	*56*	*3*	*6.5*	*0.4*
6-10%	0	Very High	0	0.0	0.0		0	0	0	0	0.0	0.0
6-10%	0.43	High	1.67	3.8	0.3		6	1	3	0	0.2	0.0
6-10%	0.49	Moderate	0.48	4.4	0.4		2	0	1	0	0.1	0.0
6-10%	0.49	Low	21.37	4.4	0.4		93	8	37	3	3.3	0.3
			23.52	*12.6*	1.1	*Subtotals>*	*102*	*9*	*41*	*4*	*3.6*	*0.3*
11-24%	0	Very High	0	0.0	0.0		0	0	0	0	0.0	0.0
11-24%	0.43	High	4.1	15.6	0.9		64	4	26	1	1.0	0.1
11-24%	0.49	Moderate	1.09	17.8	1.0		19	1	8	0	0.3	0.0
11-24%	0.49	Low	22.93	17.8	1.0		409	24	164	10	6.1	0.4
			28.12	*51.3*	3.0	*Subtotals>*	*492*	*29*	*197*	*11*	*7.4*	*0.4*
>25%	0	Very High	0	0.0	0.0		0	0	0	0	0.0	0.0
>25%	0.43	High	4.83	24.2	1.4		117	7	47	3	5.5	0.3
>25%	0	Moderate	0	0.0	0.0		0	0	0	0	0.0	0.0
>25%	0.24	Low	7.3	13.5	0.8		99	6	39	2	4.6	0.3
			12.13	37.8	2.2	*Subtotals>*	*216*	*13*	*86*	*5*	*10.1*	*0.6*
TOTALS			*140.99*			*TOTALS>*	*950*	*58*	*380*	*23*	*28*	*2*
						TOTALS (tons/yr/ac)	*6.7*	*0.4*	*2.7*	*0.2*	*0.2*	*0.0*

Table E-2

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 1
South Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare grnd)	(w/ cover)
0-5% slopes	138.35	0.45	0.39
6-10%slopes	141.00	1.08	1.35
11-24% slopes	235.17	4.41	3.72
>25%	108.40	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity		
Class	% Dist Area	% of Soil
	%	%
Very High	0.09%	4.67%
High	11.28%	3.50%
Moderate	16.66%	1.50%
Low	71.98%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0.43	Very High	0.46	1.6	0.1		0.73	0	0	0	0.0	0.0
0-5%	0.43	High	21.61	1.60	0.1		34.50	2	14	1	1.6	0.1
0-5%	0.49	Moderate	37.44	1.82	0.1		68.11	4	27	2	3.2	0.2
0-5%	0.49	Low	78.84	1.82	0.1		143.42	9	57	3	6.7	0.4
			138.35	6.83	0.4	*Subtotals>*	246.76	*15*	*99*	*6*	*11.5*	*0.7*
6-10%	0.43	Very High	0.04	3.8	0.3		0	0	0	0	0.0	0.0
6-10%	0.43	High	18.25	3.8	0.3		70	6	28	2	2.4	0.2
6-10%	0.49	Moderate	16.85	4.4	0.4		74	6	29	3	2.6	0.2
6-10%	0.49	Low	105.86	4.4	0.4		462	40	185	16	16.2	1.4
			141	*16.4*	1.4	*Subtotals>*	*606*	*52*	*242*	*21*	*21.2*	*1.8*
11-24%	0.43	Very High	0.03	15.6	0.9		0	0	0	0	0.0	0.0
11-24%	0.43	High	25.57	15.6	0.9		400	23	160	9	6.0	0.3
11-24%	0.49	Moderate	40.23	17.8	1.0		717	42	287	17	10.8	0.6
11-24%	0.49	Low	169.34	17.8	1.0		3019	176	1208	70	45.3	2.6
			235.17	*66.9*	3.9	*Subtotals>*	*4137*	*241*	*1655*	*96*	*62.0*	*3.6*
>25%	0	Very High	0	0.0	0.0		0	0	0	0	0.0	0.0
>25%	0.43	High	4.81	24.2	1.4		117	7	47	3	5.4	0.3
>25%	0.37	Moderate	9.25	20.8	1.2		193	11	77	4	9.0	0.5
>25%	0.43	Low	94.34	24.2	1.4		2286	133	914	53	106.7	6.2
			108.4	69.3	4.0	*Subtotals>*	*2595*	*151*	*1038*	*60*	*121.2*	*7.1*
TOTALS			*622.92*			*TOTALS>*	*7584*	*459*	*3034*	*184*	*216*	*13*
						TOTALS (tons/yr/ac)	*12.2*	*0.7*	4.87	*0.3*	*0.3*	*0.0*

Table E-3

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 2
North Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare grnd)	(w/ cover)
0-5% slopes	72.27	0.45	0.39
6-10%slopes	22.31	1.08	1.35
11-24% slopes	30.94	4.41	3.72
>25%	1.47	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity		
Class	% Dist Area	% of Soil
	%	%
Very High	0.00%	4.67%
High	10.46%	3.50%
Moderate	5.21%	1.50%
Low	84.33%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ac/yr) w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
0-5%	0.43	High	3.32	1.6	0.1		5	0	2	0	0.248	0.015
0-5%	0.49	Moderate	6.06	1.8	0.1		11	1	4	0	0.515	0.031
0-5%	0.49	Low	62.89	1.8	0.1		114	7	46	3	5.343	0.320
			72.27	5.2	0.3	*Subtotals>*	*131*	*8*	*52*	*3*	*6.105*	*0.366*
6-10%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
6-10%	0.43	High	2.59	3.8	0.3		10	1	4	0	0.347	0.030
6-10%	0.49	Moderate	0.24	4.4	0.4		1	0	0	0	0.037	0.003
6-10%	0.49	Low	19.48	4.4	0.4		85	7	34	3	2.977	0.257
			22.31	12.6	1.1	*Subtotals>*	*96*	*8*	*38*	*3*	*3.361*	*0.290*
11-24%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
11-24%	0.43	High	7.28	15.6	0.9		114	7	46	3	1.708	0.100
11-24%	0.49	Moderate	0.32	17.8	1.0		6	0	2	0	0.086	0.005
11-24%	0.49	Low	23.34	17.8	1.0		416	24	166	10	6.241	0.364
			30.94	51.3	3.0	*Subtotals>*	*536*	*31*	*214*	*12*	*8.035*	*0.468*
>25%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.43	High	0.09	24.2	1.4		2	0	1	0	0.102	0.006
>25%	0	Moderate	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.24	Low	1.38	13.5	0.8		19	1	7	0	0.872	0.051
			1.47	37.8	2.2	*Subtotals>*	*21*	*1*	*8*	*0*	*0.973*	*0.057*
TOTALS			126.99			*TOTALS>*	*783*	*49*	*313*	*19*	*18.474*	*1.181*
						TOTALS (tons/yr/ac)	*6.2*	*0.4*	*2.5*	*0.2*	*0.145*	*0.009*

Table E-4

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 2
South Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare grnd)	(w/ cover)
0-5% slopes	141.27	0.45	0.39
6-10%slopes	144.65	1.08	1.35
11-24% slopes	226.08	4.41	3.72
>25%	41.35	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity Class	% Dist Area %	% of Soil %
Very High	0.10%	4.67%
High	12.53%	3.50%
Moderate	14.94%	1.50%
Low	72.44%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0.43	Very High	0.46	1.6	0.1		1	0	0	0	0.034	0.002
0-5%	0.43	High	24.59	1.6	0.1		39	2	16	1	1.833	0.110
0-5%	0.49	Moderate	32.08	1.8	0.1		58	3	23	1	2.725	0.163
0-5%	0.49	Low	84.14	1.8	0.1		153	9	61	4	7.148	0.428
			141.27	*6.8*	0.4	Subtotals>	*251*	*15*	*101*	*6*	*11.741*	*0.703*
6-10%	0.43	Very High	0.04	3.8	0.3		0	0	0	0	0.005	0.000
6-10%	0.43	High	19.84	3.8	0.3		76	7	30	3	2.660	0.230
6-10%	0.49	Moderate	15.33	4.4	0.4		67	6	27	2	2.343	0.202
6-10%	0.49	Low	109.44	4.4	0.4		478	41	191	17	16.723	1.444
			144.65	*16.4*	1.4	*Subtotals>*	*621*	*54*	*248*	*21*	*21.731*	*1.877*
11-24%	0.43	Very High	0.03	15.6	0.9		0	0	0	0	0.007	0.000
11-24%	0.43	High	23.79	15.6	0.9		372	22	149	9	5.583	0.325
11-24%	0.49	Moderate	29.91	17.8	1.0		533	31	213	12	7.998	0.466
11-24%	0.49	Low	172.35	17.8	1.0		3073	179	1229	72	46.088	2.686
			226.08	*66.9*	3.9	*Subtotals>*	*3978*	*232*	*1591*	*93*	*59.676*	*3.478*
>25%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.43	High	1.09	24.2	1.4		26	2	11	1	1.233	0.072
>25%	0.32	Moderate	5.35	18.0	1.1		96	6	39	2	4.505	0.262
>25%	0.49	Low	34.91	27.6	1.6		964	56	386	22	45.013	2.623
			41.35	69.9	4.1	*Subtotals>*	*1087*	*63*	*435*	*25*	*50.751*	*2.957*
TOTALS			*553.35*			*TOTALS>*	*5937*	*364*	*2375*	*146*	*143.900*	*9.015*
						TOTALS (tons/yr/ac)	*10.7*	*0.7*	*4.3*	*0.3*	*0.260*	*0.016*

Table E-5

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 3
North Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare grnd)	(w/ cover)
0-5% slopes	19.02	0.45	0.39
6-10%slopes	7.52	1.08	1.35
11-24% slopes	9.06	4.41	3.72
>25%	1.25	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity		
Class	% Dist Area	% of Soil
	%	%
Very High	0.00%	4.67%
High	11.83%	3.50%
Moderate	11.48%	1.50%
Low	76.69%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ac w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0.00	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
0-5%	0.43	High	2.57	1.6	0.1		4	0	2	0	0.192	0.011
0-5%	0.49	Moderate	3.83	1.8	0.1		7	0	3	0	0.325	0.019
0-5%	0.49	Low	12.62	1.8	0.1		23	1	9	1	1.072	0.064
			19.02	5.2	0.3	*Subtotals>*	*34*	*2*	*14*	*1*	*1.589*	*0.095*
6-10%	0.00	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
6-10%	0.43	High	1.18	3.8	0.3		5	0	2	0	0.158	0.014
6-10%	0.37	Moderate	0.18	3.3	0.3		1	0	0	0	0.021	0.002
6-10%	0.49	Low	6.16	4.4	0.4		27	2	11	1	0.941	0.081
			7.52	11.5	1.0	*Subtotals>*	*32*	*3*	*13*	*1*	*1.120*	*0.097*
11-24%	0.00	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
11-24%	0.43	High	0.61	15.6	0.9		10	1	4	0	0.143	0.008
11-24%	0.49	Moderate	0.22	17.8	1.0		4	0	2	0	0.059	0.003
11-24%	0.49	Low	8.23	17.8	1.0		147	9	59	3	2.201	0.128
			9.06	51.3	3.0	*Subtotals>*	*160*	*9*	*64*	*4*	*2.403*	*0.140*
>25%	0.00	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.00	High	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.00	Moderate	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.24	Low	1.25	13.5	0.8		17	1	7	0	0.789	0.046
			1.25	13.5	0.8	*Subtotals>*	*17*	*1*	*7*	*0*	*0.789*	*0.046*
TOTALS			*36.85*			*TOTALS>*	*243*	*15*	*97*	*6*	*5.902*	*0.378*
						TOTALS (tons/yr/ac)	*6.6*	*0.4*	*2.6*	*0.2*	*0.160*	*0.010*

Table E-6

Ferron Natural Gas EIS
Soil Loss, Sediment Yield and
Salinity Contributions

Alternative 3
South Area

Slope Magnitude vs LS Factors		LS Factor	
Class	Acres	(bare gmd)	(w/ cover)
0-5% slopes	87.04	0.45	0.39
6-10%slopes	80.91	1.08	1.35
11-24% slopes	120.34	4.41	3.72
>25%	53.91	6.83	5.76

RUSLE Parameters	
R Factor	15
K Factor	(as shown)
LS Factor	(as shown)
C Factor	(as shown)
P Factor	1

Soil Salinity		
Class	% Dist Area	% of Soil
	%	%
Very High	0.15%	4.67%
High	12.05%	3.50%
Moderate	16.33%	1.50%
Low	71.47%	0.58%

Disturbed Ground Slope Magnitude (range)	K	Soil Salinity Content (class)	Disturbance Area (acres)	Soil Loss (tons/ac/yr) bare ground C factor = 0.55	Soil Loss (tons/ac/yr) w/cover C factor = 0.038		Soil Loss: Long-term Disturbance (20% Cover)	Soil Loss: Undisturbed Native Veg. (50% Cover)	Sediment Delivery: Long-term Disturbance	Sediment Delivery: Undisturbed Native Veg.	Salt Delivery: Long-term Disturbance	Salt Delivery: Undisturbed Native Veg.
						C Factor=	0.55	0.038				
							(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
0-5%	0.43	Very High	0.46	1.6	0.1		1	0	0	0	0.034	0.002
0-5%	0.43	High	14.95	1.6	0.1		24	1	10	1	1.115	0.067
0-5%	0.49	Moderate	20.03	1.8	0.1		36	2	15	1	1.702	0.102
0-5%	0.49	Low	51.6	1.8	0.1		94	6	38	2	4.384	0.262
			87.04	*6.8*	0.4	*Subtotals>*	*155*	*9*	*62*	*4*	*7.234*	*0.433*
6-10%	0.43	Very High	0.04	3.8	0.3		0	0	0	0	0.005	0.000
6-10%	0.43	High	11.34	3.8	0.3		43	4	17	2	1.521	0.131
6-10%	0.49	Moderate	5.25	4.4	0.4		23	2	9	1	0.802	0.069
6-10%	0.49	Low	64.28	4.4	0.4		281	24	112	10	9.822	0.848
			80.91	*16.4*	1.4	*Subtotals>*	*347*	*30*	*139*	*12*	*12.151*	*1.049*
11-24%	0.43	Very High	0.03	15.6	0.9		0	0	0	0	0.007	0.000
11-24%	0.43	High	13.76	15.6	0.9		215	13	86	5	3.229	0.188
11-24%	0.49	Moderate	23.85	17.8	1.0		425	25	170	10	6.378	0.372
11-24%	0.49	Low	82.7	17.8	1.0		1474	86	590	34	22.115	1.289
			120.34	*66.9*	3.9	*Subtotals>*	*2115*	*123*	*846*	*49*	*31.729*	*1.849*
>25%	0	Very High	0	0.0	0.0		0	0	0	0	0.000	0.000
>25%	0.43	High	1.17	24.2	1.4		28	2	11	1	1.324	0.077
>25%	0.32	Moderate	6.75	18.0	1.1		122	7	49	3	5.684	0.331
>25%	0.43	Low	45.99	24.2	1.4		1114	65	446	26	52.038	3.032
			53.91	66.5	3.9	*Subtotals>*	*1264*	*74*	*506*	*29*	*59.046*	*3.440*
TOTALS			*342.2*			*TOTALS>*	*3882*	*236*	*1553*	*94*	*110.159*	*6.772*
						TOTALS (tons/yr/ac)	*11.3*	*0.7*	*4.5*	*0.3*	*0.322*	*0.020*

S = is a representative slope gradient for the predominate subwatersheds. The S values were derived from topographic information in the GIS database for this project, and ranged from 0 to 90 percent. Values of 0 to 5, 6 to 10, 11 to 24, and >25 percent were acquired from GIS, and the average slope within each range was used. The slope and length parameters were combined to give an LS factor. Values for LS were obtained from LS tables for rangeland (applicable to soils where both interill and rill erosion are significant) and soils with little-to-moderate cover (USDA Agricultural Research Service).

C = the "C" factor is determined by ground cover, annual site production, roughness value, mechanical disturbance, and the number of years needed for soil consolidation. The C factors for the North and South Areas were derived from SCS guidelines on cover practice values (Hamon 1982). Bare ground (long-term disturbance) was run at 0.55 to reflect 20 percent rock cover. Native grass or sagebrush range was run at 0.038, reflecting 25 percent vegetative grass type cover, 15 percent litter, 20 percent rock, for total cover of 60 percent.

P = RUSLE computes the effect of erosion control practices on the amount of soil loss. The most conservative value of 1.0 was used for the calculations.

All factors of the RUSLE equation, with the exception of K, were assumed to be consistent across the North and South Areas in order to simplify calculations, even though soil loss would not be equally distributed across the areas. Acres of Disturbance were divided into four categories based on the slope angles noted above. An RUSLE calculation was run for each category and then these numbers summed to arrive at the total amount of soil loss for the Proposed Action. Two different RUSLE calculations were run to estimate soil loss; (1) bare soil conditions — representing long-term disturbance resulting from project facilities and (2) native grasses and shrubs, representative of both a baseline scenario assuming no disturbance has occurred in the North and South Areas and successful reclamation after project closure.

SEDIMENT DELIVERY

The calculations for sediment delivery, based on information provided in the San Rafael Resource Management Plan (Moab District, BLM), estimated soil loss was one to four times higher than the sediment delivery. Therefore, soil loss figures calculated by RUSLE for the North and South Areas were divided by 2.5, the average value determined in the San Rafael study.

SALT DELIVERY

Salinity yield rates for the North and South Areas were obtained from the Price CBM EIS, which were based on a study done for the San Rafael Resource Area RMP. The salt percentage of the badland soils that typify the region is 3.5, as determined in the San Rafael study. The electrical conductivity for the badland soils is 12 mmhos/cm. A ratio using the salt percentage and the electrical conductivity were used to derive the percent salt for other soil types in the North and South Areas. The resulting soil salinity levels were divided into four categories:

Very high salinity – soil with electrical conductivity greater than 16 mmhos/cm or 4.67% calculated as follows: 3.5%/(12 mmhos/cm) = x/(16 mmhos/cm); 12x = 56; x = 4.67%

High salinity – soil with electrical conductivity of 8 to 16 mmhos/cm or 3.50% calculated as follows: 3.5%/(12 mmhos/cm) = x/(12 mmhos/cm); 12x = 42; x = 3.50%

Moderate salinity – soil with electrical conductivity of 2 to 8 mmhos/cm or 1.75% calculated as follows: 3.5%/(12 mmhos/cm) = x/(5 mmhos/cm); 12x = 18; x = 1.50%

Low salinity – soil with electrical conductivity less than 2 mmhos/cm or 0.58% calculated as follows: 3.5%/(12 mmhos/cm) = x/(2 mmhos/cm); 12x = 7; x = 0.58%

The salinity levels for each soil series were entered in the GIS database to determine acres of impacts for each salinity category. Salinity delivery was based on sediment delivery values. Results are shown in **Table E-7**.

RESULTS

Soil losses of 9.86 to 11.2 tons/acre/year for long-term disturbances are consistent with area natural soil losses of 2 to 12 tons/acre/year based on topography (BLM 1997c). There is slightly less soil loss under Alternative 2 compared with the other alternatives, based predominantly on avoidance of siting of facilities on critical soils. Sediment delivery results of 4.0 to 4.5 tons/acre/year is directly related to the soil loss values, and represents sediment delivery seen at the base of the watershed. Sediment delivery rates associated with this project are approximately 16 times natural soil delivery, but within the upper end of the natural range of 0.8 to 4.8 tons/acre/year.

Salt delivery ranges from 0.009 to 0.347 tons per acre per year, depending on topography (BLM 1997c). The rate of salt delivery associated with this project is 12 to 17 times higher than undisturbed conditions but well within regional norms. Again, the alternative with the least salt delivery is Alternative 2.

Table E–7
Summary — Long-Term Soil Loss, Sediment Delivery and Salt Delivery

	Undisturbed	Alternative 1	Alternative 2	Alternative 3
Soil Loss (tons/acre/year)				
North	0.4	6.7	6.2	6.6
South	0.7	12.2	10.7	11.3
Total	**0.64**	**11.2**	**9.9**	**10.8**
Sediment Delivery (tons/acre/year)				
North	0.2	2.7	2.5	2.6
South	0.3	4.9	4.3	4.5
Total	**0.28**	**4.5**	**4.0**	**4.3**
Salt Delivery (tons/year)				
North	0.010	0.195	0.145	0.160
South	0.021	0.347	0.260	0.322
Total	**0.019**	**0.319**	**0.239**	**0.306**

APPENDIX F
RESPONSES TO COMMENTS ON THE DEIS

Comments were provided by a variety of respondents and sources. The following table identifies the agencies, businesses and industry organizations, environmental and conservation groups, other groups, and individuals that responded to the DEIS. The letter identification numbers are attached to each comment.

Respondent	Organization	Letter Identification No.
Governmental Agencies (Federal)		
Bunyak, John	National Park Service, Air Resources Division	FG-01
Cody, Cynthia	U.S. Environmental Protection Agency	FG-02
Harris, Reed E.	U.S. Fish and Wildlife Service	FG-03
Governmental Agencies (State of Utah)		
Orth, Tom	Utah Division of Air Quality	SG-01
Barber, Brad T.	Utah Governor's Office of Planning and Budget	SG-02
Dykmann, James L.	Utah State Historic Preservation Office	SG-03
Governmental Agencies (Local)		
Leamaster, Darrel V.	Castle Valley Sewer and Sanitation District	LG-01
Funk, Rex	Emery County Road Department	LG-02
Johnson, Eugene	Emery Water Conservancy District	LG-03
Anderson, Bryant	Emery County Planning and Zoning	LG-04
Payne, Val	Emery County Public Lands Department	LG-05
Businesses and Industry Organizations		
Langley, L. G.	Anadarko Petroleum Corporation	B/I-01
Chandler, III, Collis P.	Chandler and Associates, LLC	B/I-02
Smith, Marc W.	Independent Petroleum Association of Mountain States	B/I-03
Payne, Fred E.	Payne Land Services	B/I-04
Moseley, Claire M.	Rocky Mountain Oil and Gas Association	B/I-05
Belton, Terry	Texaco Exploration and Production, Inc.	B/I-06
Peacock, Lee J.	Utah Petroleum Association	B/I-07
Grifiths, Cary	Utah Pipe Trades Union	B/I-08
Thompson, Joe	Utah Pipe Trades Local Union No. 57	B/I-09
Gillen, Darrell L.	Williams Production Company	B/I-10
Webster, J. Blake	Interwest Mining Company	B/I-11
Environmental and Conservation Organizations		
McHarg, W. Herbert	Southern Utah Wilderness Alliance	E/C-01
Carpenter, Len H.	Wildlife Management Institute	E/C-02
Other Organizations		
Kirkwood, Ken	Carbon/Emery Motorcycle Association	O-01
	Carbon-Emery Trail Users Association	O-02
Warren, Scott	Sageriders Motorcycle Club	O-03
Peterson, Alan J.	Utah Trail Machine Association	O-04

Respondent	Organization	Letter Identification No.
Individuals		
Borton, Stephen		I-01
Burgess, Cory and Joan		I-02
Colt, Chris		I-03
Coones, John E.		I-04
Foote, Mr. and Mrs. Deane L.		I-05
Glenn, Patrick		I-06
Gnojek, Tom		I-07
Hanawalt, H. George		I-08
Hardy, Leo		I-09
Jensen, LaRue		I-10
Justensen, Dorothy		I-11
Justesen, Lu Ann		I-12
Keleher, Barb		I-13
Kenney, Claudia J.		I-14
Kilbourne, Pete		I-15
Knoop, Karla D.		I-16
Loveless, Ned T. and Gladys R.		I-17
Luke, Marjorie M.		I-18
Mansfield, Benjamin J.		I-19
Melville, Marvin		I-20
Sheya, Paul J. and Lynne		I-21
Snow, Harry E.		I-22
Swasey, Lee M. and Margaret F.		I-23
Tatton, Brent		I-24
Tuttle, Dawnette		I-25
Tuttle, Milton Bland		I-26
Ungerman, Lorin O. and Orilla		I-27
Wakefield, Thomas Kent		I-28
Willis, Dennis and Terry		I-29
People Attending the Castle Dale Public Meeting		
Unidentified Individuals		I-30
Rowley, Vernel		I-31
Wellnitz, Paula		I-32
Williams, Mark H.		I-33
Wilson, Brian		I-34
People Attending the Price Public Meeting		
Unidentified Individuals		I-35
James, Mike		I-36
Reed, Carter		I-37
Sheya, Paul		I-38
People Attending the Salt Lake City Meeting		
Payne, Fred		I-39

Geology and Minerals

1. Page 3–1, Section 3.1.1: In the second line of the section the word "upwarp" is incorrectly typed as "upward". The second sentence may be clearer if it read "The North Area lies within the ... physiogeographic subprovince [is] known as the Mancos Shale lowland (Stokes, 1986)." (SG–02)

   Response: These sentences have been edited for clarity. Please refer to Section 3.1.1 to review the revisions.

2. Page 3–2, first paragraph of Section 3.1.2: This paragraph refers the reader to subsurface geology on Plates 3–1a and 3–1b. These plates have errors. Particularly incorrect are the contacts of the map units in the stratigraphic interval from the Emery Sandstone Member of the Mancos Shale up through the Star Point Sandstone. The label for the middle member of the Ferron Sandstone is also incorrectly shown in areas that should be Emery Sandstone. These two maps do not accurately reflect the mapping done by the authors cited from the U.S. Geological Survey. (SG–02)

   Response: Upon review of the plates, the ID team agrees the plates had many errors. Because the information presented on these plates was not used in the impact analysis, the ID team decided to drop both from the FEIS rather than try to correct all the errors made when the information was digitized.

3. Page 3–5, last paragraph of Section 3.1.3: The material presented in this paragraph is confusing, as if some material was omitted or misplaced. It should be rewritten for clarity and ease of understanding. (SG–02)

   Response: This paragraph was rewritten to clarify the narrative. Please refer to Section 3.1.3 to review this revised discussion.

4. Page 3–7, last paragraph of Section 3.1.5.3: The first sentence of this paragraph should read "Portions of the project area are ..." to have subject and verb agreement. (SG–02)

   Response: The sentence has been revised. Please refer to Section 3.1.5.3 to review the change.

5. Plate 3–2b: This plate incorrectly shows active coal leases in Township 18 South, Range 7 East on North Horn Mountain where no federal coal leases have been sold. Conversely, there are active coal leases in Township 17 South, Range 6 East on Trail Mountain associated with the Trail Mountain mine that are not shown. (SG–02)

   Response: This plate has been reviewed and incorrect information has been corrected. Please refer to the plate in the FEIS to review the changes.

6. The Ferron DEIS does not address the future impact of the gas field on the local coal industry. When the whole gas field is developed, shall natural gas be competing with coal for firing the local power plants? What should become of local coal miners, and support industries and jobs for the coal mines, if a huge market for coal suddenly disappears? The gas well field is low maintenance and requires very few workers or support, once the pipelines are in place. What should become of our local economy if coal mines close or scale down, and miners and others lose their jobs? Even though the coal industry sees a long term weakness (30 to 60 years from now), the gas field will be developed well before then. These questions need to be analyzed in this DEIS before the gas wells go in. (I–21)

Response: *Conversion of local coal-fired power plants to natural gas was not an issue for analysis in the Ferron Natural Gas Project EIS. Natural gas extracted under the Ferron Natural Gas Project would not be a factor in the electrical utilities' decisions about converting to natural gas. The productive life of this project would be insufficient for the utilities to use as a basis for switching to natural gas. Thus, any decisions by the utilities to convert to natural gas would be the result of factors unrelated to the Ferron Natural Gas Project.*

7. The statements at 4.1.1.1.2, page 4–2 and 4.1.1.2, page 4–4, regarding lack of conflict between proposed wells and active coal leases or kcras are accurate. However, coal lease boundaries and active mine permit boundaries do not always coincide. The DEIS does not address potential conflicts between proposed wells and active coal mine permit areas. Locations where such conflicts may occur include proposed wells in Deer Creek Canyon, in Sections 1 and 2, Township 17 South, Range 7 East and near the Des Bee Dove Mine Sediment Pond, NW ¼ Section 36, T I 7 S, R 7 E. (LG–05)

   Response: *Plate 3–2b in the DEIS (Plate 3–1 in the FEIS) shows the boundaries of active coal leases, not boundaries of active mines. Based on available information on active coal leases, the ID team did not identify any conflicts between coal leases and proposed wells. The locations identified in the comment involve State- and privately-owned lands. Thus, the BLM and Forest Service would have not authority to determine the ultimate locations of wells in these sections.*

Water Resources

1. A major effort is being undertaken by cooperation of the federal government and several states to reduce salinity in the Colorado River so as to provide water of sufficient quality to meet downstream users' needs and treaty obligations with Mexico. This program named Colorado River Basin Salinity Control, has set water quality standards and is implementing a program to control salinity contributions from all sources. A concern exists that if the proposed brine disposal methods fail, saline brine would be contributed to the Colorado River and undo the progress of the control program. Disposal of saline waste waters should be carefully monitored to ensure the waste brines are not allowed to reach the San Rafael River or tributaries and/or the Colorado River system. If during monitoring of the disposal, brines are reaching the river system, then operation of the project should be suspended until the problem is fixed. (I–34, SG–02)

   Response: *Disposal wells would be monitored daily according to UDOGM's requirements. If they failed, some other approved method of disposal would have to be used or the wells would be shut in. Also, surface water quality monitoring sites exist (Plate 3–2 of the FEIS), which would continue to provide information.*

2. Page 4–7 – 4.2.1.1.3.1 Sedimentation: The third paragraph needs clarification because it is confusing. It is unclear whether the maximum rate of sediment loss of 10.75 tons/acre/year is the total estimated sediment loss for the Project Area including both natural conditions and project effects, or is only additional sediment loss resulting from the project. We interpret the paragraph to say the 775 acres of disturbed land produces 10.75 tons/acre/year. Natural conditions without the Ferron Natural Gas Project ranges from 2 to 12 tons/acre/year. Therefore, with the project the total amount of sediment loss would be 12.75 to 22.75 tons/acre/year. Similarly, sediment delivery to streams would be 5.1 to 9.1 tons/acre/year. Both these values are higher than natural conditions. No

discussion of natural sediment loss or delivery conditions was included in Chapter 3. (FG–02, FG–03, I–35)

Response: *A discussion of natural sediment loss values has been added to Section 3.2.3.2. Also, the discussion in Section 4.2.1.1.3.1 has been modified to clarify the results of the impact analysis. The interpretation developed by the reader is not correct in light of the projections that were done and described in greater detail in Appendix E.*

3. Page 4–8 – 4.2.1.1.4 Spill impacts to Surface and Groundwaters: This section states rules and regulations (Onshore Oil and Gas Order No.1, Notice to Lessees 3a, and UDOGM rules) which identify strategies to *reduce* accidental spills. The section further describes potential impacts from accidental spills resulting from standard well field operations. This section does not describe any contingency plan that would be implemented if a spill occurs, especially at wells in floodplains. Thirty-four wells are proposed in floodplains adjacent to perennial streams or in intermittent or ephemeral channel beds. Oil spills during a precipitation event or spring run-off could result in oil contaminants entering the river system and potentially affecting endangered fish. The Service is concerned about potential impacts to the endangered Colorado River fishes, especially the Colorado squawfish (Price River) and the razorback sucker (San Rafael River). A contingency plan should be developed for accidental spills and this potential impact to the endangered fish should be addressed in the EIS as well as in the Biological Assessment for the project. (FG–03)

   Response: *The project would not involve storage of any large quantities of oil. Consequently, no large spills of oil would occur. Pipeline pressures are monitored during standard operations and any pipeline breaches would be noted and immediate action taken to correct the situation. The development of contingency plans are not anticipated, but can be required from operators on individual well approvals in accordance with NTL 3A. Appendix B indicates spill plans would be developed to ensure environmental protection from hazardous substances. Small spills would be kept on location by berms and drainage control (see Section 4.2.3).*

4. Page 3–12, Figure 3–4: It would be helpful for the reader to have a legend explaining the cross-hatched and stippled patterns. (SG–02)

   Response: *A legend has been developed. Cross-hatched areas are zones where the aquifer is absent; stippled areas are where the aquifer is partially saturated. Please refer to this revised figure to review the revisions.*

5. Pages 3–18 and 3–19, Table 3–2: Column headings are missing for sixth, tenth, and last data columns in the table. To help the reader better understand any geographic changes in water quality, it would be useful to also have township and range information with the section number given for each well. (SG–02)

   Response: *The sixth, tenth, and last data columns reflected specific gravity, a ratio, and sulfate reducing bacteria concentrations. These columns have been eliminated from this table in the FEIS. Please refer to Table 3–2 to review these revisions.*

6. Page 3–23, Figure 3–7: The legend for this figure has the colors for the aquifer absent and the fresh blocks reversed. Is the data presented in Figure 3–7 original work done by the EIS authors or was it modified from some other source? (SG–02)

Response: *Figure 3–7 has been revised. It was modified after Figure 68 in Freethey and Cordy 1991. Please refer to this figure in the FEIS to review the revisions.*

7. The EIS does not identify any recharge areas for the Ferron Sandstone Aquifer and what impacts to the surface water resources may be associated with it due to the mining activities in the Ferron Sandstone Aquifer. (LG–03)

Response: *Section 3.2.1 indicates that the recharge area for the Ferron Sandstone aquifer is along fault zones to the west of the Project Area. Section 3.1.5.4 indicates that most coal mining in Carbon and Emery counties is in the overlying Blackhawk Formation within the Cretaceous Mesaverde group. However, one exception exists. The coal in the Southern Emery coal field, located south of the South Area is found in the Ferron sandstone. There are no expected cumulative impacts between mining of the Blackhawk and gas production from the Ferron. There are no overlapping effects to surface water from coal mining and CBM development in the Ferron, due to the distance between them, and the general west to east flow pattern. A supporting technical document, "Ferron Natural Gas Development EIS, Aquifer Modeling Report" (AHA 1998), indicates that there would be drawdown of the Ferron aquifer near the eastern outcrop adjacent to the Price and Green Rivers, but that the reduction in discharge would be less than nine percent (Section 5.3.2.1).*

8. The DEIS does not identify the precise degree of imbalance between recharge and discharge of water in the Ferron Sandstone Aquifer. This concern needs to be identified before the project is started. (LG–03)

Response: *Recharge and discharge of the Ferron Sandstone was modeled with projected losses of produced water. This information is summarized in Section 5.3.2.1 and was derived from the supporting technical document, "Ferron Natural Gas Development EIS, Aquifer Modeling Report" (AHA 1998).*

9. The DEIS does not address the issue of subsidence due to pumping water out of the Ferron Sandstone Aquifer and what counter measures would be put in place if subsidence occurs. (LG–03)

Response: *Subsidence was addressed in Section 4.2.1.1.3 of the DEIS. Please refer to this section of the FEIS to review the discussion.*

10. The DEIS does not address alternative solutions to possible failure of the injection well system or an overload of excess water. If water is stored in evaporative ponds water rights must be obtained. The water balance summary used is not accurate and does not balance with acres and irrigation water depletions. More research is necessary. (LG–03)

Response: *Evaporation ponds are not a feature of any alternative. Lined emergency pits are available for temporary use at the disposal well facilities. As discussed in Section 2.1.1.1.1.5, pumps would be shut off if an emergency pit reaches capacity. Subsequently, water would be injected as soon as the well is again operative. The pits would not serve as long-term storage basins.*

11. The matter of transmission line breaks and contamination to land and water due to breakage or leaks in the system needs to be addressed. It is illogical to expect that this will not occur. More research needs to be done and guidelines established for addressing these concerns. (LG–03)

    Response: *A drop in water line pressure or the visual observation of leakage are the usual indicators of problems. As for monitoring and inspection, field visitation by company personnel would be ongoing. Additionally, routine inspections are conducted by the BLM and UDOGM. Please refer to Section 2.1.1.1.3.2.2 for further information.*

12. A firm program of inspection and monitoring should be established to insure protection of the system, the water and surrounding resources. (LG–03)

    Response: *See response to previous comment.*

13. The Environmental Protection Measures associated with Alternative 2 would require that leaseholders avoid blasting or geophysical drilling within ¼ mile of a spring or water well. In most cases leaseholders would use vibroseis rather than dynamite in terrain such as the Ferron Natural Gas project. A ¼-mile restriction is unreasonable and unnecessary to address any safety concerns. Since this is not required in the lease, and the BLM's authority to relocate drilling activities is limited to 200 meters, this requirement exceeds BLM's authority. BLM should also provide a map identifying streams and water wells. (B/I–06, B/I–10)

    Response: *This EPM was a measure prescribed by the Land Management Plan. It is not an exclusion, it is an avoidance measure. Additionally, it is examined on a case-by-case basis during the APD stage. Streams and springs are identified on Plate 3–2, Hydrology.*

14. I am concerned about the effects of injecting waste water into the Navajo Sandstone and the impact this may have on the formations potential for future culinary, agricultural, and wildlife water uses. The DEIS tries to assure us that ground water impacts will be minimal. The biggest problem is lack of data to support the case. One cannot conclude the salt water will not penetrate into deeper formations and contaminate sources of freshwater, such as springs and seeps. The South Area lies immediately west of the San Rafael Swell and the North Area lies to the north. Thus the project appears to be in the vicinity of the San Rafael Swell. This would suggest that the Navajo-Nugget aquifer may be suitable for water uses within the Project Area. But to the contrary, the DEIS states on page 3–17 although fresh water occurs in the aquifer along the perimeter of the San Rafael Swell near the recharge area, water quality degrades with increasing distance from the area of recharge (Figure 3–7). Data from four wells in the North Area and two in the South Area are used as evidence. Where are these wells? Why are they not plotted on Figure 3–7? Are they representative samples sufficient to characterize the Navajo-Nugget over the entire EIS area or are some of them clustered together showing data of only local significance. What is the reference to the analysis that generated the Figure 3–7? (I–15, I–31)

    Response: *Existing publications (referenced in DEIS and FEIS) outline the basics of water quality and direction of flow in the Navajo Aquifer throughout the Project Area. Data gathered from disposal wells completed since initiation of the Drunkard's Wash project confirm the general trends shown in these publications. Data show the existence of stagnant saline water deep down structure in the west and northwest direction from the San Rafael Swell, which is under the Project Area. A recent*

unpublished study completed for the Drunkard's Wash area models and predicts injectivity and pressure response in the aquifer due to injection. This study verifies, as predicted, that higher pressure influence will remain in the western and deepest part of the aquifer. The volumes comparisons were also verified and show in the study area that the cumulative injected volume amounts to less than one percent of the water already in place in the aquifer. This helps put into perspective the dilution and pressure influence concerns. The results of this study are very relevant to the Ferron Natural Gas Project's Project Area because the model/study area is located between the North and South areas. Geologically the same formations are involved and appear to be continuous, including the confining zones.

15. Page 3–13 provides a description of ground water flow. Figure 3–4 is used to show the flow patterns. However, no information is shown specific to the Project Area, although the South Area is shown approximately one mile west of the map content and the North Area is not shown at all. How does one know where the water is going? How confidently can flow patterns be predicted without flow data in the project area? (I–15, I–33)

    Response: *The description in Section 3.2.2.1.4 includes a flow description. Figure 3–4 was intended to clarify the concept in the area of the San Rafael Swell.*

16. Consistent with the lack of the data, the DEIS honestly states on 4–6, a regional groundwater modeling study for the Navajo aquifer was not included as part of the analysis for this DEIS. Yet without adequate groundwater information, it is difficult to jump to the statements about environmental consequences found on pages 4–5 to 4–15. On page 4–6 of the DEIS … the radius of influence (resulting from injection) during the five highest years of peak water production of approximately 1500 gallons gpm (51,429 bpd) the radius of influence would extend four miles and produce a hydraulic head greater thin 8,960 feet. Assuming fresh water flow patterns in the Navajo-Nugget are constant, on a long-term basis, produced water disposal would not affect these flow patterns. Going back to the Section 3.2.2.1.4, I see the discussion about groundwater flows on the San Rafael Swell, not the Project Area. I also see a discussion about thrust faults in the Navajo and statements about the lack of information regarding thrust faults in the Navajo. This is followed by the statement such faults, if they exist, could significantly. Significantly what? What is the rest of the sentence? If we don't know about the geologic structure in the Navajo within the project area, how do we know about its groundwater flow patterns? (I–15)

    Response: *Numerical analysis has been done and is described in Section 4.2.1.1.1. Please refer to this section to review this information. The Cumulative Effects Area for groundwater resources includes the San Rafael Swell, which is on the eastern periphery of the Project Area. Such faults, if they exist, could significantly "affect groundwater flowpaths". This change has been made in Section 3.2.2.1.4. Please refer to this section to review the revision.*

17. On page 4–6, regarding Alternative one, the DEIS states impacts to springs are not likely to occur as is not operationally viable to construct in wet areas. This statement focuses on direct impacts of construction. What are the effects on the groundwater that feeds the springs? Would these impacts be different in Alternative 2? The DEIS states on page 4–10 regarding Alternative 2, the water quality within the Navajo-Nugget would be diluted slightly, although probably immeasurably. What volumes are being considered when talking about dilution? Is it based on the four mile radius of

influence discussed on 4–6? Please include these calculations regarding dilution in the FEIS, perhaps as an appendix. (I–15, I–32, I–33)

Response: *Gas development would not impact the recharge area or flow path. The producing formation is not the source of water to springs. This lack of anticipated impacts would be identical for Alternative 2.*

Section 4.2.1.1.1 has been modified to address dilution of the Navajo-Nugget by disposal of produced waters.

18. The DEIS does not consider alternative methods of disposal of produced water. The companies must provide the produced water for useful application in the local area. This area, which is a desert, is in a major conflict with an adjacent county regarding water supply for culinary and agricultural purposes. The DEIS should examine the purification of water for local use and if such purification is not feasible, the BLM should document the reasoning. (I–21)

Response: *The DEIS did consider alternative methods of disposal of produced water (Section 2.4.5). The oil and gas lease terms do not require produced water to be put to beneficial use.*

19. On page 4–10, the DEIS states that project proponents would purchase water for development (13.5 ac-ft in the North Area and 57.8 ac-ft in the South Area) from a variety of users, resulting in very minor shifts in water consumption from existing uses to this project. No change in costs to consumers should occur as a result of this project. This analysis is insufficient. The fact that water for these projects is being diverted from Huntington Creek, Scofield Reservoir, and Price River (494 ac-ft, River Gas CBM EIS page 2–5) is absolutely insane given that they are producing so much water from their own wells. It is also insufficient in that a huge amount of water is to be consumed from the adjacent RGC CBM project. The DEIS must address the water needs and impacts more specifically. (I–21, I–35)

Response: *The cumulative impact discussion in Section 5.3.2.1 noted that water use in the San Rafael and Price River basins totals 202 mgd, of which domestic and public supply is 6.81 mgd. CBM producer consumption for development is less than one percent of domestic and public supply. It is technically infeasible to use saline produced water for drilling and illegal to use saline produced water for surface applications.*

20. Information in the water resources section of Table 2–15, summarizing impacts, should be presented so that a more meaningful comparison between alternatives can be made. While the information on rates of sediment and salt delivery are useful, the total loading quantities and a comparison to background (which is not the same as No Action) should also be given in the table. (I–16)

Response: *Table 2–15 in the DEIS (Table 2–17 in the FEIS) has been updated and Section 3.2.3.2 has been modified to reflect soil loss and soil salinity characteristics of proposed disturbance areas. Please review Table E-5 in Appendix E for comparisons between undisturbed conditions and the three alternatives.*

21. It is not clear whether the water quality information provided for the Navajo-Nugget aquifer reflects the background quality of the aquifer. The source of the information is given as samples taken from

existing, active disposal wells. How is it known that the analyses do not represent the influence of the injected Ferron waters? (I–16)

Response: *Water quality information obtained from disposal wells for the Navajo Aquifer was obtained prior to commencement of disposal and should represent the water quality of the aquifer at that location.*

22. It seems that the Navajo aquifer groundwater model recently developed for the Price Coalbed Methane field would have been a useful tool to describe the hydrogeologic characteristics of the Project Area, along with the regional references cited. (I–16)

Response: *See response to Water Resources comment 14.*

23. The fact that EPA and UDOGM have regulatory responsibility for underground injection is used on page 4–6 to justify the lack of groundwater modeling for this project. However, under NEPA, the BLM is required to disclose all of the potential environmental consequences of the project. Groundwater modeling appears to be key to thoroughly assessing some of those consequences, regardless of whether or not other agencies require such a study. (I–16)

Response: *Section 4.2.1.1.1 does discuss the environmental consequences of disposal of water into the Navajo. Water quantity impacts have been modeled locally by Texaco and Anadarko and the results were used in this EIS.*

24. Under the Proposed Action, 12 wells would be located in the floodplains of perennial streams, and 22 wells would be located in the beds of intermittent or ephemeral channels. Impacts associated with such locations were very cursorily addressed by stating "this would result in substantial sediment loss and increased pollution potential." An expanded discussion is warranted, and quantification of overall impacts should include impacts specific to these sites. For example, the provided soil loss/sediment delivery analysis only reflects upland sheet and rill erosion, not in-channel erosion or sediment production. Further, the discussions on spill impacts do not discuss the greater impact potential associated with these in-stream sites. (I–16)

Response: *As Section 1.2 indicates, this FEIS is programmatic in nature. As such, locations of wells and facilities reflect a general planning concept. All federal wells are subject to the APD process and well locations would be moved as necessary during field permitting to protect resources.*

25. The potential impacts to surface water and groundwater as a result of disposal water occasionally being diverted to emergency pits are not described. (See item 1 under the Chapter 2 comments provided above.) Infiltration of stored water, and the potential consequences to shallow groundwater and stream channels should be discussed. (I–16)

Response: *The emergency pits would be lined with impermeable geosynthetic liners. As discussed in Sections 2.1.1.1.1.5 and 2.1.1.1.3.5.1, use of the emergency pits would be temporary and would not result in impacts to surface and ground waters. The Companies would not fill these pits beyond their capacities and would pump waters from the pits into the adjacent disposal well once repairs are made.*

26. Because sediment and salinity impacts would likely continue until the well sites and roads are abandoned and reclaimed, a monitoring program should be defined to validate the success of the Best Management Practices comprising the Environmental Protection Measures for water resources. We suggest the FEIS address the possibility of establishing a project monitoring workgroup to include the BLM, UDEQ, UDOGM, and counties to track the success of nonpoint source control and to modify measures as appropriate. (FG–02)

    Response: Thank you for the suggestion.

27. Section 4.2, WATER RESOURCES (page 4–5): Water continues to be a resource which generates a great deal of concern. The Council and the Department would prefer that the water from the Ferron Sandstone be treated and put to beneficial use, rather than being disposed of on injection wells. However, it is recognized that such treatment is not currently economically feasible. The Council and the Department continue to be interested in assessing the effects of injection to the Navajo Sandstone aquifer. Therefore, it is recommended that the last sentence of the second paragraph at page 4–6 be modified to read, "As data become available, modeling and analysis will be completed with the objective of protecting underground sources of drinking water from contamination by disposal activities." (LG–05)

    Response: As noted in Section 3.2.2.2.2, the Ferron Sandstone waters do not meet state drinking water standards for total dissolved solids and barium, at a minimum. Sodium, chloride, and iron also present domestic use limitations. Modeling was performed to assess the effects on water withdrawal from the Ferron Sandstone. This technical report is entitled "Ferron Natural Gas Development EIS Aquifer Modeling Report". It was prepared for the Ferron Natural Gas Project and was issued in April 1998.

    Figure 3-7 shows that sources of fresh water in the Navajo are not connected with the saline portions of the Navajo into which produced water would be injected. Thus, modeling and analysis would serve no objective.

28. We support the protection of water resources provided by Alternative 2, but, would prefer that the tenuous mitigation language, found at Section 4.2.3, page 4–14, be revised by replacing "should", "could" and "would" with "shall". (LG–05)

    Response: The EIS is not a decision document. Thus, use of the terms "should", "could", and "would" is preferred. The Records of Decision issued by the decision makers will determine what "shall" be done.

Air Quality

1. The use of 1995 data is not adequate. Adequate baseline data is necessary for an informed decision and air quality research should be part of the EIS. Determination of air quality impacts should be based on quantitative data about existing conditions and conditions that would achieve the Class I air quality standard. (E/C–01)

    Response: The 1995 IMPROVE data from Canyonlands National Park was determined by the National Park Service and the Utah Department of Environmental Quality as the latest and most representative background visibility data for national parks in central Utah. Measurements of visibility were discontinued at Arches National Park in 1993. Data

have never been collected at Capitol Reef National Park. Therefore, the National Park Service determined that the data from Canyonlands should be used to represent the background condition at Capitol Reef and Arches National Parks.

2. The analysis should include a numerical estimate of the reduction in visibility throughout the area and the establishment of standards for the project area. (E/C–01)

   Response: *The potential effect to visibility in the Price area was identified as an issue for the EIS. The U.S. Congress has decided that visibility standards would be protected only in Class I areas through the New Source Review permitting process. The State of Utah Department of Environmental Quality manages the New Source Review process and evaluates the potential of any large pollutant source to degradate visibility at Class I areas. Neither the U.S. Congress, the EPA, nor the State of Utah have established any visibility standard outside of Class I areas. In spite of the lack of any laws or standards, the analysis included a numerical estimate of visibility impacts in the Project Area to include much of Carbon and Emery counties (see Section 4.3.1.1.2.9).*

3. The analysis should consider the cumulative impacts of all existing, proposed, or reasonably foreseeable projects (including the Hunter 4 power plant) and increased vehicle traffic throughout the entire area. (E/C–01)

   Response: *The analysis does indeed consider all cumulative sources since the background NO_x concentration was measured in 1981. PacifiCorp and UDEQ were contacted and PacifiCorp has withdrawn its permit application for a fourth coal-fired unit. Furthermore, they have no future plans to re-apply for a coal-fired power unit because of expense to reduce emissions to acceptable limits.*

   Increased tailpipe emissions were not considered in the analysis for two reasons. First, as described in the Land Use analysis, Section 4.10), traffic is only expected to increase by one to three percent.

4. The analysis should evaluate the effects of using gas and electrical pumps. (E/C–01)

   Response: *The FEIS analyzes electrically-powered compressors and pumps. Please refer to the electrical discussions in Chapters 2, 4, and 5 to review these additions.*

5. The air quality analysis should consider exhaust, dust, etc. in relation to National Park and proposed wilderness lands. It also should include climate impacts. Mitigation of dust impacts from roads should be mitigated. (E/C–01)

   Response: *Fugitive dust emissions were included. The control of construction-related emissions would be required by the Utah Air Conservation Rule R307-12, which requires adequate control of construction dust for projects that disturb more than ¼ acre. Control of operational dust from roads is only required for roads where average traffic exceeds 150 vehicles per day. Although the average project traffic would be considerably less than this level, the DEIS recommends the application of dust suppressants (water or chemicals) along roads near residential areas and at congested project traffic levels. The Ferron Natural Gas Project would not affect climate.*

6. The air quality analysis involved an overly conservative and unreasonable approach to predicting the impact from emissions to air quality and visibility. Predicted field conditions are overstated. The modeling assumption that predicts full conversion of NO_x to NO_2 is erroneous. If the EPA recommends that a 75 percent conversion be used for emissions modeling (Federal Register, vol.60 No.153, pg. 40469, August 9, 1995), then it should be used for regional haze predictions for the sake of continuity and good engineering practice. However, even with the overstated predictions, a 1.2-percent increase in NO_x emissions impacting Capitol Reef is relatively insignificant. (B/I–02, B/I–03, B/I–06, B/I–10)

   Response: *It must be emphasized that the air quality analysis in the DEIS is not a permitting process. It is a NEPA analysis to disclose potential impacts. Since the Companies do not yet have a firm and binding proposal concerning the location, size, or type of natural-gas compressors that would be used to move natural gas, conservative assumptions were used in the DEIS analysis. The FEIS contains an analysis of potential air quality impacts when refined emission factors are used for the compressor emissions.*

   It is true that the EPA recommends a 75 percent conversion from NO_x to NO_2 for the air quality analysis related to NAAQS compliance. The IWAQM screening method used in this analysis and coordinated with the National Park Service and the UDEQ assumes that all NO_x is converted to NO_2 when visual impacts are analyzed at Class I areas. However, only 40 percent of NO_2 would be converted to particles that may reduce visibility. The visibility analysis only looks at specific days when the prevailing wind would transport pollutants to the Class I areas. In limited cases, the daily transport of pollutants was predicted to be toward the Class I areas at a sufficient magnitude to result in potential adverse effects on visibility.

7. Based on the air quality analysis documented in the DEIS and Air Quality Technical Document; the frequency, magnitude, and duration of these impacts from the Ferron Natural Gas Project along, and the combined Ferron and Price Coalbed Methane projects, the effects to visibility at Capitol Reef, Canyonlands, and Arches national parks are adverse impacts. (FG–01)

   Response: *Additional air quality analysis has been completed using refined emission and stack parameters that are attainable in the industry. Two options were analyzed. One option is that all compressors would be electrically powered. The second option is that the compressors would be modeled using the following parameters:*

   emission rate: 0.7 gm/hp-hr
   stack height: 17.1 m,
   stack diameter: 0.356 m,
   exhaust temperature: 739.7 K
   exhaust velocity: 72.1 m/s
   building downwash for compressor buildings 28 ft high, 65 ft X 35 ft

   The results of the analysis using these parameters are shown in Section 4.2 of the FEIS. When using 1986 meteorological data from Clawson for the Ferron compressors only, there may be one day over a five percent reduction at Capitol Reef and no days at Canyonlands or Arches. When using a second year of Clawson data

(provided by the Utah Division of Air Quality) from 1987, there may be three days reduction more than five percent at Capitol Reef and one day at Canyonlands.

This analysis demonstrates that even if all the Ferron compressors are installed at the operating level indicated in the DEIS, there may be an impact on visual resources at the closest Class I areas. However, it must be pointed out that the analysis was performed using the conservative methods mandated by the Interagency Workgroup on Air Quality Modeling (IWAQM). This method assumes that all NO_x converts to NO2. In contrast, the EPA and State of Utah assume that only 75 percent of NO_x converts to NO_2.

The results of the cumulative analysis with recommended mitigation are shown in Section 5.3.3. When using 1986 meteorological data from Clawson for the Ferron and Price CBM compressors, there may be two days over a five percent reduction at Capitol Reef and one day at Canyonlands. When using a second year of Clawson data (provided by the Utah Division of Air Quality) for 1987, there may be nine days reduction more than five percent at Capitol Reef and eight days at Canyonlands and five days reduction more than 10 percent at Capitol Reef and one day at Canyonlands.

The cumulative analysis demonstrates that there would be an adverse impact to visual resources at Capitol Reef and Canyonlands if all the natural gas-fired compressors, including the five proposed compressors for the Price CBM development, are permitted and operated at the levels indicated in both the Ferron Natural Gas and Price CBM EISs. Further analysis of potential visibility impacts would be directed by the Utah Division of Air Quality in the future when permit applications are submitted.

8. Because the effects to visibility at the three national parks in central Utah identified in the DEIS and Air Quality Technical Document are adverse effects, a refined modeling analysis should be conducted to estimate effects to visibility more accurately. This modeling should be accomplished using the EPA CALPUFF modeling system. A written protocol for this analysis should be submitted to the EPA, NPS, and State of Utah for approval before the actual modeling is conducted. (FG–01)

   Response: *This air quality analysis has demonstrated a potential adverse effect at Class I areas using conservative analysis methods. The analysis demonstrated that the cumulative effect of 12 Ferron and five Price CBM gas-fired compressors would have an adverse impact on Class I areas. It is the responsibility of the Utah Division of Air Quality to make the final permitting determinations during the permitting process when specific plans of operation and size and location of individual compressors are known. The Utah Division of Air Quality may require a CALPUFF-type analysis when they believe a level of development is approaching that may adversely affect Class I areas.*

9. The FEIS should discuss, in detail, mitigation measures to reduce the impacts to visibility at the three national parks. Mitigation measures could include electric compressor engines, very-well controlled natural gas fired compressor engines, and offsets of nitrogen oxide emissions from the nearby power plants. (FG–01)

   Response: *The FEIS (Section 4.3.3) has recommended mitigation in the form of reduced emissions for gas-fired compressors or solely the use of electric compressors.*

10. A statement should be added to the FEIS that addresses the highly conservative approach used in the air modeling and that this approach tends to over-predict the emissions' impacts. (B/I–01, B/I–10)

    Response: *A statement has been added to the air quality analysis for the Proposed Action (Section 4.3.1.1) concerning the conservative nature of the analysis. The mitigation recommended for Alternative 2 demonstrates that air quality and visibility impacts at Class I areas would be reduced when applying the refined emission and stack parameters that have been determined to be attainable. These parameters are:*

    emission rate: 0.7 gm/hp-hr
    stack height: 17.1 m,
    stack diameter: 0.356 m,
    exhaust temperature: 739.7 K
    exhaust velocity: 72.1 m/s
    building downwash for compressor buildings 28 ft high, 65 ft X 35 ft

11. The use of 400°F and its associated exhaust velocity hurts the air quality modeling. A lean burn engine (Caterpillar or Waukesha) will have an exhaust temperature in the range of 650 to 900°F. The modeling needs to be redone with higher exhaust temperatures and associated velocities to determine if the greater plume rise will yield a lower, annual maximum NO_2 concentration for the Ferron project engines. Using 400°F contributes to causing the NO_2 to exceed the 25 μg/m3 NO_2 increment. Possible this increment exceedence would not have been an issue in the report if a reasonable temperature and velocity had been used in the first place. (B/I–01, B/I–06)

    Response: *You are correct in your assumptions. The analysis in the FEIS for mitigation recommended for Alternative 2 verifies your assumptions. When refined emission and stack parameters are analyzed, there would be no exceedances of the PSD Class II increment from the FNG Project's engines.*

12. Is it OK to use an ISC, short-term model to predict annual concentrations? The model selected was the ISCST 390, which by its definition (SC for short term) means for short-term use. (B/I–01)

    Response: *The use of the ISCST390 dispersion model is recognized by the EPA for permitting of most air pollutant sources in the United States. The terminology "short term" refers to the form of the model that uses from one to five years of hourly meteorological data either measured at the proposed site or close enough to the proposed site to be recognized as representative of the site.*

13. The use of upper air meteorological data from Salt Lake City may not be suitable for the area of the project and Capitol Reef National Park, where haze problems are predicted. The use of the upper air data may predict erroneous concentrations and should not be relied on to evaluate this project. These data could prematurely condemn the use of lean burn engines because of the unreliable results generated by the model. (B/I–01, B/I–06)

    Response: *Compilation of a meteorological data set for dispersion modeling is a complex process. The first step of the process is to collect data (wind direction, variation of wind direction, wind speed, variation of wind speed, temperature, pressure, humidity, and solar radiation at the 10-meter level) at the proposed site for at least 90 percent of all hours in a minimum period of one year. Atmospheric stability (the ability of the*

atmosphere to vertically disperse air pollutants) can be calculated either using the variation (a degree of turbulence) of the wind speed and direction, or by calculating the solar radiation and the temperature variation between the surface and the 10-meter level. The next step is to calculate the mixing height, the height to which pollutants may be vertically dispersed from the height of release to the atmosphere. This data can only be calculated from sites where the National Weather Service measures the vertical profile of the atmosphere (up to approximately 100 km) every 12 hours every day of the year.

For the Ferron Natural Gas Project air quality analysis, the Utah Division of Air Quality provided the BLM with a two-year data set that had been processed. The surface data was collected at Clawson for a two-year period. Upper air data was available from Salt Lake City and Grand Junction, Colorado. Because Salt Lake City is slightly closer to the Price area and the data was to be used for permitting procedures in Utah, the use of Salt Lake City data was selected.

14. Predicted regional haze values are based on using upper meteorological data from Salt Lake City for the data over the Ferron project sources and over Capitol Reef, Canyonlands, and Arches national parks. Also, the study assumed the two years of Clawson site ground level meteorological data is typical of what the weather pattern would be over the three National Parks. A look at a USGS topographic map shows that a 7,000- to 10,000-foot mountain range runs north to south on the west side of the Ferron Project Area. The Ferron project sources are at an elevation of about 6,000 feet. The use of Clawson meteorological data (at 5,900 ft elevation) along with the upper air data from Salt Lake City probably yields results not typical of what they would be if actual meteorological were available for the modeling. The haze projections at the northern most boundary of the Capital Reef National Park should not be assumed reliable. The mountain range is only 8 to 10 miles to the west of the Park receptor and the wind patterns coming off these high mountains are probably different in magnitude and direction than the meteorological data from Salt Lake City and Clawson. The haze projections presented in the report are not reliable enough to base pass or fail judgement on the project. (B/I–01, B/I–06)

Response: *You are correct in assuming that the wind flow patterns may be different at Capitol Reef. However, no meteorological data has been collected at Capitol Reef. A more sophisticated model, CALMET/CALPUFF, is available to simulate long-range transport of pollutants to distant locations and includes atmospheric chemistry algorithms to more correctly predict the transformation from NO_x to ammonium nitrates for visibility calculations. This model incorporates terrain effects and simulated meteorological fields which vary over time and space. This model could be required to be used by the Utah Division of Air Quality if the development of the Ferron and Price CBM projects actually reaches a level where visibility may be adversely affected at Class I areas.*

15. The modeling provides NO_2 results for a receptor located outside Capitol Reef National Park's boundary, according to the 1:250,000, USGS, SALINA, Utah, topographic map. The receptor is about four km east of the closest Capitol Reef boundary. Additionally, nine of the first 20 receptors used in the modeling are based on this particular receptor. (B/I–01, B/I–06)

Response: *According to the USGS Fruita NW 7.5 minute quadrangle, the point in question is located 1,000 feet north of the Capitol Reef boundary in Township 27 South, Range*

7 East. Although the area is not explicitly surveyed, this approximate location would be in Section 7 of this Township-Range block. Although this location is slightly north of the Capitol Reef boundary, it has been chosen by the Utah DEQ as a representative area to evaluate potential visual effects at Capitol Reef.

16. The DEIS states that companies would apply dust suppression techniques, such as watering or chemical application. Our concern is that chemical application such as magnesium chloride can be very expensive and often times not necessary. As long as water can be used and is an effective technique this is preferable mitigation. We support the restrictive application of this requirement to residential areas and in areas of intense traffic congestion. (B/I–01, B/I–02, B/I–06, B/I–10)

    Response: *The mitigation recommended in Section 4.3.3 stated that dust suppression techniques should be used along roads near residential areas and at congested project traffic areas. The mitigation did not recommend any specific method of controlling dust. The application of either water or chemicals on roads would be decided on a site-specific and case-by-case basis when APDs are evaluated.*

17. BLM's jurisdiction on air issues is clearly limited, even when the issue is to protect Class I airsheds in national parks. The National Park Service has imposed a 5 percent visibility reduction standard, but this has no regulatory impact. While it may be appropriate for the BLM or National Park Service to make recommendations to Utah Department of Environmental Quality (UDEQ) on emission controls or limits, they must generally defer to the state agency on regulating oil and gas activities on air quality issues. UDEQ — Air Quality Division has primacy in regulating oil and gas activities and in permitting facilities with regard to the emissions of hazardous air pollutants and other matters affecting air quality. (B/I–01, B/I–02, B/I–06, B/I–10)

    Response: *The FEIS analyzes the potential effects to air quality and visibility when more refined and attainable emission limits and stack parameters are considered. The FEIS analyzes and discloses the potential adverse effects if the Ferron and Price CBM projects reach a full level of development with all natural gas-fired compressors. The Utah Division of Air Quality will evaluate the potential effects of each proposed compressor during the permitting process. The Utah Division of Air Quality may require a more sophisticated visibility modeling exercise, for example the EPA model CALMET/CALPUFF, if a level of development is reached that may adversely impact visibility at Class I areas. Furthermore, if development reaches a level where the any more gas-fired compressors would cause adverse visibility impacts, the Utah Division of Air Quality would have the authority to require that any subsequent compressors may have to be powered by electricity.*

18. The use of the most conservative operating parameters coupled with the conservative nature of the models used (15C5T390) tend to produce impacts in excess of the actual effects on the surrounding environment. Several of these parameters should be altered to reflect higher stack heights (3 feet above the roof height), higher exhaust temperatures, increased exhaust flow rates, and actual stack diameters. The results of these models could be shown in comparison to the more conservative approach, thereby providing a range of emission impacts. (B/I–02, B/I–06, B/I–10)

    Response: *Potential air quality impacts for the Proposed Action and the recommended mitigation present a range of impacts. The mitigation recommended for Alternative 2*

demonstrates that air quality and visibility at Class I areas impacts would be reduced when applying the much more refined emission and stack parameters as follows:

emission rate: 0.7 gm/hp-hr
stack height: 17.1 m,
stack diameter: 0.356 m,
exhaust temperature: 739.7 K
exhaust velocity: 72.1 m/s
building downwash for compressor buildings 28 ft high, 65 ft X 35 ft

19. The use of less conservative operating data also would help to alleviate potential for exceedences of the Class II PSD increment at the "few locations on elevated terrain in the immediate vicinity of some compressors due to direct impacts" The potential to exceed the Class II PSD increment will place leaseholders in a position of having to install more stringent controls on the compressor engines, possibly limiting hours of operation or even having to go with "rich burn" engines with Non-Selective Catalytic Reduction Systems (NSCR) with air/fuel ratio controllers. With more reasonable input parameters more stringent controls will not be necessary. (B/I–02, B/I–06, B/I–10)

    Response: *You are correct that less conservative operating data would reduce the potential impacts especially to exceedances of the Class II PSD increment. The analysis shown as mitigation indicates that the emission limits of compressors operating at an emission rate of 0.7 grams per horsepower-hour would not result in any Class II PSD increment exceedance directly from the project's compressor engines.*

20. Please note the "windrose" (Figure 3–13) indicates the predominant winds are from the North/Northwest and the West. This conclusion seems reasonable when coupled with the modeled prediction that the highest annual NO_2 concentrations predicted at the nearest Class I location at Capitol Reef National Park (77 kilometers to the south) is 0.062 $\mu g/m^3$. However, the ability of the models to predict, with any degree of accuracy, concentrations at these distances is questionable due to terrain and varying wind patterns. It would be interesting to see the windrose for the Capitol Reef National Park area and have that referenced in the FEIS. (B/I–02, B/I–06, B/I–10)

    Response: *No meteorological data have been collected at Capitol Reef. The ISCST390 model is conservative, particularly at distances over 50 km.*

21. The GRI-HAPCALC modeling program for predicting Hazardous Air Pollutants as a comparison to the data provided in AP–42 should result in lower concentrations of HAPS. (B/I–02, B/I–06, B/I–10)

    Response: *The GRI-HAPCALC model was used to predict hazardous air pollutant impacts from the amine and dehydration units (see Section 4.3.1.1.2.10).*

22. Given the very low emissions impact at Capitol Reef National Park of 0.062 $\mu g/m^3$ and the wind patterns, it is hard to believe the regional haze impact would be this significant. The modeling appears to be predicting conflicting results. (B/I–02, B/I–06, B/I–10)

    Response: *Your comment refers to the average annual NO_2 concentration at Capitol Reef. Visibility impacts are related to the 24-hour average concentrations. While the annual*

wind flow may be away from a particular area most of a given year, the remainder of the time that the wind flows toward the area may be enough to cause visibility impact.

23. Since the proposed Ferron compressors would contribute only 1.2 percent of the NO_x emissions in the area, the viability of the regional haze predictions are questionable. How can an increase of only 1.2 percent result in predicted visual resource degradation of 5 to 10 percent on 18 days at Capitol Reef National Park when the near-field regional haze is only impacted for 2 days of visibility reduction of more than 10 percent? (B/I–02, B/I–06, B/I–10)

    Response: *Potential visibility impacts at distant locations can occur with very low concentrations of pollutants regardless of the total emissions. The apparent discrepancy between the near-field and far-field modeling analysis is due to the differences in modeling approaches.*

24. To the best of our knowledge, River Gas has only two natural gas fired compressors, not five. (B/I–02, B/I–06, B/I–10)

    Response: *The selected alternative in the Price CBM FEIS identified five potential natural gas fired compressors that may be installed in the future. Therefore, this level of gas fired compressors was analyzed in the air quality cumulative impact analysis because five compressors were determined to be a reasonably foreseeable future action. The FEIS acknowledges that all five natural gas compressors may not be installed in the Price CBM development. The cumulative impact of adding 12 Ferron compressors and five Price CBM compressors has been analyzed. If some of the Price CBM or Ferron compressors are not installed or operated with electric power, the air quality and visibility impacts would be less than analyzed.*

25. The DEIS includes no modeling of the possible emissions associated with the RFD scenario. Instead, the DEIS indicates additional compressors would be necessary and the impacts would be similar to the Price CBM and Ferron Natural Gas projects. If this is the case, and no mitigation measures, such as electric compressors are implemented, the visibility degradation at Capitol Reef National Park could be increased by an order of magnitude. (FG–02)

    Response: *The FEIS acknowledges that potential adverse impacts to visibility at Class I areas would occur if the full development of all natural gas fired compressors is reached for the Ferron and Price CBM compressors. Furthermore, it is acknowledged that the Utah division of Air Quality would evaluate the effects of incremental compressors during the permit process. The Utah Division of Air quality may require more refined visibility modeling, for example using the CALMET/CALPUFF model, if the development indicates a potential adverse impact on visibility at Class I areas. The Division may require that any further installation of compressors has to be electrically powered to prevent adverse impacts on visibility. Under the RFD scenario, it is likely that future compressors would have to be electrically powered to prevent adverse impacts to visibility at Class I areas.*

26. Section 4.3.3 of the DEIS discusses mitigation that could offset the visibility degradation from the Ferron and Price CBM projects. Although the discussion suggests the mitigation would eliminate days of 10 percent or higher visibility reduction, it offers no conclusion about the 5 percent visibility reduction level that is considered significant by the NPS. The FEIS needs to address the 5 percent

visibility reduction level with the mitigation considered for the 10 percent visibility reduction level. (FG–02)

Response: The FEIS addresses both the five and ten percent visibility potential effects (see Sections 4.3.3.3 and 5.3.3.4).

27. Potential mitigation measures should be incorporated into the alternatives discussion in a fashion similar to the discussion of BMPs for surface-disturbing activities. (FG–02)

Response: The option for use of electricity to power production facilities was included in Alternatives 1 and 2. Other measures to mitigate impacts to air quality were not incorporated into Alternative 2 similar to the BMPs for surface activities. Many of these other measures would be the responsibility of State regulatory agencies and outside of BLM jurisdiction.

28. Section 4.4.3, Mitigation (page 4–27 of the DEIS) does not address fugitive dust. In light of the air quality analysis, appropriate measures need to be added. (LG–02)

Response: Mitigation to reduce fugitive dust is discussed in Section 4.3.3.

29. Section 4.3, AIR QUALITY (page 4–15) The Council and the Department concur with the information contained in this section with the exception of language found at Section 4.3.3 Mitigation (page 4–23). We recommend that the companies propose watering or other dust suppression techniques on roads during operational use periods, in addition to the required dust suppression during construction activities. Additionally, it is recommended that the last sentence of the third paragraph at Section 4.3.3 be modified to read, "Dust suppression shall be applied along roads near residential areas and at congested project traffic areas." (LG–05)

Response: The mitigation described in Section 4.3.3 was developed through the analysis in the DEIS. This mitigation is recommended to the BLM authorized officer to make the decision whether to implement the mitigation in the Record of Decision.

30. Regional haze is identified as an issue but is not discussed in the Affected Environment. Regional haze is a national concern over Utah's National Parks. It is also a concern of local residents. There has been significant degradation of visual range over the last 20 years (EPA). For analysis of regional haze to be meaningful, the present, already degraded situation must be disclosed. The affected environment should describe and quantify the present situation including the trends of the last 20 years, both for Class I airsheds and for the local area. (I–29)

Response: The 1995 IMPROVE data from Canyonlands National Park was determined by the National Park Service and the Utah department of Environmental Quality as the latest and most representative background visibility data for National Parks in central Utah. Visibility data has been collected at Canyonlands since 1987. Measurements of visibility was discontinued at Arches National Park in 1993. Data has never been collected at Capitol Reef National Park. Therefore, the National Park Service determined that the data from Canyonlands should be use to represent the background condition at Capitol Reef and Arches National Park.

The potential effect to visibility in the Price area was identified as an issue for the EIS. The U.S. Congress has decided that visibility standards would be protected only in Class I areas through the New Source Review permitting process. The State of Utah Department of Environmental Quality manages the New Source Review process and evaluates the potential of any large pollutant source to degradate visibility at Class I areas. Neither the U.S. Congress, the EPA, nor the State of Utah have established any visibility standard. In spite of the lack of standards, the analysis included a numerical estimate of visibility impacts in the Project Area to include much of Carbon and Emery Counties (see Section 4.3.1.1.2.9).

31. The Affected Environment discusses the presence of persistent inversions in the winter time. Along with this there should be discussion that identifies mixing heights and the potential for photochemical smog. Along with low level, persistent inversions, the Project Area enjoys many bright, sunny days in the winter. With increases in NOx, it would seem the potential for photochemical smog would be high. In fact. it is commonly seen here in the winter. Monitoring and analysis should not be delayed until such time as we are a non-attainment area. Air quality that is "better than Orem on a bad day," is not good enough. (I–29)

    Response: *Potential air quality impacts are disclosed in Section 4.3 of the FEIS.*

32. Fugitive dust. This section should disclose the impacts of dust from roads on the following users: hikers, runners and bicyclists using the trails system. Currently on many of the trails such muscle-propelled users are exposed to high concentrations of dust from passing vehicles. Because these folks are frequently breathing heavily through the mouth (bypassing the nasal air filters) they inhale large amount of dust. I have observed people forced to quit their activity to recover from dust aspiration. The statement that dust would provide no threat to human health and safety is an unsubstantiated conclusion. In addition to dust ingestion by trails users, dust presents a safety risk to trails users due to reduced visibility. The second vehicle, following in the dust plume may not see the trail user. Residents in north Price, have already experienced and increase in dust in their homes due to traffic on CUM roads. Increased home maintenance costs again represent an externalization of gas production costs. These impacts and associated costs should be analyzed and best available technology proposed for mitigation. (I–29)

    Response: *Dust impacts were discussed in Section 4.3.1.1.2.1 of the DEIS. Your suggestions concerning dust effects on muscle-propelled users have been included in the FEIS under the Recreation impacts section.*

33. Visibility Impacts. This analysis uses the wrong baseline — standard visual range measured in 1995. That reflects an already severely-degraded condition. Would there be an increase in the number of days that visibility is reduced in the National Parks? If no increase in the number of days with decreased visual range, would average visual range be reduced? Would it be any worse on the worst of days? Is any additive effect acceptable when the present situation exceeds the Class I air quality standard? Also, visual range was identified as a local concern regardless of what happens in the Parks. What is the effect on visual range for local residents during typical winter inversion conditions? There are no standards established for the Project Area that can be violated, however, this EIS should analyze and disclose the local impacts because the citizenry raised it as an issue. Also, impacts should be quantified, in miles because percentages depend on what is used as a base. (I–29)

Response: *IMPROVE data has been collected at Canyonlands National Park since 1987. The 1995 data was selected by the National Park Service and the State of Utah as the most representative year and thus reflects the current condition. The major sources in Castle Valley, i.e., the coal-fired power plants, have been operating since the late 70s and early 80s. Therefore, they are in the background data that serves as the baseline to evaluate future changes, i.e., the Ferron and Price CBM natural gas-fired compressors. The analysis in the DEIS evaluated the changes that may occur in visibility as a result of Ferron and Price CBM compressors all operating at an emission rate of 2.0 grams per horsepower-hour. The FEIS analyzes mitigation that reduces the emissions to 0.7 grams per horsepower-hour and uses more refined stack and exhaust parameters. The FEIS addresses potential visibility impacts at three National Park Service Class I areas and analyzes effects on local visibility.*

The DEIS did analyze potential effects to local visibility (see Section 4.2.1.1.2.9). Since a full year of meteorological data (two years in the FEIS) collected at Clawson was used to simulate meteorological conditions, the analysis included days with inversions.

34. Does this analysis include the contribution of the Hunter 4 power plant should it be completed? This power plant is already approved and partially constructed. It is not mentioned as a potential source even in the Cumulative Impacts Chapter. (I–29)

Response: *PacifiCorp and the Utah DEQ were contacted on this issue. PacifiCorp has withdrawn its permit application to construct Hunter Unit 4.*

35. Section 4.3.3 Mitigation. This section is weak and ineffective. "Dust suppression should be applied along roads. What is the effect of this mitigation? How and what kind of dust suppression? What is the effectiveness of dust suppression? The fact the companies have not volunteered to mitigate this impact is immaterial. Since when is mitigation only what a project proponent volunteers to do? (I–29)

Response: *The FEIS indicates that dust suppression (either watering or chemical application) reduces dust by 50 percent on the average. The difference between proponent-committed control measures and mitigation developed through the EIS analysis process are identified in the FEIS. The mitigation of applying dust suppression along roads near residences and at congested project traffic areas was not proposed by the Companies nor is required by the State of Utah Air conservation Rule R307-12-1. This mitigation was developed in response to public scoping issues and analysis and is disclosed in the EIS process for the decision maker to consider.*

36. 4.3.4 Unavoidable adverse impacts. The statement that there are no unavoidable impacts to air quality is an unsubstantiated conclusion. The fact that pre-project conditions may return in 20+ years may indicate there is no irretrievable loss of air quality. The human health risks associated with dust are not unavoidable. The loss of visual range may or may not be unavoidable, it is impossible to determine from the analysis presented. (I–29)

Response: *Section 4.3.4 has been revised.*

37. The proposed project is in an area already inundated by large quantities of NO_2 emissions from three major power producers. The Utah Division of Air Quality (UDAQ) remains concerned that ambient levels of NO_2, well above the normal rural background, increases the risk of localized exceedences of the National Ambient Air Quality Standard (NAAQS), as well as the overall visible deterioration of the airshed in a fairly pristine area of our state. The Division would welcome the introduction of an ambient NO_2 monitoring site to the western Castle Valley area to track increases in annual levels of NO_2 as this project and other proposed coalbed methane extraction projects develop over the next few years. This data would also be very helpful in evaluating of the deterioration in background visual range at the five Class I areas in southern Utah, maintained by the National Park Service (NPS). (SG–01)

    Response: *The BLM agrees and is willing to work with the Utah DEQ concerning these issues.*

38. Modeled impact of IC compressor sites in the DEIS suggest the potential for exceedences of the annual NO_2 Prevention of Significant Deterioration (PSD) increment in areas of elevated terrain. Actual site location information in the DEIS has not been specified in this early state of project development. In the event that the project continues to propose IC compressor sites, these sites will be required to obtain Approval Orders from the Division prior to construction. The Division will re-evaluate each specific site for localized pollutant dispersion, and their impacts on the federal standards at that time. The proposed project's developers should recognize the importance of site location and dispersion techniques in reducing ambient impacts on this area. (SG–01)

    Response: *The analysis in the DEIS did indicate a possibility of PSD Class II increment exceedances. The FEIS acknowledges the Utah Division of Air Quality's responsibility during the permitting process to evaluate all air quality and visibility impacts. The mitigation present in the FEIS demonstrates that potential impacts could be mitigated with more refined and readily attainable in the industry emission factors.*

39. The information in the DEIS concerning potential impacts on Class I area visibility should be considered unacceptable from a multi-agency standpoint. The reported 'multiple exceedences of the 10 percent reduction in visual range level' each year in Class I areas surpass levels considered acceptable for protecting visibility. It is my feeling that the data used in the analysis may be overly conservative, and the predicted impact over stated. We ask that this data receive further review in the EIS process to determine its accuracy and to establish whether of not the proposed impact on visibility is as significant as is stated. Should further review validate the previously predicted impact, FLM agencies should consider requiring the electric compression option mentioned in the EIS to be used throughout the coalbed/methane extraction project area. (SG–01)

    Response: *In the absence of specific design and engineering specifications, reasonable but conservative assumptions were analyzed for compressor emissions and stack parameters. Additional analysis has been performed, to evaluate additional mitigation, considering more refined emission factors and stack parameters. The analysis has demonstrated that the reduced emission factors for the Ferron Natural Gas Project would result in acceptable direct impacts to the Class I areas. When both the Ferron Natural Gas Project and the Price CBM compressors were considered cumulatively, the cumulative effects would be acceptable when modeling the scenario with the 1986 Clawson meteorological data, but adverse cumulative impacts may occur when modeling with the 1987 Clawson data. The level of acceptable impacts*

analyzed in the EIS is a reduction in Standard Visual Range of less than 10 percent at Class I airsheds.

Additionally, the Proposed Action and Alternative 2 analyze air quality effects if the field is totally electric powered. Obviously, no adverse air quality impacts would occur under this scenario because no pollutant emissions from compressors would occur.

During the permitting process, the UDEQ may require more sophisticated modeling (for example CALPUFF) at the point in time when specific engineering and operating parameters are submitted for permit considerations. Also, while the BLM may recommend the use of low-emission natural gas compressors or electrically powered compressors, it is recognized that the UDEQ has the final authority to limit the level of compressor emissions. It is further acknowledged that the UDEQ may require the use of electric compressors if it deems it necessary.

Soils

1. The Environmental Protection Measures presented in Section 2.2 of Chapter 2 would require leaseholders to avoid construction on frozen or saturated soils without any criteria defined for making this determination. The authorized BLM officer will determine what is "wet, muddy, or frozen based on weather and field conditions at the time." The BLM should identify such criteria in the FEIS. (B/I–06, B/I–10)

   Response: *This Environmental Protection Measures were developed from the land management plan. The criteria depend upon the specific soil type, weather conditions, and anticipated use. The decision to avoid construction at any specific time would depend upon these factors applied on a case-by-case basis.*

2. Section 4.4, SOILS (page 4–24) The Council and the Department concur with the information contained in this section and we support Alternative 2, as discussed at Section 4.4.1.2 (page 4–25), but, we suggest the mitigation language at Section 4.4.3 (page 4–27) be modified by replacing "should" with "shall". (LG–05)

   Response: *This section refers to mitigation developed through the impact analysis in the DEIS. If the authorized officers for the BLM and Forest Service implement the mitigation in the Record of Decisions, the action verb would be "shall" in the Record of Decisions.*

Vegetation

1. Page 4–28 – 4.5 Vegetation: The DEIS does not describe the impacts of project construction on the vital seed banks that occur in the soils. In deserts, with variable environmental conditions (i.e. temperature, precipitation, etc.), all plants do not grow each year and seed banks are important sources for a species to remain viable. Removing vegetation and top-soil for project facilities results in loss of the seed bank and changes in vegetation composition (invasion and introduction of noxious weeds). This impact should be included in the EIS. (FG–03)

   Response: *Some seed bank would be lost temporarily. However, the Reclamation Plan (Appendix A) and Weed/Vegetation Management Plan (Appendix C) compensate for these losses.*

2. The requirement to clean and wash vehicles and equipment, entering from out of county, is unreasonable. We are unaware of any such requirement in the leases, BLM regulations or any additional law. (B/I–01, B/I–02, B/I–06, B/I–10)

   Response: *The recommended mitigation to wash vehicles and equipment entering the Project Area has been reviewed and determined to be user specific and arbitrary. The Companies' Weed/Vegetation Management Plan (**Appendix C**) coupled with Federal, State, and County requirements for control of noxious weeds has been determined sufficient.*

3. Section 4.5, VEGETATION (page 4–28) The Council and the Department concur with the information contained in this section and are supportive of the proposal, in this section and elsewhere in the DEIS regarding reclamation of portions of the disturbance not needed for facilities or operational activities. (LG–05)

   Response: *Comment noted, thank you.*

4. Regarding Land Exchange, discussed at Section 4.5.5 (page 4–35), we are hopeful that SITLA will adopt a position consistent with Alternative 2. (LG–05)

   Response: *Comment noted, thank you.*

Riparian Areas

1. Page 4-35 and 4-36 - 4.6.1.1 Alternative 1 — Proposed Action: The DEIS states that no specific reclamation is proposed for riparian areas that are disturbed by facility placement, and thus it is anticipated that long-term impacts to the Huntington and Cottonwood Creeks riparian communities would occur as a result of the project. Page 3–67 (Section 3.5.2.11) states that riparian and wetland communities account for 889 acres, less than 1% of the Project Area. Riparian areas are important habitat for a variety of wildlife species. In southeast Utah, 72% and 52% of all vertebrate species in submontane and montane ecological associations, respectively, utilize riparian areas. Approximately 1.1% of the riparian and wetland communities in the Project Area will be lost because of project impacts. Mitigation and reclamation plans should be developed and implemented to offset this loss. (FG–03)

   Response: *As discussed in Section 4.6.3, Mitigation, of the DEIS and FEIS, mitigation measures were developed for Alternative 1 to address potential effects to riparian areas on federally-administered lands. These measures include the environmental protection measure identified for Alternative 2 and the use of containerized plants to reclaim riparian areas. However, readers must understand most of the affected riparian areas under all three alternatives were involved in the land exchange and have changed to state ownership. All disturbed areas on federal lands would have reclamation requirements, which would include measures to offset any losses to riparian areas.*

Wildlife

1. The Price Coalbed Methane and Ferron Natural Gas projects would develop substantial portions of crucial big game winter range, which would cumulatively affect the number of deer and elk wintering in the combined project areas. The combined developments would leave insufficient areas

for wintering big game to escape disturbances. Measures proposed in the DEIS are insufficient to mitigate the reduction in populations likely to occur under the alternatives considered, particularly during a hard winter. The FEIS should consider additional mitigation measures, such as a few winter "security" areas on crucial big game winter range. (I–03, I,–04, I–09)

Response: *As discussed in Section 2.4.2 of the DEIS, exclusion areas, such as "wildlife security areas", were considered as an alternative to the three alternatives considered in detail. But, the parcels of land within the Project Area that made sense biologically and could function effectively as wildlife security areas overlapped with entire leases held by the Companies. Due to this overlap, the BLM would prohibit development of these leases if the project's operations were excluded from the security areas. Thus, the ID team was unable to delineate wildlife security areas that did not prohibit development of an entire lease in the Project Area while still making sense biologically.*

2. The DEIS does not address the cumulative effects of the Ferron Natural Gas Project and the Price Coalbed Methane Project. (E/C–01, I,–04, I–09)

Response: *The DEIS did address the cumulative effects of the Ferron Natural Gas Project in conjunction with other projects in Carbon and Emery counties, including the Price Coalbed Methane Project. An entire chapter (Chapter 5 in both the DEIS and FEIS) is devoted to the presentation of the results of the cumulative effects analysis.*

3. The DEIS does not provide for or adhere to the newly-proposed USFWS Utah Field Office Guidelines for "Raptor Protection Proximal to Disturbance from Land Use Activities". To avoid impacts, the project should adhere to these guidelines. (E/C–01, I,–04, I–09, SG–02)

Response: *The ID team considered the proposed guidelines (USFWS 1998b) in the impact analysis and developed specific environmental protection measures that address these guidelines. For more details, please review the environmental protection measures for special-status species discussed in Section 2.2 of Chapter 2 in the FEIS.*

4. The DEIS does not address damage to fisheries from new roads built across streams nor does it provide for mitigation for this damage. (E/C–01, I,–04, I–09)

Response: *The network of roads was considered in the analysis of impacts to aquatic species. Unfortunately, the discussions for each alternative in Section 4.7.2 only mentioned crossings of streams by pipelines. These discussions were supposed to address crossings by both pipelines and roads. The discussions of effects to aquatic species for each alternative have been revised to include results of the analysis of crossings of streams by roads. Please refer to the sections on aquatic species under Section 4.7.2 to reviewed the revised discussions.*

5. The mitigation proposed in the DEIS does not adequately address the real wildlife losses. The construction of project facilities in crucial big game winter range would have serious negative effects on the carrying capacity of the deer and elk critical winter range and migration pathways. The FEIS should consider excluding development in crucial winter range areas or creating security areas in these locations for wintering big game. (E/C–01, I,–04, I–09, SG–02)

Response: *See response to wildlife comment 1. Also, the wildlife discussion has been revised to disclose effects on carrying capacity. Please refer to Section 4.7.2 to revise the revisions.*

6. The DEIS only evaluates acres directly affected and indirectly affected by the project. It does not evaluate the population losses due to the construction and completion of the alternatives, particularly losses due to a decrease in carrying capacity of winter ranges that will limit the number of animals UDWR would be able to manage within the four local herd units. No estimate of the actual decrease in numbers of harvestable big game is provided. The FEIS must indicate that big game populations in the four herd units are increasing in size and UDWR will have to manage them below the state management objectives for harvest in each unit. (E/C–01, I,–04, I–09, SG–02)

   Response: *The discussions of effects to mule deer and elk have been revised to reflect the effects of reducing carrying capacity on the UDWR's ability to fully attain its objectives for populations of these animals in the herd units encompassing the Project Area. Please refer to the individual sections on mule deer and elk under Section 4.7.2 of Chapter 4 to review the revisions.*

7. The DEIS does not address vehicular travel on roads that will result in higher winter fatalities. Also, it does not mention losses to resident predators, such as bobcat and mountain lions. (E/C–01, I,–04, I–09)

   Response: *The effects of vehicular traffic on wildlife was addressed in Section 4.7.2 of the DEIS and is addressed in the FEIS. Additional discussions were added to the mule deer sections under Section 4.7.2 that discuss the likely effects on predators, such as mountain lions, of lower populations of mule deer in the Project Area. Please refer to the mule deer sections under Section 4.7.2 to review these revisions.*

8. Work on wells during the critical winter period should be coordinated ahead of time with UDWR habitat biologists and the regional manager to minimize disturbances as much as possible. (I,–04, I–09, SG–02)

   Response: *The BLM and Forest Service encourage the Companies to coordinate with biologists of both agencies and the UDWR to the extent feasible before conducting maintenance efforts to minimize disturbances when the animals occupy their winter ranges. However, the BLM and Forest Service recognize emergency work probably cannot be coordinated ahead of time.*

9. UDWR's biggest concerns are with the number of roads through the priority and critical winter range and the cumulative effects from the "spiderweb" network of roads from Helper to Ferron due to the Price Coalbed Methane Project and Ferron Natural Gas Project. If implemented, the Ferron Natural Gas Project will enhance existing two-track and unimproved roads as well as build additional roads, which will result in a dramatic increase in the vehicular travel and disturbance in this area, at least during periods of construction and development. (SG–02)

   Response: *The ID team agrees that the two projects together would increase the number of miles of roads in the Project Area. As discussed in Chapter 2 and the mitigation sections of Chapter 4, several environmental protection measures and mitigation measures were*

developed to reduce the adverse effects of this new construction of roads. Please refer to Section 2.2 and 4.7 to review these measures.

10. Information from UDWR's Law Enforcement has shown a dramatic increase in the illegal harvest of big game in the currently developed Coalbed Methane Project. (SG–02)

    Response: *The ID team acknowledges that illegal harvests could increase with implementation of the alternatives. This acknowledgment has been added to the discussion of effects on wildlife in chapters 4 and 5. Please refer to sections 4.7.2 and 5.3.7 to review this revised discussion.*

11. Page 3–75 – 3.7.2.2 Raptors: The first paragraph states that surveys and other observations have documented the presence of nests for five species: golden eagle, ferruginous hawk, red-tailed hawk, prairie falcon, and peregrine falcon. Page 3–85 (Section 3.8.2.1 Bald Eagle) states one bald eagle nest is located within the Project Area. We believe the document should be consistent. (FG–03)

    Response: *The introductory sentence of Section 3.8.2.1 has been modified to clarify the inconsistency. Please refer to this section to review the revision.*

12. Page 4–38 – Section 4.7.2.1.1 Aquatic Species: This section should be expanded to include all impacts to the fishery (inside and outside the Project Area, particularly downstream) resulting from increased sedimentation (Page 4–7), temperature (Page 4–36), and potential impacts resulting from oil spills (increased contaminants during spring run-off or summer thunderstorms for well pads located within the floodplain or channel bed). These impacts can include loss of spawning (direct loss due to construction and indirect loss due to changes in habitat, embeddedness, etc.), changes in fish composition with increased water temperature, and direct mortality. (FG–03)

    Response: *Additional information has been added to this section to expand the discussion of impacts to aquatic species. Please refer to Section 4.7.2.1.1 of the FEIS to review these revisions.*

13. Page 4–38 – Section 4.7.2.1.1 Aquatic Species: Construction of pipelines through perennial streams should be conducted during low water periods, and avoid critical spawning periods. Increased sedimentation can result in filling of interstitial spaces and the loss of eggs or fry in spawning gravels. The UDWR should be contacted to determine dates of fish spawning in the Project Area. (FG–03)

    Response: *The analysis determined fisheries in the Project Area are limited. COE permitting required for crossings of streams would address sedimentation. Also, no perennial streams would be crossed on BLM lands.*

14. Page 4–42 – 4.7.2.1.2.4 Raptors: Number 3 of the first paragraph states temporary reductions in prey populations. This statement probably should read: "temporary or permanent reductions or changes in the prey populations." A fourth potential impact includes an increase in territory size that could result in decreased raptor populations. (FG–03)

    Response: *This paragraph was revised in response to this comment. Please refer to Section 4.7.2.1.2.1 to review the revisions.*

15. Page 4–43 – 4.7.2.1.2.4.1 Nesting Related Impacts: The DEIS states that wells, access roads, or other facilities would be constructed within 0.5 mile of raptor nests under Alternative 1. The protection measures identified for Alternative 2 should be followed to protect raptors and their habitat. (FG–03)

    Response: *Alternative 1 is the Proposed Action, which is the Companies' proposal for the Ferron Natural Gas Project. The Companies did not propose to avoid construction of aboveground facilities within 0.5 mile of raptor nests. Consequently, the environmental protection measures included with Alternative 2 were not incorporated into Alternative 1. However, the decision makers for the BLM and Forest Service could elect to include any of the environmental protection measures as mitigation, if they select Alternative 1.*

16. Page 4–43 – 4.7.2.1.2.4.2 Buffer Zones: Please provide a discussion on impacts to raptors resulting from workover and emergency workover situations. Increased activity around an active raptor nest may result in abandonment and loss of eggs or young. (FG–03)

    Response: *Additional discussion about the effects of activities at constructed well sites has been added to Section 4.7.2.1.2.4.2. Please refer to this section to review these revisions.*

17. Page 4.44– 4.7.2.1.2.4.3 Prey-Related Impacts: The USFWS concurs there is a potential that the project may result in short-term changes in prey base populations and that prey numbers may return to pre-disturbance levels. However, loss and fragmentation of habitat may result in an overall decline or changes in prey base populations. The DEIS states that rodent and lagomorph cycles are controlled by natural forces. While these populations may be cyclic, stress, loss and fragmentation of habitat, and increased predation (including road kills, hunting, and higher food chain species) resulting from the project may cause further decreases in populations over that of the cyclic fluctuations. Habitat loss and fragmentation may result in changes in the prey base when one species outcompetes another species for the same area. Subsequent change in raptor species may result. These impacts should be addressed. (FG–03)

    Response: *Section 4.7.2.1.2.4.3 was revised to reflect the concerns expressed in this comment. Please refer to this section to review the revisions.*

18. Current wording regarding mitigation states that a one-time payment of $1250 (1996 dollars) per well be paid, and that these funds would be used to "enhance" habitat that would directly benefit wildlife. UDWR requires a wording change which states that mitigation funds would be used to "enhance or secure" wildlife habitats. (SG–02)

    Response: *The environmental protection measure was modified to clarify the actual situation — which is BLM's planning and NEPA documents require off-site mitigation for direct disturbances. The Companies chose to provide monies into an account that would fund off-site mitigation rather than doing the mitigation work themselves. The fund is dedicated to doing mitigation work to enhance habitats.*

19. In an effort to address big game displacement by vehicular travel, new roads should be gated, inhibiting circumvention, from 1 December through 15 April at locations determined by BLM and UDWR personnel, and signs should be placed stating that roads are closed to protect wintering big

game populations. Additionally signs should be posted on improved roads which request limited use of roads to reduce disturbance to big game during the critical winter period. (SG–02)

Response: *Signs will be on gates. Additional signs could attract more people to critical wintering range for viewing the animals than the signs would deter. Therefore, additional signs would not be installed on improved roads.*

20. Radio monitoring units ("telemetry") should be used on all wells in priority and critical big game winter range in order to reduce road travel and visitation to the well sites. This measure should be mandated in critical wildlife areas. If no commitment to telemetry is made, it should be removed from the analysis. (I–29, SG–02)

Response: *Use of telemetry by the Companies has been added as a mitigation measure. Please refer to Section 4.7.4 to review this revision.*

21. Annual nesting raptor surveys are being conducted, and a wintering bald eagle roost survey should be conducted. The 1998 raptor survey data also should be included in the FEIS, and adjustments should be made for the updated information. (SG–02)

Response: *Results of the 1998 survey have been included in the FEIS. If included as a condition in the decision makers' decisions, annual springtime surveys for nesting raptors would continue to occur on public lands. However, the analysis identified no impacts that would justify winter surveys. If some new concerns are identified in the future, the ESA and Eagle Protection Act provide protections and justification for the addition of surveys and mitigation at a future date.*

22. In the proposed project, there are many locations where pipelines and roads cross both intermittent and perennial streams. Many of these streams either contain or are headwaters for productive trout fisheries and native fish use areas. Barriers to migration native fish should not be created. Downstream waters, including the Price River and the San Rafael River provide habitat for threatened and endangered fish, including roundtail chub, Colorado squawfish pike minnow), and razorback sucker. Crossings should also be designed to limit sedimentation. Additionally, the rise:run ratio should not be altered, as this creates headcuts and increases sedimentation. To alleviate increases in sedimentation, construction of stream crossings should be done at times other than periods of heavy runoff. (SG–02)

Response: *The ID team concurs with the concerns identified in this comment. Additional mitigation was added to address these concerns. Please refer to Section 4.7.4 to review these additional measures.*

23. Page 5–17, Tables 5–5 and 5–6 along with the text of Section 5.3.7.2: These tables and the text discussing them are not consistent with the earlier discussions in Sections 4.7.2.1.2.1 and 4.7.2.1.2.2. According to Section 4.7.2.1.2.1, crucial winter range disturbed in the north area by the Ferron Natural Gas Project was estimated at 164 acres- direct and 2,819 acres-indirect, not 220 and 4,029 acres respectively as shown in Table 5– 5. The earlier section indicates the high-value winter range disturbed in the north area was 65 acres-direct and 1416 acres-indirect, not 100 and 1830 as shown in the table. (SG–02)

Response: *The wildlife sections of chapters 4 and 5 were reviewed for inconsistencies and wording that could result in the appearance of inconsistencies. As a result of this review, several changes were made. Please review the wildlife sections of chapters 4 and 5 to review these revisions.*

24. Section 4.7.2.1.2.1 also differs from Table 5–5 for wildlife acreage disturbed in the south area by the Ferron Natural Gas Project. The numbers for the direct disturbance match in both the table and the Chapter 4 discussion, but the acreage for indirect disturbances disagree. The Chapter 4 text section lists indirect crucial range disturbance at 7,990 acres while the table lists 11,784 acres; the high value acreage disturbance in the earlier section is 6,270 acres versus 9,473 acres listed in the table. Using figures from Section 4.7.2.1.2.1 gives a total disturbance of 69,186 acres rather than 73,196 acres given in Table 5–5. Chapter 5 should restate the explanation given in Chapter 4 that the indirect disturbance of acreage does not preclude wildlife from using those lands, but merely reduces their use by displacing the animals temporarily when there is human activity. Chapter 5 should also mention the directly disturbed acreage is very small, and human intrusions can be mitigated by limiting access, as proposed in Alternative 2. (SG–02)

    Response: *The wildlife sections of chapters 4 and 5 were reviewed for inconsistencies and wording that could result in the appearance of inconsistencies. As a result of this review, several changes were made. Please review the wildlife sections of chapters 4 and 5 to review these revisions.*

25. Discussion on elk habitat in Section 4.7.2.1.2.2 , while basically agreeing with the direct acreage disturbed, disagrees with figures listed in Table 5–6 for indirect disturbances in the south area. Discussion in Chapter 4 lists the indirect disturbance as 8,940 acres of the crucial winter range and 2,940 acres of high-value winter range, which is in opposition to indirect disturbance figures in Table 5–6 of 16,410 crucial acres and 7,940 high-value acres. If the more-thorough discussion in Chapter 4 is correct, the total elk habitat disturbance mentioned in Chapter 5 should be reduced from 67,738 acres to 58,144 acres, or 7.4 percent of the total winter range. Directly disturbed lands total only 2,876 acres, or 0.4 percent of the total elk winter habitat. (SG–02)

    Response: *The wildlife sections of chapters 4 and 5 were reviewed for inconsistencies and wording that could result in the appearance of inconsistencies. As a result of this review, several changes were made. Please review the wildlife sections of chapters 4 and 5 to review these revisions.*

26. Reclamation requirements (included in the Environmental Protection Measures under Alternative 2) on big game winter range, including hand planting of seedling browse plants and use of seedling protectors, are not defensible requirements because they are arbitrary and highly suspect in relation to other activities that land managers promote, such as seasonal hunting to reduce herd size. These requirements should be removed. (B/I–01, B/I–02, B/I–03, B/I–06, B/I–10)

    Response: *Planting of browse seedlings and seedling protectors is a common practice throughout the west because reclamation via seeds has a comparatively low rate of success. Often the higher costs of using browse seedlings is offset by the faster response and lack of a need to reseed multiple times.*

27. The buffer zones for raptor nests are not being appropriately applied. Limited restrictions based on monitored sensitivities to human activity are more appropriate than a blanket ½ mile buffer zone

around empty nests. Studies show a significant variance in tolerance to human activity and this information should be appropriately applied to the target species being protected, including peregrine falcons. For example, evidence exists that a ¼-mile restrictive zone for the red-tailed hawks may be adequate. Additionally, quantitative scientific data for this restriction or substantiated basis for these buffer zones do not exist in the Migratory Bird Treaty Act and Golden Eagle Protection Act. Anadarko also objects to provisions that would prohibit occupancy at any time within a ½-mile radius of active raptor nests based on subjective evidence that nests have been occupied during the past 3 years. The issue of buffer zones should be addressed on a case-by-case basis rather than imposing a broad restriction for all raptors. (B/I–01, B/I–02, B/I–03, B/I–04, B/I–06, B/I–10)

Response: *The requirement was not intended to be all inclusive. Rather, this specific EPM includes the ability to modify the requirement on a case-by-case basis. It grants protection project wide and grants exceptions on case-by-case basis. Evidence of occupancy is not subjective — occupancy is confirmed during the annual springtime survey. Also, because raptors commonly reuse nests, the ID team considered all nests occupied at least once in the previous three years as active.*

28. The Gate Agreement requires operators to install some gates on newly-constructed roads to limit public access during winter season. Carbon and Emery counties are not signatories to this agreement. The BLM should coordinate closely with the counties and local government to avoid potential disputes with local citizens over the lack of public access. (B/I–01, B/I–06, B/I–10)

Response: *The ID team agrees. As stated in the Environmental Protection Measure in Section 2.2, the BLM and Forest Service would coordinate closely with Carbon and Emery counties in determining where gates would be installed.*

29. In addition to seasonal restrictions (December 1 – April 15), in Chapter 2.2, Page 2–37, BLM cites the need to offset direct and indirect impacts to elk and mule deer. Wildlife habitat mitigation and protection plans are being developed by BLM and the lease holders, designed to protect these animals and to offset possible displacement of critical winter habitat. We support some form of habitat mitigation fund and limiting public access during the critical winter season to help achieve these objectives. These plans, if agreed to by the lease holders, will be implemented at considerable cost to the lease holders and are strictly voluntary. Although there is language in existing land use plans that identifies the need to consider mitigation to offset potential habitat loss or displacement, there are no requirements. Nor do the lease terms, stipulations, BLM regulations, or any other laws require such enhanced mitigation and protection. These additional protection measures should not be treated as standard operating practices or imposed on lease holders of future projects without their agreement. (B/I–02, B/I–06, B/I–10)

Response: *FLPMA grants authority for environmental protections, such as those to which this comment refers. Section 1508.20 of CEQ's regulations for implementing NEPA also addresses off-site mitigation. Additionally, proponents of the Ferron Natural Gas Project are not the first companies to have these types requirements applied to their projects. However, to clarify the situation, this EPM has been revised to indicate it is an agreement willingly entered into by the Companies. The funds would substitute for acre-for-acre offsite mitigation. If the Companies elect not to make the payments, then acre-for-acre mitigation would take over. The acre-for-acre mitigation is specified by the management plans.*

30. The only requirement for conducting raptor surveys in the lease stipulations or BLM rules is that pre-disturbance site-specific surveys be conducted, not a pre-drilling field-wide raptor survey as required in Chapter 2.2. Also it is not clear who should pay for those surveys. We feel it is the responsibility of UDWR and USFWS to conduct these surveys and to continually update their wildlife inventory databases. If these agencies are not adequately funded to carry out their responsibilities, then federal and state agencies' budgets need to be addressed. (B/I–02, B/I–06, B/I–10)

    Response: *Section 6 of the oil and gas standard lease terms requires lessees to conduct operations in a manner that minimizes adverse impacts to the land, air, and water , to cultural, biological, visual, and other resources, and to other land uses or users. Additionally, the lessee is required to take reasonable measures deemed necessary by the lessor to accomplish the intent of this section, including surveys. Agency budgets are beyond the scope of this EIS.*

31. We feel conflicts with wildlife management areas should be ruled in favor of wildlife with no construction in those zones to occur until the Utah Legislature creates a land use planning process for State Wildlife Reserve properties. (I–21)

    Response: *State wildlife management areas in the Project Area involve no federal surface or mineral ownership. Consequently, the BLM and Forest Service have no jurisdiction over these properties.*

32. Section 4.7, WILDLIFE (page 4–37) The DEIS discusses the potential for displacement of mule deer and elk in response to project activities. The DEIS does not address the potential for displaced animals to impact adjacent agricultural lands. The DEIS should address this potential and identify mitigation for such occurrences. Considering the limited potential for revegetation of disturbed areas, as discussed at various locations in the DEIS, the potential for displacement of animals in response to reduced habitat will continue much longer than just the life of the project, as stated at page 4–51. (LG–05)

    Response: *The ID team revised portions of Section 4.7 to indicate agricultural lands in and near the Project Area would likely receive at least some mule deer and elk displaced from crucial or high priority winter ranges. Mitigation currently is available through UDWR for damages to agricultural lands caused by deer and elk. This mitigation would continue to be available with implementation of one of the alternatives. Once the facilities have been reclaimed, the level of human activity in the areas would decrease and fewer deer and elk would likely be displaced from crucial or high priority winter ranges.*

33. The mitigation payment, discussed at page 4–47, even if applied to enhancement of habitat adjacent to affected areas, would not be immediately effective in preventing displacement of the animals. (LG–05)

    Response: *Comment noted, thank you.*

34. Gating and closure of roads, as discussed at pages 4–46 and 4–47, must be coordinated with Emery County. Only county officials are authorized to close roads which are a part of the county's road network. Additionally, this authority applies to roads upon which the county currently has a legitimate R52477 assertion. (LG–05)

Response: *The BLM and Forest Service recognize Carbon County and Emery County's jurisdiction over their roads. As stated in the Environmental Protection Measure in Section 2.2, the BLM and Forest Service intend to coordinate closely with Carbon and Emery counties about gates proposed for any roads under their jurisdiction. Gated roads would not be closed. The gates would only restrict access. The public would have access between April 15 and December 1 annually.*

35. The selected roads to be gated are not identified. Without identifying these roads, it is impossible to assess the effectiveness of this measure. Yet Chapter 4 ascribes great benefits arising from these imagined gates. (I–29)

    Response: *Gate locations are not identified because of the need to be engineered to prevent OHVs from getting around and the need to coordinate with the counties. The BLM and Companies have entered into an agreement for the gates, which identifies preliminary locations for gates. This agreement is available for public review.*

36. No chemical or mechanical treatments should be used to enhance wildlife habitats, Specifically, chaining of pinyon-juniper areas for wildlife should not be used because the length of time the trees take to regrow is too long. (I–32)

    Response: *Any proposed treatments would be analyzed individually through the NEPA process.*

Special-Status Species

1. We object in Chapter 2.2 to the one mile buffer zone for the peregrine falcon. We recognize this is a listed species under the Endangered Species Act (ESA). However, we are not aware of any requirement under ESA, BLM regulations, or under the oil and gas lease that would impose a one mile buffer. Nor is there any scientific basis for such a restriction. Why should the buffer zone for a peregrine falcon be greater than for other raptors simply because it is a listed species? We believe this restriction is arbitrary, unreasonable, and unnecessary. This could adversely impact future development and creates uncertainty in planning activities. (B/I–02, B/I–10)

    Response: *The EMP of a one-mile buffer zone around nests of peregrine falcons is supported by BLM's planning documents and is specifically addressed in the American Peregrine Falcon Recovery Plan. The ESA requires development of recovery plans. Thus, a specific foundation for the EMP exists.*

2. The Winkler footcactus was listed as a threatened species under ESA just prior to the release of the DEIS. Under Chapter 2.2 (Page 2–38), the BLM requires that lease holders file their APDs in Winkler footcactus areas prior to April 1 every year or drilling in those areas will not be allowed until the following year. The purpose of this restriction is to provide enough time for footcactus surveys of the area prior to commencement of drilling activities. We understand the need for survey time, but feel this April 1 deadline is too rigid and arbitrary. We believe this should be handled on a case by case basis and in a more flexible manner. This permitting restriction is not required under the lease, BLM regulations, or ESA. (B/I–02, B/I–06, B/I–10)

    Response: *As described in the FEIS, the reason for the time frame identified in the EMP is the blooming habits of the cactus. In general, this cactus blooms between April 15 and May 15. However, blooming sometimes varies — earlier or later. To account for this*

variation and ensure the surveys are completed at the appropriate time, the Companies need to submit APDs for wells in areas potentially inhabited by the cactus by April 1 so the BLM can prioritize field work.

3. For other sensitive species, ESA does not afford the same protection as it does for threatened and endangered species. However, it has been BLM's policy to treat sensitive species as if they were listed. This policy should be re-evaluated because it is not based on any lease or regulatory requirement, nor has it been subject to public comment and scrutiny. (B/I–02, B/I–06, B/I–10, I–39)

   Response: National regulatory policies of the BLM and Forest Service specifically address "sensitive species." These policies direct both agencies to evaluate the potential of proposed actions to contribute toward a trend to federal listing of a sensitive species or the loss of a population's viability. In recognition of these policies, the ID team evaluated the alternatives' potential effects on sensitive species and documented the results of that evaluation in the EIS. Changing BLM's policy is not within the scope of this analysis.

Cultural Resources

1. Development of the Programmatic Agreement (PA) among the BLM, Utah SHPO, the Advisory Council on Historic Preservation, Texaco Exploration and Production, Inc., Anadarko Petroleum Corporation, Chandler and Associates, LLC., and Questar Pipeline Company is the key to evaluating the alternatives' potential effects on cultural resources. The analysis presented in the Final EIS needs to concur with the information contained in the PA. (SG–03)

   Response: The ID team agrees. Consequently, the information presented in the FEIS concurs with the information contained in the PA.

2. In addition to educating personnel working on the project, indirect effects to cultural resources could be mitigated by developing educational materials for the public and museum exhibits. (SG–03)

   Response: Comment noted, thank you.

3. Section 4.9 of Chapter 4. At the time the DEIS was released, the Cultural Resource Management Plan (CRMP) among the BLM and leaseholders had not been completed. Included in this plan will be a Programmatic Agreement among the BLM, the State Historical Preservation Office (SHPO), and the National Historic Advisory Council. This may include avoidance, identification, notification and consultation with SHPO and/or the Advisory Council. We reserve the right to submit additional comments after we have had an opportunity to review the CRMP. If any obligations are imposed under that plan that are not based on current law, regulations, or lease requirements, we will likely object. (B/I–02, B/I–06, B/I–10)

   Response: Comment noted, thank you.

Land Use

1. Already both Anadarko and River Gas have had numerous conflicts with area landowners as well as adjacent county and city dwellers regarding equipment storage, noise, dust and potential danger to pets and children. RGC has provided a precedent in already filing a lawsuit against Carbon County

for a conflict regarding impacts on private property adjacent to their development in Gordon Creek. To a lay observer, these gas companies appear to respond only to specific complaints and lawsuits and do not alter their overall behavior or policies to improve relations with the local public. It seems to me that any EIS should have documented and cataloged the complaints lodged against these gas companies and the proposed plans to mitigate repetitive problems with plans to avoid future conflicts. No mention of a problem resolution process is mentioned in this DEIS to my examination. (I–21)

Response: *The purpose of the NEPA process is to evaluate the potential impacts of a proposed action and alternatives. Documenting complaints lodged against project proponents is not part of the NEPA process.*

2. It is distressing to see such a huge tract of BLM land, currently managed for multiple use, be considered for conversion to a single use (i.e., mining-industrial). As an example, summary chart on page S–17 states "Construction activities would alter the recreational experience for local users through a loss of solitude and the natural setting. After construction, the loss of solitude would be less because of greatly reduced traffic. Installation and operation of facilities would still affect the natural setting of the Project Area for the life of the project (i.e. 20 years). BLM recreation management objectives would not be met in Roaded Natural areas." Page 3–106 states that the BLM is to "...allow geophysical activity to occur only so long as management plans are met ..." Negative effects of this project on grazing, wildlife, recreation, and on the quality of life for local residents are not mitigated by the economic benefits (about 125 jobs short term, 43 jobs long term, payroll less than 1 percent of base payroll for the two counties (P 3–17)), damage to our local coal-based economy, and poor tax returns ($14 M returned to the two counties over the 25 year project life (P S–I 7)). We believe the public should not be shortchanged in this process and that BLM management plans, including the Recreation Management plan, be held primary and considerations for mineral activity be made subordinate. In as much as multiple use land is converted to single use in such a huge area, especially around the populated centers of Carbon and Emery counties, reasonable mitigation to local residents for the loss of multiple use characteristics must be made, and must be considered in the development from the EIS process forward. Just mentioning that it may occur is not sufficiently specific. (I–21)

Response: *Approval of the project would not change a huge tract of land from multiple use to single use. The BLM has already leased these properties to the Companies. Therefore, considerations for mineral activity cannot be made subordinate.*

Multiple land use characteristics would not be lost, but would be altered. Recreation and wildlife habitat would still be available in the Project Area, including around the populated centers of Carbon and Emery counties. The FEIS addresses mitigation that would reduce the environmental impact of natural gas operations. The decision on what specific mitigation would be applied for individual well sites would be made during the Application for Drilling Permit process.

3. There is a precedent (River Gas) to convert the roads built by a developer on public land over to County ownership. This is concerning to us. This practice constitutes conversion of a private roads over to public maintenance. This is not addressed sufficiently in this DEIS. How much mileage and how much money must be spent by the counties to maintain roads likely to be granted to them once the development is complete? How does this compare to the money generated by the development to the counties? However, public maintenance of private roads strikes us as public subsidy for

private industry that in this instance is not warranted and is certainly not acceptable. In any case it is not sufficiently described in this DEIS. (I–21)

Response: *Section 2.1.1.1.4.1 in the DEIS states that "access roads would be reclaimed by plowing and seeding unless the landowner and/or land manager wishes to make use of any roads and accepts responsibility through execution of a release for future road maintenance. Roads not needed for further use would be reclaimed consistent with the requirements of respective land owner". In other words, roads would be turned over to the landowner or land manager only if the owner or manager wanted the road for some future use. If the owner or land manager decided to retain the road, all responsibility to maintain the road would be released to the land owner or manager.*

4. Because many new roads would be on state and federal lands, public access to public land should be assured regardless of road ownership. (I–21)

Response: *Access to public lands through non-public lands is determined by the individual landowner.*

5. Section 4.10, LAND USE (page 4–66) The DEIS states, at page 4–71, that visual and audible impacts may affect residential land used. Table 4–14, page 4–72, lists 23 wells in the South Area (Emery County) that will be within ½ mile of residences. The DEIS does not address possible mitigation of impacts to residences. The DEIS should require the application of mitigation measures related to well siting, facilities location, pump jack orientation and selection of component color to minimize impacts to residences. (LG–05)

Response: *You are correct that 23 wells may be sited within ½ mile of a residence in the South Area. However, only four of these wells would be on BLM land. The other 19 would be on State or private leases. As disclosed in the EIS, the BLM only has the authority to implement mitigation on federal leases. Impacts to residences are disclosed in Section 4.10.1.1.3.4. Mitigation with respect to visual resources is addressed in Section 4.13.1.2. Section 4.14.1.1.3 discloses that residences within 2,000 feet of a well would be adversely impacted by noise for one to four days during drilling. This section also discloses that noise levels from a pumping unit would be below 55 dBA, the level that the EPA recognizes as acceptable for the public welfare, at distances beyond 500 feet from a pumping unit. Site-specific mitigation for individual wells related to well siting, facilities location, pumping unit orientation and selection of component color to minimize impacts to residences would be determined during the APD process.*

6. The DEIS states on page 4–75, "The purpose of the road gates would be to restrict public use along these public roads to reduce impact to big game in their winter range habitat." Many of the roads in the project area are Emery County roads, and only county officials are authorized to close public county roads. The DEIS should recognize this. (LG–05)

Response: *Gates would be installed on BLM roads as necessary to reduce impacts to winter ranges. The text in section 4.10.1.2 has been amended to include the information that only county authorities are authorized to close county roads. Please refer to this section to review the revisions.*

7. In Section 4.10.3, Mitigation (page 4–76), the DEIS fails to recognize that many of the "existing roads across public or National Forest lands" are county roads. The county should be identified as one of the "agencies" setting standards for upgrading or maintaining roads. (LG–05)

   Response: *Section 4.10.3 has been modified to correct this discrepancy. Please refer to this section to review these revisions.*

8. The DEIS states in Section 4.10.4, Unavoidable Adverse Effects (page 4–76) "There would be unavoidable impacts from noise and dust associated with the use of roads and lands near residential areas." This contradicts the statements, at page 4–23 and elsewhere in the DEIS, which indicate that dust suppression will be required on areas, including roads, during construction activities. Additionally, the impacts resulting from dust can be avoided if dust suppression measures are required during project operation, as well as during construction. (LG–05)

   Response: *The statement in Section 4.10.4, Unavoidable Adverse Effects (page 4–76 of the DEIS) "There would be unavoidable impacts from noise and dust associated with the use of roads and lands near residential areas.", has been changed to indicate that noise is the unavoidable impact, and that dust suppression will minimize adverse effects of dust. Please refer to this section to review the revision.*

9. Section 4.10.1.1.3.5, Transportation. Trails should be considered in this section. An objective of the Carbon County Trails Plan is to provide alternative transportation links to the various communities of Carbon County. While the plan has a strong recreation emphasis, alternative transportation is also an objective and a valid component of the transportation system. (I–29)

   Response: *The Carbon County Preliminary Trails Plan is addressed in the Recreation Section. The discussion has been amended to include a potential additional use of the trails as alternative transportation.*

10. As chairman of the Carbon County Airport Advisory Board, I request you provide greater detail (i.e., a topographic map) showing the well sites and their relationship to the airport. There is a special concern for obstructions off the departure end of runway 36. Because this runway slopes upward at 2 percent, aircraft departing have take off reduced performance, intruding into the safety margins provided for the FAA, which assume level runways. Similarly, a pilot executing a go around has to contend with rising terrain. Rising terrain is also a concern for departures from runway 32. Also, need an analysis that includes the height of drilling and workover rigs. Can workovers always be scheduled at least 30 days in advance to allow for FAA action? There is no discussion of the Huntington Airport. There are wells within 3 miles of the departure end of runway 25. Although this airport is not a federal aid airport and not subject to as strict a regulation by the FAA, flight safety is still a concern. (I–29)

    Response: *The DEIS disclosed that the Federal Aviation Administration (FAA) would require notification at least 30 days before proposed construction takes place near an airport (FAA form 7460–1 "Notice of Proposed Construction or Alteration"). All rigs within 20,000 feet (3.8 miles) pose a potential hazard to aircraft; therefore, the FAA form 7460–1 "Notice of Proposed Construction or Alteration" would need to be submitted to the FAA at least 30 days before construction. Any submittal to the FAA and well siting considerations would be done individually for each well that may affect flight operations at the airport during the APD process. There would be no impacts to*

Huntington Airport, because all wells and drilling rigs under the flight path would be within the height restriction.

11. Section 4.10.3 Mitigation. How is this mitigation? It reads more like agency standard operating procedures. How is this mitigation effective? (I–29)

    Response: *Section 4.10.3 has been modified in response to comment no. 7. Please refer to this section to review the revisions.*

12. Section 4.10.4 Unavoidable Impacts. This section states, correctly, there would be impacts from dust to residences near CBM roads. This contradicts the unsubstantiated conclusion drawn in the air quality section. However, this impact is not unavoidable, the management practices to mitigate this impact are well known. Propose and analyze the mitigation for this impact. (I–29)

    Response: *The statement in Section 4.10.4, Unavoidable Adverse Effects (page 4–76 of the DEIS) "There would be unavoidable impacts from noise and dust associated with the use of roads and lands near residential areas.", has been changed to indicate that noise is the unavoidable impact, and that dust suppression will minimize adverse effects of dust. Please refer to this section of the FEIS to review the revision.*

Livestock Management

1. Section 4.11, LIVESTOCK MANAGEMENT (page 4–76): The underlying message conveyed by this section of the DEIS is that livestock grazing and project activities are incompatible. Even Alternative 2 protections cannot minimize the incompatibility. Additionally, no specific mitigation measures are available to address the impacts, other than, notification of the permitee, by the companies prior to and disturbances to of existing livestock facilities. However, it appears that the livestock permitee is responsible for repair of such disturbances. (LG–05)

    Response: *Livestock management and gas development are not incompatible uses and no intention to convey such an impression existed. The activities associated with development of the project would have little effect on livestock management. Additionally, the Companies would be responsible for mitigating any disturbances to existing livestock improvements, such as fences, gates, and water sources.*

2. This section contains conflicting statements regarding the duration of impacts. At page 4–76 the DEIS indicates that "...most of the impacts would be limited to the life of the project. Long-term impacts beyond the life of the project are not anticipated to occur, if vegetation productivity is restored at the closure of the project." At page 4–79 the DEIS states, "The reclamation efforts could take several decades to restore vegetation." (LG–05)

    Response: *Section 4.11.1.1 was revised to eliminate this unintentional conflict. Please refer to this section to review the revision.*

3. Impacts discussed in this section, which result in decreased livestock grazing potential should be addressed in Alternative 2 as has been done in other sections of the DEI S, where specific measures are identified as Additional Environmental Protection Measures. (LG–05)

    Response: *The comment is not clear as to which section it is referring. The Environmental Protection Measures discussed in the impact analysis are part of Alternative 2, not*

alternative 1 or 3. However, the decision makers can decide to incorporate these measures as mitigation for alternatives 1 or 3 if they so desire.

4. Alternative 2, found in Section 4.11.1.2 (page 4–79), is extremely inadequate. (LG–05)

   Response: *The primary concern of the comment is not clear. As noted in Section 4.11.1.2, impacts to grazing would be similar to those described for Alternative 1. Because the effects were already described under Alternative 1's discussion, they were incorporated into the discussion for Alternative 2 by reference.*

5. Alternative 2 and Mitigation (Section 4.11.3 on page 4–80) should include:
   Livestock improvements, such as fences, corrals, springs, ponds, troughs, etc. shall be protected either through avoidance during siting of facilities, relocation or restoration to pre-disturbance condition, if disturbance is unavoidable.

   Cattleguards shall be installed on all high use roads to replace gates for ease of access and to reduce the potential for gates to be left open, thus, improving livestock management.

   Signs shall be placed on high use roads advising travelers of the presence of livestock in the area.

   Mitigation measures, for other resources, such as control of noxious weeds, revegetation of disturbed lands to return them to productivity, and erosion control, will also serve to mitigate impacts to livestock. (LG–05)

   Response: *Thank you for your suggestion. Additional mitigation measures for livestock management have been added to Section 4.11.3. Please refer to this section to review these revisions.*

6. Mitigation payments, similar to that proposed for mule deer mitigation, at page 4–47, could be applied to impacts to livestock. The funds could be applied directly to range improvement projects or used to offset the loss of AUMs or as compensation for decreased livestock productivity or increased operating costs, as described at page 4–79. (LG–05)

   Response: *The loss of AUMs to the project's facilities would be minimal. Also, livestock would not be displaced from adjoining areas as would deer and elk. As a result, livestock would benefit from less competition for available forage with deer and elk in the areas from which deer and elk are displaced. Increased operating costs, while minimal in these cases, are unavoidable.*

Recreation

1. The DEIS does not recognize the Carbon County Trails Plan. Consequently, it identifies only one recreation trail in the North Area (the Kenilworth Loop). The Carbon County Trails Map identifies eight proposed motorized/ATV trails, three hiking trails, and three four-wheel drive trails that the DEIS does not address. The DEIS needs to recognize the additional trails identified on the Carbon County Trails Map. (I,–04, O–01, O–02, O–03, O–04, I–09)

Response: *Sections 1.5.5 and 3.12.2.1 of the DEIS do recognize the Carbon County Trails Plan. The system of informal trails shown on the most recent Carbon County trails map have been added to Plate 3–10 in the FEIS.*

2. The DEIS identifies no mitigation for the loss of existing and proposed recreational opportunities that implementation of the alternatives would adversely affect. The FEIS needs to include mitigation to minimize the adverse effects. Some possible measures include limiting the construction of new roads to minimize visual and auditory effects on users of the recreational trails and preserving off-highway trails for the benefit of off-road enthusiasts (which also would minimize conflicts between recreationists and construction. (I,–04, I–09)

   Response: *Mitigation was included in the DEIS and is included in Section 4.12.3 of the FEIS. Additionally, road construction would be minimized. Through the analysis, other resources also push for minimizing the amount of road construction. Many trails for off-road vehicles use existing roads and/or are in the best location to place roads for the development from an overall resource protection perspective. Thus, these trails and roads proposed for the development of natural gas coincide.*

3. The DEIS assumes no organized or group events use either the south or north areas. This is incorrect. Several organized groups use these public lands regularly, including members of the Rocky Mountain Elk and Deer Foundations; Utah Sportsman Association; and other local hiking, biking, and ATV and off-highway driving clubs. (I,–04, I–09)

   Response: *The discussion of existing recreational uses has been amended to include the information that "several organized groups use these public lands regularly, including members of the Rocky Mountain Elk and Deer Foundations; Utah Sportsman Association; and other local hiking, biking, and ATV and off-highway driving clubs." Please refer to this discussion in the FEIS to review the changes. Please refer to Section 3.12.2.1 to review these revisions.*

4. The Project Area is roaded natural and semi-primitive, not rural. The project would totally change the recreational experience in the area. (E/C–01)

   Response: *As discussed in Section 4.12.1, the quality of the recreational experience in the Project Area would change with implementation of the project.*

5. Members of the Southeastern Utah OHV Club have developed the Castle Valley Trail System (CVTS), which is a proposed system of trails and roads that provide access from the local communities and services to the recreational opportunities available on public lands for ATV and other trail users. Although the CVTS has not been adopted, the FEIS should at least address it. (I–23, I–33)

   Response: *The CVTS is addressed in Section 4.12.1.1.2 of the FEIS.*

6. Local OHV users are interested in working with land managers and gas producers to facilitate development of the CVTS. They would like to see a trail system (50 inches wide) developed to provide North-South link in the South Area. (I–23, I–33)

Response: *When a formal proposal is submitted, the appropriate land managers (BLM, State of Utah, and private) would consider the proposal.*

7. Recreation Planning, Section 3.12.4.1, Page 3–121. Off-highway vehicle (OHV) use ..... OHV use on BLM lands in the South Area is either Open to ORV use, ORV use limited to Seasonal Restrictions (ORV open, except from December 1 to April 15 limited to designated roads and trails), or ORV use limited to designated roads and trails. (BLM San Rafael RMP May 1991 and BLM Map Off-Highway Vehicle Designation Areas — San Rafael Resource Area — January 22, 1996). (I–23)

   Response: *As noted in Sec. 3.12.4.1, the South Area has been identified in the San Rafael RMP as an open OHV area with use limited to specific roads and trails. To date, final road and trail designation has not been completed.*

8. Recreation Section 4.12.1.1.2, South Area, Page 4–86, Recreation Opportunities. The DEIS mentions the OHV Trail Network that the SEUOHVC and CVTS is proposing, we expect that, through a cooperative effort with the BLM, other land managers, and the gas producers, the proposed trail network can and will be fully developed. (I–23)

   Response: *When the SEUOHVC and CVTS submit a formal proposal to the affected land managers (BLM, SITLA, Emery and Carbon County Commissions, and private land owners), the proposal would receive the appropriate consideration.*

9. Section, 4.12.3, Mitigation, Page 4–88. We realize that the gas producers have the right to drill on their valid leases and that our recreational experience with respect to changes in solitude and the natural setting will be altered. We feel that these unavoidable adverse effects can, in part, be mitigated by utilizing the existing roads, newly-constructed roads, and also constructing ATV trails to interconnect between those roads where appropriate, to create the desired trail network. These trails would be evaluated on a case-by-case basis and constructed to preclude full-sized vehicles. The enclosed Plate S–3b shows one option of where these possible connections could be constructed. These connections would provide the trail users with a break from the monotonous ride along improved roads and put them away from the more heavily used collector roads. (I–23)

   Response: *Thank you for your recommendation. CTVA's proposal for a trail system is a separate action that would have to be addressed in another NEPA document when a formal proposal is submitted.*

10. Table 2–15, Page 2–57, Recreation. BLM ROS Class "Semi-primitive Motorized" is not mentioned nor addressed. More than 50 percent of the South Area is in this class and it must be mentioned that the BLM recreation management objectives would not be met in the Semi-primitive Motorized areas, even with the added protection of Alternative 2. (I–23)

    Response: *Table 2–15 of the DEIS (Table 2–17 in the FEIS) has been revised to address semi-primitive motorized. Please refer to this table to review the revision.*

11. The whole portion in Chapter One and the Summary referring to the Carbon County Trails Plan should be rewritten to conform to other chapters in the DEIS or include a statement that will not leave the impression to the reader that a formal, designated and maintained series of trails exist in the North Area. It should also be noted that the Carbon County Trails Plan is inconsistent with development. The companies hold legal rights to development on the surface where as the Carbon

County Trails Plan does not. Additionally it should be noted that leases were issued and drilling began in the North Area prior to any formal trails plan being developed. (B/I–01, B/I–02, B/I–06, B/I–10)

Response: *The DEIS does indeed indicate the Carbon County Trails Plan map has not been ratified with the affected landowners nor has it taken into consideration the valid lease rights to produce natural gas. The trails identified on the Carbon County Trails Plan map are shown on Plate 3–10 in the FEIS for informational purposes only. Please refer to this plate to review the information.*

12. Development of natural gas that is occurring in and proposed for the North Area is and will continue to adversely affect users of trails (informal and formal) in the area. Gas development contributed to the demise of the Butch Cassidy Blowout, a race held in the North Area before gas development occurred. Additionally, new roads are disrupting trails and the dust generated by traffic on these roads makes it difficult for trail users to breath. The DEIS does not reflect this current recreational management situation and should be revised. (I–15)

    Response: *The DEIS does disclose that natural gas development would result in the loss of solitude and the natural setting of the recreational experience. The DEIS does disclose that project-related traffic would occur only in portions of the Project Area throughout the life of the project, rather than in the entire Project Area. Most roads would be affected during construction activities only for a few weeks. Traffic associated with operational activities is sparse. It is not likely that the dust raised from these activities would occur for any significant length of time along any access road.*

13. Page 3–116 and Sections 4.12 and 5.3.12 describe effects to recreational trails. The fact that there is only one (?) designated trails system or the fact that the existing state of trail uses are mostly informal on unmarked routes does not mean these routes are unimportant. Those features are the result of trails in use in an area of mostly public land (over 90 percent in Emery County and 60 percent in Carbon County) by people who have never had any threats posed to their access or use of public lands adjacent to their homes before. Although the Kenilworth loop is the only trail described in the DEIS (the recreation map 3–12a), there are many more documented trails in the Carbon County Trails Plan, all of which are used and have been negatively impacted by Anadarko's present development. The Price CBM Project has already disturbed a large number of informal trails and the historic and informal trails in and around Kenilworth are threatened. The Cumulative Impacts section of the DEIS must document this. We believe informal trails are just as important to local residents as formal trails described in booklets and they need to be considered fully in the EIS, with plans for mitigation if disturbed or destroyed. (I–21)

    Response: *The trails identified in the Carbon County Trails Plan map are shown on Plate 3–10 of the FEIS.*

14. The statement (page 4–82) "Recreationists who seek a primitive experience characterized by a high degree of natural integrity and appearance, and solitude may seek them elsewhere on public lands in Carbon and Emery Counties", and similar statement on page 4–84, are not sufficient mitigation analysis, as this represents a conversion of multiple use land to single use (see below). Page 4–8 states "construction of offsetting trails could help replace some lost recreation opportunities" is the only mitigation mentioned. Are other options available? What has been done in other areas in the area of trail loss mitigation? Also, it is proposed that the companies work with local officials and

citizens of Emery County to provide alternative recreational opportunities. This could be accomplished by developing recreational facilities. Such an endeavor would not replace, in-kind, lost recreational opportunities, but would serve as a form of off-site mitigation. Anadarko and BLM agreeing to study the development of trails is another good intention that cannot be analyzed in its present construction. This should state that BLM and Anadarko will assure trail losses are mitigated. (I–21, I–29, LG–05)

Response: *Section 4.12.3 on mitigation has been revised and expanded. Please refer to this section to review the changes. But, BLM cannot require mitigation for trail losses on state- and privately-owned lands. However, the Environmental Protection Measure in Section 2.2 was changed to include all the Companies and both the North Area and South Area. The Companies could participate with the local communities in developing recreational opportunities.*

15. We disagree with the statement on page 4–135 of the DEIS that says "...proposed well field development would not affect any of the primary recreational attractions in the region." The Carbon County Trails Plan is an adopted document that was essentially ignored in the DEIS. We find that extremely disturbing. Every trail in the Carbon County Trails Plan needs to be in this DEIS. The final decision of the BLM on these projects must abide by the Carbon County Master Plan, including the Carbon County Trails Plan. (I–21)

    Response: *The trails of the Carbon County Trails Plan map in the North Area have been added to Plate 3–10. The BLM would consider this plan while honoring valid lease rights.*

16. Page S–17 states: Construction noise to 55 decibels, 24 hours per day during construction, will be present to at least 20 homes. This is in addition to what is planned outside the EIS project area. Page 4–110 of the River Gas EIS states: "The industrial character of project activities and facilities would change the rural and undeveloped quality of life currently afforded in rural residential areas. Page 4–144 of the River Gas EIS states, "For those in the Project Area who strongly value outdoor recreation experiences ... the proposed project would likely degrade the quality of life for those individuals. Similarly, the reduced availability of outdoor recreation opportunities in the local area may reduce its appeal to potential new residents and businesses." No adequate analysis or summary of these impacts seems to exist in the Ferron Natural Gas DEIS. There are many mitigations that the companies involved in the Ferron project could make to compensate for the taking of public land for private purposes. On page 5–19, the DEIS states cumulative impacts "would primarily affect the dispersed recreational opportunities and quality of recreational experiences possible on public lands within 30 to 45 minutes of Price and surrounding areas particularly evident between Price and Kenilworth." (I–21, I–30).

    Response: *Your comment concerning noise above 55 dBA for construction noise only refers to the one to four day drilling period for a specific well. Also, see response to recreation comment 14.*

17. The companies should be allowed the ability to construct their new roads and drill sites in areas that would not destroy the existing two-track roads or single track trails. Additionally, the companies should not be required to reclaim these existing roads and trails. (O–01, O–03, O–04)

    Response: *The transportation network of the project was developed to utilize existing roads to reduce environmental impacts and expense. The field development shown in the DEIS*

is a conceptual plan taking into account the valid lease rights. The exact siting of wells and roads would be determined during the APD process. All environmental concerns (e.g., wildlife corridors, avoiding streams, avoiding high erosion potential areas, minimizing visual impact, recreational opportunities) would be considered during the APD process. The Companies would not be required to reclaim existing roads not used for the project.

18. Solitude and the natural setting are not only important to the local citizens as factors related to recreation; these factors are a part of the daily lives of the citizens and a significant factor in their choice to live in this area. (LG–05)

    Response: *Comment noted, thank you.*

19. The Council and the Department concur with the statement found at the top of page 4–81," Impacts to recreation resources are considered significant if they substantially change or degrade the existing recreation opportunities, or if the objectives of various land management plans such as county plans or the federal management plans cannot be met." (LG–05)

    Response: *Comment noted, thank you.*

20. The discussion of the Castle Valley Pageant and the pageant site, found at KOP S8 page 3–126, provides an accurate description of the pageant and the site. The final sentence in the paragraph, "The scenic setting is an essential element of the pageant", is particularly germane. Additionally, the statement at page 4–88, accurately defines significant impacts to visual resources as those which,"... substantially change or degrade the character of the landscape as seen from sensitive viewpoints".

    Development of the proposed seven (7) wells within the viewshed of the pageant site would result in significant impacts, both recreational and visual. However, the DEIS, at KOP S8, page 4–105, fails to recognize the significance of the impacts and, in fact, minimizes the historical, social and cultural importance of the pageant by referring to it as a "spectacle".

    The Castle Valley Pageant, presented annually since 1978, has grown from two night performances to eight nights, with an attendance of over 20,000 visitors. Additionally, it is one of only eight pageants sponsored worldwide by the Church of Jesus Christ of Latter-Day Saints. The pageant is an extremely important historic, cultural and recreational event in Emery County and the natural setting is an essential element of the pageant.

    It is preferred that no wells be drilled in the vicinity of the pageant site, but, if wells are drilled, maximum mitigation measures must be implemented regarding well siting, facilities location, pump jack orientation and selection of component color, to minimize visual and audible impacts to the pageant and the pageant site. Tne mitigation measures must also consider the performance time-frame for the pageant (late July through early August). (LG–05)

    Response: *As a result of the Land Exchange, the land surrounding the Castle Valley Pageant is now State-owned land. The BLM no longer has the authority to authorize any restrictions on drilling.*

21. Wells located adjacent to the Huntington Canyon Scenic Byway (5R31) and along Cottonwood Creek (Straight Canyon) also represent significant impacts. Of particular concern is the well

proposed near the Little Bear Campground, as discussed at KOP S6, page 4–105. Approximately 5,000 visitors utilize the campground annually during the months of June, July, and August. These visitors are seeking a convenient outdoor camping or picnicking experience in a relatively remote setting. The presence of a well which, would be visually and audibly intrusive to campers and picnickers", will certainly impact their recreational experience. Measures to minimize and mitigate both visual and audible impacts at the Little Bear Campground must be implemented. (I–30, LG–05)

Response: *The wells you refer to around the Little Bear Campground are all on private leases. The BLM has no authority to require mitigation on these leases. All the wells along SR31 would be installed on private and State-owned leases. The DEIS disclosed that the wells visible from SR31 would cause a visual impact. Mitigation is recommended for these sites, but the BLM has no authority to enforce the application of mitigation measures on these leases.*

22. The DEIS seems to recognize that mitigation for impacts to recreation may be ineffective. This is evidenced by the fact that no alternative to the Proposed Action is identified. The statement at 4.12.1.2, page 4–87, reads; "...none of the Environmental Protection Measures directly address recreation. Therefore, the impacts to recreation opportunities in the Project Area would be the same as described in the Proposed Action." The lack of viable mitigation is further expressed at 4.12.3 Mitigation (page 4–88). "No measures are available to reduce the effects on the recreation experience with respect to changes in solitude or the natural setting." The Council and the Department concur with the sobering statement found at Section 4.12.4, Unavoidable Adverse Effects (page 4–88). "The loss of solitude and the change in natural setting cannot be avoided with natural gas development. The construction of well pads, roads and ancillary facilities would change the natural setting of the Project Area over the lifetime of the project and beyond until reclamation activities are complete." (LG–05)

Response: *Comment noted, thank you.*

23. The impacts to recreation identified in the DEIS will affect generations of local citizens. Individuals who have grown up" in rural communities, such as those in the vicinity of the project area in Emery County, tend to maintain emotional ties to their "home towns", even though they reside elsewhere. These individuals are affected during each return visit; therefore, project impacts are not limited to the resident citizens alone. (LG–05)

Response: *Comment noted, thank you.*

24. The San Rafael RMP states no management restrictions are necessary in the roaded natural (RN), rural (R), and urban (U) designations under the Recreation Opportunity Spectrum (ROS). Chapter 4 indicates the proposed action and alternatives would change the landscape character in the Semi-Primitive, Motorized (SPM) class. This is clearly out of conformance with the RMP. A plan amendment should be prepared to address these conflicts and to quantify the impacts of CBM development on these designations. (I–29)

Response: *The San Rafael RMP does indeed state that management restrictions are unnecessary in areas designated as Roaded Natural, Rural and Urban under the Recreation Opportunity Spectrum. The Plan also identifies specific conditions for management of areas designated as Primitive and Semi-Primitive Nonmotorized. The RMP does not, however, offer special conditions for Semi-Primitive Motorized areas. Oil and gas*

leases, which carry certain rights that are not discretionary, were issued within areas in the San Rafael RMP that were inventoried as Semi-Primitive Motorized. Analysis of the RMP supports the assertion that special management conditions were not contemplated for leases in Semi-Primitive Motorized areas and a plan amendment is unnecessary for consideration of the Proposed Action and Alternatives. Mitigation, consistent with lease rights, has been recommended in Sections 4.12 and 4.13 that would reduce adverse impacts to Semi Primitive Motorized areas.

25. Reclaiming roads to trails at project completion is not very meaningful. The desirability of such action 30 to 50 years hence cannot be assessed. The loss of trails to present users is an externalization of production costs and should be mitigated as required by the Carbon County Trails Plan. (I–29)

    Response: *The lease rights supercede the Carbon County Trails Plan on BLM lands in the North Area.*

26. Section, 4.12 Recreation: This section incorrectly states the project area is primarily a rural landscape character. Much of the area is roaded natural and semi-primitive. It is these landscapes that are sought out by local residents. It downplays the sensitivity and importance of the natural landscapes to depict the area as rural. This section should analyze the impacts to trail users caused by upgrading of roads. Most notably, increased traffic speed. What used to be two track trails with travel speeds of 15 mph or less have been upgraded to major surfaced roads with travel speeds approaching 50 mph. Mix of traffic speeds of low speed trail users with high speed vehicle traffic creates a safety hazard. It also greatly reduces the quality of the trail experience. Effective mitigation might include posting speed limits on gas field roads. Mitigation must include mile for mile replacement as called for in the Carbon County Trails Plan. (I–29)

    Response: *The DEIS does disclose that the Project Area includes ROS settings of roaded natural and semi-primitive. The term 'rural' refers to the general agricultural (primarily grazing) setting that is characteristic of public and private lands in the area and does not refer to any BLM management classifications. The DEIS does analyze the impacts to trail users but emphatically stating that natural gas development would result in a loss of solitude and the natural setting. The loss of solitude would be the maximum during the construction period. However, the DEIS points out that the construction of facilities would occur over a five-year period. Because CBM wells are most productive when drilled and dewatered in "clusters", the construction activities would affect recreational use in approximately 20 percent of the Project Area in any given year. After the construction is complete, the loss of solitude impact would be lessened but the change in the natural setting would continue for the life of the Project. The valid lease rights supercede the Carbon County Trails Plan and the County Trail Plan has not been incorporated into the BLM's land management plan. Wording has been added to the mitigation recommended in Section 4.12 that the Companies should work with the local agencies to develop offsetting recreational opportunities in and near the Project Area. Please refer to this section to review this revision.*

Visual Resources

1. VRM classifications established by the SRRMP must be met. (E/C–01)

   Response: Comment noted, thank you.

2. The siting of a well can make the difference as to whether it is even seen from important observation points. A good example is the ridge line pumpjack I look at every day from my house in Kenilworth. It need not have been visible from town or the highway if it would have been placed even 20 yards down slope or behind the junipers. Between Kenilworth and the ridge line separating the town from Price and Spring Glen there is an opportunity to set pads in swales, behind low ridges and in the trees so as to not be visible. That needs to be spelled out in a proposal or mitigated. Relying on the lessees or the good works of engineers may not accomplish this. The same sensitivity needs to be given to pipelines and roads. Access roads should not be straight corridors to the pads, either. None should be allowed to cross the afore mentioned ridge line except where a road currently exists. (I–07, I–15)

   Response: Section 4.13.1.2 addresses the environmental protection measure of preventing "sky lining" where topography permits. Section 2.2 of the DEIS states that the environmental protection measures would not disallow unlawful access to leases, but may require relocation of facilities. The relocation of facilities would consider all environmental factors such as erosion potential of the soils, the slope of the land, wildlife effects, etc. Visual mitigation for individual wells and roads related to siting, facilities location, pump jack orientation and selection of component color to minimize impacts to residences would be determined on a case-by-case basis during the Application for Drilling Permit (APD) process.

3. The impacts to visual resources identified in the DEIS will affect generations of local citizens. Individuals who have grown up" in rural communities, such as those in the vicinity of the project area in Emery County, tend to maintain emotional ties to their "home towns", even though they reside elsewhere. These individuals are affected during each return visit; therefore, project impacts are not limited to the resident citizens alone. (LG–05)

   Response: Comment noted, thank you.

4. Section 4.1 3.1.1.1, Construction Disturbance (page 4–89): In order to clarify the nature of power line installation, the following words should be added to the last sentence of the first paragraph: ",as depicted in Figure 2–1". (LG–05)

   Response: The additional information has been added to the statement in section 4.13.1.1.1. Please refer to this section of the FEIS to review the revision.

5. On page 4–90, revise the first sentence of the second paragraph to read: "The gathering lines and, water lines and power line, if installed, would be buried adjacent to the existing and new road rights-of-way." (LG–05)

   Response: Section 4.13.1.1.2 has been revised to include the electric power option. Please refer to this section of the FEIS to review the revision.

6. Section 4.13.1.2.2.2.3, KOP S4, (page 4–100): The sentence in line 7 should be modified to read: "The nearest well to the KOP is nearly two miles west of the Park. (LG–05)

Response: *The sentence in section 4.13.1.2.2.2.3 has been revised. Please refer to this section of the FEIS to review the revision.*

7. Section 4.13.1.2, (page 4–106): Painting facilities so that they "harmonize with the colors of the surrounding landscape" is identified at page 4–99 as a way to minimize adverse visual impacts. However, this practice is not included as a mitigation measure in Section 4.13.1.2 (page 4–106). Painting facilities to harmonize with the natural surroundings should be added as an Environmental Protection Measure for Alternative 2 at page 4–106. The color of facilities (i.e. tan, grey or dark green/black) should be considered during the on-site inspection, described at page 1–5. Additionally, location of facilities, including orientation and size of the pump jack, should be considered during the on-site inspections. These procedures are currently implemented during on-site inspections of River Gas Company wells located within the Emery County portion of the Price Coalbed Methane Project. (I–29, LG–05)

   Response: *Painting facilities so they "harmonize with the colors of the surrounding landscape" as a way to minimize adverse visual impacts is not included as recommended mitigation or as an environmental protection measure because it is part of the Proposed Action (see Section 2.1.1.1.2.2.2). Therefore, extra mitigation is not required. Location of facilities, including orientation and size of the pump jack, are an integral part of on-site inspections for the APD process.*

8. The analysis states Visual Resource Management (VRM) Class II standards would not be met in Huntington Canyon (a Scenic Byway) and in other Class II areas. The San Rafael RMP (pages 68–70) established VRM Management Classes. These Management Classes are in fact resource allocations, not mere desirable objectives that may or may not be met (IBLA 98–144). A plan amendment should be prepared to address these conflicts and to quantify the impacts of CBM development on these designations. (I–29)

   Response: *All of the wells along the Huntington Canyon Scenic Byway are located on private or state lands. Although the BLM has inventoried these lands with the VRM system, the BLM does not manage visual resources on private lands and a plan amendment would not be required as a result of this project. The FEIS discloses the potential visual impacts on all lands within the Project Area. The environmental protection measures are recommendations to reduce visual impacts on State and private land. However, the BLM has no authority to enforce any mitigation on State or private land.*

9. Other design features should be incorporated. One should be an assurance that walking beam pumps in visually sensitive areas be no larger than necessary. This would include proper sizing and use of low profile pumps for visually sensitive areas. Using oversized pumps is visually intrusive and constitutes unnecessary and undue degradation. (I–29)

   Response: *The use of low profile pumps was considered. However, the reason for not selecting these pumps is that the coal fines present in the gas stream would clog the pumps much more frequently than the proposed walking beam pump. This would result in additional maintenance for each pump, necessitating more frequent operational traffic on local roads, and an increase in dust and noise, and effects to wildlife associated with maintenance activities and increased traffic.*

10. Landscaping should be used in visually sensitive areas. (I–29)

    Response: *Comment noted, thank you.*

11. Section 3.1 3.1.1 Visual resources were more than just inventoried. VRM management classes were established in the San Rafael RMP. (I–29)

    Response: *Section 3.13.1.1 has been revised to state that VRM management classes were inventoried and established in the San Rafael RMP. Please refer to this section of the FEIS to review this revision.*

12. Section 4.13, Visual Resources. The analysis of impacts seems to be well done and accurate. The mitigation is weak and impossible to assess for effectiveness. Why is there no difference in mitigation or project design for wells in Class II areas as opposed to Class III and IV areas. In visually sensitive areas, more aggressive mitigation can and should be required. Camouflage paint schemes, aggressive landscaping efforts, locating facilities sub-grade are all viable techniques for reducing impacts to visual resources. In more urban/rural areas, production facilities can be enclosed by structures which fit into the local visual character. (I–29)

    Response: *The Project Area no longer has any proposed facilities on BLM lands in visually sensitive areas (Class II VRM). While the extra mitigation you suggest could be recommended, it would be a decision between the Companies and the landowner. In Section 2.1.1.1.2.2.2, the last paragraph states that facilities on federal lands would be painted with agency-approved BLM colors to blend with surrounding landscape. This information has been included in the text of Section 4.13 Visual Resources. Locating facilities subgrade would result in additional impacts to other (particularly vegetation and wildlife) resources, including additional disturbance acreage, additional noise and dust generated from a longer construction period, additional traffic generated by a longer construction period, and the visual impact of the depression that would surround each facility. Production facilities require periodic maintenance requiring access by trucks and other large equipment. An enclosing structure would impede maintenance activities, would increase the length of time that such activities require by adding the additional tasks of dismantling and reassembling each structure, and may actually be more visibly intrusive.*

Noise

1. Data must be collected and analyzed. Supportable estimations of project noise must be addressed under all reasonable scenarios. (E/C–01)

   Response: *Source noise data were collected from previous oil and gas field projects (see Section 4.14). The source data were based upon field measurements of oil and gas facilities. Therefore, the source data are valid as a representation of noise from proposed Ferron facilities.*

2. Table 3–31 appears to base estimated noise based on density of people with vehicles. This results in the curious finding that Kenilworth is noisier than Helper, a town with a major highway running through the middle of it and a railroad switch yard at its center. There are no major highways or trains passing through town as there are in Price and Helper. Kenilworth is a much quieter

community than Helper. Also, the neighborhoods in North Price, nearest the CBM development are relatively quiet being removed from any major streets, highways, and the railroad. I suggest using some real data here rather than an approximation based on density. Monitoring should be established prior to development and that mitigation be directed if a threshold is exceeded. Go measure the situation, now. Monitor it later, but establish thresholds that should not be exceeded. (I–07, I–29)

Response: *You are correct in your observation that the average noise level at Helper is higher than the average noise at Kenilworth. The EPA method of estimating community noise is based upon the average noise in neighborhoods and does not take in effect other industrial sources or main traffic arteries. The community noise average level for Kenilworth is valid. The analysis demonstrated that noise levels associated with the project would not exceed significant thresholds. Thus, monitoring is not needed.*

3. In Section 4.14.1.1.3 (page 4–123), the first paragraph indicates that no residences would be within 500 feet of a pumping unit. This statement is contradicted in Section 4.14.1.2 (page 4–123), which includes the statement, "In the South Area, the three wells on BLM land that could be within 500 feet of a residence would not be eliminated as part of environmental protection measures." (LG–05)

   Response: *The "500 feet" in Section 4.14.1.2 was a typographical error. This section has been corrected to read "...could be within 1500 feet...". Please refer to this section in the FEIS to review the revision.*

4. The noise levels associated with CPFs are not addressed in the DEIS, nor is there any discussion of the location of CPFs in relation to residences. (LG–05)

   Response: *The noise levels from CPFs are analyzed in Section 4.14.1.1.3. The terminology "noise levels from compressor stations" has been modified to "noise levels from CPFs" because the noise from the compressor engines by far constitute the majority of noise emanating from the CPFs. Please refer to this section in the FEIS to review the revision.*

5. Section 4.14.1.1.3, Operational noise impacts. I suspect the 1981 USDI figures for noise from pumping units are optimistic or used very well tuned pumping units. Noise from the Anadarko Federal F–4 can be heard over normal conversation at distances greater than 2000 feet. In addition to the rhythmic "pop-pop", there are also some very non-rhythmic, mechanical sounds of metal on metal, poorly lubricated. Is there a difference between electric and gas powered pumps? If so, would it make sense to use the quieter technology in noise sensitive locations? (I–29)

   Response: *The conservative noise scenario was analyzed. No significant impacts were identified. Electrically-powered pumping units would be quieter. Please see the revised analysis (Sections 4.14.1.1 and 4.14.1.2) in the FEIS that evaluates the effects of electrifying the entire Project Area.*

6. 4.14.3. Why is no mitigation recommended. In addition to using the quieter technology as suggested above, there are other obvious effective mitigation strategies. In noise sensitive areas, (residences, trails, recreation sites) vegetated, earthen berms are effective to reduce noise impacts. Noise can be monitored so that when equipment is malfunctioning and making unnecessary noise, it can be quickly identified and repaired. (I–29)

Response: *Other than temporarily elevated noise levels during construction and drilling, the DEIS analysis revealed that there would not be any significant, long-term noise impacts. The installation of berms for the short-lived construction and drilling at any one location would be infeasible. Noise reduction mitigation was suggested in Section 4.12.3 to reduce impacts in Semi-primitive Motorized areas in the South Area.*

Socioeconomics

1. Projections of employment required by the project suggest many workers would be hired from outside the local area. Employing a larger number of local and in-state workers would minimize the boom-bust cycle, minimize housing problems, and have a greater positive effect on the local economy. (B/I–08, B/I–09, I–36)

   Response: *Section 4.15.1.1.2.1 estimates that approximately 40 percent or 39 workers during the construction phase of the project would be hired locally. Employment decisions would be made by third-party contractors retained by the Companies to complete the project. Some workers with specialized skills unavailable in the local area may be required for the project necessitating outside hiring. Because 98 workers annually represents a relatively small percentage of employment in the mining, oil and gas, and construction sectors (8 to 9 percent in Carbon and Emery counties), the possibility of boom-bust cycle and housing problems is minimal.*

2. Construction of the project's facilities, such as gas-gathering and gas-delivery pipelines, should be accomplished following appropriate quality control procedures. (B/I–08, B/I–09)

   Response: *Construction of project facilities would be subject to all state, federal and local construction and safety regulations. The operation of these facilities are also subject to specific regulations and requirements to be followed by the Companies. As identified in Section 2.1.1.1.1.3 of the DEIS, construction activities would be overseen by the Authorizing Officer. The FEIS identifies various quality control, inspection, and safety procedures in Section 2.1.1.1.3.3, and OSHA standards and DOT regulations for pipelines in Section 2.1.2.*

3. The section on tourism in the DEIS (Section 4.15.1.1.4) fails to recognize the significant economic effect the project would have on transient room and restaurant taxes. Both taxes are specifically earmarked for the development of tourism. Implementation of the project would increase the amount of these taxes collected in the area and this increase would provide additional financial opportunities for developing tourism further. (I–06)

   Response: *The respondent is correct in identifying transient occupancy tax (TOT) and restaurant tax as a potential source of county revenues, which may experience some increase as a result of the project. While this revenue source is not anticipated to experience a significant increase as a result of the project, there may be minor revenue increases that can be attributed to the project over its projected 20- to 25-year lifespan. Sections 3.15.5 and 4.15.1.1.4 have been revised to identify the TOT and restaurant taxes and the potential for increased revenues as a result of project implementation.*

4. The cumulative reduction in the number of deer and elk in the general project area also would adversely affect Carbon County's socioeconomics. The herds of deer and elk in and around Carbon

County draw hunters from all over the state and surrounding states. Sales generated by these hunters are considerable. Also, the return to the Utah economy from mule deer hunting is substantial. The cumulative reduction in the number of deer and elk would result in fewer hunters pursuing animals in Carbon County, which also would reduce the number of sales generated in the County. The FEIS needs to address the cumulative reduction in the number of deer and elk, the effects of these reductions on hunting opportunities, and the local economic losses that would result from the reductions in hunting opportunities. (E/C–01, E/C–02, I–03, I,–04, I–09)

Response: *The FEIS Recreation and Wildlife sections discuss the potential impacts to deer and elk habitat and subsequent effect on hunting in the region over the project lifespan. Tables 5-5 and 5-6 identify the cumulative amount of crucial and high value winter range acreage potentially effected by cumulative projects in the region. Table 3-29 provides existing hunting statistics including the number of participating hunters and total hunter days for the North and South Areas. Page 4-82 identifies an estimate of a 20 percent reduction in hunting opportunities in any given year for the life of the project.*

Hunting is an important recreational activity in the Project Area and revenues from hunting benefit both Carbon and Emery counties and the entire State of Utah. As identified in the FEIS, the project would effect mule deer and elk habitat and potentially the populations in both counties.

A reduction in available habitat in the winter months due to the project would potentially lower the population of mule deer and elk, which could result in a reduction in hunter success. This reduction in hunter success could result in some economic effects, including decreased purchasing of goods and services in local communities. Please refer to Section 4.15.1.1.4 for further information on these effects.

5. Installation of the gas transmission pipeline would adversely affect the existing infrastructure, such as water and sewer pipelines, curbs, and gutters, in communities crossed by the pipelines (particularly Clawson, Castle Dale, and Huntington). Additionally, the gas transmission pipeline will have to be located away from existing water lines. (I–30, LG–01)

Response: *Prior to pipeline installation on lands within municipal boundaries, various easements and rights-of-way would have to be obtained. The issuance of these easements would require a review for potential conflicts and compatibility with existing utilities systems.*

6. Page 4–133 Table 4–24: The estimated value column of information does not follow the formula, where the annual production is to be multiplied by an assumed gas price of $1.39; rather the values shown use a gas price of about $0.987 per mcf. Total value of gas production should be about $945 million. (SG–02)

Response: *The respondent is correct in identifying the error in Table 4-24 in the DEIS. The error has been corrected in both the text and table. Please refer to Section 4.15.1.1.8.1 to review the revisions.*

7. The socioeconomics analysis in the DEIS does not consider revenues lost to motels and restaurants when the Butch Cassidy Blowout Mountain Bike Race was lost. (I–15)

   Response: This race ended in 1996, which predates this proposal.

8. The Ferron DEIS does not address the possibility of "boom bust" economics adequately. The statement "Historically, the economies of Carbon and Emery Counties have been subject to the fluctuations associated with resource extraction, and are probably less sensitive to this phenomenon than other areas" (p 4–130) is untrue. This area is one of the most volatile economies in Utah, suffering much more unemployment and welfare problems than the Wasatch Front. Each time a coal mine lays off workers the whole economy here suffers. Given the recent behavior of River Gas and Anadarko, and the apparent rush they are in to develop the field, we believe a boom bust economy is not only inevitable but is beginning now. This is in part from their willingness to import more than 50 percent of their work force from out of this area, who stay in motels because they are mostly transients (p 3–53 CBM EIS).

   The River Gas EIS mentioned phase development, but the Ferron DEIS insufficiently discusses it on page 5–25. In the RGC CBM EIS, phased development (Page 1–19) is disregarded out of hand because "limitations could prevent RGC from meeting lease requirements, thereby exposing them to litigation by some mineral estate owners" but later was supported by the River Gas EIS (page 5–28) "To the extent these (cumulative) projects were spread out over time, the less likely an economic boom-bust cycle would occur." This same disagreement exists in the Ferron Gas DEIS, and should be fixed. The BLM should determine what is best for BLM land, and proper attention to boom bust economics should be made for the entire Ferron Fairway development, not each EIS in isolation. Fear of possible litigation is not a good reason to refuse to pursue good policy. The Ferron DEIS should better analyze phased development. (I–21, I–35)

   Response: Phased development is addressed in Section 2.4.7.

9. The analysis of adverse effects to the economies of local, county, state, and federal governments is incomplete. It does not include any mitigation for short-term and long-term losses to the socioeconomic environment generated by requirements for mitigation in other "environments", such as the biological environment. (B/I–04)

   Response: Comment noted, thank you.

10. Table 4–22 on page 4–126 and information at the top of page 4–127 and in Section 4.15.2 (page 4–136) indicate local hires during the construction phase of the project will involve approximately 39 people. This would result in approximately 59 non-local hires. However, the second paragraph in Section 4.15.2, in providing support for previous statements in this section regarding the lack of impact to housing, etc., that would result from influx of non-local workers, indicates the number of non-local workers would only be about 40 people. (LG–05)

    Response: The discrepancy in-migrating employment has been resolved in the FEIS. Section 4.15.2 has been amended to indicate the correct number of 59 employees. Please refer to this section to review the change.

11. Table 4–23 on page 4–128 indicates the overall project may span 30+ years. Information in Section 4.15.1.1.8.1, second paragraph (page 4–132), indicates "...25 years of project operation".

Information in Section 4.15.1.1.9.1 (page 4–134) indicates "20-year expected life span of the project". While it is recognized that the numbers are only estimates and projections, consistency in definition of project life would reduce confusion. (LG–05)

Response: *A clarification and explanation of the estimated life span of the project and reasons for the discrepancies in numbers is included in the FEIS. Please refer to sections 4.15.1.1.8.1 and 4.15.1.1.9.1 to review the revisions.*

12. Table 4–24 on page 4–133: The values in the third column of the table cannot be derived by applying the calculation, as instructed in footnote 3, to the values in column 2. (LG–05)

    Response: *Please refer to the response to socioeconomics comment 6.*

13. In Section 4.15.1.1.9.2 (page 4–135): The statement near the end of the first paragraph, which reads, "...it should be noted that proposed well field development would not affect any of the primary recreational attractions in the region", is inaccurate. The DEIS identifies significant impacts to recreation and visual resources. (LG–05)

    Response: *Section 4.15.1.1.9.2 has been modified to clarify impacts to quality of life related to recreation in the Project Area. Please refer to this section to review these revisions.*

14. Section 4.15.4 Unavoidable Adverse Impacts (page 4–137): The statement, "Impacts to quality of life may occur depending on an individual's negative point of view.", is subjective and inappropriate. As has been discussed previously, many local citizens choose to live in rural Emery County because they prefer the solitude and natural setting. Additionally, the ever increasing numbers of visitors to the area are also seeking solitude and the natural setting. The DEIS recognizes that the project will affect the quality of life of these people, as evidenced by the following statement on page 4–137; "For those that prefer the solitude and natural setting, their quality of life would be affected for the life of the Project." The impacts result from the Project, not from the negative point of view of the individuals. (LG–05)

    Response: *The word "negative" in the section referenced by the respondent was included in error and has been corrected and modified in the FEIS. Please refer to this section of the FEIS to review the revision.*

15. Many impressive numbers are presented in this section in an attempt to show the significant economic benefits and increased revenue that will result from the Project. Then the statement is presented in Section 4.15.1.1.9.5 (page 4–135) that, "While there may be a moderate increase in demand on existing services over time as project activities proceed, these affects have not been determined to be significant. Careful planning and budgeting of revenue would allow municipalities to consider such things as school additions, parks and recreation facilities, additional law enforcement officers and other services and facilities."

    Considering the following information derived from Section 4.15 of the DEIS that:

    During portions of the first few years of the project, the influx of non-local workers may range between 59 and 115 people (including Questar);

    The average salary of the project construction employees may be approximately $1100 per month;

"...most of the workers would not have dependents accompanying them and they would most likely stay in motels, recreational vehicles and mobile homes.";

Sales and use tax revenues generated by the Project, "would not represent a significant impact" as a source of additional revenue and these tax revenues, "would be captured primarily by Carbon County";

total revenues added to the Emery County economy, by the Project, through royalties, may be less than $250,000 annually for the first several years.

It will require much more than, "careful planning and budgeting" as suggested by the DEIS to allow for consideration of such things as schools, parks and recreation facilities, additional law enforcement, and other services and facilities. It will require a commitment by the companies to work with the local officials and citizens to meet the needs of the affected public, including their own employees. The DEIS should address this matter. (I–30, LG–05)

Response: *Planning for public utilities and services in local communities is beyond the jurisdiction of the BLM. The BLM cannot require an agreement between the Companies and local governments to address the potential for secondary socioeconomic effects. The intended meaning of the statement regarding "careful planning and budgeting" is that the additional revenues generated by the project that will eventually end up in local government coffers should be managed to offset any impacts to public utilities and services in each jurisdiction. The increase in population and/or workforce would be less than one percent of the existing population and workforce. This level of increase would not require increases in public services or schools.*

16. Section, 4.15.1.1.6. This section discusses demand on housing. What is the impact on property values (particularly on residential property with wells proposed for construction nearby). Properties with amenities such as access to a trails system and natural landscapes and public land are more valuable than similar dwellings without the amenities. What happens when these amenities are replaced with a dust choked, noisy, polluting industrial development. Can this loss of value be quantified? If so, this is another example of the externalization of gas production costs. (I–29, I–30, I–35)

Response: *A limited number of residences would be affected. The County overall, would be minimally affected.*

17. Section 4.15.1.1.9, Quality of Life. The Carbon County Future Plan and the Carbon County Comprehensive Master Plan provide numerous examples of what "quality of life" means. None of them point to a loss of air quality, reduction of recreation opportunities and wholesale conversion of our natural landscapes to an industrial zone as being desirable. The FEIS should discuss the out-migration of mobile professionals who live in the area because of its quality of life. It also does not discuss the disincentive for new business and professionals to locate here. Not many people outside the petroleum industry see living in the middle of a producing gas field as an ideal situation. People do not typically invest in upscale housing in the middle of a heavy industrial zone. (I–29)

Response: *It is extremely difficult to estimate potential out-migration of population as a result of project activities over a 25-year period. New businesses related to gas development may locate in the Project Area as a result of project activities.*

18. Section 4.15.1.9.1, Local Economy. We have experience in the River Gas Project. How about some quantification as to employment of locals and employment of transient workers. (I–29)

    Response: *Employment estimates were provided by the Companies based upon past experience, which includes the Price Coalbed Methane Project.*

19. Alternatives 2 and 3 will reduce the value of State lands and the income they will produce. (I–39)

    Response: *Comment noted, thank you.*

Health and Safety

1. The new transmission line is proposed to follow the same general alignment as the existing transmission line. This alignment would place the new line within the boundaries of Clawson Town, Castle Dale City, and possibly Huntington City. The placement of the line through these communities and the potential for a rupture represent a serious safety concern. For example, the line in Castle Dale would be very close to Emery County High School. For safety reasons, the line should be moved east of all communities along the route. (I–30, LG–01, LG–04)

    Response: *The ID team recognizes concerns exist about the alignment of the transmission pipeline shown in the DEIS. A common preference for the installation of new pipelines is to place them along existing pipelines, which is what Questar proposed to do. As noted in Section 1.2 of the EIS, locations shown in the EIS are conceptual in nature. Final locations are subject to field and permitting reviews. Landownership in and around Clawson, Castle Dale, and Huntington is nonfederal. Thus, the BLM and Forest Service would have no authority over the location of the transmission pipeline in these locations. The ultimate placement of the pipeline in these areas would be the result of negotiations among Questar and the various landowners.*

2. Little mention is made of fire, earthquake, or vandalism to the pumps, wells, pipelines, ponds, or tanks in the Ferron Natural Gas DEIS, other than mention of earthquake regarding pipelines and the fact that the well near the Bear Creek campground has a "possibility of well explosion or fire" (p4–86). This also was insufficiently evaluated in the River Gas CBM EIS. Many acts of vandalism are committed in this county every week These wells are open and the existing compression stations, injection wells, and evaporation ponds are in remote areas and constitute "attractive nuisances" that will tempt children, teenagers, and many adults into curious exploration, tampering, and vandalism — perhaps even target practice. These gas companies need to address these possibilities with proper enclosures, gates, or fences and proper training and equipment made available to local emergency services to deal with any potential explosions, fires, or injuries that could occur during and after development. Simply to mention the Sheriff's office will address these is not comforting. Facilities located within ½ mile of a residence should be fenced. (I–21, I–30)

    Response: *Fires are addressed in Section 4.16. Section 4.1.1.1.3 addresses earthquakes. Section 4.15.1.1.7.2 addresses vandalism. The BLM and Forest Service have law enforcement responsibilities on federal lands.*

Reclamation

1. Page 4–147 – 4.17.5 Mitigation and Appendix C Weed/Vegetation Management Plan: Reclamation and management plans developed for the project should include monitoring of reclamation areas. The DEIS states (Page 4–144) that of the 1,642 acres of soils that would be disturbed during construction, over 80% of these lands are unsuitable (high clay content, coarse fragments, salinity, etc.) for reclamation. Reclamation of these soils is expected to require many growing seasons and multiple efforts to reseed and successfully generate vegetation cover similar to that which presently exists. However, the mitigation described for both project reclamation (Page 4–147) and the Weed Vegetation Management Plan (Appendix C) does not describe long- term monitoring and successive revegetation efforts if original reclamation measures do not work. Monitoring should continue until vegetation is back to pre-construction conditions. (FG–03)

   Response: *The need for monitoring is a decision made by the decision makers in the Records of Decision. Please refer to the BLM and Forest Service's Records of Decision to review the requirements for monitoring defined by the decision makers. Recognizing that reclamation could require several years before being defined as successful, the BLM would not release bonds until the BLM has determined reclamation is successful. Reclamation monitoring also is part of the BLM's inspection program.*

2. Appendix C Weed/Vegetation Management Plan: The Service believes that cheatgrass (*Bromus tectorum*) is a an undesirable plant species that should be included as a Weedy Species of Concern (Table C–1). The USFWS recommends that BLM coordinate with biologists from UDWR, Service, and other agencies affected by the project and knowledgeable on noxious weeds to review and update the species list and develop reclamation and management plans appropriate for the project. (FG–03)

   Response: *Although cheatgrass is an undesirable species, the ID team did not identify cheatgrass as a Weedy Species of Concern in the Weed and Vegetation Management Plan because cheatgrass is widespread and uncontrollable in both Carbon and Emery counties. In general, the chemical nature of soils in the Project Area does not support cheatgrass. As a result, efforts specifically targeted at control of populations of this species are no longer an effective expenditure of time and money. Instead, cheatgrass is controlled only in conjunction with treatments more specifically directed at other species.*

3. Topsoil segregation and redistribution requirements (Reclamation Plan — Appendix A–3) should not apply to areas that are basically dirt and rock with little or no vegetation. These conditions should not be classified as "topsoil." (B/I–06, B/I–10)

   Response: *The presence or absence of vegetation solely does not define topsoil. Furthermore, a lack of vegetation does not negate the need to segregate topsoil, particularly in an arid environment. The upper layers of soil commonly contain elements important to successful reclamation of a disturbed site, including deposits of plant seeds and nutrients. Segregation of the soil containing these elements and the redistribution of this soil over subsoils is a primary component that determines the ultimate success of reclamation efforts. The actual determination of the amount of segregation required for each facility would be made on a case-by-case basis at the permitting (e.g., APD) stage.*

4. Road reclamation (Reclamation Plan — Appendix A–6) should be limited to leaseholder-constructed roads. Leaseholders should not have to reclaim roads that were in existence prior to operations. (B/I–06, B/I–10)

   Response: *Reclamation would involve only facilities constructed or upgraded by the Companies. Thus, the Companies would be responsible for reclaiming new roads they construct and reclaiming to pre-project conditions roads they upgrade. They would not be responsible for reclaiming roads in existence before the project began. Additionally, they would not be responsible for reclaiming newly-constructed roads or upgraded roads for which landowners decide to take responsibility for management and maintenance.*

5. Once drilling is completed and operational facilities are in place, the size of well pads and the width of roads should be reduced to the minimums necessary for access and operation. The DEIS addresses this reduction somewhat, but personal experience in the North Area suggests this type of reduction is not occurring. Higher bonds should be required if the operators cannot live up to this commitment. (I–15)

   Response: *Onshore Oil and Gas Order No. 1 requires that areas of pads not needed for production be reclaimed. The BLM will enforce the reductions on lands it administers. However, it has no authority to enforce the reductions on State- or privately-owned lands.*

6. The levels of bonding proposed in the River Gas and Ferron EISs are horribly small and place future reclamation in great danger. Recognizing the long-term danger of insufficient bonding (through recent experience of the Sunnyside mine bonding disaster) both Carbon and Emery counties have incorporated into their Master Plans a requirement of 100 percent bonding for reclamation of oil and gas extraction activities (p 1–8). The Ferron DEIS states "county bonding requirements are not binding on Federal or State leases... If the companies or their successors did default, the liability would ultimately lie with the mineral rights owner." We believe all anticipated reclamation costs must be bonded in advance to assure proper reclamation. Page S–2 states that the Carbon County Master Plan and the DEIS are not compatible because zoning requirements for gas is legally "...not designed to cover 100 percent of the reclamation costs ..." but that does not mean the company cannot furnish a good faith bond that may exceed local requirements in order to appease local interests.

   The Ferron DEIS does not state the dollar value required for the bond, but the River Gas EIS states that "RGC has filed a $25,000 statewide bond with the BLM. The cost to properly plug and reclaim a single well is estimated, in 1996 dollars, at $15,000. All 601 wells of the Proposed Action would than account for a total potential liability of $9,015,000, in 1996 dollars." The rest of this paragraph (CBM EIS page 1–9) explains how the company has so far acted responsibly, but that liabilities may increase as the field ages. No similar statement is made in the Ferron DEIS, and there should be. How much is this project going to cost to reclaim?

   We feel it is necessary for these companies to go beyond the legal requirements for bonding and satisfy local governments with 100 percent bonding, at least as a good faith effort to develop good will. Otherwise it will feed the perception these companies will do the legal minimum and expose the community to financial and environmental long-term risks in the interests of short-term gain. These gas companies could experience a change in management or go out of business for a number

of reasons over the expected 30–60 year life of these projects. Adequate bonding is essential. (I–21, I–35, I–37, I–38)

Response: *The discussions of bonding in the EIS and Summary have been revised. Please refer to these discussions to review the revisions. Additionally, neither Emery County nor Carbon County require bonding. County bonding requirements were erroneously reported in the DEIS. Emery County has a permitting process, but not bonding requirement. Carbon County has no permitting process or bonding requirements.*

Bonding requirement were discussed in Section 4.17.1 of the DEIS. This discussion also occurs in Section 4.17.1 of the FEIS. Readers also should note that since the DEIS was published, the land exchange that was pending in Congress was passed and signed into law. Thus, the number of wells that would be constructed on federal lands has decreased and the number of wells that would be constructed on State lands has increased.

7. Pages S–2 and 1–8 (of the DEIS)— statements regarding county Master Plans requiring 100 percent bonding for reclamation of the land are inaccurate. The Emery County General Plan contains no such requirement. However, adequate bonding is a significant concern, as indicated in the Scoping Summary for the Project; of 33 comments regarding reclamation, 15 dealt with bonding. (LG–05)

Response: *Please see response to the previous comment.*

Planning

Land Exchange

1. If the land exchange bill passes, would all of the federal land in the project area be traded or just part of it? (SG–03)

Response: *No, not all of the federal land in the Project Area was traded. The discussion of the land exchanged included in Section 1.5.2 of the DEIS has been revised to reflect passage of the land exchange bill. Please review Section 1.5.2 of the FEIS to review the results of the land exchange, which President Clinton signed into law on October 31, 1998.*

2. The DEIS states that resource protection and mitigation measures on exchanged state lands would be eliminated (4.7.6 Land Exchange pp.4–52). All Federal lands exchanged to the State of Utah within the Ferron Natural Gas Project Area should adhere to all conditions, mitigation measures, and restrictions developed for the Project. Thus, the same stipulations and mitigation payment requirements on federal lands should be adhered to on the new state lands. (FG–03, SG–02)

Response: *The land exchange was completed before the BLM and Forest Service made any decisions on the Ferron Natural Gas Project. As a result, no mitigation measures or conditions had yet been applied to any of the federal lands specifically involved in the exchange. The State of Utah is under no legal obligation to adhere to conditions, mitigation measures, or restrictions the BLM and Forest Service originally developed for the federal lands involved in the exchange.*

3. The BLM should note the Utah Trust Lands Administration has not agreed to adopt any of the conditions, mitigation measures, or restrictions imposed upon leases by any record of decision that will be issued for the Ferron Gas EIS. Consequently, such a record of decision is not binding on, and will not govern, activities conducted on trust lands. Activities on trust lands will be governed by lease terms and rules governing the management and use of trust lands and other applicable laws and regulations.

   The intent of the Trust Lands Administration is to manage trust lands in a reasonable manner consistent with the management practices of adjacent landowners. Because the Trust Lands Administration advocates the responsible development of natural resources, the BLM's analysis of the impacts will be considered in the development of trust lands within the Ferron Natural Gas Project Area. However, as authorizing agency, the Trust Lands Administration reserves the right to impose such conditions and restrictions or grant such waivers and exceptions to existing leases that the Trust Lands Administration deems to be in the best interest of the trust. (SG–02)

   Response: Comment noted, thank you.

4. The Council and the Department are cognizant of the effects, described at Section 4.2.3, page 4–15, and various other locations, which the Land Exchange may have upon portions of the Project. We desire that SITLA seriously consider adopting a position, regarding the entire project, that is consistent with Alternative 2. (LG–05)

   Response: Comment noted, thank you.

Consistency with Local Plans

1. The "Carbon County Trails Plan" is an informal document adopted in mid-1998 by Carbon County as a starting point for the development of a formal trails system. The present "Carbon County Trails Plan" has no binding commitments for Carbon County, the gas companies, or any other party. Additionally, the "Carbon County Trails Plan" is not inconsistent with other plans. It was designed to provide coexisting uses of the resource area. (I–06)

   Response: A review of the Carbon County Trails Plan suggests the Plan's developers do not consider the development of CBM fields as a compatible use. The Plan specifically states the experience of recreationists using the "de facto" system of trails around the Price and Helper areas would change from roaded natural to an industrial experience with construction of the gas fields. Additionally, the Plan suggests the gas companies associated with the CBM projects replace trail systems affected by the developments. Thus, the Plan suggests CBM development is incompatible with current use of the "de facto" trail system.

2. The DEIS correctly states the alternatives are inconsistent with the Carbon County Comprehensive Master Plan and Carbon County Trails Plan. However, no justification or reasons were given for the inconsistency and no finding was provided indicating consistency with local plans would be contrary to the Purpose of and Need for the Proposed Action. Unless an overriding Federal interest is identified and described, the Proposed Action and all alternatives should be restructured to be consistent with the local plans (I–29, I–39)

Response: *Reasons for inconsistencies between the proposed action and alternatives and the Carbon County Trails plan are included in Section 1.5.5. The proposed gas development and recreational use are two separate and sometimes incompatible uses identified for the area. On Federal lands, leases were granted under the provisions of the Price River MFP. The Federal leases grant valid rights to develop the lands. The leases, issued under the provisions of the MFP, do not contain stipulations requiring protection or mitigation of recreation opportunities. Section 1.5.5 of this document has been modified to include information regarding valid lease rights.*

NEPA does not require a finding to indicate if consistency with local plans would be contrary to the Purpose and Need for the Proposed Action. Section 202 of FLPMA requires that BLM management activities consider local plans and, to the extent practical, resolve any inconsistencies. This has been done in this instance. The Carbon County Trails plan recognized projected gas development in the area, including improvement and use of existing roads that are used by recreationists. Similar to the mitigation recommendations in the Trails Plan, construction of offsetting trails are identified in chapter 4 of the EIS as a means of mitigating impacts to recreation opportunities. Alternatives were already investigated (See Sections 2.4.2 and 2.4.6) that may have been consistent with the trails plan, but they were dropped from further consideration for legal and technical reasons. The lease rights represent an overriding Federal interest and would negate options to restructure alternatives to be consistent with local plans.

3. None of the alternatives offer to comply with local trails proposals or to mitigate the identified adverse impacts to recreational users. Some attention should be given, up front, to the Carbon County Trails Plan (North Area) and the draft proposal for the Castle Valley Trail System (South Area). The former has some standing as it was approved as an amendment to the Carbon County Master Plan. The latter is only a draft, but as a matter courtesy to the people that live adjacent to the development it should be addressed. (I–07)

   Response: *As identified in Section 1.5.5, rights granted to oil and gas leases on federal lands are nondiscretionary and supercede proposed trail uses identified in local plans. Additionally, several of the identified trails are on state and private lands and outside the BLM's jurisdiction. The ID team addressed the potential adverse effects of the alternatives on the trails and their users and identified potential mitigation to offset the affects.*

4. Page 1–9 Item.1.5.5, Consistency with Local Plans. The last sentence of the last paragraph states "requesting funding from Anadarko as possible mitigation in the affected area." A detailed review of the trail plan finds no mention at all of requesting funds from Anadarko for mitigation. In fact, the 1995 Trails Plan states that Carbon County suggested to BLM in a letter that a good mitigation agreement would include a requirement allowing for flexible reclamation for future trail opportunities. Neither the leases nor the Price MFP require mitigation for recreation. However, industry is mitigating on trails issues by following the Reclamation Plan, which requires coordination with BLM on future reclamation for future trail opportunities. NEPA and Federal Regulations recognize reclamation as a form of mitigation. (B/I–01, B/I–06)

Response: The last sentence of Section 1.5.5 has been revised to reflect a reference to companies pursuing CBM developments. Although neither the leases nor Price MFP specifically address mitigation for recreation, FLPMA requires the BLM ensure unnecessary degradation of resources on federal lands does not occur. Standard lease terms require protection and mitigation of impacts to resources. Recreation commonly is considered one of the resources the BLM must consider. Although NEPA and federal regulations recognize reclamation as a form of mitigation, they do not limit mitigation to reclamation only. Other options can and will be considered.

5. Page 3–107 states "There is currently no formal mechanism used to resolve land use conflicts," and "Land use planning for wildlife lands has been identified as a potential issue for the 1998 Utah General Session." We were actively involved in three groups that actively participated in drafting of the Carbon County Master Plan, now accepted by our county government. It is very distressing to see projects of this magnitude and potential impact plowing ahead, seemingly totally out of control of most people who live here and are involved in local planning efforts. Local citizen groups and activists that have great interest in the long-term quality of life in this area have largely been ignored by River Gas and Anadarko, the former already being involved with filing lawsuits against Carbon County. (I–21)

   Response: Comment noted, thank you.

6. Please add information regarding the following to page 1–9, immediately preceding Section 1.6, PUBLIC INVOLVEMENT/SCOPING OF ISSUES: In the South Area, a proposal has been developed for a Castle Valley Trail System (CVTS). The CVTS is designed to accommodate all terrain vehicle (ATV) and other trail users. The system will provide access from the local communities in Emery County to recreational opportunities on public lands. (LG–05)

   Response: The consideration of a proposal, such as the Castle Valley Trail System, as part of existing management direction is outside the scope of the Ferron Natural Gas EIS. Such a proposal must be evaluated in a proposal-specific NEPA analysis before it can be incorporated into the BLM's management direction. Although the ID team cannot evaluate the Castle Valley Trail System as existing management direction in the Ferron Natural Gas Project EIS, it did recognize the proposal's existence in the recreation sections. Please refer to the recreation sections in Chapters 3 and 4 of the FEIS to review the discussion.

7. Section 1.5.4 states the proposed actions and alternatives are in conformance with applicable, Federal Land Use Plans. This conclusion is not substantiated and is in fact contradicted in Chapter 4 of the DEIS. (I–29)

   Response: The comment provided insufficient information for the ID team to develop a detailed response. A review of Chapter 4 failed to locate the "contradiction" identified in the comment.

8. A precursor to the Carbon County Master Plan and Trails Plan was the Carbon County Futures Plan. This plan identified many of the issues addressed in the Carbon County Master Plan, including recreation opportunities such as trails and wildlife viewing. The Futures Plan was funded in large part by a grant from the USDA Forest Service. Both the Forest Service and BLM contributed staff and expertise to this planning effort. Both agencies contributed to the preparation of the Carbon County Master Plan. The Trails Plan was developed with Federal grant money and

again, both BLM and Forest Service provided staff and expertise. Carbon County Master Plan and Trails Plans are the result of hundreds of citizens donating thousands of hours in the creation of these products. Both Federal agencies were active participants in these planning processes. It is a violation of the community trust and spirit of partnership for the agencies to dismiss the local plans as though they are inconsequential. The Federal agencies need to honor the plans they assisted in preparing. The agencies should honor the community that entered into the planning process in good faith, expecting the federal agencies were committed partners. The FEIS must be rewritten to make it consistent with local plans. Local plans were raised as issues in scoping and should not be summarily dismissed. (I–29)

Response: *Section 202 of FLPMA requires that BLM management activities consider local plans and, to the extent practical, resolve any inconsistencies. This has been done in this instance. The coalbed methane leases were issued before local planning efforts, such as the Carbon County Trails Plan, occurred. Consequently, the Carbon County Trails Plan recognized projected gas development in the area, including improvement and use of existing roads that are used by recreationists. Similar to the mitigation recommendations in the Trails Plan, construction of offsetting trails are identified in chapter 4 of the EIS as a means of mitigating impacts to recreational opportunities. Alternatives were already investigated (See Sections 2.4.2 and 2.4.6) that may have been consistent with the trails plan, but they were dropped from further consideration for legal and technical reasons. The lease rights represent an overriding Federal interest and would negate options to restructure alternatives to be consistent with local plans.*

Editorial

1. The Final EIS would benefit from additional editing to fix typographical errors present in the Draft EIS, such as "DLM State Office" on page 3–98. (SG–03)

   Response: *During preparation of the FEIS, the ID team reviewed the DEIS for typographical errors. All errors identified during this review and those identified by respondents were fixed in the FEIS.*

2. Page 2–47 first line of Section 2.4.3: The word "buffer" is incorrectly typed as "bugger". (SG–02)

   Response: *This typographical error has been corrected. Please review Section 2.4.3 to review the correction.*

3. It was difficult to determine if facilities were proposed in highly-visible locations due to the small detailed maps of the North Area. Can larger plates be used in the display of the alternatives for the North Area? The plates fold out to show nothing applicable south of Price. (I–07)

   Response: *Due to the number of plates included in the EIS, the number of copies printed, and costs for printing color plates, the ID team did not consider including larger plates in the FEIS practical or cost effective. However, larger plates are available at the BLM's Price Field Office and State Office for review by anyone interested in examining larger maps.*

4. The reference to Section 4.15.2.1 on page 4–135 is erroneous, the section does not exist. (I–21, LG–05)

   Response: The reference to this nonexistent section has been deleted. Please refer to Section 4.15.1.1.9.2 to review this revision.

5. The last sentence of paragraph 2 in Section 5.3.15.2.3 on page 5–25 is incomplete. (I–21)

   Response: This sentence has been revised. Please refer to Section 5.3.15.2.3 of the FEIS to review the revisions.

Alternatives

1. Natural gas in the Project Area should be developed. (B/I–04, B/I–05, I–02, I–08, I–10, I–11, I–12, I–14, I–17, I–18, I–19, I–20, I–22, I–24, I–25, I–26, I–27, I–28, LG–05, O–01, O–02, O–03)

   Response: Comment noted, thank you.

2. The discussion on the use of electrical equipment (Section 2.1.1.1.1.4 Electric Utilities on page 2–9 in the DEIS) should be clarified and expanded and whether they would be buried or run above ground. (E/C–01, I–29)

   Response: The discussion of electrical facilities in Chapter 2 have been revised and expanded to provide readers with more information about electrification of the project's facilities. Please refer to chapters 2 and 4 to review these revisions.

3. I am opposed to the alternatives evaluated in the DEIS. (I–01, I–03, I–04, I–09)

   Response: Comment noted, thank you.

4. The three alternatives analyzed in the DEIS do not provide the decision maker with a full range of alternatives. Alternative 1 should not be considered and Alternative 3 is obligatory. For example, only 10 percent fewer acres would be disturbed between alternatives 1 and 2 and only 6 percent less water is used in Alternative 2. (E/C–01, E/C–02, I–07, I–29)

   Response: Although the analysis evaluated three alternatives in detail, the ID team considered a variety of potential alternatives. Many alternatives were eliminated from a detailed evaluation due to technical considerations and the primary constraints described below. Alternatives eliminated from a detailed evaluation are discussed in Section 2.4 — Alternatives Considered, but not Evaluated in Detail. The ID team evaluated Alternative 1 because it was the Companies' Proposed Action and it defined the level of development necessary to extract the coalbed methane.

   Each reader must keep in mind two primary constraints to fully understand the circumstances surrounding the proposed project, alternatives considered in detail, and the NEPA analysis documented in this FEIS. First, the Ferron Natural Gas Project is not a leasing analysis. The Companies already hold valid federal oil and gas leases. An oil and gas lease grants the lessee the "right and privilege to drill for, mine, extract, remove and dispose of all oil and gas deposits" in the leased

lands," subject to the terms and conditions incorporated in the lease (Form 3110–2). On land leased without a No Surface Occupancy or similarly restrictive lease stipulation, the Department of Interior cannot deny a permit to drill. Once the land is leased, the Department no longer has the authority to preclude surface-disturbing activity, even if the environmental impact of such activity is significant. The Department can only impose mitigation measures upon a lessee who pursues surface-disturbing activities. When it issues a lease, the Department makes an irrevocable commitment to allow some surface disturbances (Tenth Circuit Court of Appeals in Sierra Club vs. Peterson [717 F. 2d 1409, 1983]).

Second, much of the proposed Ferron Natural Gas Project would occur on state- and privately-owned lands and mineral estates. The BLM and Forest Service have no legal authorities over these lands, including the authority to impose environmental protection measures or mitigation measures. In other words, development of natural gas resources from state- and privately-owned lands and mineral estates is not subject to the BLM or Forest Service's approval. Consequently, the ID team could only assume development would proceed on these lands as the Companies propose in Alternative 1, regardless of the BLM and Forest Service's decisions on the Ferron Natural Gas Project.

5. Alternatives that present different levels of development on the proposed area should be included. (E/C–02)

   Response: *The ID team considered alternative well densities for potential alternatives to be considered in detail. Alternatives with a well density pattern less than 160 acres (e.g., 320 acres) cannot extract CBM effectively or completely. Thus, these alternatives cannot be implemented because they would violate the Companies' lease rights. As discussed in Section 2.4.1, well density patterns greater than 160 acres (e.g., 80 acres) are not supported by geologic data, economic conditions, or present technologies. Consequently, higher well density spacing patterns were not evaluated in detail. If circumstances change in the future, another NEPA analysis would be required before a higher well density spacing pattern could be implemented.*

6. The USFWS strongly supports the selection of Alternative 2. The environmental protection measures identified under Alternative 2 would help reduce or eliminate some environmental impacts resulting from the proposed project and these environmental protection measures are consistent with the USFWS' Mitigation Policy to avoid and minimize environmental impacts. (FG–03)

   Response: *Comment noted, thank you.*

7. Page 2–3 paragraph 3: Paragraph does not provide operational contrasts that conventional gas wells in the study area produce from sandstone reservoirs and are not pumped but flow naturally as a result of gas pressure in the reservoir. Operation and maintenance of CBM wells is more involved than conventional wells due to the need to operate, inspect, and maintain additional pumping equipment at CBM well sites. (SG–02)

Response: *The fourth full paragraph of Section 2.1.1.1, Overall Field Development Proposal has been revised to include discussion about the greater efforts needed to maintain CBM wells relative to conventional natural gas wells. Please refer to this section to review the revisions.*

8. The proposals do not specify the types of facilities that may be installed. The type of pump and associated facilities can greatly change the impacts on the visual and noise environment. River Gas Corporation has made efforts to minimize these impacts close to residences in Price. Can we expect the same from Anadarko or future leaseholders? (I–07)

Response: *Section 2.1.1.1.3.2.1 — Production describes the two types of pumps available and the reasons the Companies proposed one type over the other type Please refer to this section to review this discussion. Mitigation for visual effects is identified in Section 4.13.3. This analysis determined levels of noise projected for the alternatives would be below the EPA's guidelines. These guidelines identify levels below which noise would not adversely affect public health and welfare.*

9. UDOGM's main concern is that a consistent set of compliance and performance standards be kept between the Drunkard's Wash Coal Bed Methane Field and the Ferron Coal Bed Methane Field which are adjoining development areas. Alternative Two, the proposed action with the requisite environmental performance measures, in UDOGM's opinion, does an outstanding job of maintaining that consistency. In particular, five broad areas are addressed to protect the environmental resource values in the Ferron Natural Gas Field: (SG–02)

Development Exclusions — Similar to the Drunkards Wash, the number of wells to be permitted, the number of acres where disturbance is allowed, as well as the number of miles of roads permitted are all limited through the use of Alternative Two. All of these limitations will contribute to a reduction in the potential gas production from the field. From a conservation (of oil and gas) standpoint, this is a drastic, but necessary measure for compatibility with other uses.

Seasonal Closures of Certain Areas — Seasonal closures in the Drunkards Wash Field have worked in protecting certain wildlife species and measures used are successful only because of cooperative management among companies, land managers, and wildlife managers.

Vehicular Access Limitations During Certain Periods — Limits on vehicular access are an important part of the success of natural gas recovery in the Drunkard's Wash Field but mostly owe their success to cooperative field efforts of the parties involved, and tolerance from the parties, especially during times of emergency access. Mitigation Fees - An important part of maintaining a level playing field for the companies involved is holding mitigation fees on a per acre basis at similar levels for all areas where coal bed methane is produced. An intensive effort to collect additional mitigation fees in one area over another is adverse to the goal of consistency and even handed development.

Response: *Comment noted, thank you.*

10. Utah Division of Water Rights supports the additional stipulations under Alternative 2 that have been proposed by the BLM, which would provide minimal protection of flood plains, springs, and wells in and adjacent to the project area. (SG–02)

Response: *Comment noted, thank you.*

11. The BLM's Preferred Alternative (Alternative 2) should be implemented, but pre-existing leases should be managed under the original terms and conditions applicable at the time the leases were acquired. Existing land use plans for the Ferron Natural Gas Project area already provide sufficient restrictions and stipulations to ensure proper protection and mitigation of the sensitive resources covered in the DEIS. Unless otherwise agreed to by the operators, leases issued before the land use plans supersede those plans and should not be subject to inconsistent standards or requirements. (B/I–01, B/I–02, B/I–03, B/I–06, B/I–07, B/I–10)

    Response: *The leases were issued under existing land use plans that did not contemplate the level of development proposed. Section 6 of the oil and gas uniform leasing form requires lessees to conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Additionally, the lessee shall take reasonable measures deemed necessary by the lessor to accomplish the intent of this section. This section provides the basis for the BLM and Forest Service to address needs of the resources that were not adequately addressed under existing land use plans at the time the leases were issued.*

12. Section 2.2, Alternative 2 — Proposed Action with Additional Environmental Protection Measures, Page 2–38, Recreation. The South Area is not mentioned. The South Area also has existing recreational trails that should be reclaimed to pre-existing conditions, these should be identified during the APD process. Reclamation of company-constructed roads also should include consultation with the recreational users. Texaco, Chandler, and the BLM also should complete an agreement to study the development of trails to offset recreational impacts in the South Area. (I–23)

    Response: *The Environmental Protection Measures for recreation in Section 2.2 have been revised. Please refer to this section of the FEIS to review these changes.*

13. We strongly oppose BLM's intention to require operators to pay $1,250 per well and $250 per acre of actual surface disturbance from pipelines on federal surface or subsurface estate in big game crucial and high priority winter range. This kind of forced contribution goes beyond BLM's authority, is tantamount to blackmail, and should not be allowed. In a May 6, 1991 memo, the Regional Solicitor's Office indicated there are several problems with forcing companies to contribute to a special fund for use in enhancing wildlife habitat elsewhere. The memo states this kind of "*fundraising*" is beyond the BLM's authority. "*First, it appears to be an unauthorized tax or an equally unauthorized attempt to augment BL M's existing appropriations. Second, it strikes the subjects of the "contribution" as little more than thinly disguised blackmail. Third, the courts tend to find such matters very offensive to fundamental notions of fairness and administrative law.*"

    As a result of the memo, which was in response to questions from both the Wyoming and Colorado State Directors, the Wyoming State Office issued IM WY-93-160 which virtually prohibited compensation or "off-site" mitigation. Under this policy, compensation, as a form of off-site mitigation, may be used only in rare circumstances and is to be strictly voluntary, meaning no party is to be coerced or forced to comply under duress. "*No otherwise lawful authorization is to be held ransom to participation in compensation mitigation.*" Clearly, this is what BLM is

doing in Utah in the Price Field Office. Moreover, we understand that at present the BLM has so much money in the fund already that it does not know what to do with it. We do not see such a fund as necessary or viable option. (B/I–05, B/I–07)

Response: *The EPMs have been revised to indicate they are agreements willingly entered into by the Companies. The funds would substitute for acre-for-acre offsite mitigation. If the Companies elect not to make the payments, then acre-for-acre mitigation would take over. The acre-for-acre mitigation is specified by the management plans.*

14. Various portions of the DEIS describe specific sizes of pipes and casings that would be used in the wells and gathering system. Dimensions of emergency water pits and facilities sites also are stated. Anadarko is not agreeing to use these specific sizes and dimensions. This information represents general data for a reasonable foreseeable development scenario. At the time of submitting these data to the BLM, it was Anadarko's understanding that specific design parameters could change as more information was acquired by development. (B/I–01)

Response: *As Section 1.2 of the EIS describes, the project evaluated in the EIS is conceptual in nature. Thus, the precise specifications and locations of facilities may change somewhat in their final configuration. However, changes made to facilities cannot substantively change the overall basis for the evaluation documented in the EIS or the results of that evaluation. Substantive changes in the basis of the NEPA analysis or results of that analysis would require another NEPA analysis.*

15. We have serious concerns regarding the imposition of excessive and, in our view, unlawful restrictions on operations held on valid, existing leases. BLM must recognize that certain lease rights were granted upon lease issuance which cannot be abrogated simply because BLM believes additional restrictions may be warranted. For example, the imposition of blanket seasonal restrictions was raised in an industry protest of the Big Piney/LaBarge Coordinated Activity Plan (CAP). On page 3 of BLM's October 21, 1992 decision on the CAP protest, it is declared:

"The use of restrictions on construction, drilling and well completion activities for the benefit of big game and other animals are not to be applied for a blanket 51/2 to 9-month period and are not to be applied as "stipulations", or additional stipulations, on existing unstipulated oil and gas leases. Rather, the need for restrictions is to be determined through a case-by-case review and analysis of APDs and Sundry Notices, at the time such APDs and Sundry Notices are submitted for approval. Application of the restrictions is to be only as necessary and appropriate to avoid <u>unnecessary and undue impacts</u>." [Emphasis added]

Additional BLM policy outlined in Washington Office Instruction Memorandum (IM) 92-67, directs:

"Any relocation greater than 200 meters, timing restriction greater than 60 days or mitigation which would render a proposed operation uneconomic or technically infeasible is not considered to be consistent with a lessee's rights and cannot be required absent a lease stipulation, unless it is determined to <u>prevent unnecessary and undue degradation</u> of public lands or resources. The clear evidence and convincing need for such mitigation must be documented in a site-specific EA or EIS, if necessary, on the APD." [Emphasis added]

Clearly, the standard which must be met relates to the need to avoid unnecessary and undue degradation of the resource in question. In our view, maintenance and the logical progression of development on a valid lease cannot possibly result in unnecessary and undue impacts. The Ferron operators have certainly demonstrated their willingness to work with BLM to minimize impacts and there is no need to stray from the policy outlined above. (B/I–05)

Response: Any unnecessary and undue impacts will be determined in the ROD.

16. Texaco has installed automated equipment that measures and monitors production in the South Area. This will further mitigate impacts on wildlife by restricting traffic in sensitive areas during the critical winter months. This was done voluntarily and not in response to lease or regulatory requirements. It should not be imposed as a standard operating practice for the area. (B/I–06)

    Response: The Environmental Protection Measures identified in Section 2.2 do not include the use of automated equipment.

17. As a person interested in rural tourism and outdoor recreation I cannot support Alternative I or II unless there are mitigation measures written to create new trails to replace the former trails. The companies could either provide funding or hire a trails designer/builder to complete the project. I think this would be a great public relations move which could highlight the relationship between the companies and the community. (I–13)

    Response: Comment noted, thank you.

18. The Summary states "alternatives considered but not evaluated in detail included alternative well densities, ... certain areas excluded from development, specific buffers around residences, ..." At least these alternatives were considered in the River Gas EIS. Although we find the 160 acres spacing as the only considered spacing refreshing, why were buffer zones not considered? The Ferron Natural Gas Project will impact more homeowners than RGC, especially in areas just outside the Project Area's boundaries (especially in Carbonville and Spring Glen). This cannot be ignored. (I–21)

    Response: Although the analysis evaluated three alternatives in detail, the ID team considered a variety of potential alternatives. Many alternatives were eliminated from a detailed evaluation due to technical considerations and the primary constraints described below. Alternatives eliminated from a detailed evaluation are discussed in Section 2.4 — Alternatives Considered, but not Evaluated in Detail. The ID team evaluated Alternative 1 because it was the Companies' Proposed Action and it defined the level of development necessary to extract the coalbed methane.

    Each reader must keep in mind two primary constraints to fully understand the circumstances surrounding the proposed project, alternatives considered in detail, and the NEPA analysis documented in this FEIS. First, the Ferron Natural Gas Project is not a leasing analysis. The Companies already hold valid federal oil and gas leases. An oil and gas lease grants the lessee the "right and privilege to drill for, mine, extract, remove and dispose of all oil and gas deposits" in the leased lands," subject to the terms and conditions incorporated in the lease (Form 3110–2). On land leased without a No Surface Occupancy or similarly restrictive lease stipulation, the Department of Interior cannot deny a permit to drill. Once the land

is leased, the Department no longer has the authority to preclude surface-disturbing activity, even if the environmental impact of such activity is significant. The Department can only impose mitigation measures upon a lessee who pursues surface-disturbing activities. When it issues a lease, the Department makes an irrevocable commitment to allow some surface disturbances (Tenth Circuit Court of Appeals in Sierra Club vs. Peterson [717 F. 2d 1409, 1983]).

Second, much of the proposed Ferron Natural Gas Project would occur on state- and privately-owned lands and mineral estates. The BLM and Forest Service have no legal authorities over these lands, including the authority to impose environmental protection measures or mitigation measures. In other words, development of natural gas resources from state- and privately-owned lands and mineral estates is not subject to the BLM or Forest Service's approval. Consequently, the ID team could only assume development would proceed on these lands as the Companies propose in Alternative 1, regardless of the BLM and Forest Service's decisions on the Ferron Natural Gas Project.

19. The negative impacts of a development of this type on citizens living in the areas wells are to go are mentioned in the River Gas EIS and are felt to be "unavoidable" and "significant" in "agricultural and residential split-estate areas and in residential areas where CBM facilities would be on private and/or state lands within 0.5 mile". Therefore, a half mile buffer zone, uniform for River Gas, Anadarko, and other company developments needs to be established and enforced as the development of the entire field occurs. This should exist for private residences and campground (note the proximity of a well to the Bear Creek campground is unacceptable (p 4–86). No buffer zones are described as part of the development process in this Ferron EIS. More than the legal minimum needs to be used here. Does this DEIS even mention the legal minimum and exactly where the conflicts are expected to arise? It must also consider the impacts from development on land adjacent to the field boundaries, such as in Carbonville and Spring Glen. (I–21)

    Response: *No legal requirement for buffer zones exists. Furthermore, the BLM has no jurisdiction over private or state lands. The areas specifically mentioned in this comment are not on BLM lands. Please refer to Section 2.4.3 to review the discussion about why buffer zones were considered but dropped from detailed evaluation.*

20. Anadarko has expanded its drilling field directly into the town of Carbonville. The field boundaries displayed in the maps for this DEIS do not include that. Why? (I–21)

    Response: *The FEIS addresses only the proposals submitted by the Companies. Anadarko's drilling around Carbonville is not part of the submittal to the BLM and does not require BLM's approval. These wells are within the Price Coalbed Methane Project's project area and are considered in the cumulative effects analysis of the Ferron Natural Gas Project.*

21. The FEIS should consider an alternative that is a more measured, logical, phased development over a longer time period and considers the entire coalbed methane field as a whole. (I–21)

Response: *Phased development was discussed in Section 2.4.7 of the DEIS. Please refer to this section to review this discussion.*

22. The descriptions provided for the emergency pits associated with the disposal well facilities are inadequate to allow impact determination. Information should be given on whether these pits would be lined (for example, with synthetic liners or with compacted clays) or unlined. If lining is not proposed, a discussion of fate of the stored water should include expected infiltration. An anticipated frequency of use should be estimated; this could be done by citing how often the existing disposal wells have been shut down, either for repairs or for routine maintenance. The maps provided in the DEIS seem to indicate that at least some of these sites would be located close to perennial or intermittent streams, so such information on fate and frequency is necessary in order to assess the associated potential impacts to surface water and groundwater. (I–16)

Response: *Regulations of the State of Utah require lining of these pits. Thus, all emergency pits would be lined. Please refer to Section 2.1.1.1.1.5.1 to review the discussion about lining emergency pits.*

23. Section 2.4.6 on directional drilling appears to have been taken directly from the Price Coalbed Methane Project EIS. While the two projects have many similarities, and it may have been appropriate and efficient to use some of the same information in preparing the Ferron Natural Gas Project DEIS, the document authors did not even change the name of the proponent from RGC to the current proponents. From this "typo" it can be inferred that, at least on the subject of directional drilling, the need for further thought was dismissed without even a cursory examination of the specifics of this project and its environment. This does not inspire confidence that all other aspects of the Ferron project were looked at afresh. (I–16)

Response: *The typographical error was corrected for the FEIS. Although the narrative was taken from the Price CBM EIS, the material was reviewed by the ID team. Because the typographical error was included, no one should infer the material was taken without due consideration.*

24. Given the world-wide need for new water treatment technologies, I would think that the heavy reliance on a 1980 publication to discuss alternate water disposal methods (Section 2.4.5) could produce a biased discussion. I would be surprised to find that no relevant information on this subject has been generated since the most recent (1993) reference cited in the section. While an exhaustive literature search may not have been warranted since treatment is not part of the Proposed Action, if the subject is discussed it should be done so in a worthwhile way, by using the most current information available. (I–16)

Response: *We did a literature search and the analysis was based on the most recent information we could locate.*

25. Given the potential for greater impacts to surface water and groundwater associated with placement of wells near perennial streams, I support the BLM"s choice of Alternative 2 over Alternative 1. However, under Alternative 2, I urge the BLM to apply the additional protection measures not only to sites near perennial streams as stipulated, but to sites near intermittent and larger ephemeral streams as well. (I–16)

Response: *Comment noted, thank you.*

26. Although permitting of specific compressors is the responsibility of UDEQAQD, we suggest including in the FEIS a revised or modified alternative that would avoid degradation of visibility in Class I areas and continue to allow coalbed methane development. The alternative should consider all possibilities to offset the predicted visibility degradation, regardless of authorities or responsibilities for implementation. This information could be used by UDEQAQD in permitting decisions. (FG–02)

    Response: *Additional mitigation and changes were made in the assessment of potential effects to air quality. Also, an option was added to alternatives 1 and 2 which would replace gas-fired equipment with electrical equipment. Please refer to the air quality analysis in Chapters 4 and 5 to review these changes.*

27. New roads constructed in Emery County should be constructed to the County's minimum right-of-way width standard, which is 66 feet. (LG–02)

    Response: *New roads constructed on federal lands would not be part of existing maintenance agreements between the BLM and the counties. Any relinquishment of roads to the counties would not occur before the end of the project.*

28. For public safety reasons, Emery County is not favorable to allowing the construction of any type of roadway on any slope greater than 10 percent. Also, roads constructed on slopes greater than 6 percent must be properly engineered and constructed to minimal AASHTO standards. (LG–02)

    Response: *Comment noted, thank you. Final designs of roads would be determined at the APD stage.*

29. Additional information on Questar's pipeline is needed. This information includes the pipeline's specifications, details on the timing of installation, a determination on the abandonment of the old pipeline, the proposed location of the pipeline relative to the direction growth is likely to occur in cities traversed by the pipeline, and reclamation standards for the pipeline's right-of-way. (LG–04)

    Response: *The final alignment of the pipeline (within the pipeline corridor shown on plates in the FEIS) and timing of construction would be determined during post-EIS negotiations with landowners and construction schedules of the other three Companies. Questar would have to negotiate with cities along the route for the optimal location of the pipeline. Detailed design parameters would be included with applications to appropriate landowners.*

30. Section 2.1.1.1.1.4, Electric Utilities on page 2–9: The DEIS states that electrical power cables or lines would be installed either underground or overhead. The Council and the Department oppose installation of overhead power lines as the method of providing electrical power for the project. Electrical transmission cables associated with the Price Coalbed Methane Project are buried, the same criterion should apply to the Ferron Project. (LG–05)

    Response: *Full electrification of the Ferron Natural Gas Project is analyzed in the FEIS. An addition to the Proposed Action is all electrical lines installed above ground. An addition to Alternative 2 analyzes a portion of lines installed above ground and a portion buried.*

The basis of the Alternative 2 analysis is the type of soils in the Project Area. A generalized analysis of soil type was performed for the Project Area. The criteria was a depth to bedrock of 18 inches and cobbles in the soil. It was assumed that where the depth to bedrock was greater than 18 inches and no cobbles were expected in the top 18 inches, the power lines could be buries. Conversely, where the depth to bedrock was less than 18 or cobbles were present, the power lines would need to be installed above ground on poles. This criteria was used because it was assumed that areas with cobbles or depth to bedrock of less than 18 inches would have to be blasted, and the environmental effects of blasting would preclude buried power lines.

It is recognized that the Price CBM Project is mostly burying electrical lines. However, to date the Price CBM Project Area is not operating in areas that contain cobbly and shallow depth to bedrock that is present in parts of the Ferron Natural Gas Project Area.

31. All alternatives should be consistent with local plans and there should be at least one alternative that includes realistic best management practices to mitigate impacts. The mitigation provided in Alternative 2 is weak and not demonstrated to be effective (I–29)

    Response: *The environmental protection measures described in Alternative 2 were derived from the conditions listed in the San Rafael Resource Management Plan (1991) and the Price River Management Framework Plan (1986). The list of environmental protection measures was developed to comply with federal management plans, reduce undue environmental degradation, and be consistent with the valid lease rights of the Companies. In some cases, the analysis demonstrated that environmental impacts may still occur. As a result, extra mitigation was proposed to the decision maker for each resource where applicable.*

32. The development of the proposed project should be accompanied by the availability of natural gas in Kenilworth. Bringing gas into Kenilworth would mitigate poverty-level conditions in Kenilworth. (I–35)

    Response: *Thank you for your comment. Availability of natural gas in Kenilworth is beyond the scope of this analysis.*

Desired Future Conditions

1. The BLM should address the question of desired future conditions on the North and South Areas before decisions are made on these projects. The adverse cumulative effects of the projects will only be known at some later date and may not be reversible. The FEIS should address the future desired conditions of these areas relative to each alternative. (E/C–02)

    Response: *The Price River Resource Area MFP and San Rafael Resource Area RMP define desired future conditions for lands administered by the BLM in the North and South areas, respectively. The Manti-La Sal National Forest's LRMP defines the Forest Service's desired future conditions for National Forest System lands within the Project Area. As long as the alternatives evaluated in the FEIS are consistent with these management plans, they would be consistent with the desired conditions*

defined by the BLM and Forest Service. Please refer to these management documents to review information that defines the desired conditions on BLM and Forest Service lands in the Project Area.

Data

1. I am concerned about the reliability and currency of the data based used for the analysis. It is critical that timely and reliable resource data be used in developing the FEIS. (E/C–02)

   Response: The ID team used the most current data available for the analysis. Please see references throughout the FEIS to obtain documentation concerning the data and assumptions used.

2. Overall, the data used to support the analyses documented in the DEIS are speculative and insufficient to establish a scientific basis for the requirements for mitigation. For example, the provisions that would prohibit any surface occupancy within ½-mile of raptor nests has not been validated by recognized scientific study. (B/I–04)

   Response: The foundation for the Environmental Protection Measure that prohibits surface occupancy within ½ mile of raptor nests is the USFWS' "Utah Field Office Guidelines for Raptor Protection Proximal to Disturbances from Land Use Activities".

Mitigation

1. The environmental protection measures associated with Alternative 2 should be applied to all lands within the Project Area to help conserve and protect the fish and wildlife within the area. (FG–03)

   Response: The BLM only has the authority to implement mitigation on public land. The impacts of not applying the environmental protection measures and mitigation are discussed in the analysis. However, it would be a decision between the land owners and the Companies to apply mitigation and environmental protection measures on non-federal land.

2. The USFWS supports the use of off-site computerized monitoring systems, especially at wells in close proximity to raptor nests, to reduce visits by maintenance personnel. (FG–03)

   Response: Comment noted, thank you.

3. The USFWS recommends the following two additional environmental protection measures for raptors: (FG–03)

   - Selected roads near areas with high raptor utilization (large numbers of active nests, abundant prey, perching habitat, etc.) should be gated and locked during the critical breeding season. (Areas of high value raptor habitat should be determined with consultation with the UDWR and USFWS).

➢ Electrical power lines, if installed overhead, adjacent to roads should conform to current standards to protect raptors from electrocution.

Response: The BLM believes that adequate protection for raptors has been analyzed under Alternative 2, which prohibits all construction within ½ mile of a known active raptor nest. If overhead power lines are approved, they would be installed in conformance with current standards to protect raptors from electrocution.

4. The USFWS is preparing guidelines to avoid and minimize impacts to raptors resulting from all types of development. These guidelines, "*Utah Field Office Guidelines for Raptor Protection Proximal to Disturbances from Land Use Activities*" should be implemented. (FG–03)

Response: The August 1998 draft Guidelines were considered during the analysis, and the EPMs and mitigation measures included in the EIS reflect that consideration.

NEPA Process

1. The EIS should address the stewardship responsibilities of the BLM. The EIS must acknowledge the long-term consequences on the renewable natural resource of energy development on public lands as proposed in the DEIS and develop viable alternatives to address these concerns. (E/C–01)

Response: The DEIS does address that the extraction of natural gas would be an irretrievable commitment of natural sources. In other words, once the natural gas would be extracted, it would no longer be available for future use. The consideration of other energy sources at other places is beyond the scope of the EIS.

2. The DEIS fails to adequately describe certain actions and/or mitigations. Without specifically identifying the actions and addressing all appropriate mitigations, it is impossible for the agency or the public to make an informed decision. (E/C–01)

Response: The ID team was unable to respond to this comment because the information contained in the comment lacks the specific information needed to respond.

3. The DEIS fails to consider impacts on all aspects of the environment. Due to this failure, any decision based on the current EIS would be arbitrary and capricious. Until all concerns are addressed, adequate mitigations are considered, baseline data is collected, and a sufficient monitoring plan is considered, any EIS prepared for this project will lack the "high quality …[a]ccurate scientific analysis" required under NEPA so that the decision can be scrutinized by the public. (E/C–01)

Response: The DEIS focused on the issues identified during scoping. Without further specifics, the ID team cannot address this comment further.

4. This document is too complex, discourages citizen participation, and hides the real choice in a mire of technical obscurity. Hopefully, the "experts" did not use science to justify a pre-determined outcome. (B/I–03)

Response: *A 111,000-acre natural gas development project is a complex issue that cannot be properly analyzed in a simplistic manner. Although at least some of the material presented in the EIS is technical, the ID team tried to avoid technical discussions and jargon as much as possible so the material is as understandable to most people. The Executive Summary is meant to present the results of the analysis for those individuals who do not wish to read all the detail. It is important that the EIS process analyzes and discloses potential impacts. The final decision is left to the Authorized Officers, in this case the BLM Utah State Director and Forest Supervisor, who will make the decision based upon the information presented in the FEIS.*

5. The Proposed Action and alternatives include wells and facilities that are already constructed or approved. Those actions (such as the Jewkes Hollow project EA #UT-066-98-70) have been covered by the NEPA process already and have stipulations and mitigation already connected to them. Others appear to be covered by other EA's the Price Office completed prior to the initiation of the current process, too. I understand how you may need to quantify the commutative impacts from every project within the EIS Project area, but I wonder if the mitigation or stipulations that may result from this yet completed document can be applied. Will that result in stacking NEPA decisions? Approval can not be given for a well that is already drilled. Normally EIS's do not tier off EA's. (I–07)

   Response: *Comment noted, thank you.*

6. Based on observations of the implementation of the Price Coalbed Methane EIS and prior experiences, concerns exist that the approval process to permit wells, facilities, roads, and pipelines can be done in a timely manner. We urge the BLM to begin formulating procedures that will allow the lease holders to begin timely development of their oil and gas leases in 1999, pending a Record of Decision. The Green River Basin Advisory Committee's recommendations for NEPA streamlining have been adopted by the Secretary of Interior. We urge BLM to apply these recommendations to this project. (B/I–01, B/I–02, B/I–06, B/I–10)

   Response: *Decisions about procedures used in implementing the APD stage of development are beyond the scope of this NEPA analysis and FEIS. Thus, this FEIS does not address procedures used in the APD stage of development.*

7. The cost of raptor surveys is just one aspect of the overall increasing cost of operating on federal lands that concerns the oil and gas industry. The Green River Basin Advisory Committee's recommendation for Eco-Royalty (ERR), if applied nationwide would have allowed leaseholders to offset against royalty NEPA documentation and these types of mitigation and monitoring costs that exceed lease and regulatory requirements. Unfortunately, the Secretary of the Interior did not adopt those recommendations due to objections by the Solicitor's Office. We recommend the Interior Department re-evaluate its position on ERR and adopt this form of relief nationwide. (B/I–02, B/I–06, B/I–10)

   Response: *Recommendations for Eco-Royalty are beyond the scope of this analysis.*

8. Individually, the extents of coalbed methane projects approved (primarily the Price CBM Project) and proposed (primarily the Ferron Natural Gas Project) for development in Carbon and Emery counties would be relatively limited. However, when considered together, the developments are

immense. Because the developments have been or are being considered separately, the total magnitude of the projects has never been made known publicly in a manner that shows the entire scope of the projects, with reasonable analysis and mitigation plans, to be taken together. To ensure the effects from all the coalbed methane developments are clearly identified and appropriately mitigated, the BLM should prepare one EIS covering all project areas for these developments. Without this overall analysis, the BLM will probably allow the companies to construct larger initial developments than what would otherwise be deemed acceptable and the local communities will be doomed to reacting to unacceptable impacts after the fact instead of wisely planning beforehand. (I–21, I–35)

Response: *The Price CBM and Ferron Natural Gas projects are separate actions requiring separate decisions and separate EISs documenting their respective NEPA impact analyses . Additionally, legally-binding decisions on the Price CBM Project have been made already. Although both projects cannot be addressed in one EIS, the Ferron Natural Gas Project DEIS and FEIS address and disclose the potential cumulative effects of both projects together. Please refer to Chapter 5 to review the results of the cumulative effects analysis.*

9. Page 1–8 indicates the Price River Resource Area Management Framework Plan and San Rafael Resource Area Management Plan are being updated by the Ferron Natural Gas Project EIS. Because this DEIS suggests significant visibility degradation directly and cumulatively, justification of future analyses will be difficult. How is the BLM going to address potential air quality impacts in future actions tiered to these management documents? (FG–02)

Response: *In Section 1.5.3, it is noted that this EIS will update the 1983 EA Supplement for the Price River MFP and the RFD for the San Rafael RMP by analyzing a higher level of development. Analysis of cumulative air impacts demonstrates that potential visibility impacts at Class I areas may be averted by the use of lower emission rates from project compressors or the use of electric-powered compressors. The FEIS concludes that any additional compression beyond the Ferron Natural Gas and Price CBM projects, i.e., the RFD Scenario, could have to be electrically powered. The electric power options of the Proposed Action and Alternative 2 were analyzed, in part, to address this. Ultimately, The State of Utah has jurisdiction for permitting emission sources.*

10. It is my understanding that $1250 per well site is required for mitigation of potential wildlife impacts and those fees are to be paid into an account that is held by a non-governmental organization under an agreement that is not part of the DEIS. If such an agreement exists, it is required to be included in the EIS, at least by reference, and readily available for public access. (B/I–04)

Response: *The wildlife mitigation agreement developed among and signed by the BLM and Companies will be included in the project record when it is finished and signed. Anyone is welcome to stop in the BLM's Price Field Office or State Office to review a copy of this document.*

11. I believe that analysis and considerations of delay impacts should be made and if mitigation is to be provided for any impacts, there should be mitigation for the time value losses for substantiated unreasonable delays in processes and permitting. (B/I–04)

Response: Comment noted, thank you.

Permits

1. In at least two locations in the DEIS, it is referenced that water for the project will be obtained from local users. Depending on who those users are, and the source of the water, applications may need to be filed and approved before any water can be diverted or used. This would pertain to any water for drilling, road construction and maintenance, pipeline testing, or any other associated uses. Processing time, depending on the type of application, would be from a few days to as long as 90 days, and filing fees are required. A water right is not required for the production and injection of the produced water as long as there is no associated beneficial use of the water. (SG–02)

   Response: Comment noted, thank you.

2. As noted in the DEIS, Joint Permit Applications (Stream Channel Alteration Permits) will be required for the crossings of all the major streams, and many of their tributaries. This will pertain to crossings for roads, water, gas and electrical lines to and from the wells, and crossings for Questar's production pipeline. Utah Division of Water Rights would be happy to meet and discuss various crossings in detail, and determine which ones will require a permit. Processing time is approximately 45 days, and there are no fees associated with this type of application. (SG–02)

   Response: Comment noted, thank you.

3. If ponds are constructed for the purpose of evaporating water, they must be associated with an approved water right application, and an Application For a Dam Not Requiring Submission of Formal Plans Under Section 73-SA-202 will be required for each impoundment. However, if the use is simply for emergencies resulting from the shutdown of an injection well, a water right and storage form are not required. It appears that the emergency scenario represents the uses of the proposed ponds in this project. (SG–02)

   Response: Evaporation ponds are not proposed for the Ferron Natural Gas Project. The DEIS describes the size and capacity of emergency pits that would be constructed for each disposal well.

4. Emery County has several permits that should be addressed in Chapter 1 of the FEIS. They include individual oil and gas well permits, Large Site Plan approval, road encroachment permit, and building permits. (LG–04)

   Response: These permits have been added to Table 1–2 (Table 1–1 in the DEIS). However, everyone should understand, as discussed under Section 1.8, Table 1–2, which identifies various federal, state, and local permitting actions the Companies would have to accomplish, is not all inclusive. The purpose of the table is to provide an idea of the extensive federal, state, and local permitting action required of the Companies for the Ferron Natural Gas Project after the RODs on this FEIS are completed.

Summary

1. Page S–6 Alternative 1 section, last line of the last paragraph: The sentence would be clearer if it read "… and **be** disposed [of] into the Navajo-Nugget Aquifer." (SG–02)

   Response: Comment noted, thank you.

Legal Issues

1. Some of the roads "potentially" needing upgrading would be roads recognized by the State of Utah and local ordinances as part of Emery County's road network. Upgrading of these roads cannot occur without Emery County's involvement in the process. (LG–02)

   Response: This aspect of coordination between the Counties and the BLM is addressed in Section 2.1.1.1.3.1. Please refer to this section to review the information.

2. Installing locked gates on roads included in Emery County's road network cannot occur without Emery County's participation in the decision. (LG–02)

   Response: The ultimate location of gates will be coordinated with the counties. However, all gates would be placed on new roads on BLM land.

3. The BLM must recognize and disclose that Emery County has existing assertions under RS 2477 claiming authority over all existing (prior to 1976 FLPMA) dirt/gravel roads not reserved for public uses in Emery County. (LG–02)

   Response: The responsibilities of maintaining segments of roads within the Project Area are disclosed in Section 2.1.1.1.3.1 and shown on Plate 2–3. Please refer to this section and plate to review information on these responsibilities.

4. The DEIS fails to recognize valid and existing contracts, agreements, and leases and exempt them from changes, unless all parties to the contracts, agreements, and leases consent to the changes. (B/I–04)

   Response: This comment lacks sufficient information for the ID team to develop a response. The ID team recognizes the need to be consistent with existing agreements and contracts.

5. The instigation of "fees" or "charges" for mitigation for <u>possible</u> or <u>probable</u> impacts is questionable justification, unless <u>all impacts</u> to <u>every</u> environmental element is applied equally under the law, including economic impacts. To do so without explicit authority and federal regulations for accounting, audit, and validation of the applications of funds to the purpose delineated in the EIS is contrary to the intent of NEPA. I request that the FEIS clearly state the justification for, the statutory authority for, and the regulatory direction for, the use, accounting, and audit of any and all mitigation payments. (B/I–04, I–39)

   Response: Section 1508.20 of CEQ's regulations for implementing NEPA addresses off-site mitigation. Also, FLPMA and the BLM's regulations and land management plans provide ample authority to mitigate direct and indirect effects of projects. Regarding the "mitigation fees", BLM's planning and NEPA documents require

off-site mitigation for direct disturbances. The Companies chose to provide monies into an account that would fund off-site mitigation rather than doing the mitigation work themselves. The fund is restricted to doing mitigation work to enhance habitats rather than securing properties.

6. We request BLM to stipulate that future lessees of gas reserves be required to research potential third party conflicts in advance of construction and operation so conflicts with existing permitted areas are identified (such as those with PacifiCorp's mining operations in Emery County shown on the enclosed map) and resolved. If permit modifications in conflicting areas are necessary, the burden of application and approval of these modifications should be the sole responsibility of the developing lessee. (B/I–11)

   Response: *The Companies are responsible for uncovering and identifying conflicts on non-BLM lands. The BLM has no authority over these lands. The BLM reviews all projects on its lands for conflicts with other permittees.*

7. Page 1–5 — The description of the on-site inspection team does not include a representative of the county. The Bureau of Land Management (BLM), the Manti-La Sal National Forest (NF), Utah Department of Natural Resources (DNR) and the State of Utah School and Institutional Trust Lands Administration (SITLA) have each entered into a Memorandum of Understanding (MOU) with Emery County that establishes coordinated planning efforts between Emery County and each entity. Therefore, it is appropriate to include a representative of Emery County as a member of the on-site inspection team.

   On page 1–8, please add the following information to the end of the first paragraph under 1.5.5, Consistency with Local Plans: The Bureau of Land Management (BLM), the Manti-La Sal National Forest (NF), Utah Department of Natural Resources (DNR) and the State of Utah School and Institutional Trust Lands Administration (SITLA) have each entered into a Memorandum of Understanding (MOU) with Emery County which establishes coordinated planning efforts between Emery County and each entity. (LG–05)

   Response: *The BLM and Forest Service would include representatives of other agencies, such as Emery County, in the on-site inspections when the specific facilities under review also fall under the jurisdiction of these agencies.*