Biological Field Findings Report
For
Potential Rail Alignments along the Mina Route

June 2006

Prepared for:

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Office of National Transportation

Prepared by:
URS Corporation/
Potomac-Hudson Engineering

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1.0 SUMMARY

Field surveys on potential rail alignments along the Mina Corridor took place June 7, 2006 and June 12 through June 14, 2006 in western Nevada. The work was conducted as part of a feasibility study to consider whether potential Mina rail alignments would be suitable for inclusion in the Rail Alignment Environmental Impact Statement (RAEIS), as well as to support subsequent impact analysis in the RAEIS. The area surveyed on the above dates consisted of the Walker River Indian Reservation (WRIR) and areas south of the WRIR from Hawthorne to Tonopah and extending to the Goldfield Valley area.

The purpose of the surveys was to observe and document the habitat that occurs near the proposed rail alignment, as well as identify any potential special status species and their associated "micro-sites" in the vicinity of the proposed rail alignment. Micro-sites are small dissimilar community types that occur within a larger continuous community type. The potential Mina rail alignments are shown in Figure 1.

A list of special status species provided by the Nevada Natural Heritage Program Database (NNHP 2005) was separated into associated micro-sites based primarily on habitat types. These areas were then located on topographic maps of the project area and assessed in the field for the potential occurrence of special status species. Habitat assessment points were documented using Global Positioning System (GPS), photography, and data forms. Figures 2 through 26 show the segments of the potential Mina rail alignments where surveys took place during the June 2006 field surveys and/or the locations of special status species from the Nevada Natural Heritage Program. Figures 2 thru 26 do not show the entire potential Mina Route.

The following vegetative community types were found along the Mina rail alignments: Mixed Salt Desert Scrub, Semi-Desert Shrub Steppe, riparian, Mojave Mid-Elevation Mixed Salt Desert Scrub, Inter-Mountain Sagebrush Steppe and sandy/dune areas. Wassuk beardtongue (*Penstemon rubicundus),* a special status plant, was observed within the project area during the field surveys. Another special status plant, Tonopah milkvetch (*Astragalus pseudiodanthus)* may have been observed during the field surveys, however, because of the lack of flowers on the plants, positive identification could not be confirmed.

2.0 METHODOLOGY

Prior to beginning the habitat assessments, investigations were conducted to identify existing information regarding the occurrence and distribution of special status species near the proposed rail alignment. A list of special status species potentially present in the project area was obtained from the Nevada Natural Heritage Program (NNHP) Database. The special status species were separated into groups associated with micro-sites based mainly on the habitat types where the species may occur. The known locations of the special status species were placed digitally on topographic maps. The mapped locations of the special status species and any areas determined to be micro-site areas (e.g., sand dunes, springs and rocky outcrops) were used to establish the specific survey locations along the proposed alignment.

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Weber Reservoir
Weber Dam
Schurz
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Gillis Canyon
Walker River
Southern Pacific Railroad
Walker Lake
Rockland
Wichman
Schweer Housing Area
Babbitt
Hawthorne
Hawthorne East
Thorne
Kinkaid
Indian Head Peak
Luning
Lucky Boy
Fletcher
Del Monte
Mina
Camp Douglas
Sodaville
Tonopah Junction
Marietta
Candelaria
Rock Hill
Columbus
Coaldale Junction
Coaldale
Basalt
Mount Montgomery
Gold Hill
The Crossing
Blair Junction
Devils Gate
Lone Mountain
Mount Butte
North of Silver Peak
Klondike
Alcatraz Island
Montezuma Peak
Montezuma Peak SW
Lida Wash
Lida
Gold Point
Tokop
Sylvania
Omco
Golden
Pactolus
Goldyke
Weepah
Alkali
Blair
Silver Peak
Nivloc
Dyer
Dyer Postoffice
Gemfield
West Spring
Goldfield
Montezuma
Gilbert
Millers
Montezuma Wells
Tonopah
McLeans
Basic
Gabbs
Berlin
Grantsville
Ione
Lodi
Lodi Tanks
Nevada Scheelite Camp
Rawhide
Frenchman
Middlegate
Eastgate
Nevada
California
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121
722
361
839
827
359
360
844
773
264
265
266
376
774
6

Legend

- Caliente Alignment
- Potential Mina Rail Alignments

General Reference Features

- Cities \ Towns
- Rivers
- Lakes \ Reservoirs
- Highways
- Existing Rail Lines
- Abandoned Rail Lines
- USGS Quad Boundaries

Source: URS 2006, EPA 2006, NDOT 2006, ESRI 2004

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0 5 10 15 20
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Caliente Alignments
Potential Mina Rail Alignments

Potential Mina Rail Alignments

URS

Project Area
Figure 1

Habitat assessments for the potential Mina Route took place June 7, and June 12 through June 14, 2006 in western Nevada. The areas surveyed consisted of micro-sites within or near the Goldfield Valley, Railroad Pass, the Silver Peak area, along Highway 95 from Tonopah to Hawthorne, and the WRIR. Figures 2 thru 26 detail the areas surveyed and/or areas where the NNHP database lists special status species as possibly occurring along the potential rail alignments along the Mina Route. Figures 2 thru 26 do not show the entire potential Mina Route.

At each micro-site, biologists and botanists conducted meandering transects to visually assess each micro-site. At each site, soil type, presence or absence of noxious weeds, level of disturbance, dominant plant species, wildlife, potential special status species and other observations were noted on data sheets. Field survey points were recorded with a GPS unit and digital photographs were taken at each micro-site. Appendix A contains a representative selection of site photos. Appendix B contains an example of the data sheets that were used during the field activities.

3.0 FINDINGS

3.1 Vegetation Communities

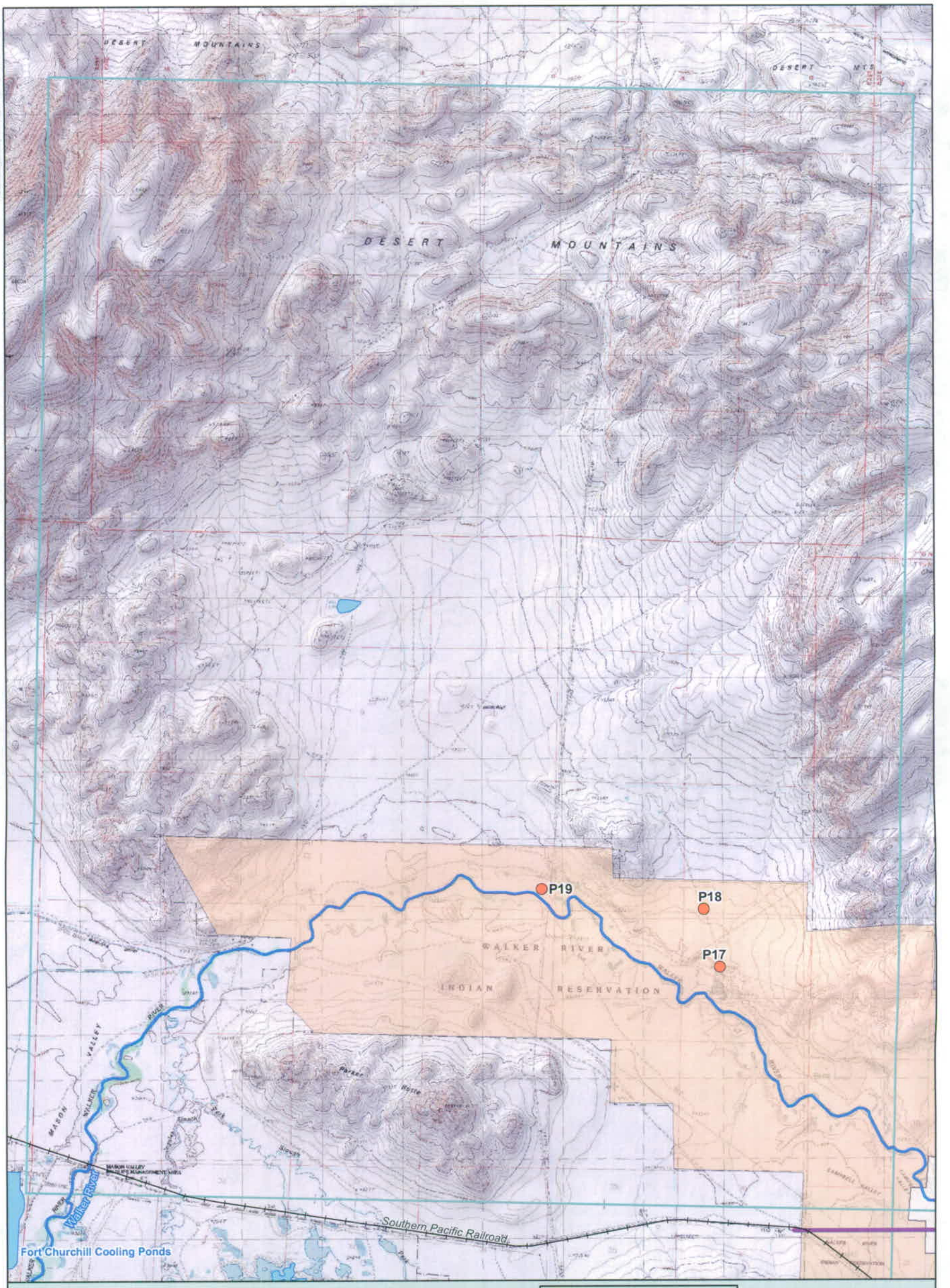
Vegetation found along the Mina Route can be divided into the following vegetative community types: Mixed Salt Desert Scrub, Semi-Desert Shrub Steppe, riparian, Mojave Mid-Elevation Mixed Salt Desert Scrub, Inter-Mountain Sagebrush Steppe and sandy/dune areas.

3.1.1 Mixed Salt Desert Scrub

This vegetative community type occurs at low elevations in flat valley bottoms or salt flats. The majority of the area surveyed, from Hawthorne to Tonopah, consisted of this vegetative community type. These areas were dominated by shadscale (*Atriplex confertifolia),* four-wing saltbush (*Atriplex canescens),* greasewood (*Sarcobatus vermiculatus),* spiny hopsage (*Grayia spinosa),* and Nevada dalia (*Psorothamnus polydenius var. polydenius).* The understory vegetation consisted of desert globemallow (*Sphaeralcea ambigua),* Indian rice grass (*Oryzopsis hymeniodes)* and invasives including cheat grass (*Bromus tectorum),* halogeton (*Halogeton glomeratus),* and Russian thistle (*Salsola kali).*

3.1.2 Semi-Desert Shrub Steppe

This area is limited to the area surrounding Tonopah. Dominated by winterfat (*Krascheninnikovia lanata),* bud sage (*Artemisia spinescens),* and shadscale *(A. confertifolia).* This vegetation community contains an understory dominated by Indian rice grass, desert trumpet (*Eriogonum inflatum)* and other forbs.


DESERT MOUNTAINS
DESERT MTS
DESERT MOUNTAINS
P19
P18
P17
WALKER RIVER INDIAN RESERVATION
MASON VALLEY
Walker River
Parker Butte
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Fort Churchill Cooling Ponds
Legend
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Abandoned Rail Lines
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Private Land
USGS Quad Boundaries
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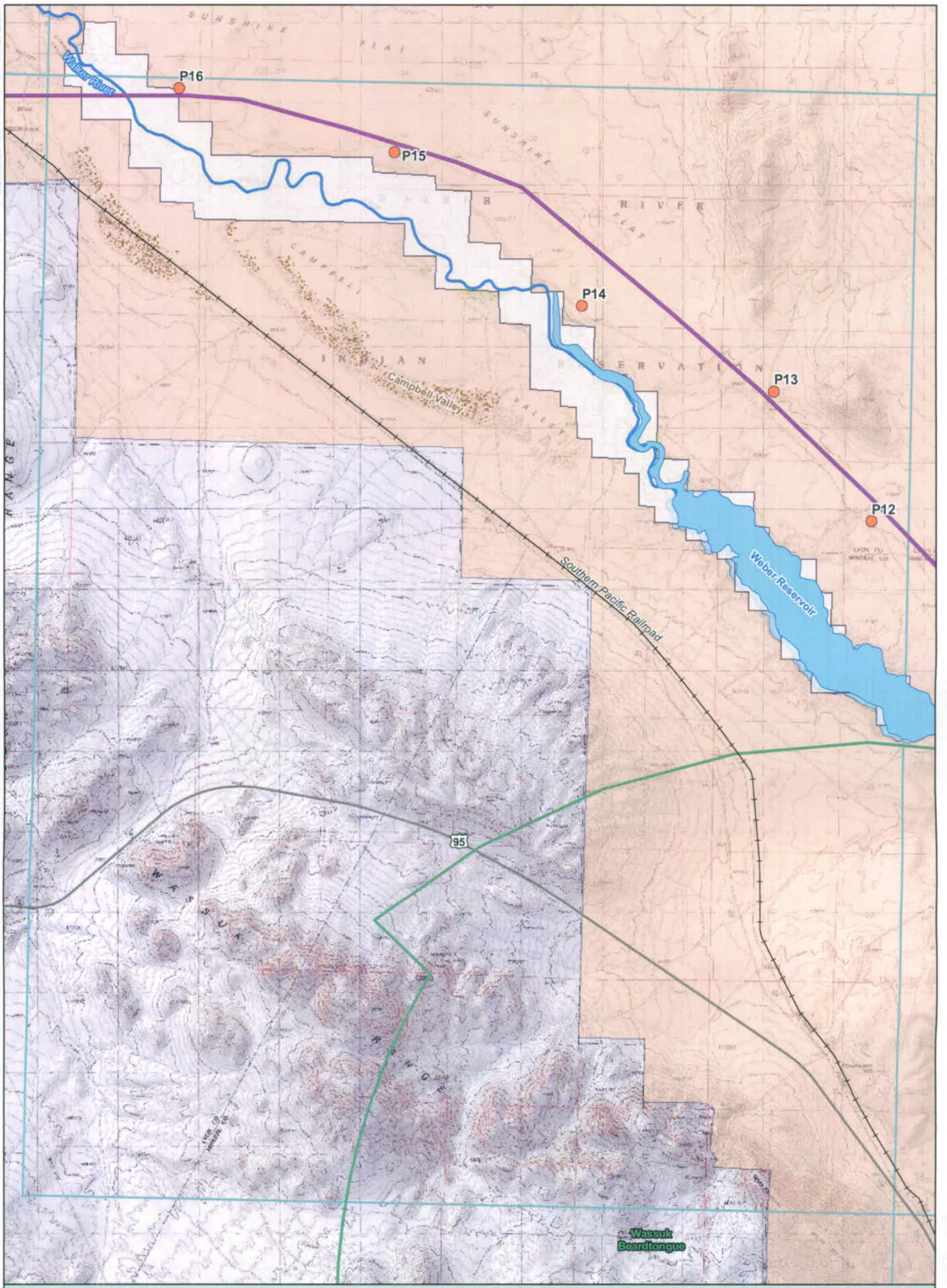
Figure 5
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Parker Butte
Figure 2


SUNSHINE FLAT
Walker River
P16
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P14
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P12
CAMPBELL VALLEY
INDIAN RIVER RESERVATION
Campbell Valley
Weber Reservoir
Southern Pacific Railroad
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Wassuk Beardtongue
Legend
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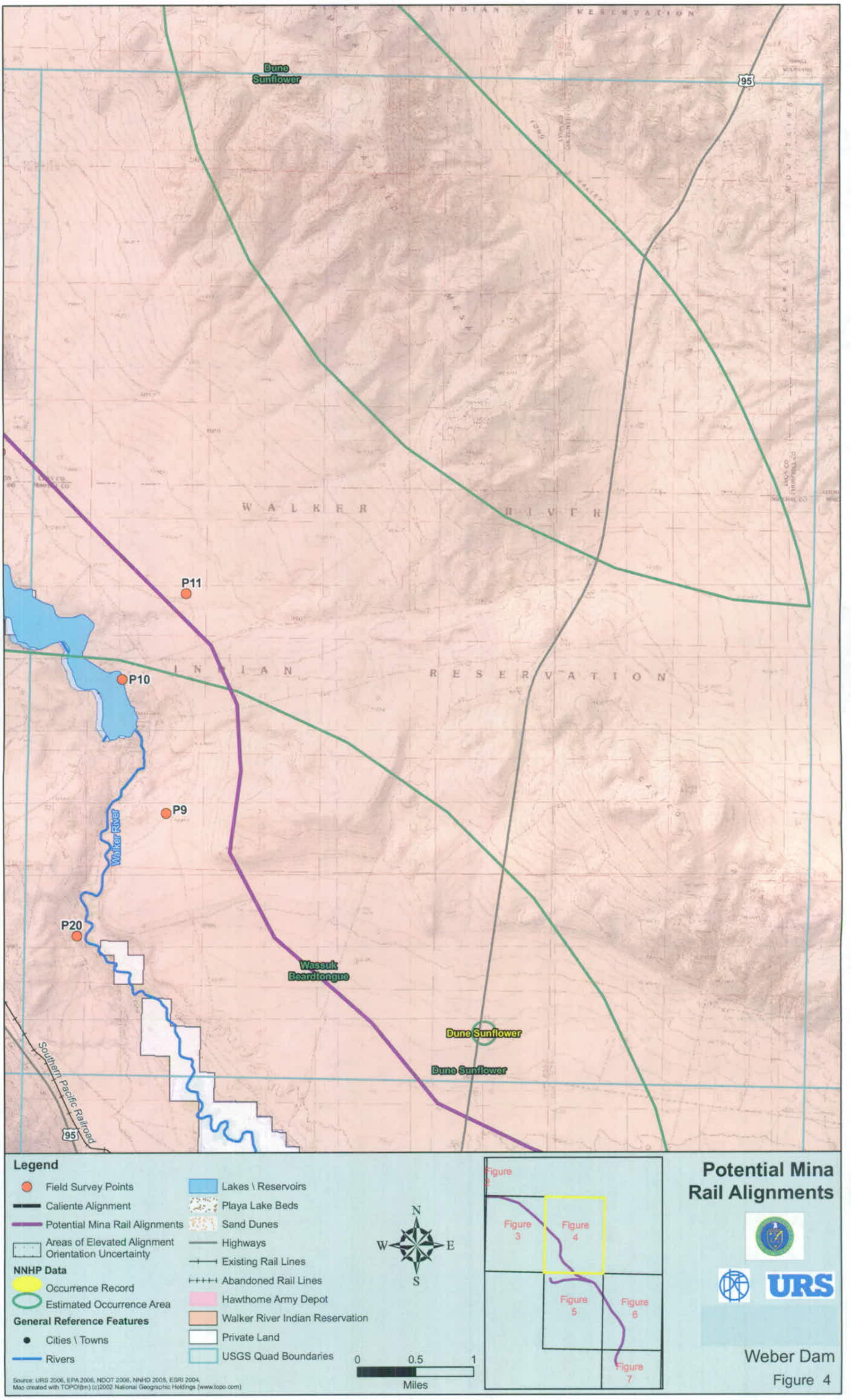
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004.
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Weber Reservoir
Figure 3


INDIAN RESERVATION
Dune Sunflower
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WALKER RIVER
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INDIAN RESERVATION
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Walker River
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Wassuk Beardtongue
Dune Sunflower
Dune Sunflower
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Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
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Potential Mina Rail Alignments
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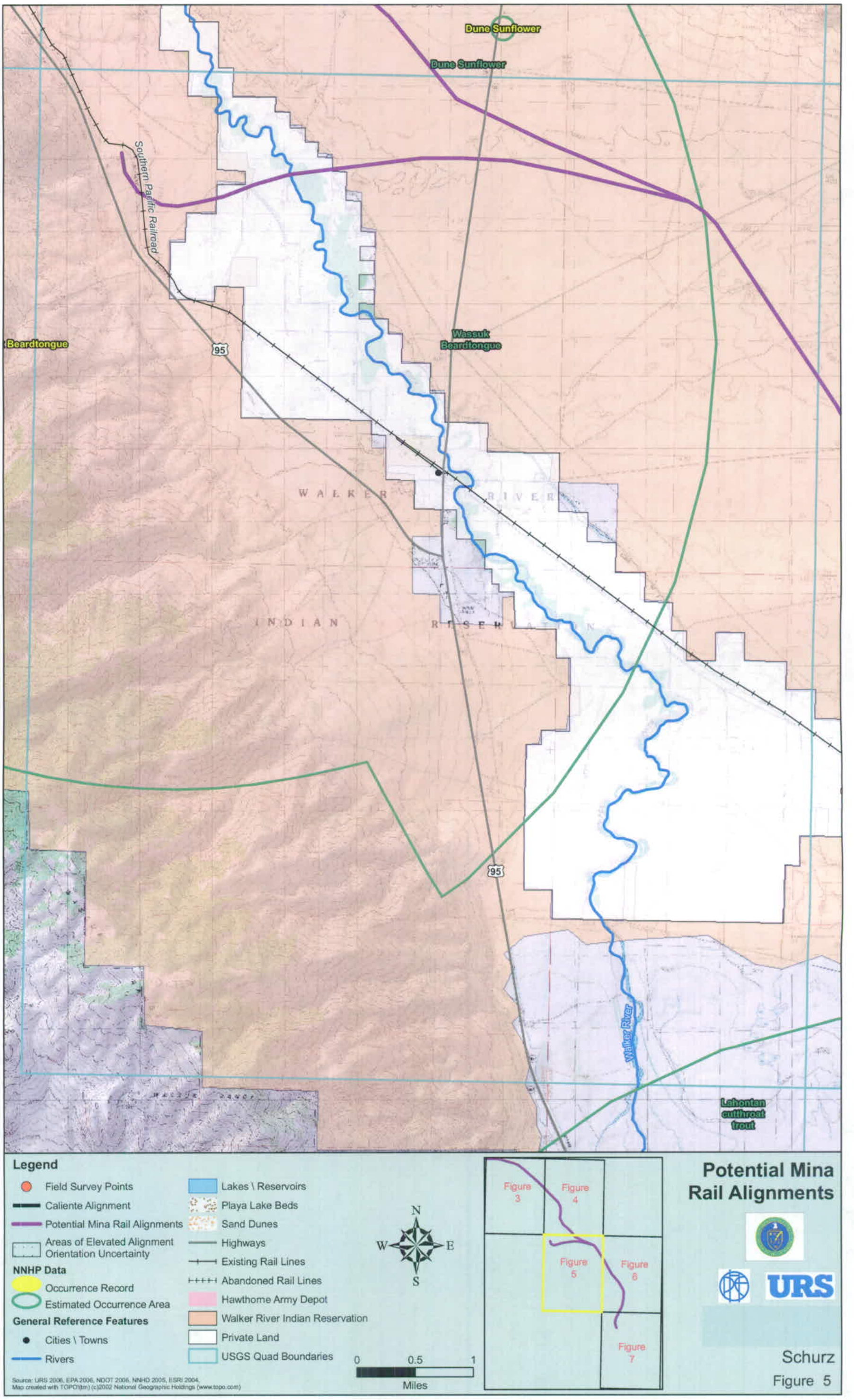
Weber Dam
Figure 4


Dune Sunflower
Dune Sunflower
Southern Pacific Railroad
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RIVER
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Walker River
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cutthroat
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Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004.
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Potential Mina Rail Alignments
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Schurz
Figure 5

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WALKER RIVER

INDIAN RESERVATION

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Southern Pacific Railroad

Lahontan cutthroat trout

RANGE

Legend

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Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Gillis Canyon NW

Figure 6

P23

Orycles
Orycles

WALKER RIVER

INDIAN RESERVATION

Walker River

Lahontan cutthroat trout

Lahontan cutthroat trout

95

Walker Lake

Southern Pacific Railroad

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Source: URS 2006, EPA 2006, NDOT 2006, NHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Figure 3
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Figure 7

Potential Mina Rail Alignments

URS

Gillis Canyon

Figure 7

Western Snowy Plover

Southern Pacific Railroad

Oryctes

Oryctes

Thorne

WALKER LAKE VALLEY

HAWTHORNE ARMY AMMUNITION PLANT

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Hawthorne

Hawthorne

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359

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Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Figure 8

Figure 9

Figure 10

Potential Mina Rail Alignments

URS

Hawthorne East

Figure 8

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Kinkaid

Soda Spring Valley

WALKER LAKE

GARFIELD

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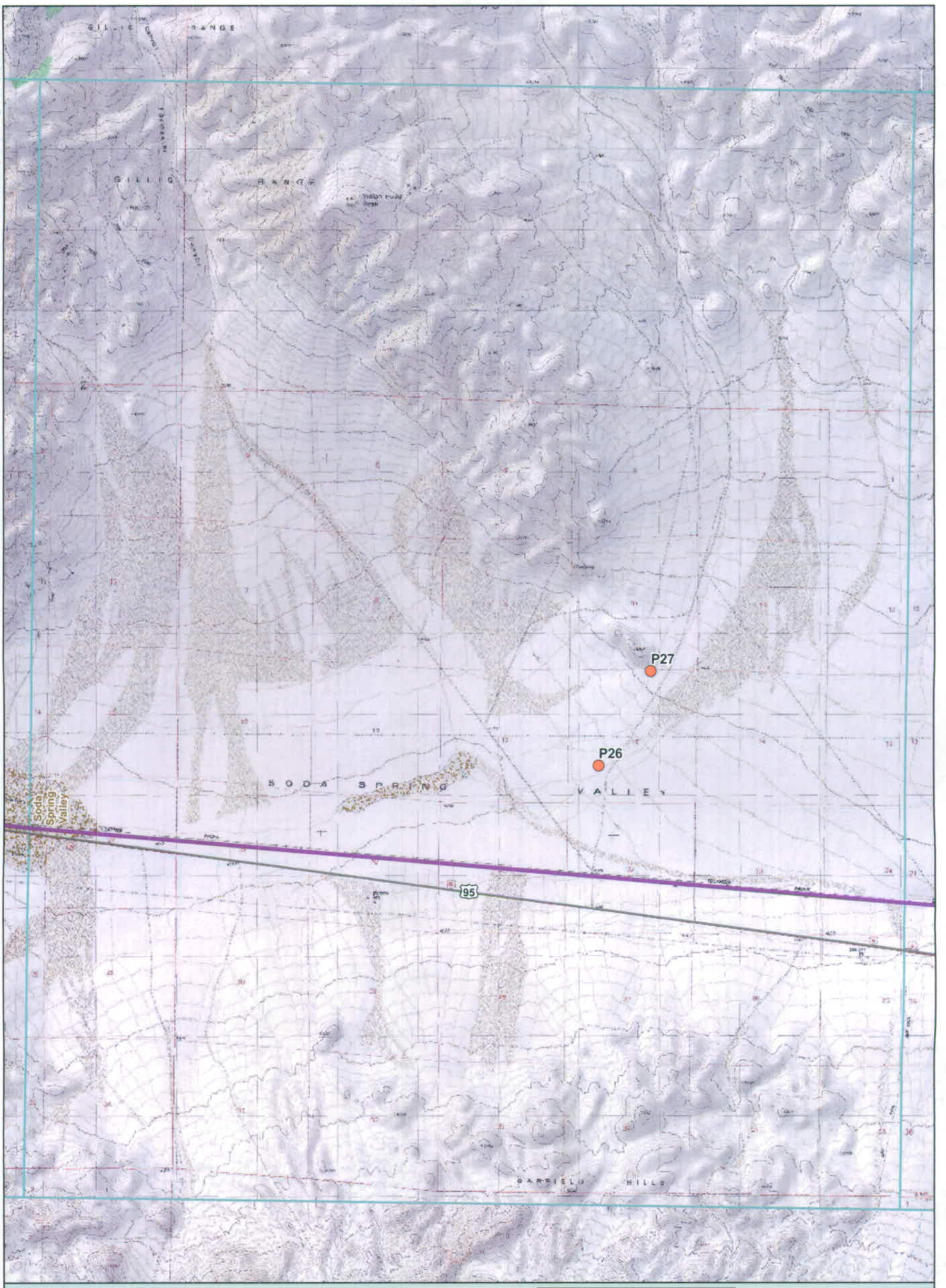
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004.
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Kinkaid

Figure 9


GILLIS RANGE
GILLIS RANGE
SODA SPRING VALLEY
Soda Spring Valley
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GARFIELD HILLS
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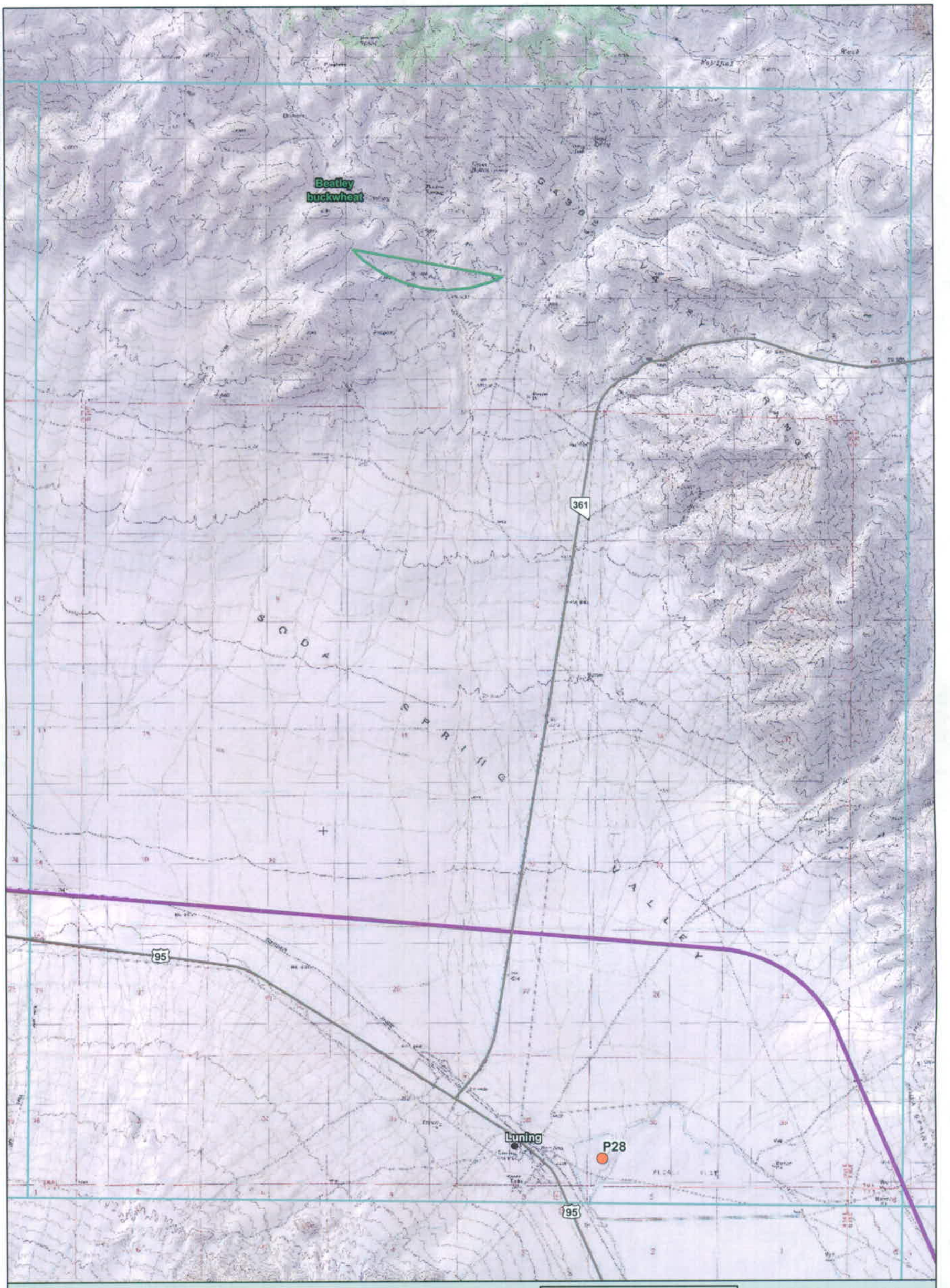
Figure 13
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Indian Head Peak
Figure 10



Legend

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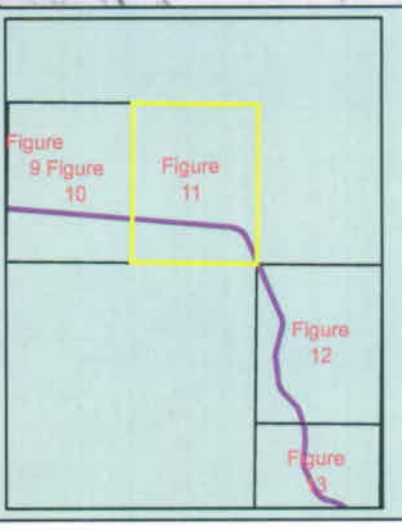

Potential Mina Rail Alignments

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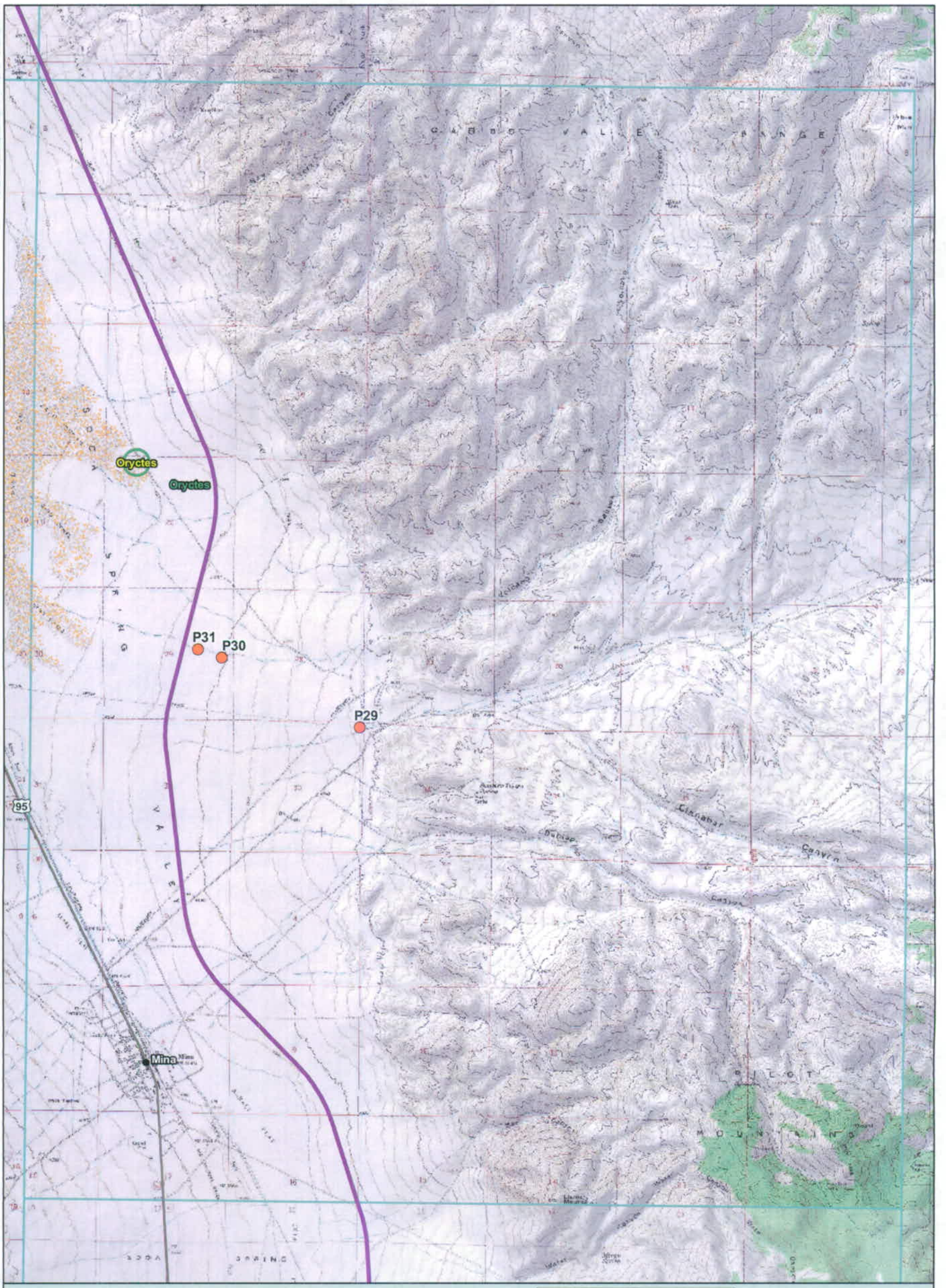

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Figure 10 Figure 11 Figure 12 Figure 13

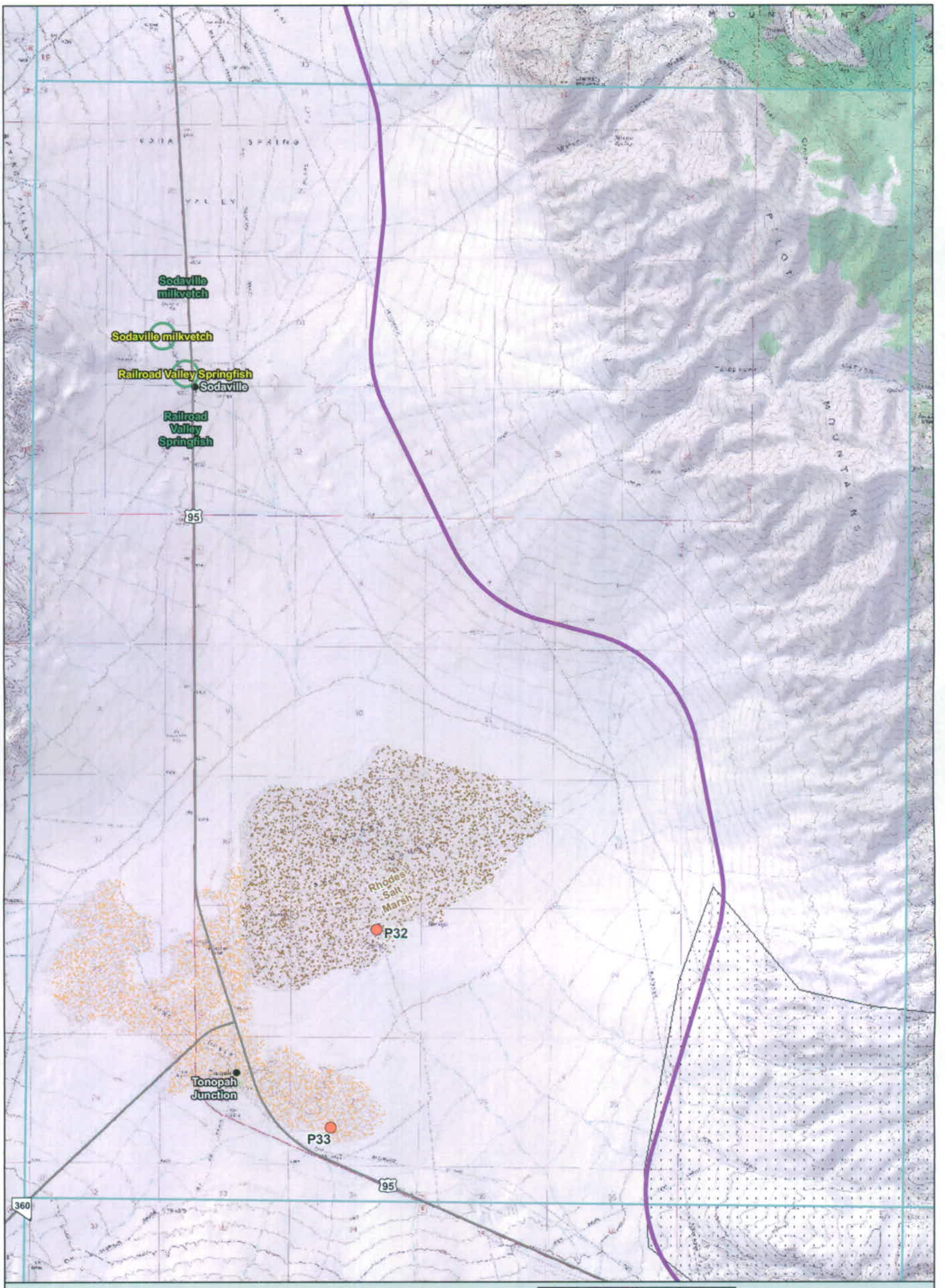
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Mina

Figure 12



Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

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CANDELARIA HILLS

Tonopah Milkvetch

Columbus Salt Marsh

Legend

- Field Survey Points
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Potential Mina Rail Alignments

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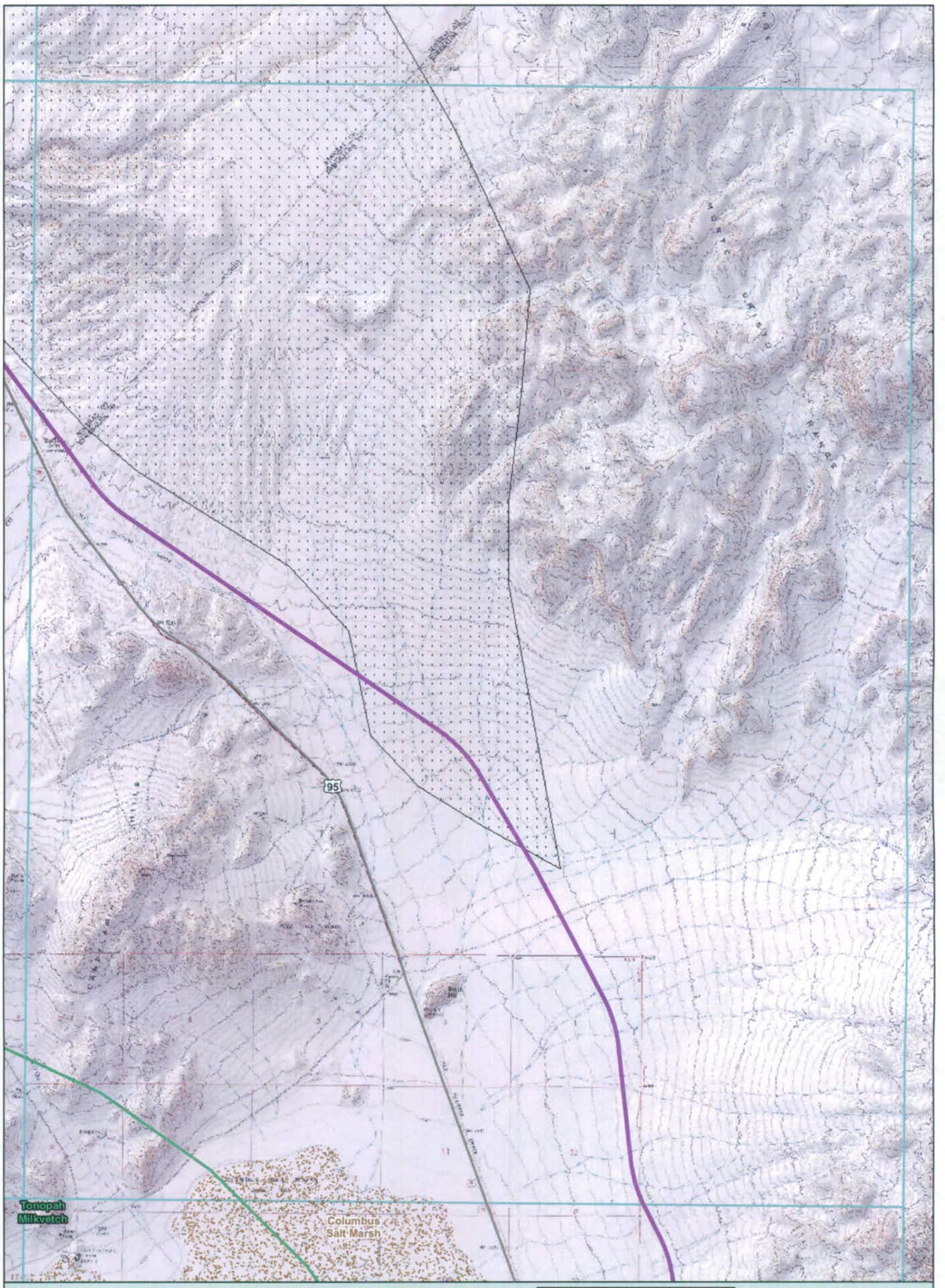
Figure 14

Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)



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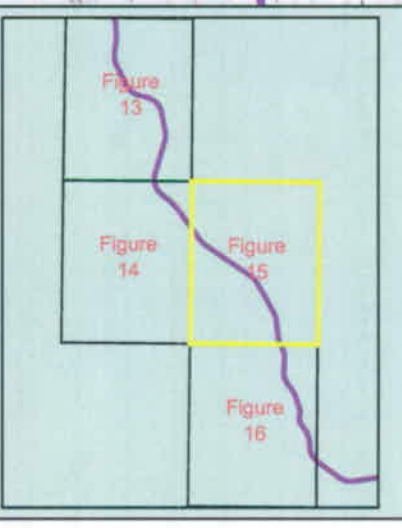


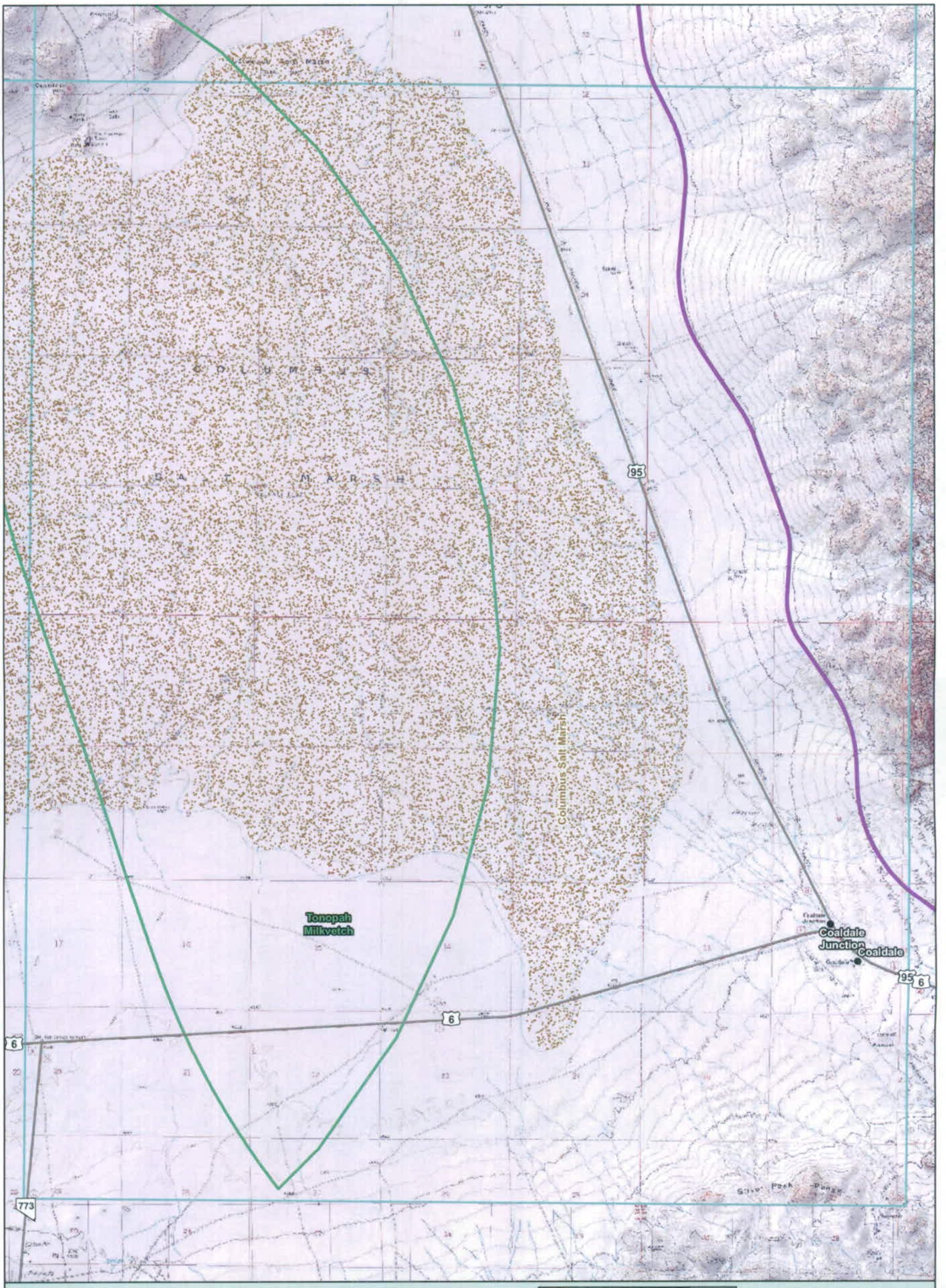
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004.
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Rock Hill

Figure 15


C O L U M B U S
S A L T M A R S H
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Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
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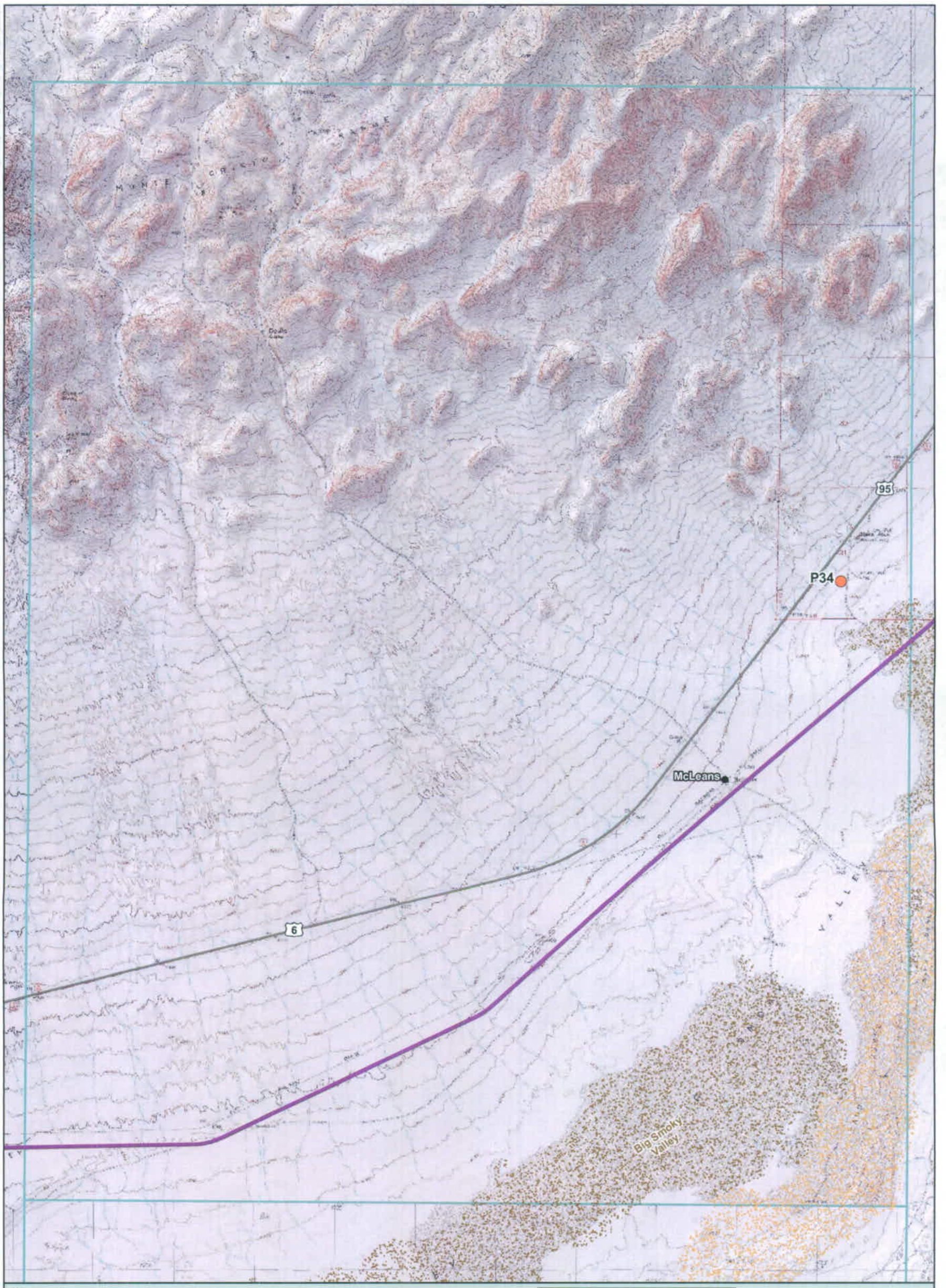
Figure 16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Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
N
W
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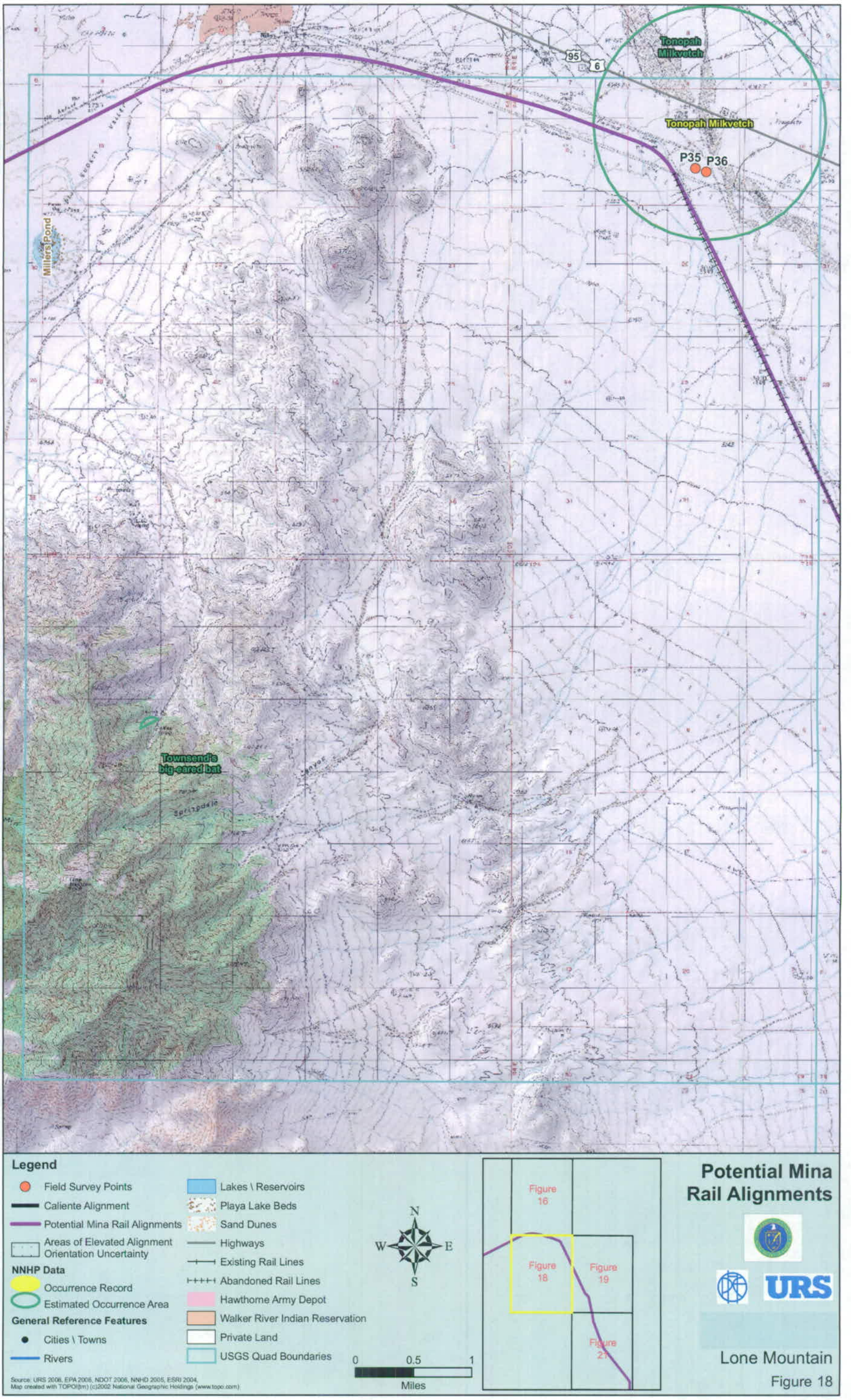
Miles
Figure 17
Figure 20
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Devils Gate
Figure 17


Tonopah Milkvetch
Tonopah Milkvetch
95
6
P35
P36
Miller's Pond
Townsend's big-eared bat
Legend
Field Survey Points
Caliente Alignment
Potential Mina Rail Alignments
Areas of Elevated Alignment Orientation Uncertainty
NNHP Data
Occurrence Record
Estimated Occurrence Area
General Reference Features
Cities \ Towns
Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
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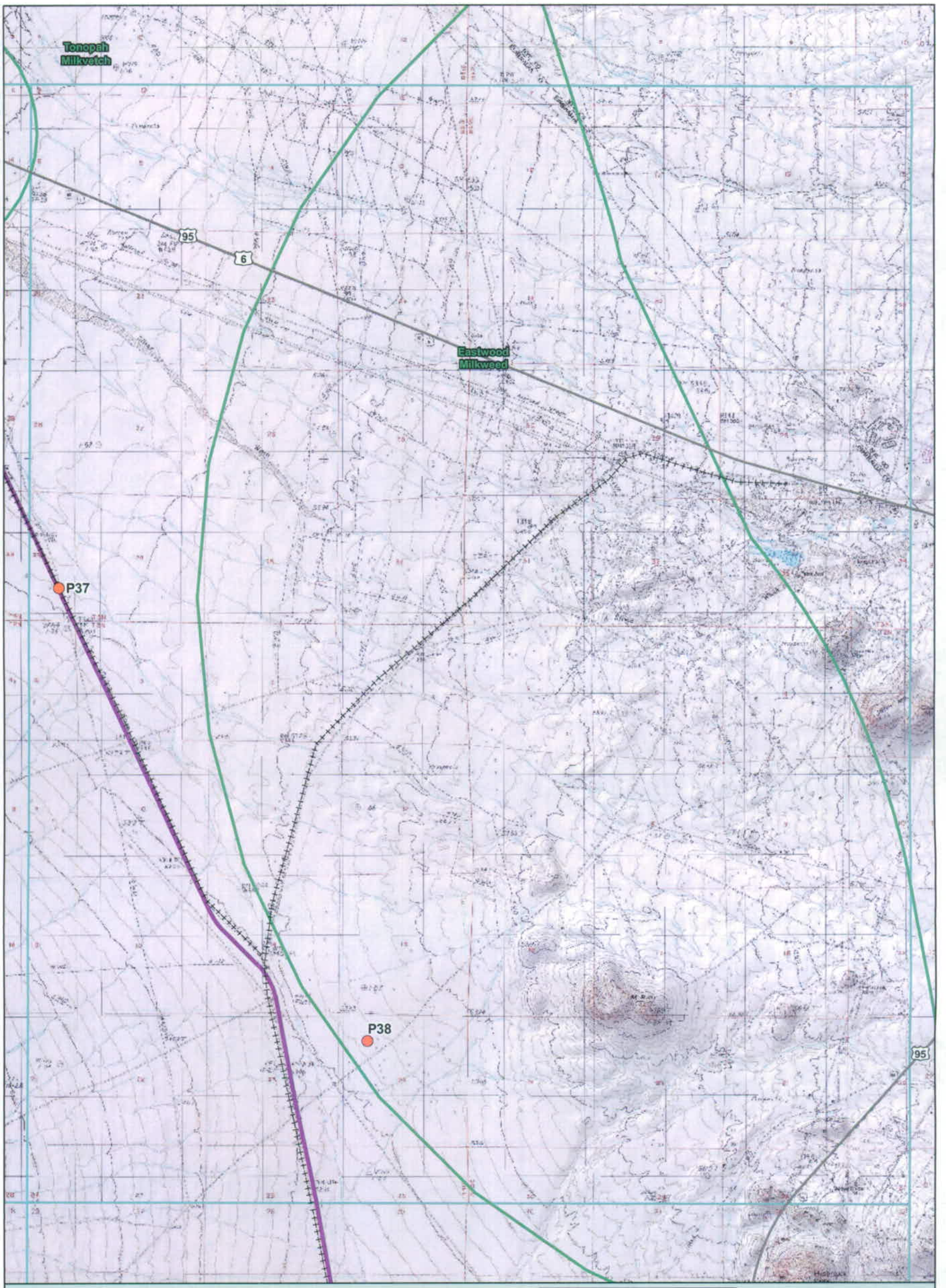
Miles
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Figure 16
Figure 18
Figure 19
Figure 21
Potential Mina Rail Alignments
URS
Lone Mountain
Figure 18



Legend

- Field Survey Points
- Caliente Alignment
- Potential Mina Rail Alignments
- Areas of Elevated Alignment Orientation Uncertainty

NNHP Data

- Occurrence Record
- Estimated Occurrence Area

General Reference Features

- Cities \ Towns
- Rivers
- Lakes \ Reservoirs
- Playa Lake Beds
- Sand Dunes
- Highways
- Existing Rail Lines
- Abandoned Rail Lines
- Hawthorne Army Depot
- Walker River Indian Reservation
- Private Land
- USGS Quad Boundaries

N W E S

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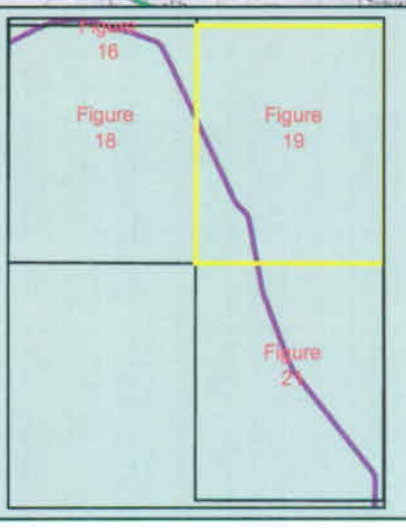
Miles



Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Mount Butte

Figure 19

Big Smoky Valley

BIG SMOKY VALLEY

WESTERN PILLS

Eastwood Milkwood

Eastwood

265

Legend

- Field Survey Points
- Caliente Alignment
- Potential Mina Rail Alignments
- Areas of Elevated Alignment Orientation Uncertainty

NNHP Data

- Occurrence Record
- Estimated Occurrence Area

General Reference Features

- Cities \ Towns
- Rivers
- Lakes \ Reservoirs
- Playa Lake Beds
- Sand Dunes
- Highways
- Existing Rail Lines
- Abandoned Rail Lines
- Hawthorne Army Depot
- Walker River Indian Reservation
- Private Land
- USGS Quad Boundaries

N W E S

0 0.5 1 Miles

Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Figure 17

Figure 20

Potential Mina Rail Alignments

URS

North of Silver Peak

Figure 20

Eastwood
Milkweed

95

Alkali Lake

Legend

- Field Survey Points
- Caliente Alignment
- Potential Mina Rail Alignments
- Areas of Elevated Alignment Orientation Uncertainty

NNHP Data

- Occurrence Record
- Estimated Occurrence Area

General Reference Features

- Cities \ Towns
- Rivers
- Lakes \ Reservoirs
- Playa Lake Beds
- Sand Dunes
- Highways
- Existing Rail Lines
- Abandoned Rail Lines
- Hawthorne Army Depot
- Walker River Indian Reservation
- Private Land
- USGS Quad Boundaries

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0 0.5 1
Miles

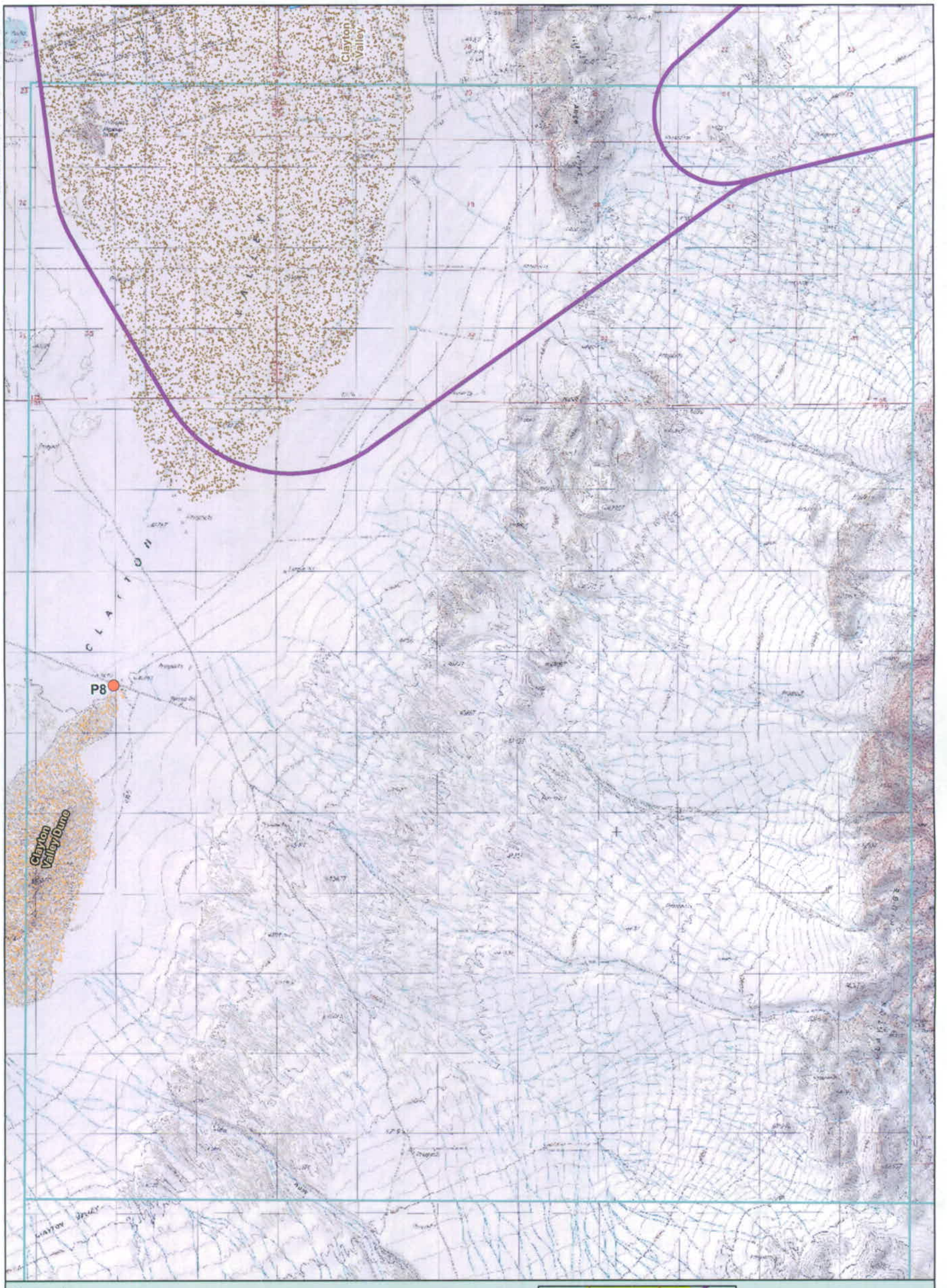
Figure 16
Figure 18
Figure 19
Figure 21

Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Klondike
Figure 21


Clayton Valley
P8
Clayton Valley Dune
Legend
Field Survey Points
Caliente Alignment
Potential Mina Rail Alignments
Areas of Elevated Alignment Orientation Uncertainty
NNHP Data
Occurrence Record
Estimated Occurrence Area
General Reference Features
Cities \ Towns
Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
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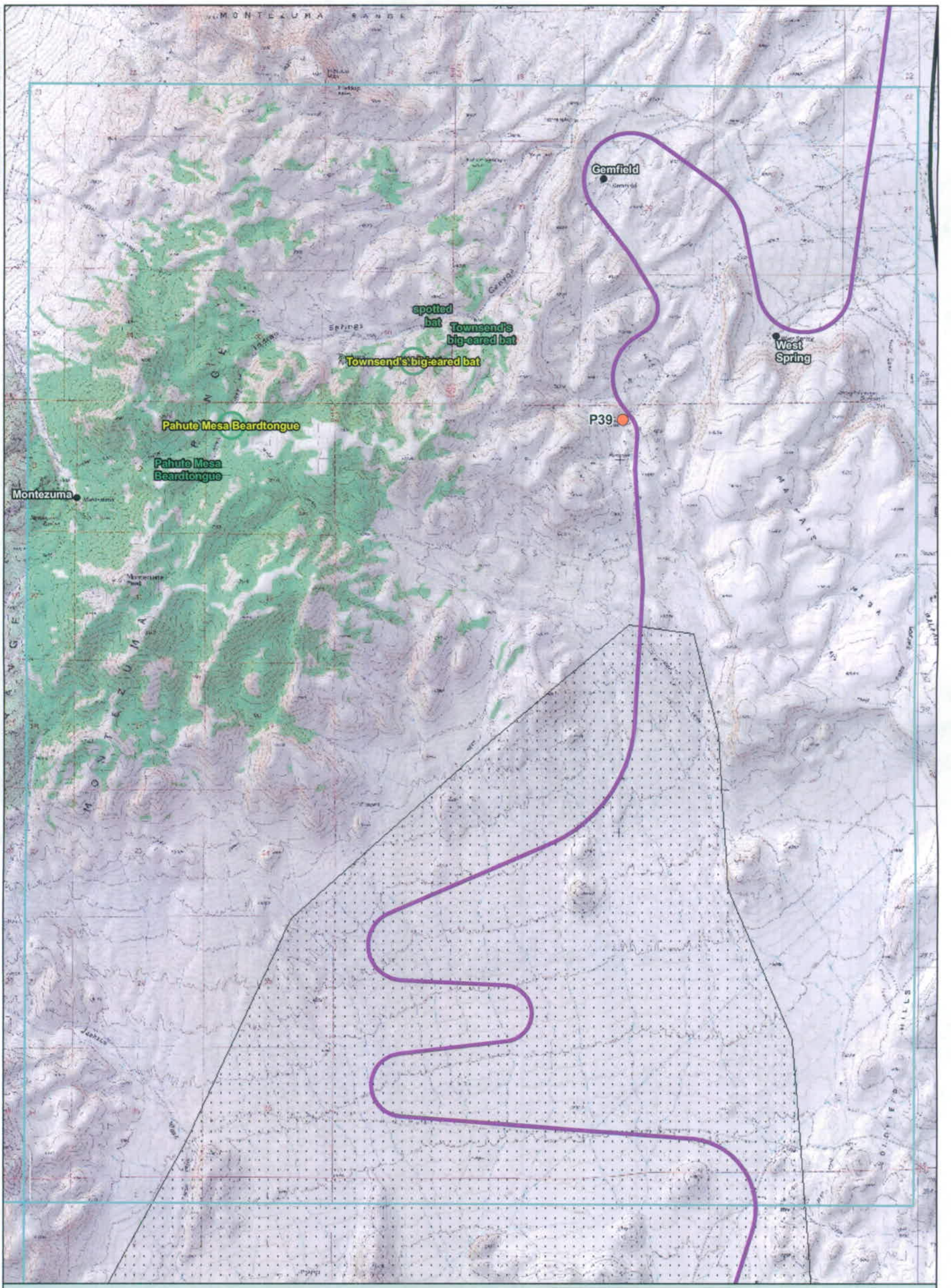
Miles
Figure 22
Figure 24
Figure 25
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Alcatraz Island
Figure 22


MONTEZUMA RANGE
Gemfield
West Spring
P39
spotted bat
Townsend's big-eared bat
Townsend's big-eared bat
Pahute Mesa Beardtongue
Pahute Mesa Beardtongue
Montezuma
Legend
Field Survey Points
Caliente Alignment
Potential Mina Rail Alignments
Areas of Elevated Alignment Orientation Uncertainty
NNHP Data
Occurrence Record
Estimated Occurrence Area
General Reference Features
Cities \ Towns
Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
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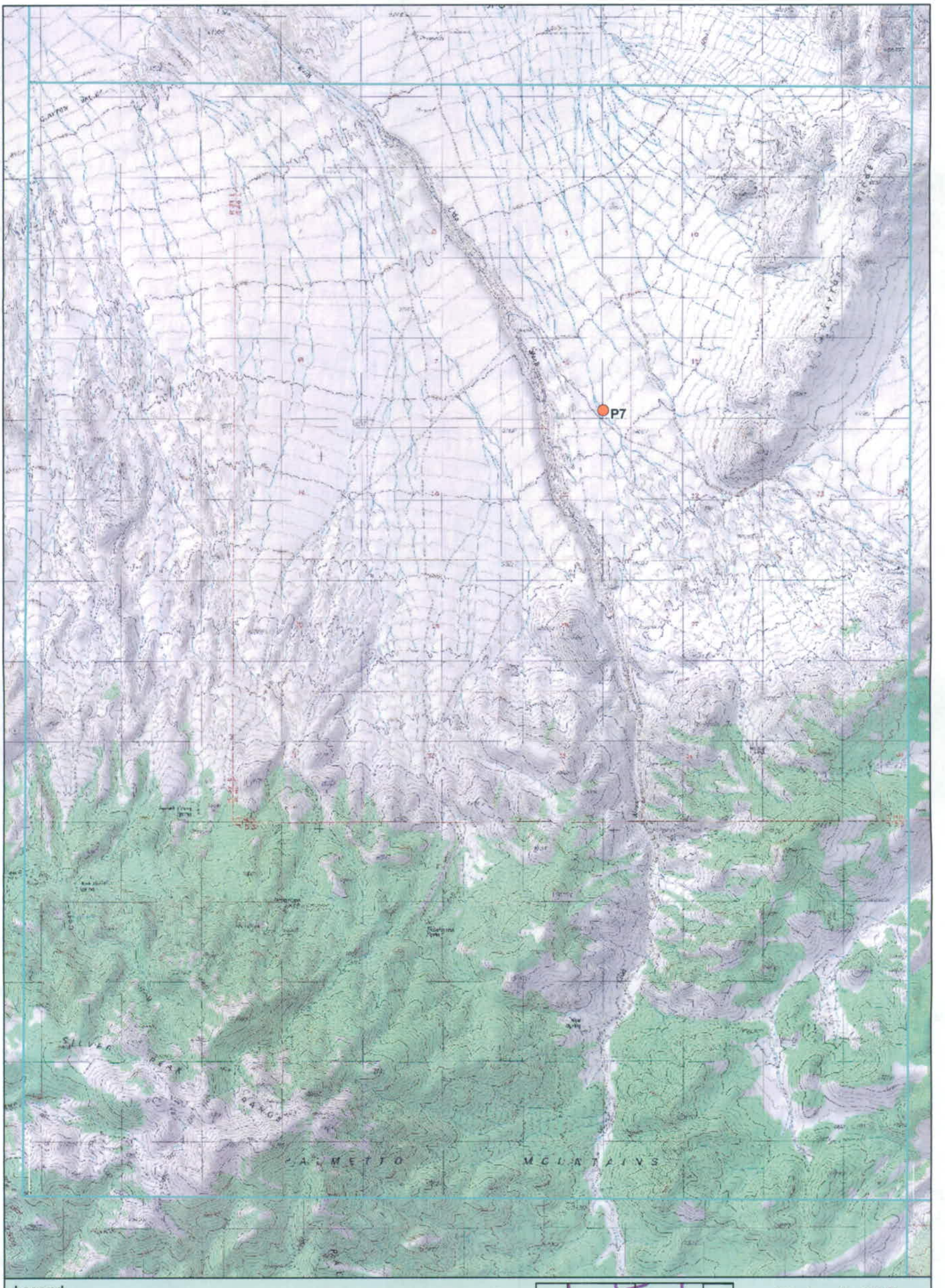
Miles
Figure 22
Figure 23
Figure 25
Figure 26
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Potential Mina Rail Alignments
URS
Montezuma Peak
Figure 23



Legend

- Field Survey Points
- Caliente Alignment
- Potential Mina Rail Alignments
- Areas of Elevated Alignment Orientation Uncertainty

NNHP Data

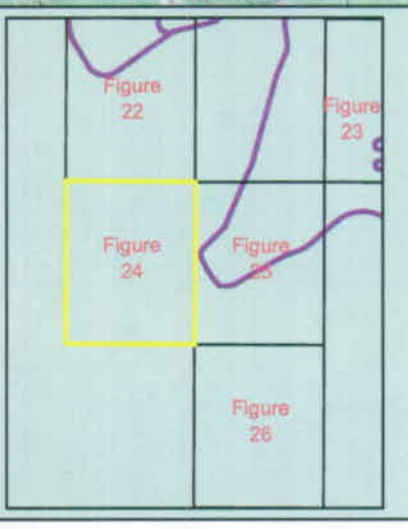
- Occurrence Record
- Estimated Occurrence Area

General Reference Features

- Cities \ Towns
- Rivers
- Lakes \ Reservoirs
- Playa Lake Beds
- Sand Dunes
- Highways
- Existing Rail Lines
- Abandoned Rail Lines
- Hawthorne Army Depot
- Walker River Indian Reservation
- Private Land
- USGS Quad Boundaries

N W E S

0 0.5 1
Miles



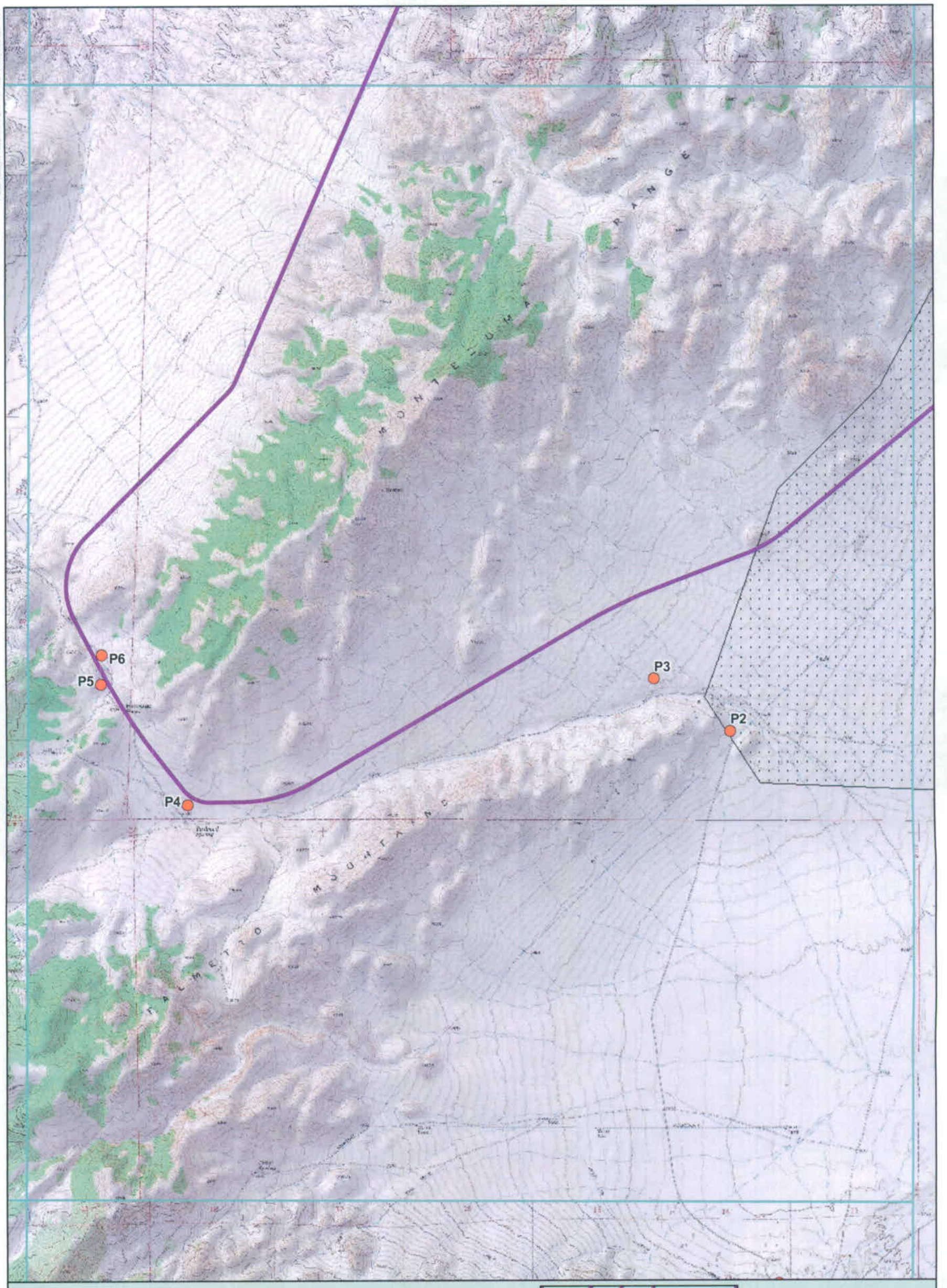
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

Potential Mina Rail Alignments

URS

Lida Wash

Figure 24


MONTEZUMA RANGE
PALMETTO MOUNTAINS
P6
P5
P4
P3
P2
Legend
Field Survey Points
Caliente Alignment
Potential Mina Rail Alignments
Areas of Elevated Alignment Orientation Uncertainty
NNHP Data
Occurrence Record
Estimated Occurrence Area
General Reference Features
Cities \ Towns
Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
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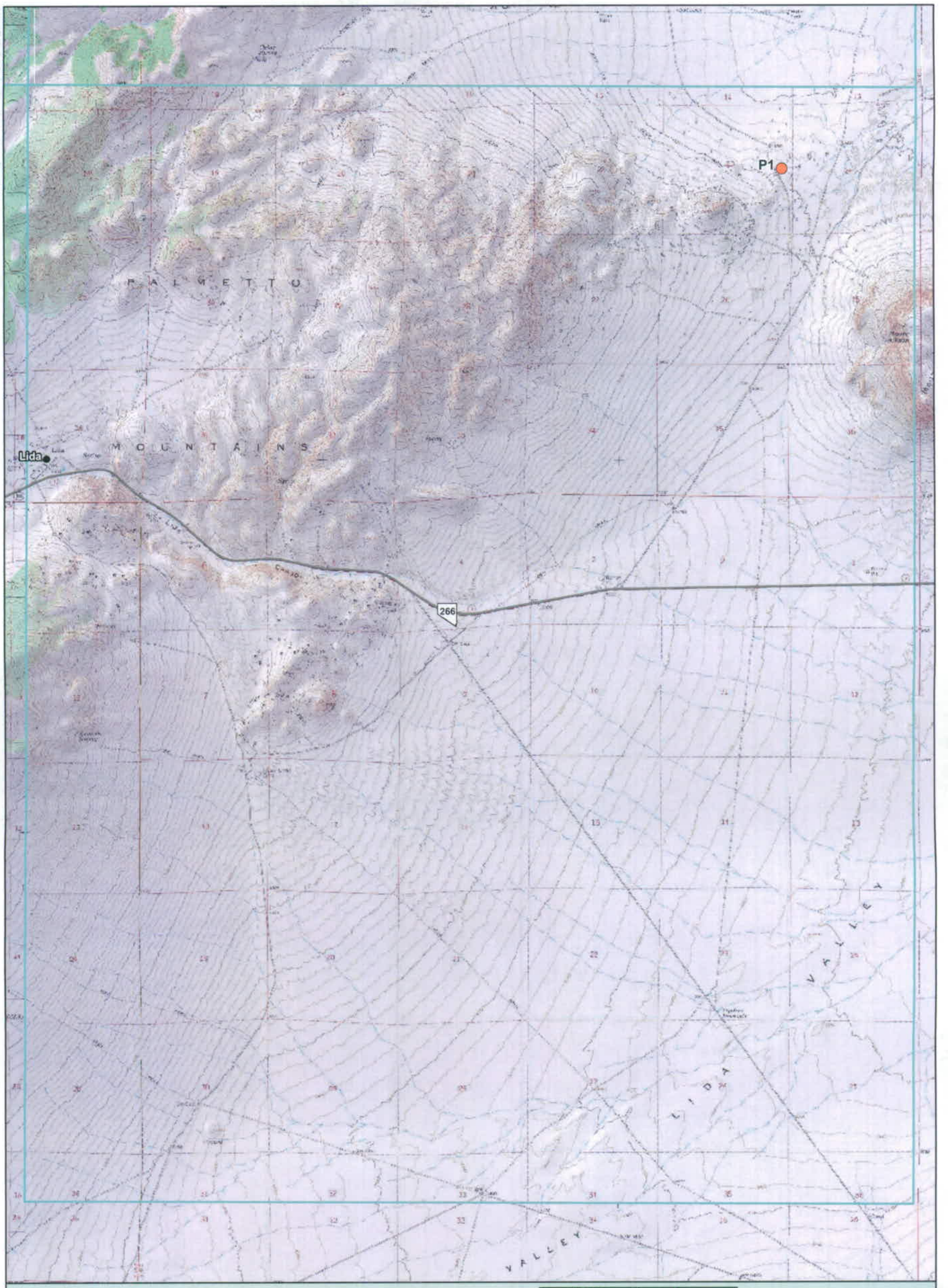
Miles
Source: URS 2006, EPA 2006, NDOT 2006, NNHD 2005, ESRI 2004.
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Figure 22
Figure 23
Figure 24
Figure 25
Figure 26
Potential Mina Rail Alignments
URS
Montezuma Peak SW
Figure 25


P1
PALMETTO
MOUNTAINS
Lida
266
VALLEY
Legend
Field Survey Points
Caliente Alignment
Potential Mina Rail Alignments
Areas of Elevated Alignment Orientation Uncertainty
NNHP Data
Occurrence Record
Estimated Occurrence Area
General Reference Features
Cities \ Towns
Rivers
Lakes \ Reservoirs
Playa Lake Beds
Sand Dunes
Highways
Existing Rail Lines
Abandoned Rail Lines
Hawthorne Army Depot
Walker River Indian Reservation
Private Land
USGS Quad Boundaries
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Source: URS 2006, EPA 2006, NDOT 2006, NHHD 2005, ESRI 2004,
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)
Figure 22
Figure 24
Figure 25
Figure 26
Potential Mina Rail Alignments
URS
Lida
Figure 26

3.1.3 Mojave Mid-Elevation Mixed Salt Desert Scrub

This vegetative community was found south of Railroad pass within the Goldfield Valley, and is dominated by Mormon tea (*Ephedra nevadensis),* Joshua tree (*Yucca brevifolia),* and spiny hopsage (*Grayia spinosa).* The understory consists of bluegrass *(Poa secunda),* Indian ricegrass, prince's plume (*Stanleya pinnata)* and desert trumpet (*Eriogonum inflatum).*

3.1.4 Inter-Mountain Sagebrush Steppe

The area surveyed includes the Railroad pass area at approximately 6,356 feet in elevation. This area was dominated by Mormon tea, Wyoming sage *(Artemisia tridentate var. wyomensis),* with an understory dominated by Indian ricegrass, bottlebrush squirreltail (*S. hystrix)* and diverse forbs including fleabane (*Erigeron sp.),* buckwheat (*Eriogonum sp.),* phlox (*Phlox longifolia), Astragalus sp.* and Prince's plume.

3.1.5 Sandy/dune areas

These areas consisted of stabilized dunes, vegetated dunes and sandy soils which occur throughout the Mina Route. These areas are mostly dominated by greasewood (*S. vermiculatus),* shadscale *(A. confertifolia),* spiny hopsage (*G. spinosa),* Nevada dalia (*P. polydenius var. polydenius)* with trace amounts of four part horsebrush (*Tetradymia tetramers)* and short spine horsebrush (*Tetradymia spinosa).* The understory was dominated by Indian ricegrass, desert globe mallow, and some invasive species including Russian thistle and cheatgrass.

3.1.6 Riparian

Riparian areas within the Mina Route survey area include the Walker River on the Walker River Indian Reservation and springs and salt marshes scattered throughout the entire survey area. Vegetation along the Walker River is dominated by cottonwood (*Populus fremontii),* willow (*Salix sp.),* saltcedar (*Tamarix ramosissima),* and Russian olive (*Elaeagnus angustifolia).* There are intermittent areas along the river that appear to function as ephemeral wetlands during high precipitation and run-off where a fair amount of rushes (*Juncus* sp.) and other riparian grasses occur with dense patches of willow. However, there is a fair amount of greasewood and rabbitbrush (*C. viscidiflorus)* encroachment in these areas.

Salt marshes occurred in the alkaline flat areas where a spring served as a primary water source. The two salt marshes observed were dominated by rushes and salt grass with some submerged aquatic vegetation.

Most of the springs observed during the field surveys were developed for livestock watering purposes and either contained no vegetation or were surrounded by upland vegetation. However, Railroad spring (near Railroad pass) included a variety of riparian vegetation as well as a historical structure. The dominant riparian species was spikerush

(*Eleocharis* sp.), with an unknown mint species, salt grass *(Distichlis spicata)*, and great basin wildrye *(Elymus elymoides)*. A significant amount of several different sage species surrounds this spring.

3.2 Special Status Plants

The plants listed in Table 1 were considered during the habitat survey of the Mina Route. The plants listed are known to occur in the area and are site-specific, dependent on certain habitat types (Table 2).

Wassuk beardtongue (*Penstemon rubicundus),* a special status plant, was observed within the project area during the field surveys. The Wassuk beardtongue was found along the roadside near Railroad Pass in rocky to coarse sand soils in high-elevation desert shrub community. The plants were in bloom and occurred frequently at other locations within the proposed Mina Route. A potential *Astragalus pseudodanthus* was found just south of Tonopah within a winterfat/bud sage community in dry gravelly soils within the roadway. The potential Tonopah milkvetch observed during the field surveys lacked flowers and therefore, positive identification could not be confirmed.

3.3 Noxious Weeds

Several noxious weed species were found throughout the survey area including: Russian thistle, halogeton, saltcedar, and Russian olive. Russian thistle was most common and dominated dune and sandy areas. Halogeton was more common in alkaline soils and in transition areas from alkaline to sandy soils. Saltcedar and Russian olive were found only in riparian areas, mostly along the Walker River.

3.4 Wildlife

Many reptiles were observed during the survey including: western whiptail (*Cnemidophorus tigris*), side-blotched lizard (*Uta stansburiana*), leopard lizard (*Gambelia wislizenii*), horned lizard (*Phrynosoma* sp.), and the zebratail lizard (*Callisaurus draconoides*). The reptiles were found in mostly sandy to somewhat alkaline soils in salt desert shrub community type. Mammals observed during the field surveys included: black-tailed jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus audubonii*), kit fox (*Vulpes velox*), packrat (*Neotoma lepida*), kangaroo rat (*Dipodomys deserti*), and white-tailed antelope squirrel (*Ammospermophilus lecurus*).

A red-tailed hawk (*Buteo jamaicensis*) nest was observed and was occupied at time of the field surveys on a transmission pole near Tonopah within the project area. Two red-tail hawks were also observed within the Walker River riparian area. Other birds observed during the field surveys included red-winged blackbirds (*Agelaius phoeniceus*), ravens (*Corvus corax*) and killdeer (*Charadrius vociferous*). The killdeer were commonly observed in the salt marsh areas.

Table 1. Special Status Plants Potentially Occurring in Mina Alternative Route

Plant Name	Common Name	USFWS[1]	BLM[2]	NV[3]	Soil Type[4]
Arabis bodienesis	Bodie Hills rockcress	Species of concern	Special status in NV, CA		3
Asclepias eastwoodiana	Eastwood milkweed	Species of concern	Special status		1
Astragalus cimae var.cimae	Cima milkvetch				2
Astragalus funereus	Black woolypod	Species of concern	Special status in NV		4
Astragalus lentiginosus var. sesquimetralis	Sodaville milkvetch	Species of concern	Special status in NV	protected	2
Astragalus pseudiodanthus	Tonopah milkvetch		Special status in CA		1
Cymopterus cinerarius	Gray wavewing				3
Eriogonum beatleyae	Beatley buckwheat				3
Eriogonum tiehmii	Tiehm buckwheat	Species of concern	Special status		2
Helianthus deserticola	desert sunflower				1
Oryctes nevadensis	oryctes	Species of concern		Special status	1
Penstemon arenarius	Nevada dune beardtongue	Species of concern	Special status		1
Phacelia monoensis	Mono County phacelia	Species of concern	Special status in NV, CA		2
Penstemon pahutensis	Pahute mesa beardtongue	Species of concern	Special status in NV		3
Penstemon rubicundus	Wassuk beardtongue				4
Tonestus graniticus	Lone Mountain tonestus	Species of concern	Special status		3

[1] United States Fish and Wildlife Service
[2] Bureau of Land Management
[3] State of Nevada
[4] Soil Types: 1- Sandy soils or dune areas, 2- Alkaline/salty/basic/calcium carbonate/light colored soils, 3- Rocky outcrops/talus slopes/granitic areas, 4- Rocky/gravelly areas.

Table 2 - Community Types and Associated Plant Species

Sandy/sand dunes:
Greasewood *Sarcobatus vermiculatus*
Shadscale *Atriplex confertifolia*
Four part horsebrush *Tetradymia tetrameres*
Short spine horsebrush *Tetradymia spinosa*
Spiny hopsage *Grayia spinosa*
Nevada dalia *Psorothamnus polydenius var. polydenius*
Indian ricegrass *Oryzopsis hymeniodes*
Salt grass *Distichlis spicata*
Desert globemallow *Sphaeralcea ambigua*
Russian thistle *Salsola kali*
Cheatgrass *Bromus tectorum*
Alkaline/salt/clay:
Four-wing saltbush *Atriplex canescens*
Shadscale *Atriplex confertifolia*
Nevada dalia *Psorothamnus polydenius var. polydenius*
Greasewood *Sarcobatus vermiculatus*
Desert globemallow *Sphaeralcea ambigua*
Halogeton *Halogeton glomeratus*
Russian thistle *Salsola kali*
Cheatgrass *Bromus tectorum*
Mojave low elevation rock/gravel:
Mormon tea *Ephedra nevadensis*
Joshua tree *Yucca brevifolia*
Bluegrass *Poa secunda*
Indian ricegrass *Oryzopsis hymeniodes*
Nevada dalia *Psorothamnus polydenius var. polydenius*
Spiny hopsage *Grayia spinosa*
Desert globemallow *Sphaeralcea ambigua*
Desert trumpet buckwheat *Eriogonum inflatum*
Spiny hopsage *Grayia spinosa*
Prince's plume *Stanleya pinnata*
Inter-Mountain Sagebrush Steppe rock/gravel:
Mormon tea *Ephedra nevadensis*
Wyoming sage *Artemisia tridentate var. wyomensis*
Indian ricegrass *Oryzopsis hymeniodes*
Fleabane *Erigeron sp.*
Buckwheat *Eriogonum sp.*
Bottlebrush squirreltail *Sitanion hystrix*

Phlox *Phlox longifolia*
Prince's plume *Stanleya pinnata*
Penstemon *Penstemon* sp.
Walker River riparian area:
Greasewood *Sarcobatus vermiculatus*
Great Basin wildrye *Elymus elymoides*
Cottonwood *Populus fremontii*
Saltcedar *Tamarix ramosissima*
Willow *Salix sp.*
Russian olive *Elaeagnus angustifolia*
Rush *Juncus sp.*
Rabbitbrush *Chrysothamnus viscidiflorus*
Semi-Desert Shrub Steppe:
Winterfat *Krascheninnikovia lanata*
Bud sage *Artemisia spinescens*
Shadscale *Atriplex confertifolia*
Indian ricegrass *Oryzopsis hymeniodes*
Desert trumpet buckwheat *Eriogonum inflatum*
Prince's plume *Stanleya pinnata*
Desert globemallow *Sphaeralcea ambigua*

3.5 Special Status Wildlife Species

The habitat assessment of the Walker River area near Schurz conducted during the field surveys revealed potential habitat for both the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) and the bald eagle (*Haliaeetus leucocephalus*). Potential habitat for the Lahontan cutthroat trout exists in the Walker River and Walker Lake, up to the Weber Dam, and the NNHP database lists this species as occurring in the Walker River near the project area. This species is stocked in Walker Lake, but because of the lack of fish ladders at the Weber Dam cannot spawn past the dam. Potential bald eagle habitat exists in the riparian corridor along the Walker River, however the NNHP database does not list this species as occurring in the area. Focused, species-specific surveys for the Lahontan cutthroat trout and the bald eagle were not conducted during the June 2006 habitat assessment activities. Focused, species-specific surveys may be required for either of these species by the U.S. Fish and Wildlife Service (USFWS) as part of the consultation process. Protocol to conduct these surveys would be determined by the USFWS at the time of consultation.

The Railroad Valley springfish (*Crenichthys nevadae*) is listed by the NNHP database as occurring at a spring near the town of Sodaville. This is an introduced population at this spring. The spring is more than a mile away from the potential rail alignment and no habitat for this species exists along the potential rail alignments. Focused surveys for this species were not conducted during the June 2006 fieldwork because of private land ownership and land access issues. Focused, species-specific surveys may be required for this species by the USFWS as part of the consultation process. Protocol to conduct these surveys would be determined by the USFWS at the time of consultation. However, because of the lack of habitat for this species along the potential rail alignments, formal consultation and focused, species-specific surveys will most likely not be required by the USFWS.

Evidence of bats was noted in two mines near the Nevada Eagle Mine, just outside of Goldfield. Both mines are open and may provide day roosts for cliff and/or cave roosting species. Special status bat species that could potentially occur in this area, which may roost in these mines include: California myotis (*Myotis californicus*), Townsend's big-eared bat (*Corynorhinus townsendii),* western small-footed bat (*Myotis ciliolabrum*), western pipistrelle (*Pipistrellus hesperus*), spotted bat (*Euderma maculatum*) and the pallid bat (*Antrozous pallidus*). However, only the Townsend's big-eared bat and the spotted bat are listed as occurring in the project area by the NNHP database.

4.0 DISCUSSION AND CONCLUSION

The majority of the areas observed during the field surveys consisted of the salt desert shrub vegetative community. Additionally, most of the areas observed appeared to be disturbed either by roads or historical livestock grazing resulting in little grass and forb diversity and an increase in noxious weeds. Wassuk beardtongue, a special status plant,

was observed within the project area during the field surveys. Another special status plant, Tonopah milkvetch, may have been observed during the field surveys, however, because of the lack of flowers on the plants found, positive identification could not be confirmed. It is possible that special status plants other than those listed in Table 1 occur within the study area, however, due to the time of year the surveys were conducted and the lack of rainfall during the months leading up to the field surveys, most of the annual species had already bloomed, gone to seed and dried up. This makes observation and identification of these additional annual species nearly impossible.

The winterfat community near Tonopah holds the greatest potential for the occurrence of special status plant species and greatest value for wildlife, due to the historical occurrences of Tonopah's milkvetch and Eastwood milkweed in the area, the presence of a raptor nest and the presence of a large winterfat community. Winterfat is an important forage plant for many wildlife species including mule deer, pronghorn, jackrabbits, and ground squirrels (Anderson and Shumar 1986, McArthur et al 1994, Stevens et al 1977). Several passerine bird species are known to breed in winterfat communities in Nevada including the horned lark, Brewer's sparrow, and sage thrasher (Medin 1990).

The frequent patches of willows, cottonwoods and occasional wetland areas of the Walker River area provide good riparian habitat. Railroad Spring appears to have been historically developed and disturbed by livestock grazing. However, during the survey the presence of riparian vegetation, standing water, native grasses and the surrounding mature sage stand indicates good potential for wildlife use, and provides good cover and resting sites for wildlife.

The salt marshes appear to provide good habitat for several different bird species. The salt marshes also appear to be functioning as wetlands as evidenced by the presence of riparian and hydrophytic plant species, standing water and anaerobic soils.

The Bureau of Land Management and other Federal land and natural resource management agencies may require further habitat assessment surveys. Additionally, focused special status species surveys may also be required depending upon alignment refinement and positioning of the Walker River crossing. If the rainfall in Spring 2007 is abundant, additional spring special status plant surveys may be beneficial and required by the various Federal land and natural resource management agencies.

5.0 REFERENCES

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Stevens, Richard; Giunta, Bruce C.; Jorgensen, Kent R.; Plummer, A. Perry. 1977. Winterfat (Ceratoides lanata). Publ. No. 77-2. Salt Lake City, UT: Utah State Division of Wildlife Resources. 41 p. [2242]

APPENDIX A - PHOTO LOG

Field Survey Point P2 - Rocky outcrop area in Goldfield Valley

Field Survey Point P4 - Railroad Pass spring area

Field Survey Point P4 - Spring at Railroad Pass

Field Survey Point P8 - Dune area near Alkali Lake

Field Survey Point P19 - Riparian area along the Walker River

Field Survey Point P20 - Overview of the Walker River

Field Survey Point P21 - Double Springs salt marsh and associated spring

Field Survey Point P25 - Playa area near Kinkaid

Field Survey Point P32 - Rhodes Salt Marsh

Field Survey Point P34 – Devil's Gate sand dune area

Field Survey Point P7 – Wassuk beardtongue

Field Survey Point P37 - Potential Tonopah milkvetch

APPENDIX B – FIELD FORM EXAMPLE

Project Name: Yucca Mountain RR Mina Alternative Date:
Location:

Biologist(s):

Habitat Class #'s:

1. virgin	6. dump
2. grazing	7. trails
3. mining	8. construction
4. roads	9. developed
5. OHV	10. disturbed

Site Description

Vegetation Type: _____
% Vegetation Cover: _____
Habitat Class #'s: _____
Notes:

GPS Coordinates
Soil Type(s)
Types of noxious weeds present
List of Species that May Occur in Project Area:

Plant Species	Birds	Reptiles/Amphibians
		Mammals

- For special status species, list type of sign (i.e. scat, nest, carcass, visual, tracks, etc.), location, GPS point, photo number, habitat, etc.
- No abbreviations for species unless you provide a key