Appendix 9

ENVIRONMENTAL EVALUATION AND DISPERSION MODELING FILES

DISPERSION MODELING IMPACT ANALYSIS
NV ENERGY, INC
REID GARDNER GENERATING STATION
APPLICATION FOR SIGNIFICANT REVISION TO THE CLASS I PERMIT
REVISION 2

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Attachments

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EXECUTIVE SUMMARY

NV Energy, Inc. (NV Energy) is submitting an application for a significant revision to the Class I permit for the Reid Gardner Generating Station (Reid Gardner). The revision will allow the safer use of Powder River Basin (PBR) Coal at the facility. The properties of PBR coal are such that several modifications to the coal handling system will be required to safely accommodate the additional level of control. This document represents Revision 2 to the Environmental Evaluation, and replaces Revision 1 which was submitted in December 2010. Revision 2 includes revised meteorological data processing using corrected site-specific meteorological data, and revised dispersion modeling using the updated 2009 meteorological data processed with solar radiation and temperature difference (delta-T) data.

An air quality impact analysis is required as part of the permit application and must include an evaluation of compliance with the Nevada Ambient Air Quality Standards (AAQS) and National AAQS. Because the project will require addition of wet suppression systems, dust bags and dust extraction units, facility-wide AAQS analyses were performed for particulate matter with diameter less than or equal to 10 microns (PM_{10}). In addition, facility-wide AAQS analyses were revised for sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and carbon monoxide (CO). Modeled concentrations of nitrogen oxides (NO_x) were converted to NO_2 by multiplying by EPA's empirically derived scaling factor of 0.75. Maximum potential emissions of volatile organic compounds (VOC) and NO_x, which are precursors to ozone (O_3), were used with EPA's screening technique by Richard D. Scheffe entitled *VOC/NOx Point Source Screening Tables* (Scheffe 1990) to estimate O_3 impacts.

The results of this modeling analysis demonstrate that Reid Gardner will remain in compliance with the AAQS for all regulated pollutants. Table ES-1 summarizes the AAQS modeling results.

TABLE ES-1
DISPERSION MODELING RESULTS

Pollutant	Averaging Period	Total Concentration[a] ($\mu g/m^3$)[a]	National Ambient Air Quality Standard ($\mu g/m^3$)[b]	Nevada Ambient Air Quality Standard ($\mu g/m^3$)[b]
Nitrogen Dioxide	Annual	35.5	100	100
Sulfur Dioxide	Annual	36.9	80	80
	24-hour	303.1	365 [c]	365
	3-hour	856.2	1,300 [c]	1,300
Carbon Monoxide	8-hour	1,493.6	10,000 [c]	10,000 [d]
	1-hour	2,814.5	40,000 [c]	40,000
PM_{10} [e]	Annual	38.5	Revoked [f]	50
	24-hour	130.9	150 [c]	150
Ozone	1-hour	0.054 [g]	Revoked [h]	0.12 [g]

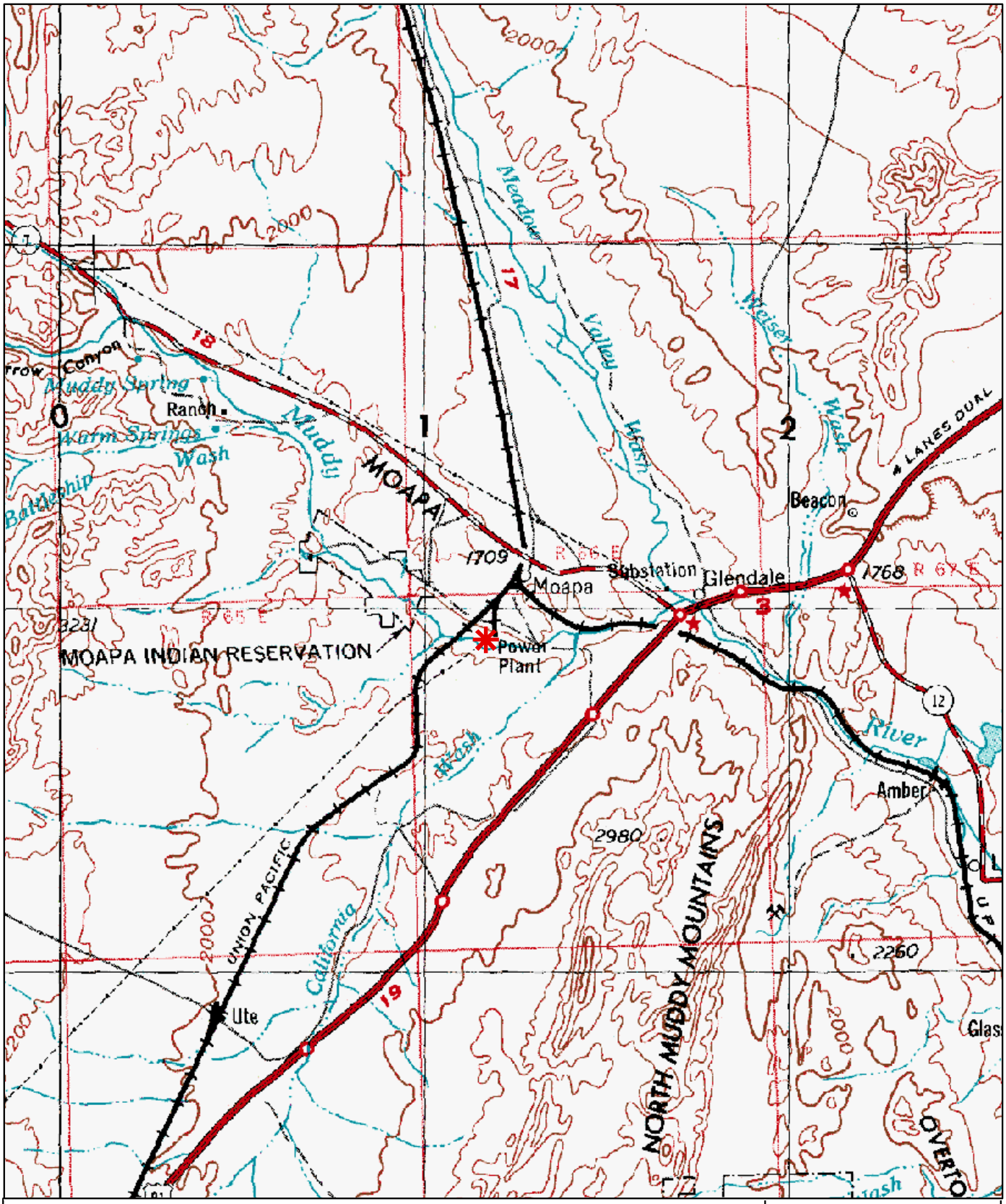
Notes:
- a Includes background concentrations
- b $\mu g/m^3$ = micrograms per cubic meter
- c Not to be exceeded more than once per calendar year
- d 6,670 $\mu g/m^3$ at areas equal to or greater than 5,000 feet above Mean Sea Level
- e Particulate matter with aerodynamic diameter less than or equal to 10 microns
- f EPA revoked this standard effective December 17, 2006
- g Value given in units of parts per million
- h Revoked by EPA as of June 15, 2005

1.0 INTRODUCTION

NV Energy, Inc. (NV Energy) is submitting an application for a significant revision to the Class I permit for the Reid Gardner Generating Station (Reid Gardner). The revision will allow the safer use of Powder River Basin (PBR) coal at the facility. The properties of PBR coal are such that several modifications to the coal handling system will be required to safely accommodate the additional level of control. This document represents Revision 2 to the Environmental Evaluation. Revision 1 to the Environmental Evaluation was submitted in December 2010. Revision 2 includes revised meteorological data processing using revised and corrected 2009 site-specific meteorological data, and revised dispersion modeling using the updated meteorological data.

Reid Gardner is located in Clark County, Nevada, approximately 1 mile south of Moapa, Nevada, and approximately 50 miles north of the city of Las Vegas, Nevada. The plant site is located in Sections 5, 6, and 7 of Township 15 South, Range 66 East – Hydrographic Basin 218. The four boiler stacks are centered at approximately Universal Transverse Mercator (UTM) coordinates 711,642 meters east and 4,059,206 meters north (Zone 11, North American Datum [NAD] 83). The Reid Gardner facility employs coal-fired boilers; cooling towers; material handling, including coal unloading, coal conveying, coal piles, coal silos, fly ash silos, fly ash landfill, fly ash dump pile, soda ash slurry tanks, and lime storage silo; and unpaved roads. Figure 1-1 shows the location of the Reid Gardner Generating Station. A complete list of modeled emission sources and their modeled release parameters is included in Attachment A.

This air quality modeling analysis has been completed by Redhorse Corporation (Redhorse) for submittal to the Nevada Division of Environmental Protection (NDEP) in support of the application for a significant revision to the Class I permit in accordance with Nevada Administrative Code (NAC) 445B.308. The Class II area impact analyses required as part of the permit application include an evaluation of the Nevada Ambient Air Quality Standards (AAQS) and National AAQS. Section 2.0 of this report discusses the Class II area impact analysis, including the modeling methodology; the selected dispersion model and model setup; source input data; building downwash; background pollutant concentrations; meteorological data and data processing; model receptors; and model results. Section 3.0 presents references.



Legend

✱ Facility Location

SOURCE: USGS Las Vegas 1:250,000 1969.

N 0 1.25 2.5 5 Kilometers

TETRA TECH

Reid Gardner Generating Station

FIGURE 1-1

Facility Location

2009-JuneTetraTech EMI - L. Niell

2.0 AIR QUALITY IMPACT ANALYSIS

Dispersion modeling of particulate matter with diameter less than or equal to 10 microns (PM_{10}), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and carbon monoxide (CO) was completed to estimate the ambient air quality impact from Reid Gardner and other nearby emission sources. Modeled concentrations of nitrogen oxides (NO_x) were converted to NO_2 by multiplying by EPA's empirically derived scaling factor of 0.75. Maximum potential emissions of volatile organic compounds (VOC) and NO_x, which are precursors to ozone (O_3), were used with EPA's screening technique by Richard D. Scheffe entitled *VOC/NOx Point Source Screening Tables* (Scheffe 1990) to estimate O_3 impacts. Modeled impacts for each applicable averaging period were added to appropriate background concentrations and then compared to the AAQS to determine compliance. The modeling analysis followed the guidance and protocols outlined in the NDEP's *General Air Dispersion Modeling Guidelines* (NDEP 2008), and the U.S. EPA's *Guideline on Air Quality Models (Revised)* (EPA 2005).

Table 2-1 shows the PM_{10}, SO_2, NO_2, CO, and O_3 National AAQS and the Nevada AAQS that Reid Gardner must meet to demonstrate compliance with ambient air quality standards.

TABLE 2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Period	National Ambient Air Quality Standard ($\mu g/m^3$)[a]	Nevada Ambient Air Quality Standard ($\mu g/m^3$)[a]
Nitrogen Dioxide	Annual	100	100
Sulfur Dioxide	Annual	80	80
	24-hour	365 [b]	365
	3-hour	1,300 [b]	1,300
Carbon Monoxide	8-hour	10,000 [b]	10,000 [c]
	1-hour	40,000 [b]	40,000
PM_{10} [d]	Annual	Revoked [e]	50
	24-hour	150 [b]	150
Ozone	1-hour	Revoked [f]	0.12 [g]

Notes:
- a $\mu g/m^3$ = micrograms per cubic meter
- b Not to be exceeded more than once per calendar year
- c 6,670 $\mu g/m^3$ at areas equal to or greater than 5,000 feet above Mean Sea Level
- d Particulate matter with aerodynamic diameter less than or equal to 10 microns
- e EPA revoked this standard effective December 17, 2006.
- f Revoked by EPA as of June 15, 2005.
- g Value is given in units of parts per million

2.1 MODEL SELECTION AND SETUP

The dispersion modeling was conducted using the American Meteorological Society/ EPA Regulatory Model Improvement Committee Dispersion Model named "AERMOD." AERMOD is the EPA regulatory model approved for use with industrial sources (EPA 2005). The approved version of AERMOD (Version 09292) was used for this analysis which includes PRIME downwash algorithms and corrects several other minor problems associated with the previous version of AERMOD.

AERMOD is a Gaussian plume dispersion model based on planetary boundary layer principles for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions based on the probability density function and the superposition of several Gaussian plumes. The AERMOD modeling system has three components: (1) AERMAP, the terrain preprocessor program; (2) AERMET, the meteorological data preprocessor; and (3) AERMOD, which includes the dispersion modeling algorithms.

AERMOD was developed to handle simple and complex terrain issues using improved algorithms. As with the Complex Terrain Dispersion Model, AERMOD uses the dividing streamline concept to address plume interactions with elevated terrain.

AERMOD was used to predict maximum pollutant concentrations in ambient air from Reid Gardner emissions for comparison with the AAQS. AERMOD was run using all regulatory default options, including use of stack-tip downwash, buoyancy-induced dispersion, calms processing routines, upper-bound downwash concentrations for super-squat buildings, default wind speed profile exponents, vertical potential temperature gradients, and no use of gradual plume rise. The local terrain was incorporated into the calculations.

2.2 SOURCE INPUT DATA

Emission inventories for all modeled pollutants were developed based on data provided by NV Energy regarding revised operations to safely accommodate the PRB coal, as well as revised operation of the fire pump. Source release parameters and emission rates for Reid Gardner sources are shown in Attachment A, Table A-1. Detailed emission calculations are provided in Appendix 6 of the Significant Revision permit application.

The air modeling analysis used hourly emission rates as submitted in the Reid Gardner Title V Renewal Application, including amendments, with the following exceptions:

- PM_{10} emissions from all coal handling operations were revised to represent operations associated with PRB coal usage, storage and handling. This included:
  - Additional wet suppression at some transfer points;
  - Introduction of Dust Bags at six transfer points, replacing originally modeled emissions; and
  - Introduction of Dust Extraction (Engart) Units at five locations, with three of the units replacing baghouse emissions associated with the coal silos, and one of the units replacing coal transfer emissions from conveyor D to conveyor E.
- Emissions associated with P1.001f (Transfer of coal from bottom of crusher onto conveyor G or N) were taken out of the model as the crusher tower was never constructed.
- The haul road operational practices have been adjusted from the current configuration. Additional controls have been applied to a portion of the ash haul road over which the pond construction/closure activities travel. The current and proposed haul road configurations are described in Table 2-2.

Source release parameters associated with the new control technologies are detailed in Table A-1. Manufacturer specifications for the Engart Units and the Dust Bags are provided in Appendix 8 of the Significant Revision permit application.

Overall, the Reid Gardner sources were modeled using point, area, volume and areapoly sources as defined in AERMOD. Stack emission sources were modeled as point sources. Open fugitive dust sources such as the fly ash landfill and coal storage piles, as well as insignificant sources were modeled as area or areapoly sources. The haul road and process fugitive sources such as material transfer operations were modeled as volume sources. Source emission characteristics were calculated following the AERMOD User's Guide (EPA 2004).

TABLE 2-2
UNPAVED HAUL ROAD PARAMETERS

Scenario	Description	Ash Haul Road Control Efficiency (%)	Operation	
			Round Trips per Hour	Hauling Hours per Day
Current Configuration	Inside Coal yard to pond construction truck entrance	80	12[a]	10
	Pond construction truck entrance to northernmost part of ash haul road, north of pond to ash dump	80	12[a] 30[b]	10

Notes:

[a] Operation of 12 trips per hour for ash hauling operations.

[b] Operation of 30 round trips per hour and 10 hours per day represents the worst case operational parameters expected over the life of the pond construction/closure project.

Some fugitive dust emission sources are calculated using empirically-derived EPA emission equations. Some wind erosion sources at Reid Gardner were calculated using an EPA emission equation that requires input of an annual average wind speed. Actual emissions from these sources will be lower with low wind speeds and higher with high wind speeds. AERMOD includes an option to include wind speed scalars to adjust emissions based on ambient wind speeds. Wind speed scalars were included in the modeling to more accurately reflect PM_{10} emissions based on ambient winds for source emissions that were calculated using an annual average wind speed. Wind speed scalars were included for the following sources: Silo material transfer operations, coal transfers onto stockpiles, and ash dump to the ash landfill. Hourly emissions for these sources were calculated based on an annual average wind speed of 4.47 meters per second (m/s). Wind speed scalars were calculated by inputting the median wind speed for each wind speed category into the EPA emission equation. Table 2-3 shows the wind speed scalars used for each AERMOD wind speed category.

TABLE 2-3
WIND SPEED SCALARS

Wind Speed Category (meters per second)	0.0 - 1.54	1.55 – 3.09	3.10 – 5.14	5.15 – 8.23	8.24 – 10.8	> 10.8
Wind Speed Scalar (unitless)	0.101	0.426	0.899	1.689	2.672	3.671

The coordinate system used for this modeling has been updated per NDEP guidance to the UTM NAD83 projection.

2.3 BUILDING DOWNWASH

The modeling analysis included evaluation of building dimensions at Reid Gardner to assess potential downwash effects on stack emissions from nearby structures. Direction-specific downwash parameters were calculated using facility plot-plan maps and EPA's Building Profile Input Program PRIME (BPIPPRM) software. This software has produced building dimension data that have been used with the PRIME building downwash algorithms incorporated into AERMOD.

2.4 BACKGROUND CONCENTRATIONS

Ambient background concentrations represent the contribution of pollutant sources that are not included in the modeling analysis, including naturally occurring sources. The background concentration for each criteria pollutant is added to the maximum modeled concentration to calculate the total estimated pollutant concentration for comparison with the AAQS.

Background concentrations for NO_2, SO_2, and PM_{10} were taken from monitoring data collected for the Lehman Caves. The Lehman Caves monitoring site is located northeast of Reid Gardner. No nearby monitoring data are available for CO, however Reid Gardner is located in a relatively remote area and background CO concentrations are expected to be low. Therefore, CO background concentrations are assumed to be zero for modeling purposes. Table 2-4 shows the background concentrations used for the modeling analysis.

TABLE 2-4
BACKGROUND POLLUTANT CONCENTRATIONS

Pollutant	Averaging Period	Concentration (µg/m^3)
NO_2[a]	Annual	0
SO_2[a]	3-Hour	0
	24-Hour	0
	Annual	0
PM_{10}[a]	24-Hour	10.2
	Annual	9.0

[a] Measured from Lehman Caves monitoring site

2.5 METEOROLOGICAL DATA

Site-specific meteorological data collected at the Reid Gardner facility in 2009 were used for the modeling analysis. After reviewing site-specific meteorological data from 2007 through 2009, NDEP staff requested that the 2009 dataset be used for this modeling analysis. Meteorological years 2007 and 2008 were eliminated from consideration by NDEP due to concerns about data accuracy for some variables. Following NDEP guidance, the 2009 dataset was processed through the AERMET pre-processor software using solar radiation and temperature difference parameters to calculate stability values used by AERMOD. This processing method is referred to as the solar radiation/delta-T (SRDT) method and is used instead of the standard method which requires cloud cover data. The revised 2009 dataset includes delta-T measurements from the 2-10 meter levels and from the 2-100 meter levels. The dataset excludes temperature measurements from the 50 meter level because the data were deemed questionable by NDEP and Redhorse meteorologists. Table 2-5 shows the data collection efficiency for the 2009 meteorological dataset based on statistics calculated by AERMET software. Over 90 percent data collection efficiency was accomplished for all parameters.

The meteorological data were processed into model-ready format using EPA's AERMET software, Version 06341. AERMET processed the Reid Gardner on-site surface data and twice-daily upper air soundings from the National Weather Service (NWS) Station in Desert Rock, Nevada. NWS surface data collected from the Las Vegas, Nevada station were also used in the processing to fill missing surface data from the site-specific dataset.

TABLE 2-5
METEOROLOGICAL DATA COLLECTION EFFICIENCY

Meteorological Variable	Percent Data Collected
	2009
Solar Radiation	98.3
10-Meter Wind Speed	99.1
50-Meter Wind Speed	99.2
100-Meter Wind Speed	99.2
10-Meter Wind Direction	99.3
50-Meter Wind Direction	99.3
100-Meter Wind Direction	99.3
10-Meter Sigma A	99.2
50-Meter Sigma A	99.2
100-Meter Sigma A	99.2
2-Meter Temperature	99.1
10-Meter Temperature	99.1
100-Meter Temperature	99.2
2-10 Meter Temperature Difference	99.1
2-100 Meter Temperature Difference	99.1
10-Meter Vertical Wind Component	99.1
50-Meter Vertical Wind Component	99.1
100-Meter Vertical Wind Component	99.2

The meteorological data were processed by AERMET using a three stage process. The first stage extracts the data and administers several data quality checks. The second stage merges the data, and the third stage estimates required boundary layer parameters. Reid Gardner meteorological data include wind parameters observed at three levels - 10, 50, and 100 meters. All three levels were used as input to AERMET. Using three wind levels provides a better estimate of boundary layer conditions than using only one wind level. 50-meter temperature data were excluded from the processing based on data quality concerns.

Surface characteristics required as input to AERMET, but not included in the Reid Gardner dataset, were estimated using EPA's AERSURFACE software. AERSURFACE obtains surface characteristics from U.S. Geological Survey land use/land cover (LULC) data files and characterizes surface conditions in user-defined sectors surrounding the site. AERSURFACE was run using Nevada National Land Cover Data 1992 archives (NLCD92), and processed the data for the application site (Reid Gardner). AERSURFACE was run using guidance provided in EPA's *AERSURFACE User's Guide* (EPA 2008). Output from this run was processed through AERMET.

During data processing it was discovered that a significant number of soundings were missing from the Desert Rock upper air data. The missing upper air data resulted in AERMOD assigning 13 to 15 percent of the meteorological dataset as missing (depending on the year). No nearby upper air stations with representative data are available. Therefore, several missing soundings were filled with soundings from the previous day or following day to produce a full upper air dataset. According to the National Oceanic and Atmospheric Administration (NOAA), the Mercury/Desert Rock upper air sounding operations are on a reduced schedule and therefore the missing data encountered in our processing is expected.

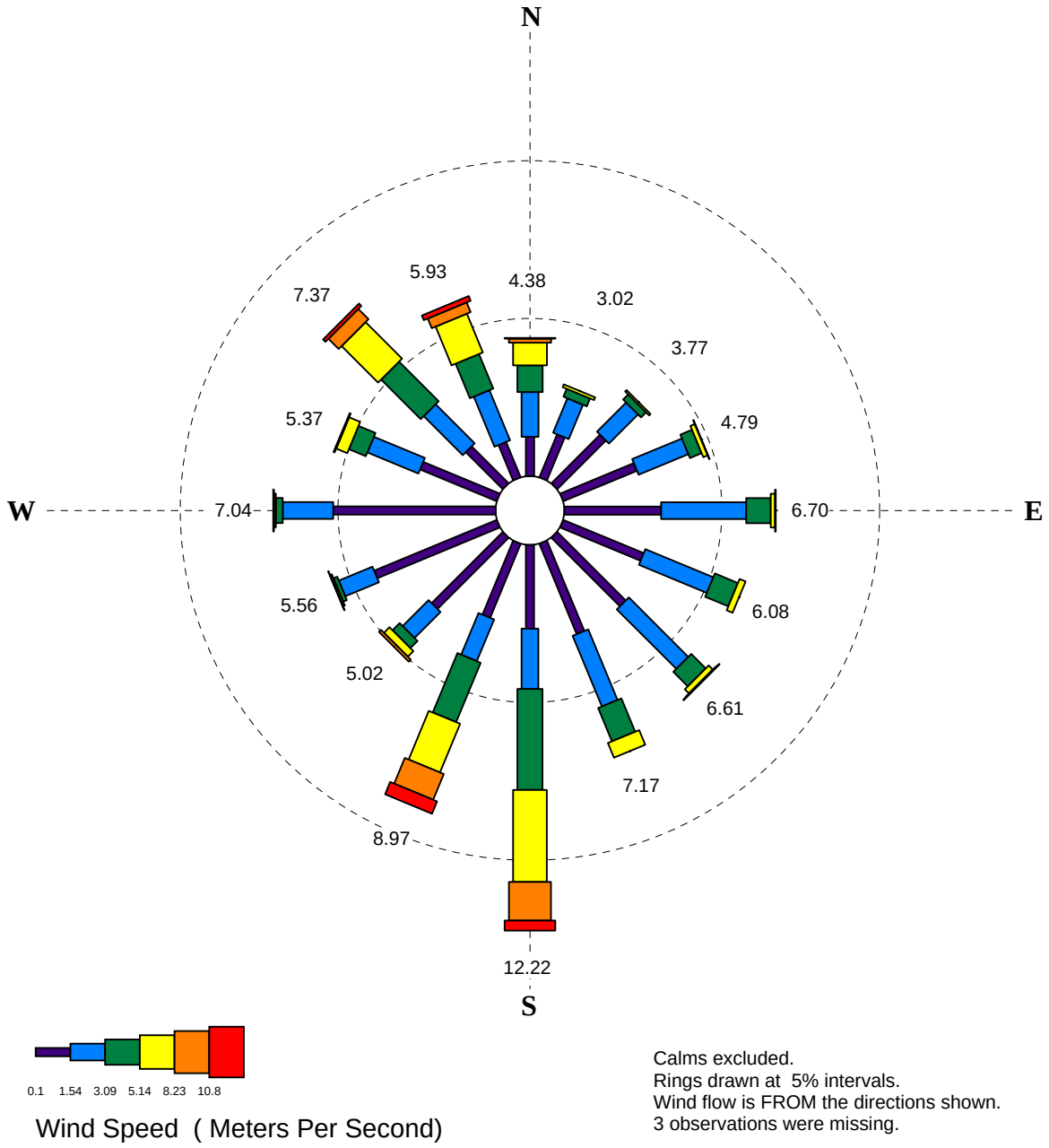
Figure 2-1 shows a wind rose diagram of the Reid Gardner meteorological data used in the modeling analysis.

2.6 AERMOD MODEL RECEPTORS

The modeling was completed using multiple receptor locations to ensure that the maximum estimated impacts are identified. Following EPA and NDEP guidelines, receptor locations were identified with sufficient density and spatial coverage to isolate the area with the highest impacts. To accomplish this goal, the following receptors were used for all pollutant assessments:

- 25-meter spaced fenceline grid;
- 50-meter spaced grid from boundary to at least 200 meters;
- 100-meter spaced grid from the edge of the 50-meter grid out 500 meters;
- 200-meter spaced grid from the edge of the 100-meter grid out 1200 meters;
- 500-meter spaced grid from the edge of the 200-meter grid out to 12 kilometers from the site, to create an overall 24 x 24 kilometer grid.

FIGURE 2-1
REID GARDNER WINDROSE
2009 METEOROLOGICAL DATA



Calms excluded.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
3 observations were missing.

A total of 7,039 receptors were used in the AAQS modeling. Figure 2-2 shows the receptor grid relative to Reid Gardner. Model receptors are presented in the UTM NAD 83 coordinate projection.

All model receptors were preprocessed using the AERMAP software associated with AERMOD. The AERMAP software establishes a base elevation and a height scale for each receptor location. The height scale is a measure of the receptor's location and base elevation and its relation to the terrain feature that has the greatest influence in dispersion for that receptor.

AERMAP was run using U.S. Geological Survey digital elevation model (DEM) data. 7.5-minute DEM data were used to give a detailed characterization of the terrain through the region. Output from AERMAP was used as input to the AERMOD runstream file for each model run.

2.7 SUMMARY OF MODEL RESULTS

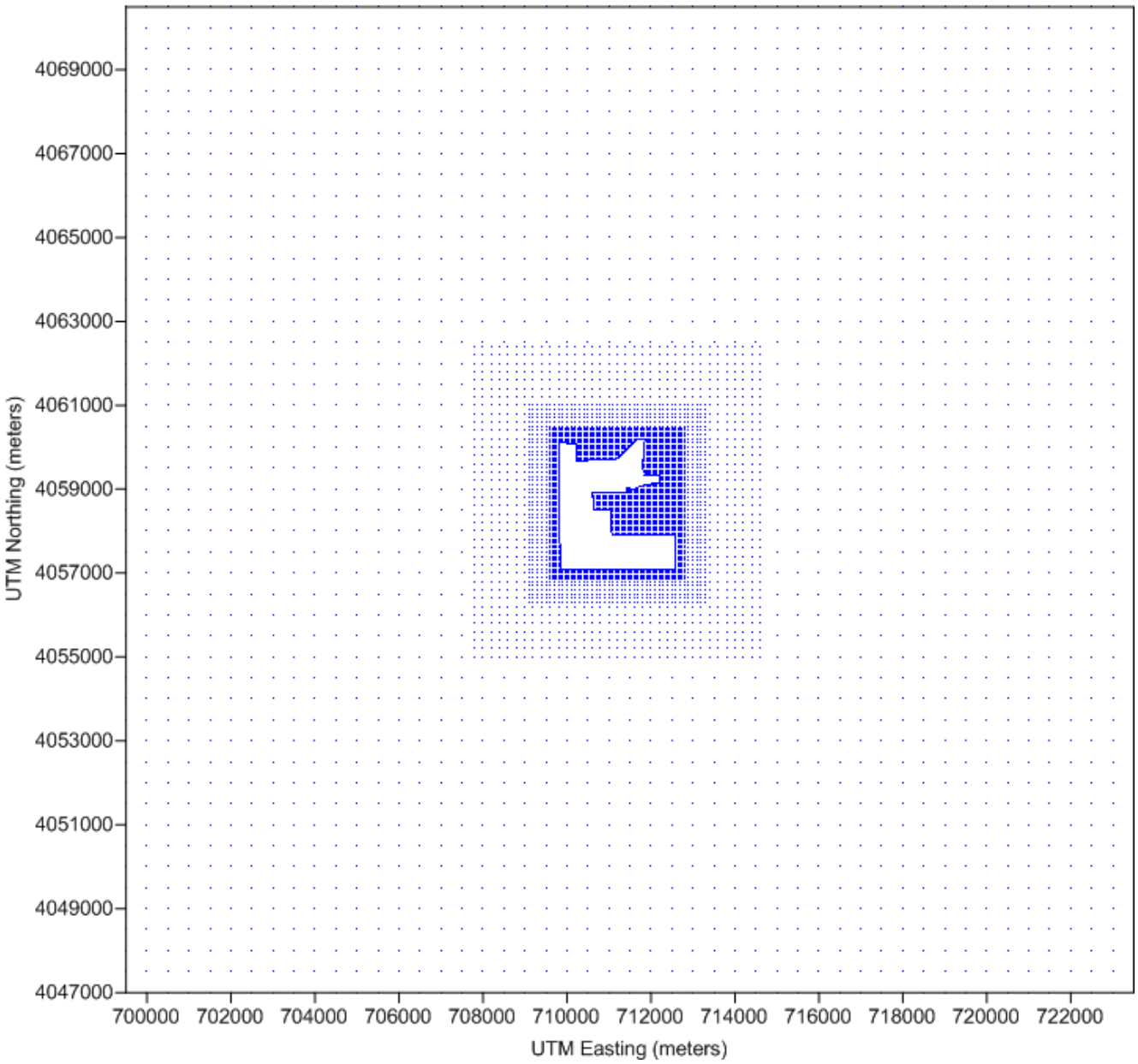
Facility-wide AAQS analyses were performed for CO, NO_2, SO_2, PM_{10}, and O_3. Modeling demonstrates that Reid Gardner will comply with the AAQS with the proposed modification to safely accommodate the PRB coal conversion. Table 2-6 shows the AAQS modeling results.

The highest 24-hour and annual PM_{10} impacts, with background values, are 130.9 μg/m^3 and 38.5 μg/m^3, respectively. These modeled PM_{10} values represent the highest impacts over the 2009 modeling period. These values are below the respective AAQS values of 150 μg/m^3 and 50 μg/m^3. The 24-hour PM_{10} value presented includes a large background value which is the highest monitored 24-hour value from the Lehman Caves monitoring effort. Figures 2-3 and 2-4 show plots of AAQS impact contours for 24-hour and annual PM_{10}.

The highest annual NO_2 impact, with background value added, is 35.5 μg/m^3. This modeled NO_2 value represents the highest impact over the 2009 modeling period. This value is below the AAQS value of 100 μg/m^3. Figure 2-5 shows a plot of AAQS impact contour for annual NO_2.

The highest 3-hour, 24-hour and annual SO_2 impacts, with background values, are 856.2 μg/m^3, 303.1 μg/m^3 and 36.9 μg/m^3, respectively. These modeled SO_2 values represent the highest impacts over the 2009 modeling period. These values are below the respective AAQS values of 1,300 μg/m^3, 365 μg/m^3 and 80 μg/m^3. Figures 2-6, 2-7 and 2-8 show plots of AAQS impact contours for 3-hour, 24-hour and annual SO_2.

FIGURE 2-2
NV Energy Reid Gardner Station
Model Receptor Locations



The highest 1-hour and 8-hour CO impacts are 2,814.5 $\mu g/m^3$ and 1,493.6 $\mu g/m^3$, respectively. These modeled CO values are below the respective AAQS values of 40,000 $\mu g/m^3$ and 10,000 $\mu g/m^3$. Figures 2-9 and 2-10 show plots of AAQS impact contours for 1-hour and 8-hour CO.

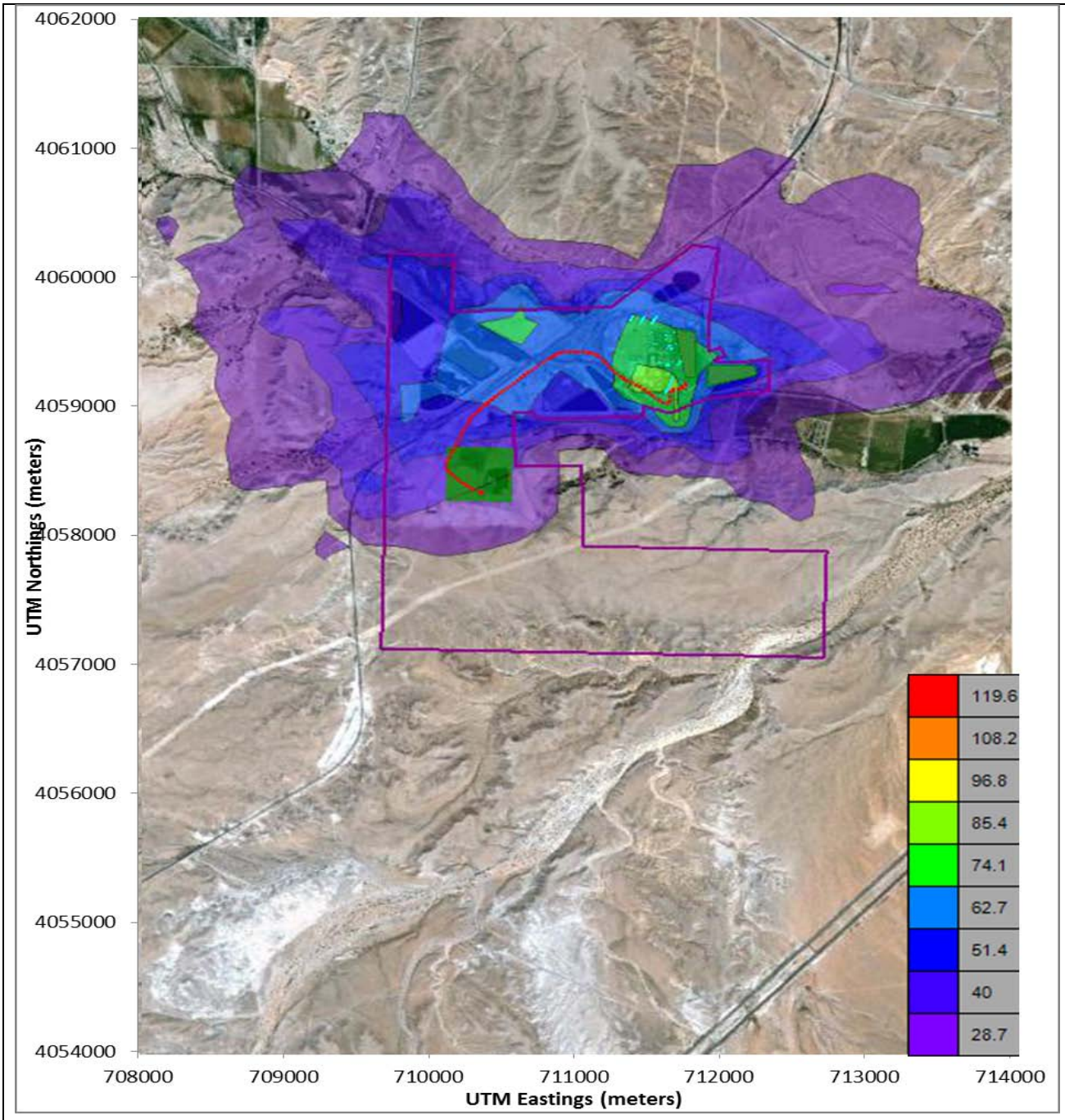
The highest 1-hour O_3 impact calculated by the Scheffe model is 0.054 parts per million (PPM). This modeled O_3 value is below the AAQS value of 0.12 PPM. Scheffe model output is given in Attachment B.

All receptors in the dataset were evaluated for compliance with AAQS. All modeling electronic files are included on compact disc in Attachment C.

TABLE 2-6
DISPERSION MODELING RESULTS
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Period	Highest Modeled Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)[a]	Total Concentration ($\mu g/m^3$)[a]	National Ambient Air Quality Standard ($\mu g/m^3$)[a]	Nevada Ambient Air Quality Standard ($\mu g/m^3$)[a]
Nitrogen Dioxide	Annual	35.5	NA	35.5	100	100
Sulfur Dioxide	Annual	856.2	NA	856.2	80	80
	24-hour	303.1	NA	303.1	365 [b]	365
	3-hour	36.9	NA	36.9	1,300 [b]	1,300
Carbon Monoxide	8-hour	2,814.5	NA	2,814.5	10,000 [b]	10,000 [c]
	1-hour	1,493.6	NA	1,493.6	40,000 [b]	40,000
PM_{10} [d]	Annual	120.7	10.2	130.9	Revoked [e]	50
	24-hour	29.5	9.0	38.5	150 [b]	150
Ozone	1-hour	0.054 [f]	NA	0.054 [f]	Revoked [g]	0.12 [f]

Notes:
- a $\mu g/m^3$ = micrograms per cubic meter
- b Not to be exceeded more than once per calendar year
- c 6,670 $\mu g/m^3$ at areas equal to or greater than 5,000 feet above Mean Sea Level
- d Particulate matter with aerodynamic diameter less than or equal to 10 microns
- e EPA revoked this standard effective December 17, 2006
- f Values given in units of parts per million
- g Revoked by EPA as of June 15, 2005
- NA Not Applicable

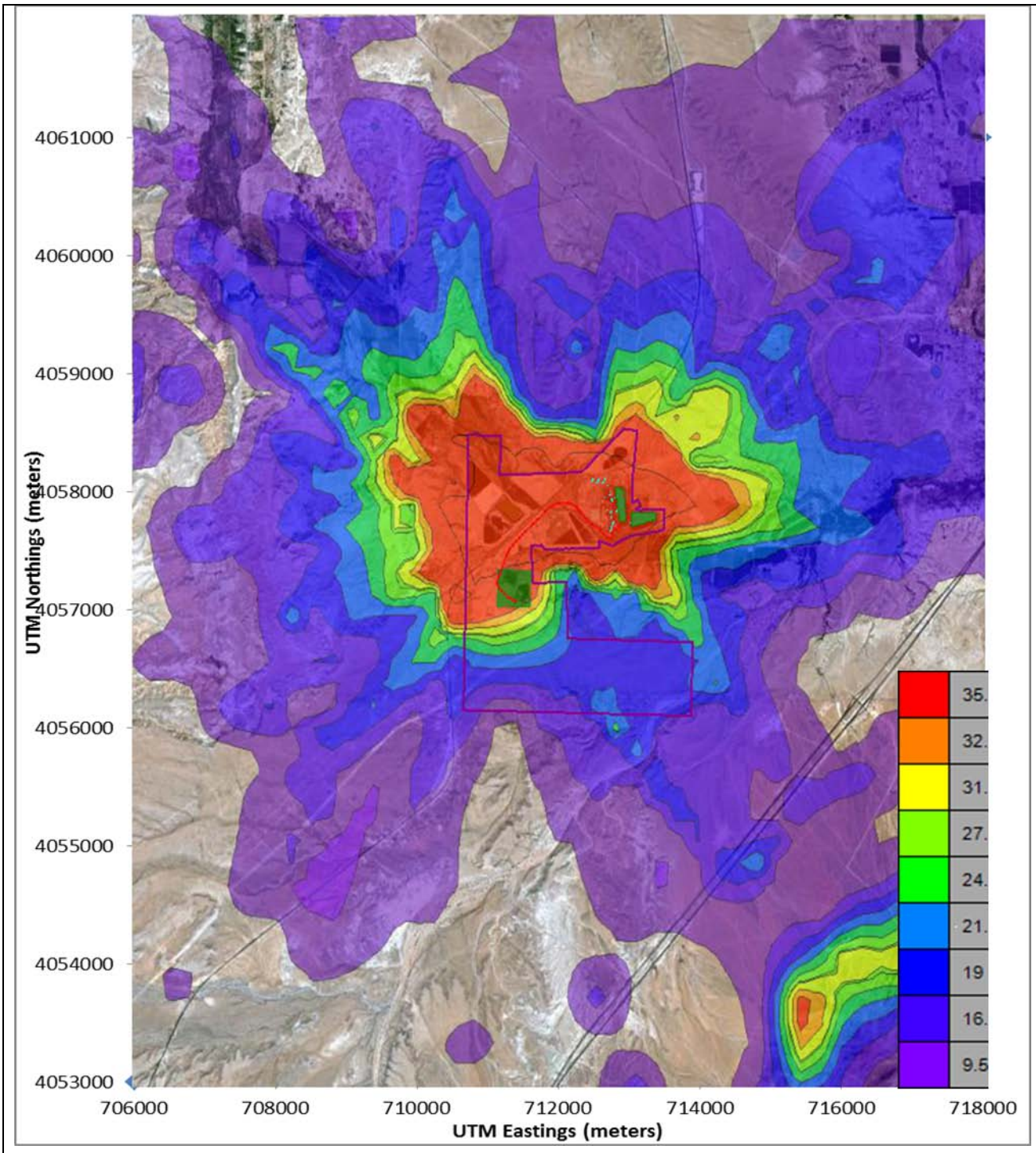


Reid Gardner Fenceline

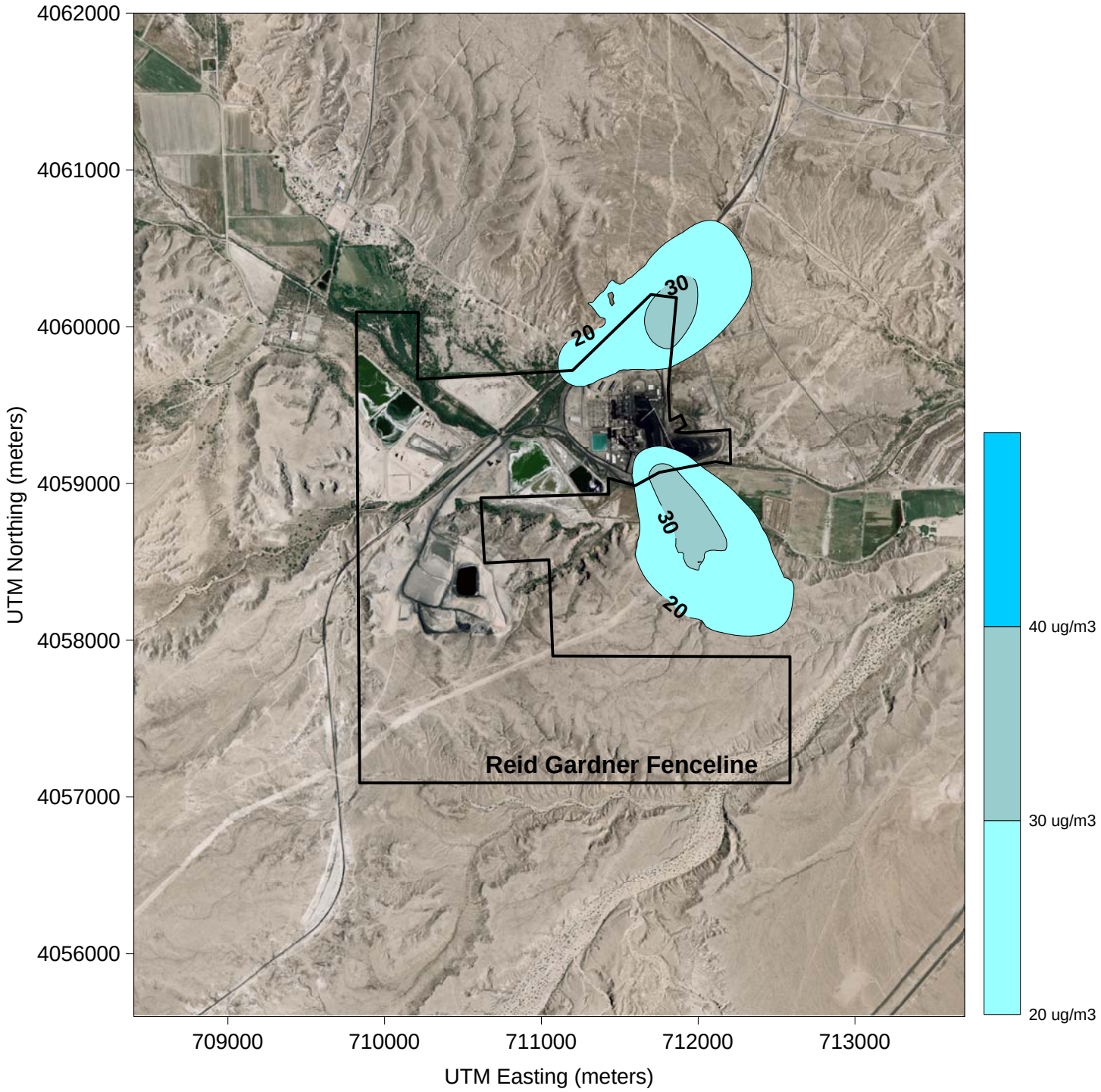
Concentrations presented in micrograms per cubic meter

N

FIGURE 2-3
NV Energy Reid Gardner Station
24 hour PM10 Concentrations



Reid Gardner Fenceline Concentrations presented in micrograms per cubic meter	N	**FIGURE 2-4** **NV Energy Reid Gardner Station** **Annual PM10 Concentrations**



Reid Gardner Fenceline

Concentrations presented in micrograms per cubic meter

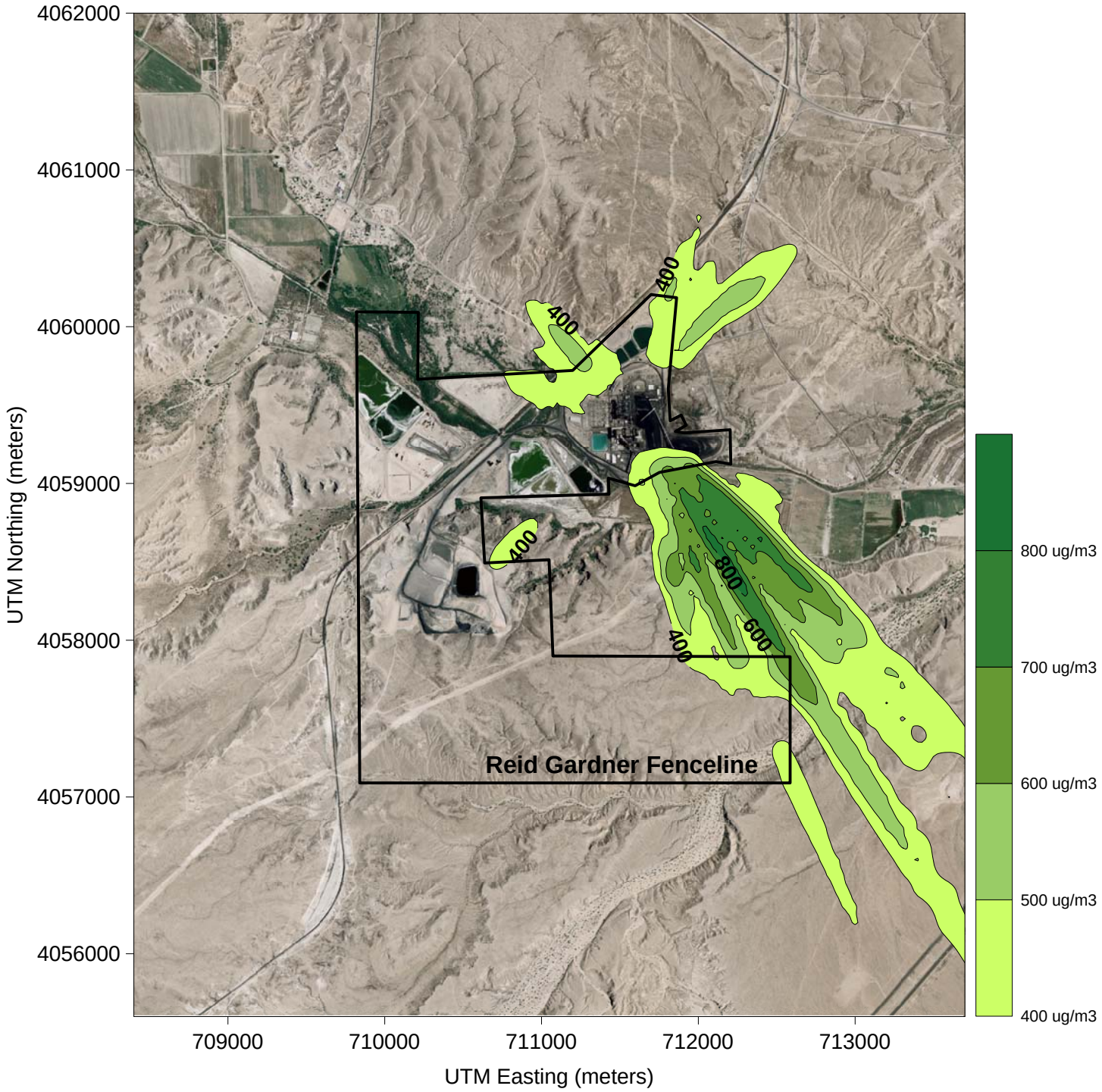
Background concentrations assumed to be zero

N
W
E
S

FIGURE 2-5
NV Energy Reid Gardner Station Annual NO2 Concentrations

NVEnergy

RHC
REDHORSE CORPORATION



Reid Gardner Fenceline

Concentrations presented in micrograms per cubic meter

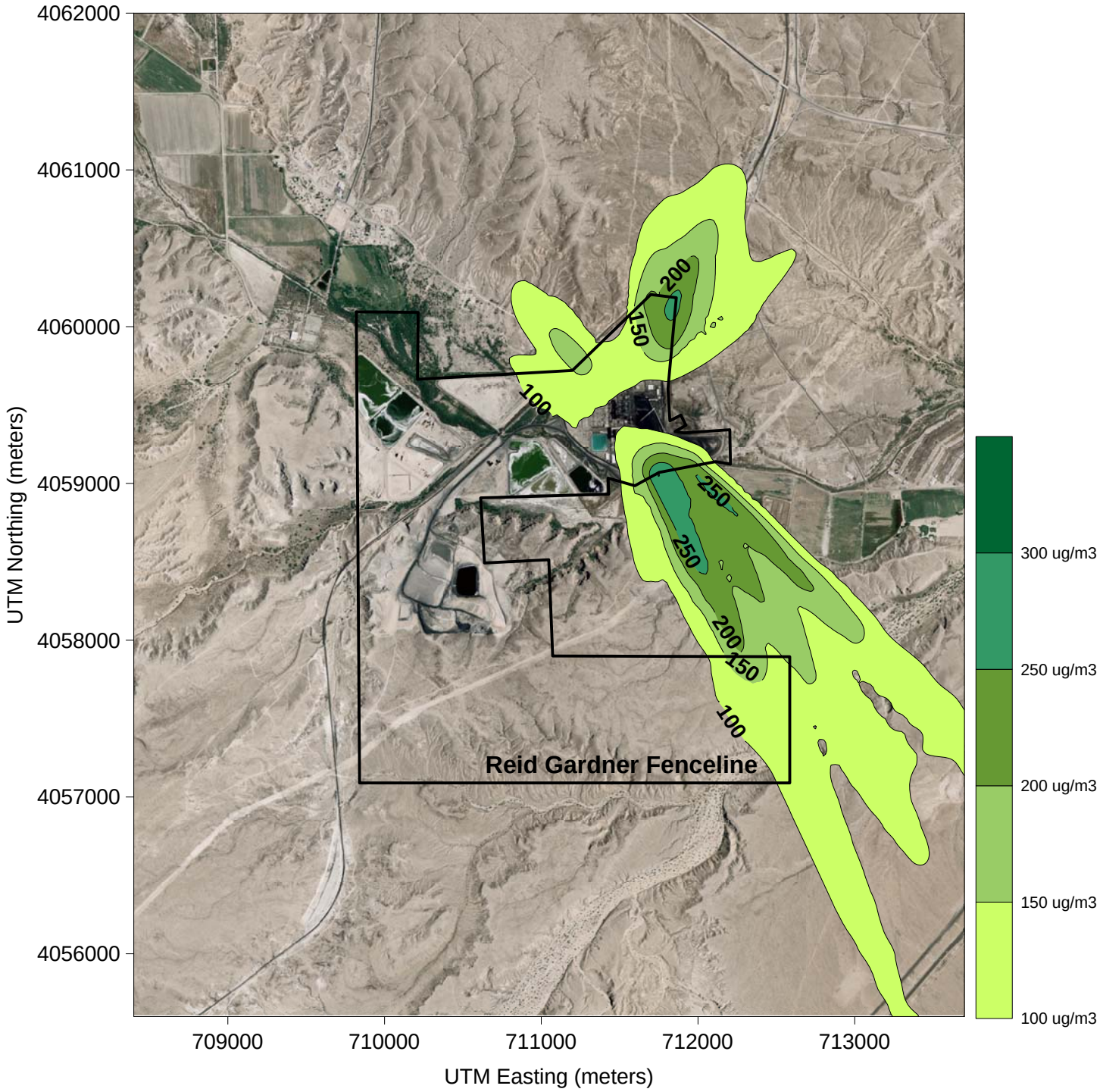
Background concentrations assumed to be zero

N
W E
S

FIGURE 2-6
NV Energy Reid Gardner Station
3-Hour SO2 Concentrations

NVEnergy

RHC
REDHORSE CORPORATION



Reid Gardner Fenceline

Concentrations presented in micrograms per cubic meter

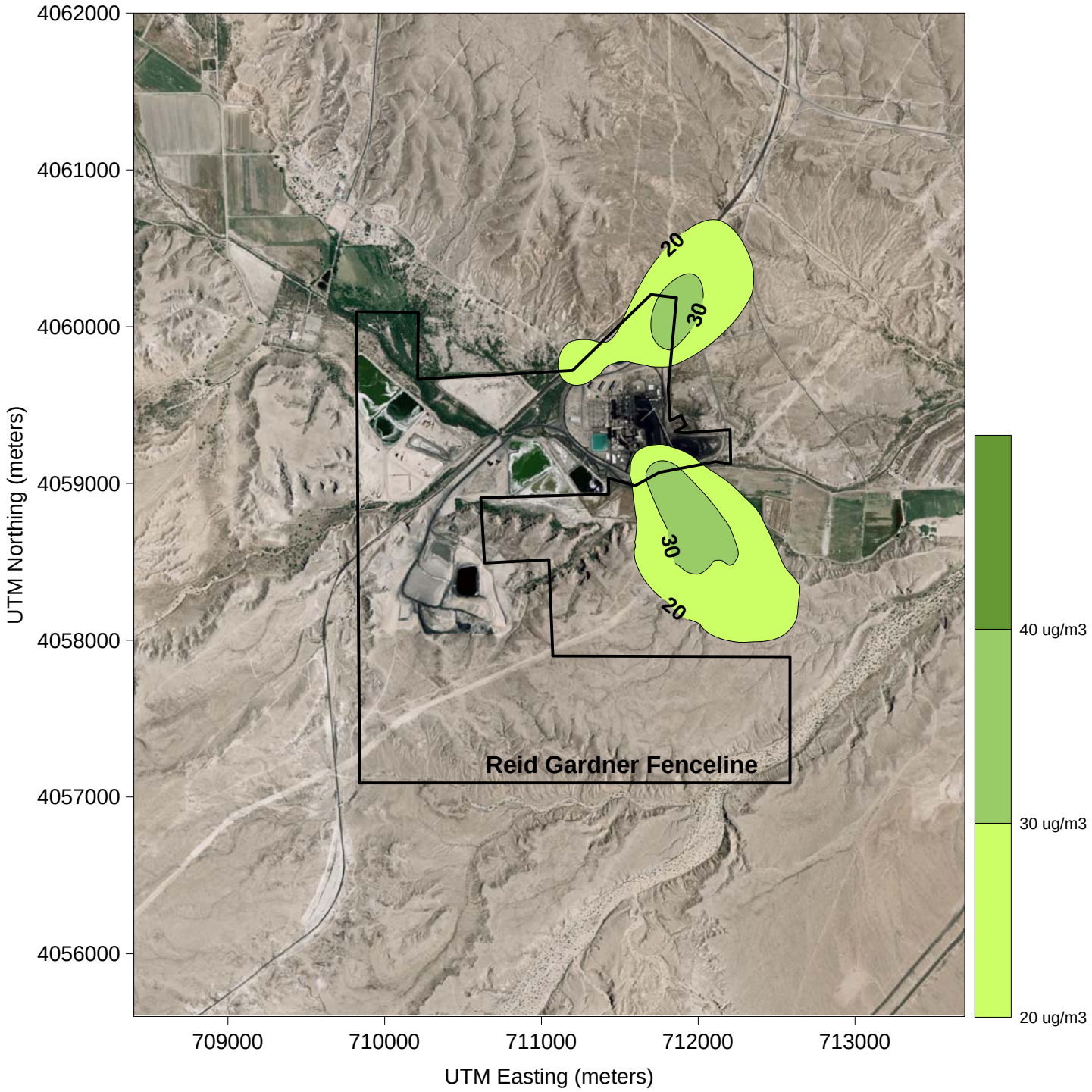
Background concentrations assumed to be zero

N
W E
S

FIGURE 2-7
NV Energy Reid Gardner Station 24-Hour SO2 Concentrations

NVEnergy

RHC
REDHORSE CORPORATION



Reid Gardner Fenceline

Concentrations presented in micrograms per cubic meter

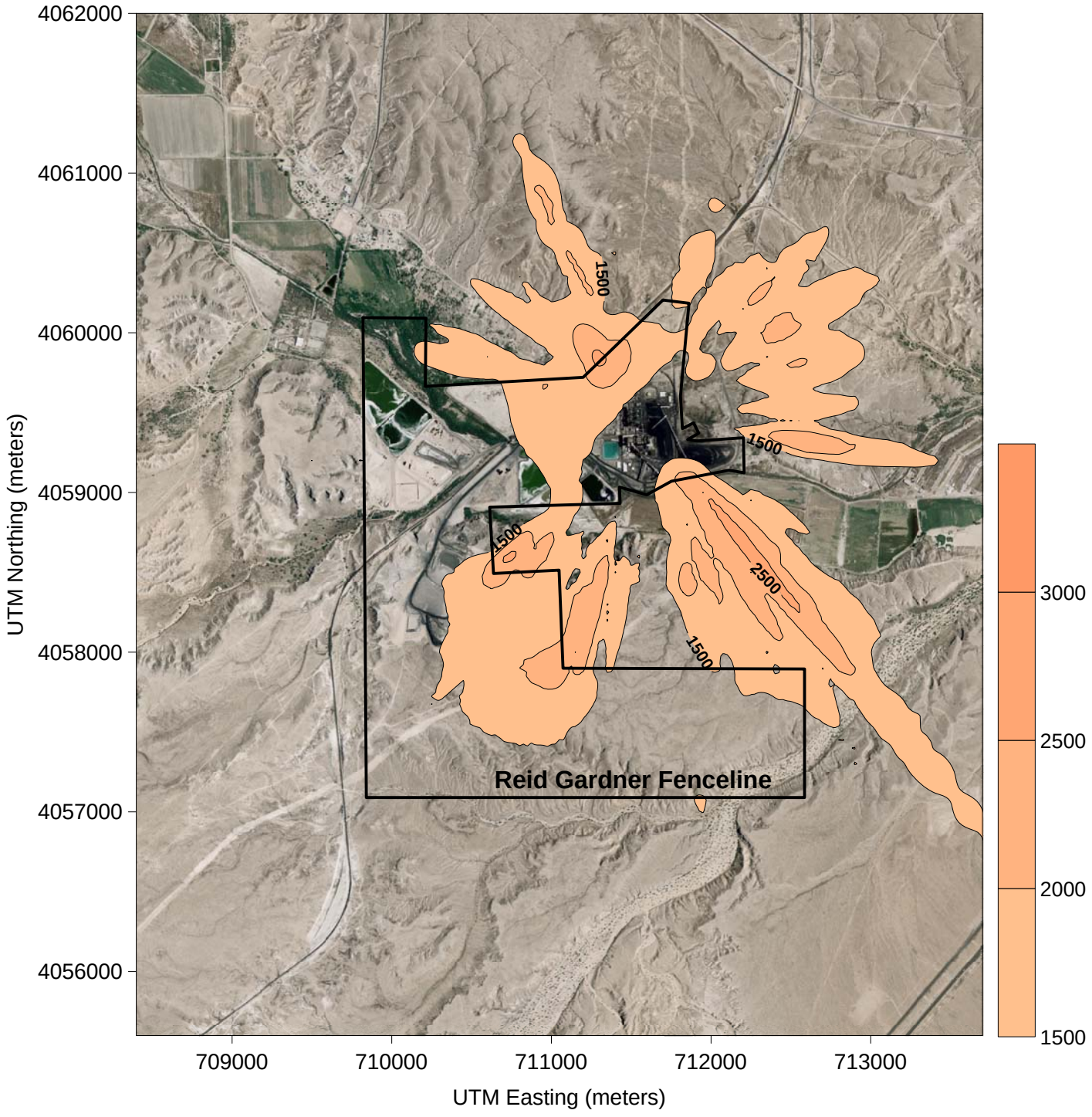
Background concentrations assumed to be zero

N
W E
S

FIGURE 2-8
NV Energy Reid Gardner Station Annual SO2 Concentrations

NVEnergy

RHC
REDHORSE CORPORATION



Reid Gardner Fenceline

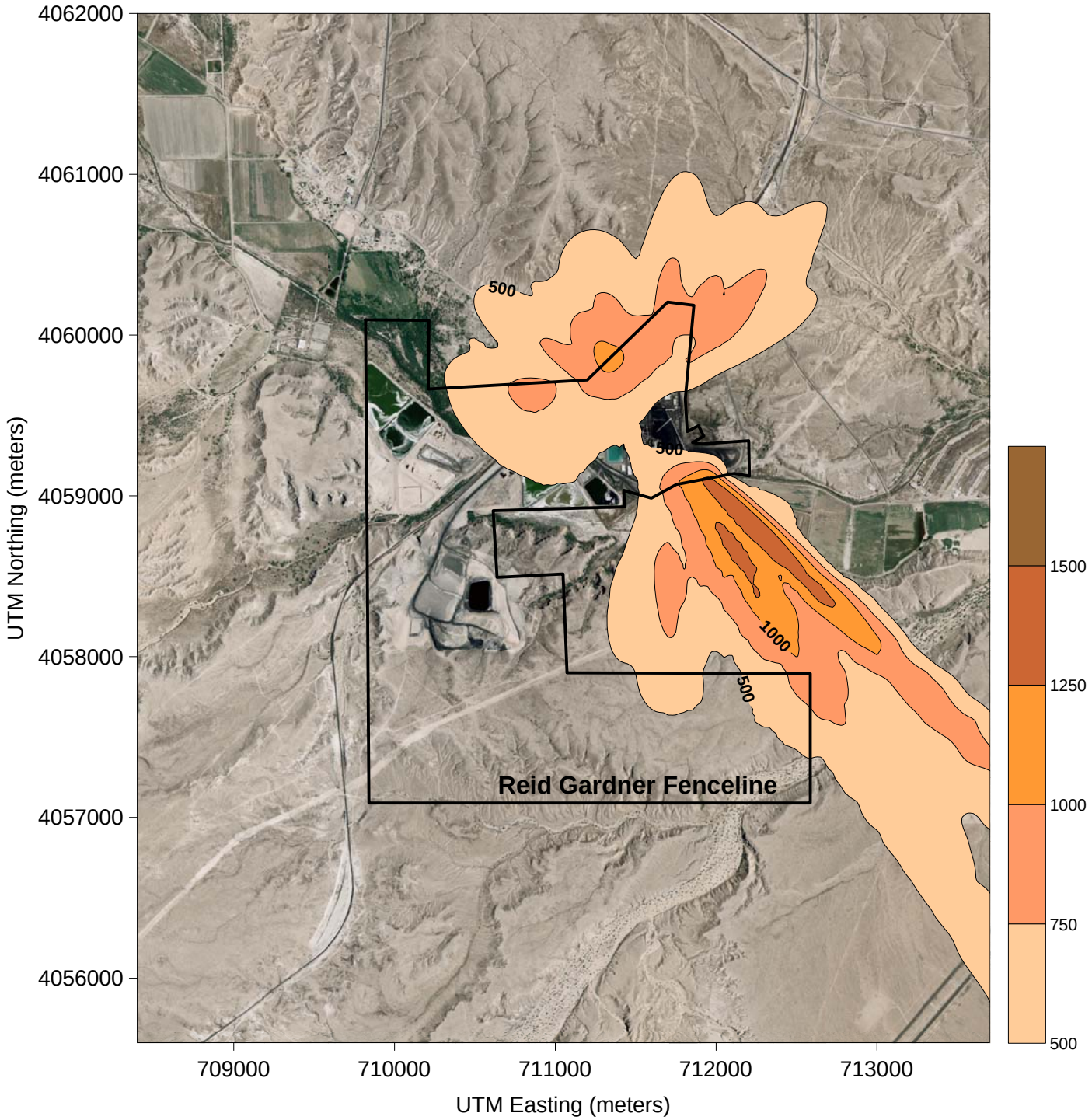
Concentrations presented in micrograms per cubic meter

N
W E
S

FIGURE 2-9
NV Energy Reid Gardner Station
1-Hour CO Concentrations

NVEnergy

RHC
REDHORSE CORPORATION



Reid Gardner Fenceline

Concentrations presented in micrograms per cubic meter

N
W E
S

FIGURE 2-10
NV Energy Reid Gardner Station
8-Hour CO Concentrations

NVEnergy

RHC
REDHORSE CORPORATION

3.0 REFERENCES

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ATTACHMENT A
Source Release Parameters

Point Sources

Source ID / Pollutant ID	UTM		Elev.	Emission Rate				Stack Height	Stack Temp	Stack Velocity	Stack Diameter
	East (m)	North (m)	(m)	PM10 (g/s)	CO (g/s)	SO2 (g/s)	NOx (g/s)	(m)	(K)	(m/s)	(m)
B01	711545.020	4059509.260	485.400	12.24699399	126.0	57.7301	70.8268	60.960	326.480	16.62760	3.810
B02	711546.080	4059478.830	485.000	12.24699399	126.0	57.7395	70.8268	73.152	326.480	16.05370	3.810
B03	711562.490	4059420.620	484.000	12.4687502598	151.2	58.5201	71.7843	82.296	326.480	17.85180	3.810
B04	711629.430	4059298.550	481.380	11.1760120053	1512.0	109.1084	173.0504	152.400	335.650	15.83590	6.460
U1CELL1	711482.310	4059651.250	488.000	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U1CELL2	711477.310	4059641.250	487.800	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U1CELL3	711472.310	4059632.250	487.500	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U1CELL4	711467.310	4059622.250	487.170	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U1CELL5	711462.310	4059613.250	487.000	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U1CELL6	711457.310	4059603.250	487.000	0.02849	NA	NA	NA	13.411	-11.000	9.55000	8.534
U2CELL1	711409.310	4059650.250	488.000	0.03419	NA	NA	NA	15.240	-11.000	10.77000	8.534
U2CELL2	711404.310	4059639.250	487.730	0.03419	NA	NA	NA	15.240	-11.000	10.77000	8.534
U2CELL3	711398.310	4059629.250	487.400	0.03419	NA	NA	NA	15.240	-11.000	10.77000	8.534
U2CELL4	711393.310	4059618.250	487.030	0.03419	NA	NA	NA	15.240	-11.000	10.77000	8.534
U2CELL5	711387.310	4059607.250	487.000	0.03419	NA	NA	NA	15.240	-11.000	10.77000	8.534
U3CELL1	711337.310	4059649.250	488.000	0.04274	NA	NA	NA	15.240	-11.000	11.23000	8.534
U3CELL2	711332.310	4059639.250	487.730	0.04274	NA	NA	NA	15.240	-11.000	11.23000	8.534
U3CELL3	711327.310	4059630.250	487.430	0.04274	NA	NA	NA	15.240	-11.000	11.23000	8.534
U3CELL4	711322.310	4059620.250	487.100	0.04274	NA	NA	NA	15.240	-11.000	11.23000	8.534
U4CELL1	711598.310	4059193.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL2	711593.310	4059177.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL3	711587.310	4059162.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL4	711582.310	4059146.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL5	711576.310	4059130.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL6	711571.310	4059114.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL7	711565.310	4059099.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
U4CELL8	711560.310	4059083.240	480.000	0.2015966089	NA	NA	NA	16.231	-11.000	7.99000	8.534
13FASHL	711582.310	4059415.240	484.000	0.0024821582	NA	NA	NA	15.850	0.000	0.00100	8.534
13BCKUPL	711581.310	4059443.240	484.200	0.0024821582	NA	NA	NA	11.278	0.000	0.00100	3.658
4FASHL	711563.310	4059287.240	480.000	0.0059596998	NA	NA	NA	26.213	0.000	0.00100	15.240
13SODA	711514.310	4059585.250	486.220	0.0055	NA	NA	NA	9.449	0.000	0.00100	0.305
4FGDSODA	711568.310	4059249.240	480.440	0.0055	NA	NA	NA	12.192	0.000	0.00100	0.305
4FGDLML	711574.310	4059237.240	480.240	0.0036539385	NA	NA	NA	7.620	0.000	0.00100	0.305
GEN12	711459.000	4059536.000	486.000	0.136077711	NA	NA	NA	2.743	633.150	49.00000	0.152

ENG_D	711596.000	4059540.000	485.700	0.052	NA	NA	NA	9.140	0.000	21.03000	0.610
ENG_H	711611.000	4059453.000	484.530	0.144	NA	NA	NA	9.140	0.000	25.88000	0.914
ENG_O	711806.000	4059188.000	480.360	0.144	NA	NA	NA	9.140	0.000	25.88000	0.914
ENGU123A	711485.000	4059448.000	484.360	0.085	NA	NA	NA	36.576	0.000	18.18000	0.838
ENGU123B	711485.000	4059448.000	484.360	0.085	NA	NA	NA	36.576	0.000	18.18000	0.838
ENG_U4	711510.000	4059304.000	481.730	0.137	NA	NA	NA	58.674	0.000	29.30000	0.838
GEN3	711459.000	4059406.000	483.960	0.1335577534	NA	NA	NA	2.743	633.150	49.00000	0.152
GEN4	711574.000	4059237.000	480.250	0.097018368	NA	NA	NA	2.743	633.150	49.00000	0.152

Rectangular Area Sources

Source ID / Pollutant ID	UTM		Elev.	Emission Rate				Release Height	X Length	Y Length	Angle	Init. Vert. Dim.
	East (m)	North (m)	(m)	PM10 (g/s-m**2)	CO (g/s-m**2)	SO2 (g/s-m**2)	NOx (g/s-m**2)	(m)	(m)	(m)	(deg)	(m)
ASHLAND	710211.250	4058222.210	530.010	7.6644E-06	NA	NA	NA	13.720	400.000	400.000	0.000	0

Polygon Area Sources

Source ID / Pollutant ID	UTM		Elev.	Emission Rate				Release Height	Vertices	Init. Vert. Dim.
	East (m)	North (m)	(m)	(g/s-m**2)	CO (g/s-m**2)	SO2 (g/s-m**2)	NOx (g/s-m**2)	(m)	#	(m)
PILE13	711675.310	4059197.240	481.000	0.00001257	NA	NA	NA	12.192	4	12.192
PILE4	711811.320	4059136.240	480.000	0.000014	NA	NA	NA	12.192	4	12.192

Volume Sources

Source ID / Pollutant ID	UTM		Elev.	Emission Rate				Release Height	Init. Lat. Dim.	Init. Vert. Dim.
	East (m)	North (m)	(m)	PM10 (g/s)	CO (g/s)	SO2 (g/s)	NOx (g/s)	(m)	(m)	(m)
COALTR	711771.320	4059528.250	487.340	0.0165057224	NA	NA	NA	2.290	4.320	2.127
CTOST1	711622.250	4059533.250	486.000	0.0165057224	NA	NA	NA	7.620	4.320	3.000
GTOST2	711652.120	4059402.990	484.000	0.0165057224	NA	NA	NA	7.620	4.320	3.000
NTOST3	711862.070	4059218.740	479.650	0.0165057224	NA	NA	NA	7.620	4.320	3.000
ASHDUMP	710596.400	4058413.720	528.040	0.03525	NA	NA	NA	2.130	3.050	12.190
ALL1	711682.610	4059146.840	480.320	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL2	711660.010	4059126.340	480.240	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL3	711636.110	4059108.640	480.040	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL4	711606.210	4059102.640	480.000	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL5	711587.810	4059081.440	480.000	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL6	711586.710	4059051.140	480.000	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL7	711589.410	4059020.930	478.480	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL8	711571.010	4059002.030	478.000	0.0298	NA	NA	NA	2.000	13.954	3.000

ALL9	711541.700	4059007.430	478.000	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL10	711515.900	4059023.530	478.170	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL11	711492.500	4059042.930	478.030	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL12	711469.900	4059063.430	478.690	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL13	711448.300	4059084.840	478.930	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL14	711424.900	4059104.440	479.620	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL15	711399.300	4059120.840	479.450	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL16	711372.100	4059134.540	479.910	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL17	711345.500	4059149.240	479.480	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL18	711320.000	4059166.040	479.270	0.0298	NA	NA	NA	2.000	13.954	3.000
ALL19*	711294.600	4059182.840	479.230	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL20*	711270.900	4059202.040	479.100	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL21*	711247.300	4059221.340	479.000	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL22*	711226.200	4059243.240	479.530	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL23*	711205.900	4059266.040	479.630	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL24*	711187.200	4059290.040	479.870	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL25*	711168.400	4059314.040	479.920	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL26*	711149.100	4059337.640	480.680	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL27*	711123.790	4059354.540	480.810	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL28*	711096.190	4059367.440	480.670	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL29*	711066.890	4059374.140	480.900	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL30*	711036.490	4059376.540	480.980	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL31*	711006.090	4059378.340	481.250	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL32*	710975.690	4059380.040	482.380	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL33*	710945.390	4059376.840	482.970	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL34*	710915.490	4059371.840	483.000	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL35*	710886.690	4059361.840	483.690	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL36*	710860.090	4059347.240	483.040	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL37*	710833.990	4059331.340	481.840	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL38*	710810.780	4059311.730	482.600	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL39*	710788.180	4059291.230	484.910	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL40*	710765.680	4059270.730	485.110	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL41*	710743.080	4059250.230	485.720	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL42*	710720.580	4059229.730	487.050	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL43*	710698.080	4059209.230	487.620	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL44*	710675.480	4059188.630	488.220	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL45*	710652.980	4059168.130	488.820	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL46*	710630.580	4059147.430	488.430	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL47*	710608.180	4059126.730	488.500	0.080028	NA	NA	NA	2.000	13.954	3.000

ALL48*	710585.770	4059106.130	489.150	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL49*	710563.370	4059085.430	489.210	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL50*	710541.170	4059064.630	489.390	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL51*	710519.570	4059043.030	489.340	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL52*	710498.070	4059021.530	489.240	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL53*	710476.470	4058999.930	488.960	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL54*	710454.970	4058978.330	489.680	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL55*	710433.870	4058956.320	490.080	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL56*	710412.970	4058934.230	492.990	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL57*	710392.770	4058911.320	496.740	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL58*	710372.670	4058888.420	500.590	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL59*	710355.470	4058863.220	503.190	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL60*	710340.660	4058836.820	503.630	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL61*	710329.160	4058808.620	509.350	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL62*	710317.860	4058780.320	510.970	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL63*	710306.560	4058752.020	518.600	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL64*	710295.160	4058723.720	520.920	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL65*	710283.560	4058695.520	525.620	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL66*	710272.960	4058666.920	529.300	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL67*	710262.460	4058638.320	531.260	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL68*	710251.260	4058610.020	532.620	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL69*	710239.160	4058582.020	533.500	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL70*	710227.260	4058553.920	533.000	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL71*	710215.960	4058525.620	533.000	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL72*	710206.760	4058496.610	533.000	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL73*	710214.060	4058467.210	532.530	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL74*	710228.560	4058440.810	530.860	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL75*	710248.960	4058418.210	530.030	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL76*	710271.060	4058397.210	530.110	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL77*	710293.960	4058377.210	529.970	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL78*	710316.960	4058357.210	529.150	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL79*	710341.560	4058339.110	528.400	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL80*	710366.160	4058321.110	527.800	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL81*	710393.360	4058307.810	527.090	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL82*	710421.360	4058295.810	525.950	0.080028	NA	NA	NA	2.000	13.954	3.000
ALL83*	710436.260	4058289.410	525.740	0.080028	NA	NA	NA	2.000	13.954	3.000
DBB1	711737.000	4059535.000	486.400	0.0008252861	NA	NA	NA	2.130	0.710	1.420
DBB2	711735.000	4059535.000	486.350	0.0008252861	NA	NA	NA	2.130	0.710	1.420
DBC1	711684.000	4059534.000	486.000	0.0003301144	NA	NA	NA	2.130	0.710	1.420

DBC2	711682.000	4059534.000	486.000	0.0003301144	NA	NA	NA	2.130	0.710	1.420
DBF1	711693.000	4059527.000	486.000	0.0003301144	NA	NA	NA	6.100	0.710	1.420
DBF2	711694.000	4059525.000	486.000	0.0003301144	NA	NA	NA	6.100	0.710	1.420
DBF3	711695.000	4059523.000	486.000	0.0003301144	NA	NA	NA	6.100	0.710	1.420
DBG1	711714.000	4059472.000	485.510	0.000235616	NA	NA	NA	6.100	0.710	1.420
DBG2	711712.000	4059470.000	485.410	0.000235616	NA	NA	NA	6.100	0.710	1.420
DBG3	711710.000	4059468.000	485.300	0.000235616	NA	NA	NA	6.100	0.710	1.420
DBN1	711723.000	4059469.000	485.740	0.000235616	NA	NA	NA	2.130	0.710	1.420
DBN2	711724.000	4059467.000	485.750	0.000235616	NA	NA	NA	2.130	0.710	1.420
DBN3	711725.000	4059465.000	485.730	0.000235616	NA	NA	NA	2.130	0.710	1.420
DBN4	711726.000	4059463.000	485.700	0.000235616	NA	NA	NA	2.130	0.710	1.420
DBO1	711693.000	4059100.000	480.000	0.0002305761	NA	NA	NA	6.100	0.710	1.420
DBO2	711690.000	4059102.000	480.000	0.0002305761	NA	NA	NA	6.100	0.710	1.420
DBP1A	711682.000	4059111.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP1B	711680.000	4059113.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP1C	711678.000	4059115.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP1D	711676.000	4059117.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP2A	711674.000	4059119.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP2B	711672.000	4059121.000	480.000	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP2C	711670.000	4059123.000	480.030	0.000057581	NA	NA	NA	2.130	0.710	1.420
DBP2D	711668.000	4059125.000	480.070	0.000057581	NA	NA	NA	2.130	0.710	1.420
13FASHD	711582.310	4059415.240	484.000	0.0289795125	NA	NA	NA	3.048	0.914	3.000
13BCKUPD	711581.310	4059443.240	484.200	0.0289795125	NA	NA	NA	3.048	0.914	3.000
4FASHD	711563.310	4059287.240	480.000	0.0289795125	NA	NA	NA	3.048	0.914	3.000
4FGDLMD	711574.310	4059237.240	480.240	0.0001259979	NA	NA	NA	3.048	0.914	3.000

* Haul road sources include pond construction/closure haul truck usage

ATTACHMENT B
Scheffe Model Analysis

Table B-1. NV Energy Reid Gardner Generating Station, Scheffe Model

Determine which column of Table (I) is applicable

The NMOC/NOx ratio is based on annual estimates

NMOC	9991	tpy	**NMOC/NOx Ratio**	**0.7456**
NOx	13400	tpy		(Use Column 3 in Rural Table)

Annual estimates are from the emission calculation spreadsheets

Calculate annual NMOC emissions rates in tons/yr from maximum daily rate

Maximum Daily NMOC Rate	54792.0	lbs/day
Maximum Annual Rate	9999.54	tpy

Maximum annual emissions are calculated from maximum short-term emissions.

Refer to table to determine column 3 ozone increment

Ozone Increment Value:	**5.40 PPMC**	Increment > Standard?		
	0.054 PPM	NO	**0.12 ppm**	**1-hour Nevada AAQS Standard**
			0.075 ppm	**U.S. EPA 2008 8-hour Standard**
			0.12 ppm	**1-hour U.S. EPA Standard revoked June 2005**

NMOC/NOx (Rural)

NMOC EMISSIONS (TONS/YR)	TONS NMOC/TONS NOx (PPMC/PPM) > 20.7 (>20)	5.2-20.7 (5-20)	< 5.2 (< 5)
25			1.0
50	0.4	0.4	1.1
75	0.4	0.4	1.2
100	0.4	0.5	1.4
300	0.8	1	1.7
500	1.1	1.4	1.9
750	1.6	1.9	2.3
1000	2	2.4	2.7
1500	2.7	3	3.3
2000	3.4	3.8	3.7
3000	4.8	5.2	4.3
5000	7	7.5	4.8
7500	9.8	10.1	5.1
10000	12.2	12.9	5.4

ATTACHMENT C
Electronic Modeling Files

Appendix 10

APPLICATION CERTIFICATION

APPLICATION CERTIFICATION

Certification of application content consisting of the following:

(Please check each of the appropriate boxes to indicate the information provided in your application submittal)

General Company Information
☒General Company Information Form

Emission Unit Application Forms (Appendix 1)
☒Industrial Process Application Form(s)
☒Combustion Equipment Application Form(s)
☒Storage Silos Application Form(s)
☐Liquid Storage Tank Application Form(s) - NA
☐Surface Area Disturbance Form(s) - NA

Insignificant Emissions Unit Information (Appendix 2)
☒Insignificant Emissions Unit Information Form(s)

Facility-Wide Applicable Requirements (Appendix 3)
☒Table 1 - Facility-Wide Applicable Requirements

Streamlining and Shield Allowance (Appendix 4)
☒Streamlining Demonstration

Facility-Wide Potential To Emit Tables (Appendix 5)
☒Table 1 - Facility-Wide Potential To Emit
☒Table 2 - Insignificant Activities Potential To Emit

Detailed Emissions Calculations (Appendix 6)
☒Detailed Emissions Calculations Provided

Emissions Cap Information (Appendix 7)
☐Emissions Cap Information Provided - NA

Process Narrative, Process Flow Diagram, Plot Plan, Map, Dust Control Plan (Appendix 8)
☒Process Narrative Provided
☒Flow Diagram Provided
☒Plot Plan Provided
☒Map Provided
☐Dust Control Plan Provided - NA

Dispersion Modelling Files (Appendix 9)
☐Dispersion Modeling Provided - NA

Application Certification (Appendix 10)
☒Application Certification

Additional Information Requested by the Director
☐Any Additional Information Required by the Director - NA

PLEASE NOTE THE FOLLOWING REQUIREMENTS WHICH APPLY TO PERMIT APPLICANTS DURING THE APPLICATION PROCESS:

A. A permit applicant must submit supplementary facts or corrected information upon discovery [NAC 445B.297.1(b)].
B. A permit applicant is required to provide any additional information which the Director requests in writing within the time specified in the Director's request [NAC 445B.297.1(c)].
C. Submission of fraudulent data or other information may result in prosecution for an alleged criminal offense (NRS 445B.470).

CERTIFICATION: I certify that, based on information and belief formed after reasonable inquiry, the statements contained in this application are true, accurate and complete.

Dave Sharp

Signature of Alternative Responsible Official

Dave Sharp - Plant Director

Print or Type Name and Title

JUL 25, 2008

Date

Attachment 1
Compliance Assurance Monitoring Plan

Compliance Assurance Monitoring Plan
Reid Gardner Station Power Plant
Facility ID No. A0379
Steam Boiler Units 1 through 4
6/9/08

Background

Emissions Units

Reid Gardner Station Power Plant
Boiler Units #1 through #4
Emission Unit Numbers S2.001, S2.002, S2.003 and S2.004

Applicable Regulation, Emission Limit, and Monitoring Requirements

Applicable Regulation

State of Nevada Bureau of Air Pollution Control Part 70 Operating Permit for Facility A0379, Permit No. AP4911-0897

Emission Limits

PM_{10} limits for each boiler are:

S2.001
0.08 lbs/MMBtu
425.7 tons/year

S2.002
0.08 lbs/MMBtu
425.7 tons/year

S2.003
0.08 lbs/MMBtu
433.4 tons/year

S2.004
0.03 lbs/MMBtu
388.4 tons/year

(The short term limits exclude hours of startup and shutdown)

Monitoring Requirements

40 CFR 64 Compliance Assurance Monitoring Rule

Control Technology

Baghouse

Monitoring Approach

The key elements of the monitoring approach are presented in Table 1. Coal mass and natural gas volume are measured continuously to accurately measure the fuel combusted as an indicator of Particulate Matter smaller than 10 microns in aerodynamic diameter (PM_{10}) emissions. The baghouses will be periodically checked for pressure drop and annually inspected.

Table 1 Monitoring Approach

Criteria	Indicator
Indicator and Measurement Approach	A calibrated coal mass measurement device is used to continuously* monitor the amount of coal combusted. The natural gas combusted is continuously* measured using a calibrated fuel flow meter. These measurements are collected by a Continuous Data Collection System (CDCS). Weekly coal sampling is performed to determine the gross caloric value. Monthly analysis of caloric value of natural gas is provided by natural gas supplier. Weekly pressure drop across the baghouse will be checked to ensure it is greater than 0 and less than 11.5 inches of water.
Indicator Range	An excursion is defined as a fuel combustion rate greater than the maximum possible fuel combustion rate. Maximum fuel combustion rates are based upon emission factors developed from annual PM_{10} emissions testing. Pressure drop across the baghouse in excess of 11.5 inches of water will be considered and excursion. Excursions trigger an investigation, corrective actions and a reporting requirement.
Performance Criteria	
Data Representativeness	PM_{10} emissions are measured annually at the exhaust stack using EPA Methods 201A and 202; or Method 5. Fuel combustion is measured using calibrated devices. The emission factor used to determine maximum fuel flow is based upon these approved and calibrated methods. Pressure drop will be measured using a calibrated device.
Verification of Operational Status	Baghouses will be inspected annually. Compliance with Operating Permit AP4911-0897 requirements.

QA/QC Practices and Criteria	Practices and criteria are outlined in Operating Permit AP4911-0897 specific requirements, Section 4 of each applicable emission unit.
Monitoring Frequency	Fuel flow is monitored continuously*. Caloric value is monitored weekly for coal and monthly for natural gas. Emissions of PM_{10} per heat input are measured annually.
Data Collection Procedures	Fuel flow/combustion rates are monitored and recorded by a CDCS. The lbs-PM_{10}/MMBtu are measured annually. The heat content of coal is measured weekly. The heat content of natural gas is measured monthly.
Averaging Period	A one-hour emission rates of PM_{10} are recorded..

* Except during periods of start-up, shutdown, maintenance/planned outage, or malfunction.

Monitoring Approach Justification

Background

The pollutant-specific emission units at this source are the four boilers (S2.001, S2.002, S2.003 and S2.004). The emission sources are coal-fired boilers with natural gas-fired igniters. Particulate emissions are controlled for each boiler by a baghouse downstream of the combustion process.

According to EPA AP-42, Section 1.1.3.1, particulate emissions result from boiler firing configuration, boiler operation, and coal properties. The boiler firing configuration and operation are consistent and not easily changed for an individual boiler. Keeping these parameters reasonably constant, the fluctuations in particulate emissions can be directly related to the amount of coal combusted and the properties of the coal.

Particulate matter emissions from natural gas are typically low and directly related to the amount of natural gas combusted (EPA AP-42, Section 1.4). The heat input value for natural gas does not fluctuate greatly so the relationship between the amount of natural gas combusted and the particulate emissions does not vary and the quantity of natural gas combusted becomes a good measure of the amount of particulate produced. Therefore a determination of particulate emissions from the amount and heat input property of the fuel combusted is logical and meets the intent of the compliance assurance monitoring program.

At the Reid Gardner Station Power Plant boilers, the fuel combusted is measured continuously by calibrated devices in accordance with Operation Permit AP4911-0897. Given that fuel combustion is directly related to particulate emissions and the relationship between fuel heat input and particulate emissions are measured in accordance with EPA methodologies annually, fuel combustion rates are deemed indicative of compliance with the PM_{10} short term emission limits.

Weekly pressure drop measurements and annual inspections will ensure the baghouses continue to work properly. Maintenance and operation will be conducted in accordance with manufacturer's recommendations.

Rationale for Selection of Performance Indicator

The EPA recognizes the relationship between the amount of fuel combusted and the particulate produced. The fuel combustion rate is measured using calibrated devices and the measurements are federally enforceable. The relationship is verified annually through direct measurement. The pressure drop measurement criteria are in accordance with manufacturer's recommendations.

Rationale for Selection of Indicator Ranges

The indicator range is based directly upon permitted emission limits for PM_{10} and manufacturer's recommendations.

Performance Test Data

Compliance Performance Test
PM_{10} Emission Rate (lb/MMBtu)

Unit	Date of Test	Run 1	Run 2	Run 3	Average	Limit
1	9/20/07	0.040	0.039	0.040	0.040	0.2
2	9/19/07	0.045	0.039	0.039	0.041	0.2
3	9/18/07	0.035	0.038	0.036	0.037	0.1
4	10/17/07	0.012	0.011	0.009	0.010	0.03

Compliance Assurance Monitoring Plan
Reid Gardner Station Power Plant
Facility ID No. A0379
Cooling Tower Units 1 through 4
6/9/08

Background

Emissions Units

Reid Gardner Station Power Plant
Cooling Tower Units #1 through #4
Emission Unit Numbers S2.005, S2.006, S2.007 and S2.008

Applicable Regulation, Emission Limit, and Monitoring Requirements

Applicable Regulation

State of Nevada Bureau of Air Pollution Control Part 70 Operating Permit for Facility A0379, Permit No. AP4911-0897

Emission Limits

PM_{10} limits for each cooling tower are:

S2.005
1.36 lbs/hr

S2.006
1.36 lbs/hr

S2.007
1.36 lbs/hr

S2.008
12.8 lbs/hr

Monitoring Requirements

40 CFR 64 Compliance Assurance Monitoring Rule

Control Technology

Drift Eliminators

Monitoring Approach

The key elements of the monitoring approach are presented in Table 1. Circulating water flow rate and Total Dissolved Solids (TDS) are monitored as the indicator of PM_{10} emissions.

Table 1 Monitoring Approach

Criteria	Indicator
Indicator and Measurement Approach	The volume flow rate of the circulating water is monitored and hourly totals are recorded. The TDS value of the circulating water is determined quarterly by analyzing the circulating water using EPA Method 160.1 DNS.
Indicator Range	An excursion is defined as a circulating water flow rate greater than 63,800 gallons per minute (GPM) for towers 1 through 3 or greater than 131,000 gpm for tower 4. An excursion is also defined by TDS values greater than 8,500 ppm. Excursions trigger an investigation, corrective actions and a reporting requirement.
Performance Criteria	
Data Representativeness	The volume flow rate of the circulating water is measured by an accurate device. The TDS is measured by an approved EPA test method Therefore, compliance with the TDS and flow rate short term emission limits is deemed indicative of compliance with the PM_{10} short term emission limits.
Verification of Operational Status	Compliance with Operating Permit AP4911-0897 requirements.
QA/QC Practices and Criteria	Practices and criteria are outlined in Operating Permit AP4911-0897 specific requirements, Section I4.
Monitoring Frequency	Circulating water volume flow rate is recorded hourly. TDS is measured quarterly. Drift eliminators are inspected annually.
Data Collection Procedures	Contemporaneous logs are kept for volume flow of circulating water. TDS analysis results are recorded quarterly.

Averaging Period	Volume flow of the circulating water is recorded hourly and hourly emissions are reported semi-annually.