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MOAPA BAND OF PAIUTES

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July 30, 2004

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NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

John J. Kelly
U.S. Environmental Protection Agency
Region 9, AIR-2
75 Hawthorne Street
San Francisco, California 94105

Dear Mr. Kelly:

I enclose the 11-Point Analysis of the Moapa Band of Pauite Indians demonstrating that the entire Moapa River Indian Reservation should be excluded from the Clark County, Nevada ozone non-attainment area under consideration by EPA.

Very truly yours,

MOAPA BAND OF PAITUES

Philbert Swain

By Philbert Swain, Chairman

AIR QUALITY DESIGNATIONS AND BOUNDARY RECOMMENDATIONS FOR MOAPA RIVER INDIAN RESERVATION UNDER THE 8-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD

THE MOAPA BAND OF PAIUTE INDIANS

July 30, 2004

EXECUTIVE SUMMARY

Pursuant to Section 107(d) of the Clean Air Act, the Governor of each State is required to submit to EPA designation recommendations for each portion of the that State. On March 26, 2004, the Governor of the State of Nevada submitted recommended designations for all parts of the State with the exception of the Indian reservations, including the Moapa Band of Pauites' reservation, located in eastern Clark County (the "Reservation"). The State accurately acknowledged that it has no jurisdiction within the reservations and therefore deferred making any recommendations regarding attainment or nonattainment status therein. On April 15, 2004, EPA designated Clark County, Nevada, including the Reservation, as nonattainment for the 8-hour ozone national ambient air quality standard. On June 18, 2004, EPA granted a deferral of the effective date of the 8-hour ozone nonattainment designation to September 13, 2004 in order that the agency might receive and consider additional information as to the appropriate boundary designations within Clark County.

This document constitutes the Moapa Band of Pauite's (the "Tribe's") recommendations for the designation and boundary determinations within the Reservation. The following analysis demonstrates that it is inappropriate to include any portion of the Reservation within the 8-hour ozone nonattainment area situated in Clark County. The only documented 8-hour ozone exceedances occurred in the urban core of the Las Vegas Valley. The Reservation is separated, geographically, topographically, politically, jurisdictionally, socio-economically and culturally from the Las Vegas Valley. There is neither socio-economic integration nor airshed integration between the two areas. The limited population and activities on the Reservation have no impact on the attainment status of the Las Vegas Valley. Conversely, the evidence indicates that there is not appreciable transport of ozone or ozone precursors from the Las Vegas Valley to the Reservation. In other words, the entire Reservation enjoys air quality that is in compliance with the national ambient air quality standards and there are no indications that this compliant status is in jeopardy, even when reasonably foreseeable future development is taken into account. Therefore, the Tribe recommends that the Reservation, in its entirety, be classified as attainment/unclassifiable for ozone.

TRIBAL BACKGROUND

The Reservation today consists of 72,000-acres in the heart of traditional Southern Paiute territory, which extended from the San Juan River in eastern Utah to the Chemehuevi areas west of the Colorado River in southern California. The Southern Paiute have occupied this area for at least the past 800 to 1,000 years. The Moapa Valley was home to the largest Southern Paiute band and was an important site for irrigated agriculture.

The Spanish entry into the Southwest, beginning in the 1540s, had little effect on the Southern Paiute for 250 years. When direct contact came, the results were devastating. Spanish slave trading led to raids and depredations by neighboring Utes and Navajos. The Southern Paiute, for the most part, were known for their peacefulness. The Mormon move into Utah territory in the 1840s ended slave raids but encroached on Southern Paiute territory and resources.

The Reservation was selected by Indian agents as a homeland for all of the Southern Paiute in a series of recommendations beginning in 1869. The Reservation was created by an Executive Order signed by President Grant on March 12, 1873. On February 12, 1874, President Grant issued an executive order which expanded the Reservation to well over 2,000,000 acres, including the entire Moapa and Lower Virgin watersheds and extensive lands along the Colorado River.

Pressure from non-Indian settlers led Congress, in a rider to an appropriations bill, to drastically reduce the size of the Reservation to 1,000 acres "to be selected by the Secretary of the Interior, in such manner as not to include the claim of any settler or miner." The selection of 1,000 acres was made by Secretary of the Interior on July 3, 1875, and 99.5% of the Reservation was lost to the Tribe at the stroke of a pen.

From the 1875 reduction until 1900, the conditions the Tribe had to endure deteriorated until very few Tribal members remained. Corruption and mismanagement among agents of the Indian Service, including the seizure of disputed lands by dishonest agents and their partners, and actions by non-Indian landholders, resulted in virtual dispossession of the Tribe from much of the Reservation by the turn of the century. The entire Southern Paiute population decreased by about two-thirds from 1873 to 1930.[1] Kelly and Fowler at 388-89.

On December 2, 1980, Congress enacted Pub. L. 96-491 which restored 70,565 acres to the Reservation. The legislative history of that Act specifically contemplates industrial development of the Reservation. First, in support of the bill, the Tribe submitted testimony cataloguing its intended uses of the lands to be returned:

> The Bill before you petitions the return of 70,565.46 acres which will be used for farming (approximately 1,000 acres are immediately contiguous to existing farm fields), grazing, *industrial park sites*, economic/commercial development around two exits/interchanges on I-15 (the freeway between Las Vegas and Salt Lake), and home sites. We need these former lands because almost all available acreage on the reservation has been used and approximately 35 percent of our population is young people approaching the age of starting a family.[2]

In the House deliberations on the restoration bill, all Representatives who spoke indicated a clear intent to redress, at least in part, the Tribe's longstanding grievance about the loss of its Reservation, as well as an understanding that the lands were to be used for economic development, including *industrial uses*:

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[1] Even in 1980, the Southern Paiute population was still 25% below population levels in 1873, making them one of the few groups in the area that had not regained and exceeded 1873 levels.

[2] Letter from Tribal Chairman Preston Tom to Sen. Dale Bumpers, Chairman, Sen. Subcomm. on Public Lands (Oct. 12, 1979), *reprinted* in Hearing Before the Subcomm. on Parks, Recreation, and Renewable Resources, 96th Cong., 1st sess., Publication No. 96-82 (Oct. 15, 1979) at 122.

> Mr. SANTINI: . . . The bill deals with the partial return of lands which were once part of the Moapa Indian Reservation in the 1870's, and which were subsequently taken from the tribe without any compensation. The purpose of this bill is to correct this historic injustice and return a small portion of the reservation to a most deserving people. . . .
>
> Additional land is badly needed by the Moapa Tribe for the following reasons:
>
> First. The development the tribe has undertaken has used up almost all available existing land: the tribe is virtually landlocked;
>
> Second. Sites will need to be developed for *industrial and commercial purposes in order to provide more jobs;*

Cong. Rec. – House (November 17, 1980) at H 10691 (emphasis added). The House thereupon passed the bill.

Unfortunately, notwithstanding the explosive growth in the region, the economic development envisaged for the Tribe's lands by Congress and the Tribe has been difficult to achieve. The single business operation is a tribal retail outlet at the Valley of Fire interchange off Interstate 15. Extensive efforts to achieve further development of the Tribe's restored lands have historically been unsuccessful. The lack of development on the Reservation has contributed to serious unemployment and underemployment problems. Few jobs are available for those living on the Reservation, and those few yield incomes well under the region's average. Official BIA statistics are available for the Reservation for 1995 and 1997, a boom period for most of the rest of Southern Nevada and the nation.

In 1995, 127 Tribal members were in the potential labor force (non-students, aged 16 to 64). Of these, 58 were unemployed, an unemployment rate of 46%. Of the 69 members who were employed, *only 9* earned $9,048 or more. Only 6% of working-age Reservation members (9 of 140) thus received anything close to a decent wage.[3] 1997 showed no overall improvement. 49% of the labor force remained unemployed.[4] The disparity in economic conditions and public services and facilities between the Reservation and the rest of the region is a profound and troubling problem for the Tribe, who have unmet basic needs for human and governmental services. These disparities are inconsistent with the expressed policies of Congress as expressed in the 1980 restoration bill.

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[3] *See* U.S. Department of the Interior, Bureau of Indian Affairs, "Indian Service Population and Labor Force Estimates, Table 3 [http://www.doi.gov/bia/ifcons95.html] (1995).

[4] *See* U.S. Department of the Interior, Bureau of Indian Affairs, "Local Estimates of Resident Indian Population and Labor Market Information, Male and Female Indians Living On-or-Near Reservation, Summary by Tribe or Reservation [http://www.doi.gov/bia/Labor/97Labphx.PDF] (1997).

DESIGNATION BACKGROUND

Neither the Reservation nor any other area within the State of Nevada were considered nonattainment for the 1-hour ozone standard. Similarly, neither the Reservation nor any other area within the State of Nevada were initially considered to be nonattainment areas for the 8-hour ozone standard. All areas within Nevada, including the Reservation were identified as in attainment with the 8-hour standard by EPA in December 2003. See, Letter from EPA to Honorable Kenny C. Guinn dated December 3, 2003. However, weeks before the April 15, 2004 signing of the designation rule, EPA reached the preliminary conclusion that the Las Vegas Metropolitan Statistical Area ("MSA") (which includes Clark, Nye and Mojave (Arizona) counties) was nonattainment for the ozone standard because the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentrations for a single monitor in the urban core of Las Vegas reached 86 ppb (the standard being 85 ppb). None of the other 15 monitors in Clark County indicated an 8-hour standard exceedance.

The Las Vegas MSA covers an enormous amount of territory. The Las Vegas Valley MSA consists of Clark and Nye Counties in Nevada and Mojave County in Arizona. Clark County alone covers 8,060 square miles, Nye County covers 18,064 square miles and Mojave County covers 13,479, meaning the MSA covers an area roughly the size of the state of Kentucky. By contrast, the Las Vegas Valley covers only 516 square miles, or less than 0.05% of the total land within the Las Vegas MSA.

On March 26, 2004, the Nevada Division of Environmental Protection ("NDEP") prepared boundary and designation recommendations suggesting that EPA exclude Nye County from the 8-hour ozone nonattainment area. NDEP has limited air regulatory authority in Clark County and so NDEP did not presume to suggest that the nonattainment boundaries be less than the entirety of Clark County. Neither Clark County nor the Tribe had an opportunity to prepare and submit analysis supporting a boundary recommendation constituting less than the entirety of Clark County. On April 15, 2004, EPA promulgated the 8-hour ozone standard designations which established Clark County, including Indian Country within the County, as nonattainment. On June 18, 2004, EPA deferred the nonattainment designation effective date for Clark County to allow the County and the Tribe to submit relevant information supporting alternate nonattainment area boundaries. This submittal is the Tribe's response to this opportunity.

RESPONSE TO ELEVEN MITIGATING FACTORS

The following analysis follows the format of EPA's March 28, 2000 and July 18, 2000, 11 point guidance on establishing boundaries for ozone nonattainment areas other than those matching the MSA.

1. Emissions and Air Quality in Adjacent Areas (including adjacent C/MSA's)

The Reservation is surrounded by few sources of emissions and enjoys excellent air quality. Development and land use in the areas surrounding the Reservation is dominated by the limited availability of privately held land. The Reservation is encircled by a broad swath of publicly owned land that is not available for development absent an Act of Congress. The one exception is a small amount of privately held land adjacent to the northeast corner of the

Reservation, which includes the town of Moapa. See Figure 1. All land to the south and west of the Reservation is publicly held, essentially forming a barrier to the expansion and growth otherwise emanating from the Las Vegas Valley. The nearest privately held land to the southwest of the Reservation is within the Apex Industrial Park, located west of the junction of Interstate 15 and Highway 93. Between the western edge of the Reservation and the Apex Industrial Park lies approximately 10 miles of undevelopable property. Two topographical feature also define the Reservation's airshed—the Arrow Canyon Range (which lies along the western edge of the Reservation) and the Dry Lake Range (whose northern most edge reaches nearly the southwest corner of the Reservation). The effect of these features is to physically isolate the Reservation and its airshed. See Figure 2.

The Tribe lacks substantial information about the industrial sources in the Apex Industrial Park. There is essentially no physical, environmental, socio-economic, commercial or jurisdiction interaction between the Reservation and the Industrial Park. The Tribe understands that persons working in Apex Industrial Park predominantly live in Las Vegas Valley. Few, if any, Tribe members ever work in the Apex Industrial Park or in Las Vegas Valley and so there are not a significant number of vehicle miles traveled between the Reservation and the Apex Industrial Park (or points further west in the Las Vegas Valley). There is one ambient ozone monitor in the Apex Industrial Park. The three year average of the 4th high ozone concentrations from the Apex monitor document a design value of 78 --comfortably below the ozone standard. Data collected to date indicate the 2002-2004 design value will be even lower.

There are three significant stationary sources located on the privately held land east of the Las Vegas Valley. The primary source of NOx is the Reid Gardner power plant, owned and operated by the Nevada Power Company. We understand from the County that this plant has NOx emissions of approximately 9,794 tons per year and VOC emissions of less than 10 tons per year. Emissions from these sources are outside the control and jurisdiction of the Tribe as they are on state land. Emissions from these plants do not materially impact the Las Vegas Valley as the wind direction and topographical features will result in emissions moving to the north and east of those sources. There is one ambient ozone monitor in Mesquite—to the east of the Reservation. That monitor was installed in December 2001 and so there is not yet a full three years of data. However, we understand that the data collected to date documents an average 4th-high ozone concentration of 71 ppb--well below the ozone standard. Therefore, the monitoring results from Mesquite strongly suggest that the exiting stationary sources are not materially impairing ozone levels on the Reservation.

There has never been an ozone monitor placed on the Reservation itself because of the absence of industrial development and the limited amount of area and mobile source emissions. The Reservation currently has no stationary sources of air emissions; the only sources of air emissions are from area and mobile sources. Even those sources are extremely small. The Moapa Reservation is roughly 72,000 acres and is inhabited by approximately 425 residents clustered around the Tribal headquarters in the northeast corner of the Reservation. The majority of employed Tribal members work for the Tribe, and a very small number of Tribal members work at the Reid Gardner power plant. With unemployment of approximately 50 percent, many are not working at all. Total annual vehicle miles traveled on the Reservation are insubstantial and the majority are concentrated in the northeast corner of the Reservation (near the town of

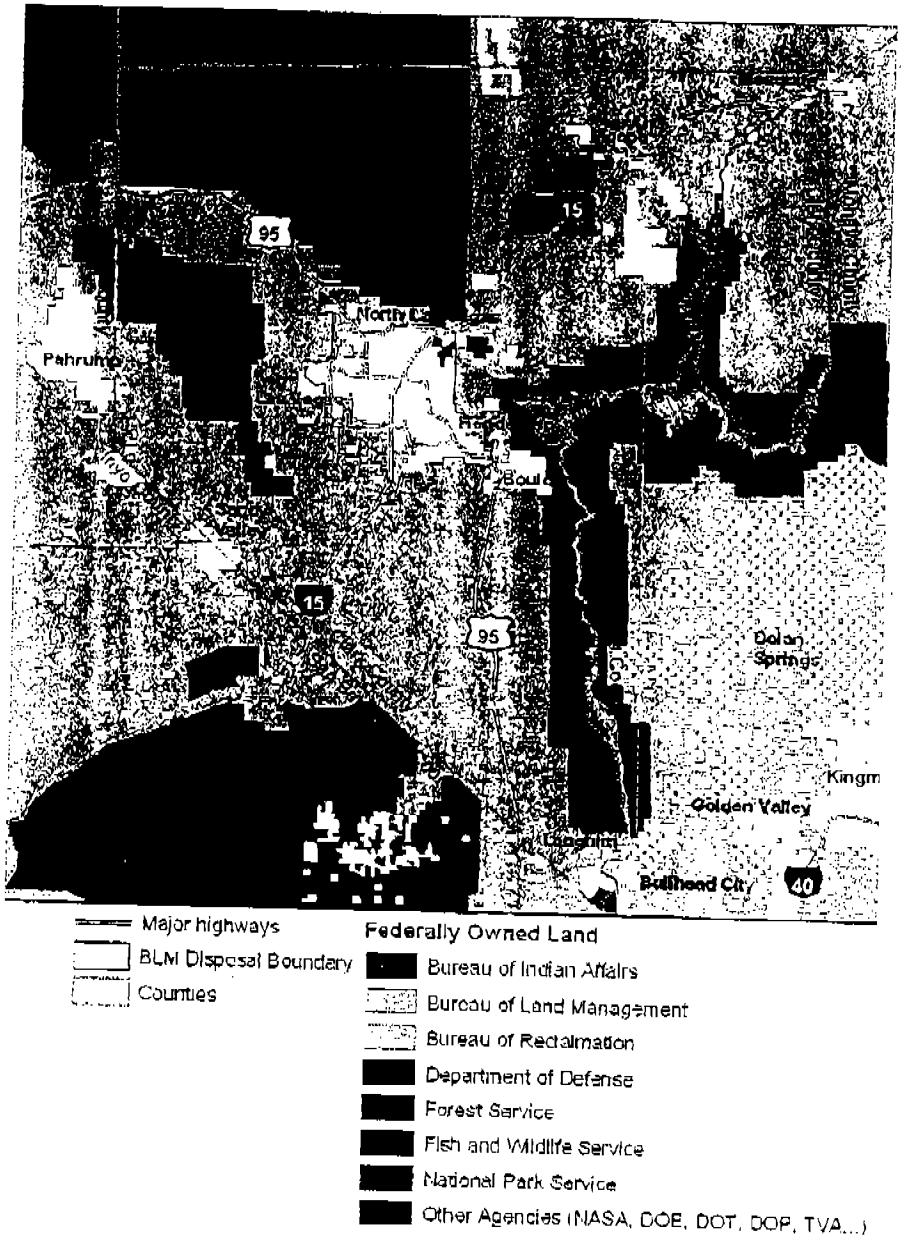


Figure 1. Public v. Private Land Ownership

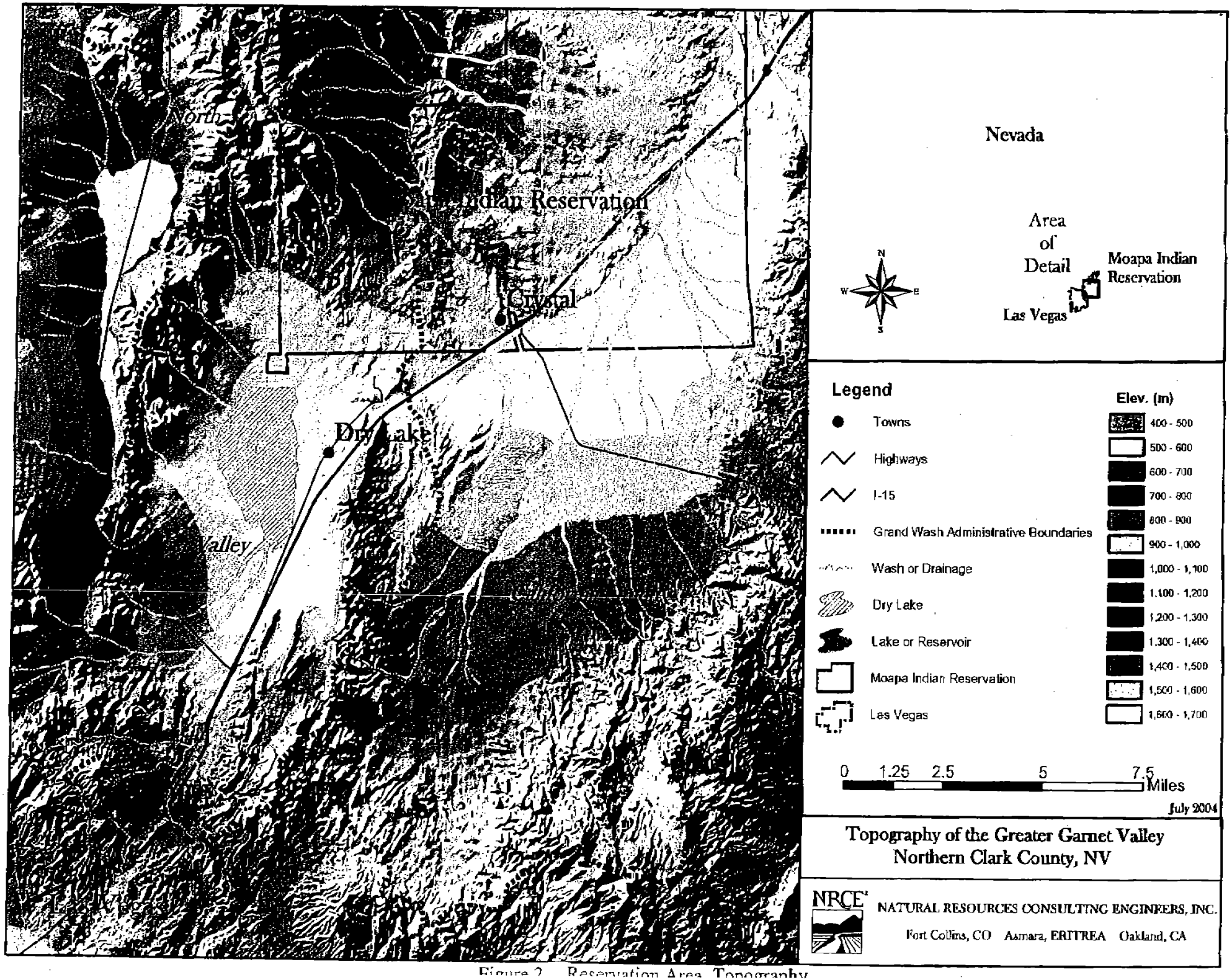


Figure 2 Reservation Area Topography

Moapa). Were a monitor to be placed on the Reservation, there is little question that it would monitor attainment conditions.

Planned industrial development on the Reservation will not materially impact the good air quality enjoyed on the Reservation nor will it materially impact air quality in the Las Vegas Valley or even Apex Industrial Park. The Tribe has been working for decades to bring responsible industrial development to the Reservation. Only in the last few years has that effort generated substantial development opportunities. Recently, EPA Region 9 issued Calpine a permit to construct on the Reservation a natural gas fired power plant with maximum allowable NOx emissions of 247.5 tons per year and VOC emissions of 79.2 tons per year. The proposed plant would be located approximately two miles northwest of Crystal. Modeling that was performed as part of the Calpine application reviewed and approved by EPA Region 9, documents worst case NO_2 impacts attributable to the project of 1.5 $\mu g/m^3$. However, this modeling was based upon a 3 ppm emission limit which has been revised to 2 ppm. We would expect impacts to decrease by a similar percentage. In addition, for market and water availability reasons, the proposed powerplant has recently been down-sized by about one-third. In other words, we anticipate that impacts would be at or below the significance level at the worst case receptor. The worst case receptor was directly north of the facility (Las Vegas is to the southwest) and wholly within the Moapa Reservation. While the modeling was of NOx impacts, not ozone formation, it is demonstrative of the limited impacts and the location of the impacts anticipated from the potential Calpine project.

The Tribe has also reached agreement in principle with Ash Grove Cement Company for the construction of a cement plant on the Reservation. Although this plant is still in the design stage, we anticipate that it will have maximum emissions of approximately 1,800 tons per year of NOx and less than 100 tons per year of VOC (VOC is highly dependent upon organic content of the raw materials and the required assays are not yet complete so the company has been unable to tell us how much lower). Emissions from the proposed facility have been modeled and the worst case NO_2 impacts attributable to the source are predicted to be 1.47 $\mu g/m^3$. As with the Calpine facility, the worst case receptor is directly north of the facility and wholly within the Moapa Reservation. We understand that these modeling results are preliminary and that final results could well be lower. This plant is to be located in the southwest portion of the Reservation, in roughly the same area as the Calpine project.

The only place in Clark County where a documented exceedance of the 8-hour ozone standard occurred was at a monitor in northwest Las Vegas (the "Joe Neal" monitor). Even that monitor barely exceeded the 8-hour ozone standard with a design value of 86 based on the 2001 - 2003 period. A design value of 84 would constitute attainment of the standard. There are 10 ozone monitors in the greater Las Vegas area. None of the other 9 monitors monitored a design value of 85 or above. Therefore, air quality in the areas adjacent to the Reservation is in attainment with the 8-hour ozone standard and there is no suggestion that the Reservation could be impacted by the Las Vegas Valley or that the Reservation could be impacting the Las Vegas Valley.

Physical, social, economic and geographic factors have all combined to isolate the Reservation from the prosperity of the Las Vegas Valley. Las Vegas Valley emissions do not materially impact the Reservation and Reservation emissions (such as they are) do not materially

impact the Las Vegas Valley. Air quality across the Reservation is good, as indicated by the Mesquite monitor, and the Reservation, in its entirety, should be designated as in attainment with the 8-hour ozone standard.

2. Population Density And Degree Of Urbanization Including Commercial Development (e.g., shows a significant difference from surrounding areas)

The Moapa Reservation is roughly 72,000 acres and is inhabited by approximately 425 residents. Approximately 460 acres are cultivated with alfalfa being the major crop. The majority of employed Tribal members work for the Tribe, and a very small number of Tribal members work at the Reid Gardner power plant near the Moapa Reservation. Unemployment averages approximately 50 percent. All of the 425 residents of the Reservation live in housing clustered in the extreme northeast corner of the Reservation near the town of Moapa. This area is roughly 48 miles from downtown Las Vegas.

48 miles and a world away from the Reservation's "population center" lies Las Vegas. The Las Vegas MSA as a whole is reported to have had 83% population growth from the 1990 census to the 2000 census. At the same time, the local median household income has risen from $30,746 to $45,607. The Las Vegas Valley is estimated to be home to roughly 1.6 million people and some have estimated that it could grow to 2.1 million people by 2020. This explosive growth in population and affluence that has occurred in the Las Vegas Valley has resulted in an increase in air pollution within that valley.

The increase in population and affluence, as well as the decrease in air quality, seen in Las Vegas Valley has not extended to the Reservation. The Reservation is in stark contrast to the Las Vegas Valley in terms of both urbanization, commercial development and socio-economics. The Las Vegas Valley is highly urbanized and includes substantial commercial development. The Reservation is entirely rural, has no industrial development, and has only small scale commercial development (the Tribal store at the Valley of Fire exit from I-15). The lack of integration between the Las Vegas Valley and the Reservation has meant that the Tribe has not seen any of the economic growth and prosperity that has been the trademark of urban Las Vegas. However, the Reservation also has not experienced the degradation in air quality that has been documented in urban Las Vegas. The Reservation is culturally and geographically isolated from the Las Vegas Valley. Just as this isolation has kept Las Vegas' prosperity from reaching the Reservation, the mountains and vast arid land between Las Vegas and the Reservation have minimized the potential for ozone transport and maximized the potential for dispersion.

There is no basis for including the Reservation within the nonattainment area based upon the Las Vegas Valley Metropolitan Statistical Area boundaries. Metropolitan Statistical Areas (MSAs), according to OMB reports, are core areas containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. In other words, MSAs are generally urban cores and their suburbs. Indian communities are stark exceptions to the presumption of social and economic integration that may seem logical due to physical proximity. One of the most significant economic challenges for tribes is the lack of economic integration with surrounding cities. In general, tribes have had few ways to benefit from the growth of surrounding cities. Tribes do not receive revenue sharing from state or other local taxes. Because tribes are not political subdivisions of the state, they

generally provide most governmental services on the Reservation. Tribes generally have few retail establishments. A number of reports over the past decade have demonstrated that the already limited amount of tribal dollars flow off of reservations because of the lack of retail stores on tribal land (and tribal members pay city and state retail taxes as a result). All of this is certainly the case on the Moapa Reservation. Very few people commute from the Las Vegas Valley to work on the Reservation. Similarly, few Tribal members commute off the Reservation to work within the Las Vegas Valley. Several Tribal members who work in the Las Vegas Valley have simply moved into that valley. In short, there is little or no economic or social integration between the Reservation and the Las Vegas Valley.

The Tribe has expended precious resources in extended negotiations for two industrial projects - - a gas-fired power plant (Calpine Corporation) and a Portland cement plant (Ash Grove Cement Company). An agreement in principle for the Ash Grove project has been reached and the original agreement with Calpine is being renegotiated for a down-sized (by one-third) powerplant project. If achieved, these projects for the first time would provide significant revenues and well-paying, quality jobs to the Tribe, its members and their families. We fear that the ozone attainment designation for the Reservation may impede one or both of the projects and deprive the Tribe of sorely needed economic development. EPA's trust responsibility to the Tribe demands that such potential adverse consequences be considered in consultation with the Tribe in determining whether the Reservation should be included within the nonattainment area.

3. Monitoring data representing ozone concentrations in local areas and larger areas (i.e., urban or regional scale)

There is no ozone monitoring data from the Reservation. As identified in the table below, monitors in Apex (west of the Reservation) and Mesquite (east of the Reservation) document that those areas are in attainment with the 8-hour ozone standard. Based upon the Reservation's location between these two monitoring sites, The data indicate that the Reservation's air quality is well below the 8-hour ozone standard.

Ozone Monitoring Data 2001 – 2003 4th Highs—ppm				
	Joe Neal	Craig Road	Apex	Mesquite
Relative Location	Outer NW Edge of Las Vegas	NE edge of Las Vegas going towards Apex	West of Reservation	East of Reservation
2001	0.083	0.070	0.074	0.049
2002	0.086	0.078	0.082	0.072
2003	0.089	0.080	0.078	0.070
Average	0.086	0.076	0.078	0.071
Note: 2001 Mesquite data incomplete and not used in average.				

The Apex monitor is the only monitor lying between the Reservation and Las Vegas Valley. Over the past three years (2001 to 2003), the Apex monitor experienced only a single day (June 16) in 2002 and a single day (June 19) in 2003 where ozone concentrations equaled or exceeded 0.085 ppm. In 2001 the Apex monitor did not record a single hour where ozone exceeded 0.085 ppm. This data suggests that while Apex may be nominally impacted by Las Vegas Valley, the impacts are attenuated and the additional distance and topography between

Apex and the Reservation should insulate the Reservation from material impacts attributable to the Las Vegas Valley.

The four monitors summarized above also show a clear trend that is indicative of ozone formation and transport in the region. The Joe Neal monitor, located on the northwest side of Las Vegas, is the sole monitor in the Las Vegas Valley to have experienced an exceedance for the 8-hour standard. As one moves out of Las Vegas towards the Reservation the closest monitor is the Craig Road monitor which is comfortably below the 8-hour standard. As one leaves the Las Vegas Valley and enters Apex Valley there is another monitor that similarly is comfortably below the 8-hour standard. By the time one moves past the Reservation and enters Mesquite (about 25 miles past the Reservation) the ozone levels have dropped significantly lower. The County considers Mesquite to be indicative of background ozone levels. Ozone levels within the Las Vegas Valley appear to be highest on the northwestern side of the valley. While transport out of Las Vegas Valley and emissions from sources within Apex Industrial Park may be causing impacts in Apex, these impacts are localized and relatively low. At the Reservation boundary, the impacts are sufficiently attenuated that there is no material concern about an ozone exceedance.

Although this evaluation is limited to data collected in the 2001 to 2003 ozone seasons, it appears that the 2004 ozone levels will be lower than the 2003 or 2002 levels. EPA has provided the Tribe with four highest monitored values through July 26, 2004 (which we have updated through July 29). Those data indicate that ozone levels promise to be appreciably lower this year. For example, on only two days, in early May, did the 8-hour average ozone value at the Apex monitor equal 0.085 ppm; on no occasion, to date (as of July 29, 2004), did the 8-hour average at Apex exceed 0.085 ppm. We understand that the worst ozone readings in Clark County normally occur before August. This indicates that the first high value is likely to be 0.085 ppm for the Apex monitor—0.007 ppm lower than the 2003 first high (0.092 ppm) and 0.005 ppm lower than the 2002 first high (0.090 ppm). The data also strongly suggest that the 2002 through 2004 design value for Apex will continue to be comfortably below the 8-hour ozone standard.

Individual Monitor Values (2001 to 2004)					
		Joe Neal	Craig Road	Apex	Mesquite
2001	1st high	0.094	0.078	0.076	
	2nd high	0.085	0.071	0.075	
	3rd high	0.084	0.071	0.074	
	4th high	0.083	0.070	0.074	
2002	1st high	0.093	0.089	0.090	0.076
	2nd high	0.088	0.082	0.083	0.075
	3rd high	0.087	0.079	0.083	0.074
	4th high	0.086	0.078	0.082	0.072
2003	1st high	0.094	0.089	0.092	0.080
	2nd high	0.092	0.084	0.080	0.075
	3rd high	0.090	0.081	0.078	0.074
	4th high	0.089	0.080	0.078	0.070
2004	1st high	0.082	0.075	0.085	0.084
(through 7/26)	2nd high	0.082	0.074	0.085	0.075
	3rd high	0.080	0.074	0.078	0.069
	4th high	0.078	0.074	0.077	0.069

This trend is also consistent across the Las Vegas Valley, where the readings from 1st high on down are all significantly lower than they were in 2002 or 2003. The "unofficial" 2004 data strongly suggest that all monitors in Clark County will have 4th high 8-hour average values comfortably below the 8-hour standard and that, based upon the 2002 through 2004 data, the County will be considered in attainment. This strongly supports limiting the ozone nonattainment boundaries to the Las Vegas Valley and excluding the Reservation from the nonattainment area.

4. Location of Emissions Sources

Currently, the only sources of VOC and NOx within the Moapa Reservation are area and mobile sources. There are no stationary sources at this time on the Reservation. Because all Tribal residences, governmental services and facilities are located in the far northeast corner of the Reservation (near the town of Moapa), mobile and area source emissions attributable to Tribal activities will occur primarily in the northeast corner of the Reservation.

Mobile and area source emissions within the Reservation are minimal. With 425 residents, 50 percent employment and most of the commuting limited to within the northeast corner of the Reservation and the adjoining town of Moapa, the ozone precursor emissions inventory is negligible. The County estimates approximately 42 million vehicle miles will be traveled per day in the Las Vegas metropolitan area in 2010. With an estimated population at that time in Las Vegas Valley of 1,817,100, that equates to about 23 VMT per day per resident. The Tribe does not anticipate similar growth in upcoming years. If the number of Reservation residents increased by the same growth rate as the County predicts for Las Vegas Valley between now and 2010 (13%), the Reservation's population would increase to 482 persons. At 23 VMT per resident, this would equate to an average weekday vehicle miles traveled of approximately 11,000 miles or less than 0.03% of the vehicle miles traveled in Las Vegas Valley. Because of the predominantly local travel of Tribal residents, this crude means of estimating vehicle miles traveled likely overstates the total. The Nevada Department of Transportation 2003 Traffic Report reported only 400 vehicles per day passing its portable traffic count station on Reservation Road in 2003—down from 430 vehicles in 2001. All of this indicates that emissions attributable to the activities of Reservation residents are not expected to contribute materially to the County's emission inventory.

As noted above, the Moapa Paiute Tribe is hoping that Calpine Corporation will build a power plant on the Reservation. Worst case emissions from that facility would be 248 tons per year of NOx and 79 tons per year of VOC. Modeling that was performed as part of the Calpine application reviewed and approved by EPA Region 9, documents worst case NO_2 impacts attributable to the project of 1.5 $\mu g/m^3$. However, this modeling was based upon a 3 ppm emission limit which has been revised to 2 ppm. We would expect impacts to decrease by a similar percentage to a level at or below the significance level at the worst case receptor. The worst case receptor was directly north of the facility (Las Vegas is to the southwest) and wholly within the Reservation. While the modeling was of NOx impacts, not ozone formation, it is demonstrative of the limited impacts and the location of the impacts anticipated from the Calpine project. The Calpine project is expected to be located approximately four miles northeast of the southwest corner of the Reservation. In addition, the proposed Calpine project has recently been

down-sized by about one-third, due to market and water availability issues.

The Tribe has reached agreement in principle with Ash Grove Cement Company about locating a plant on the Reservation. We anticipate that the facility will be a major source of NOx and VOC with worst case potential emissions of approximately 1,800 tons per year of NOx and less than 100 tons per year of VOC (VOC is highly dependent upon organic content of the raw materials and the required assays are not yet complete so Ash Grove has been unable to tell us how much lower). Emissions from the proposed facility have been modeled and the worst case NO_2 impacts attributable to the source are predicted to be 1.47 $\mu g/m^3$. As with the Calpine facility, the worst case receptor is directly north of the facility and wholly within the Reservation. We understand that these modeling results are preliminary and that final results could well be lower. The Ash Grove plant is likely to be located in the same general area in the southwest township of the Reservation.

It is also important to consider the difference in the emissions patterns attributable to the stationary sources expected to locate on the Reservation. As the County acknowledges in its 11 point analysis, the emission patterns consistent with a mobile source dominated airshed such as Las Vegas Valley exacerbates ozone formation. Morning NOx and VOC emissions build up under morning surface inversions and are replenished throughout the day as increasing sunlight and temperatures speed photochemical conversion. The County recognizes that within Las Vegas Valley, vehicular traffic patterns are such that emissions predominate in the morning and early afternoon hours with the result that maximum VOC and NOx emissions occur at those hours when they will have the greatest impact on ozone formation. This is in contrast to the 24 hour per day operations of a cement plant and power plant. A substantial portion of these proposed plants' emissions will occur in the late afternoon and at night, allowing for more time for removal by deposition prior to sunrise and the advent of photochemical activity.

The County has identified three significant stationary sources east of the Las Vegas Valley; all are located off the Reservation. The primary source of NOx is the Reid Gardner power plant, owned and operated by the Nevada Power Company. Reid Gardner is located to the immediate northeast of the Reservation, approximately 1 mile outside the town of Moapa. The County estimates that NOx emissions from Reid Gardner are 9,794 tons per year and that VOC emissions are less than 10 tons per year. The secondary source of NOx is Chemical Lime Company in the Apex Industrial Park which the County estimates emits 1,121 tons per year of NOx and less than 20 tons per year of VOC. The tertiary source is JR Simplot, located near the Overton Arm of Lake Mead, which the County estimates to emit 180 tons per year of NOx and less than 5 tons per year of VOC. Emissions from these sources are outside the control and jurisdiction of the Tribe as they are on state land.

In summary, the Reservation currently has minimal area and mobile source emissions and no stationary source emissions. The Tribe hopes that over the next 5 years two industrial sources will locate in the approximate center of the southwest portion of the Reservation. The State estimated in its March 2004 11 Point Analysis that Clark County has an overall NOx emission inventory attributable to stationary sources of 13,195 tons per year of VOC and 31,312 tons per year of NOx. Even if both stationary sources planned for the Reservation were built, they would only contribute approximately 6 percent of the total stationary source NOx and approximately 1 percent of the total stationary source VOC in the county. Given the predominant wind direction,

the distance that these sources will be from the Las Vegas Valley, and the topographical features lying between the Reservation and the Las Vegas Valley, these sources will not impact air quality in the Las Vegas Valley (as is documented by the ambient air modeling done to date for the two facilities). The nature of the existing and potential sources on the Reservation and the unlikelihood that they will materially impact the Las Vegas Valley support excluding the Reservation, in its entirety, from the Las Vegas Valley nonattainment area.

5. Traffic and Commuting Patterns

Traffic on the Reservation is limited. The Nevada Department of Transportation 2003 Traffic Report counted only 400 vehicles per day passing its portable traffic count station on Reservation Road in 2003. Interestingly, the amount of traffic is actually trending down, with 2002 traffic having been 410 vehicles per day and 2001 traffic having been 430 vehicles per day.

The southeast quadrant of the Reservation is dissected diagonally by approximately 10 miles of Interstate 15. This highway is a major thoroughfare that is a source of ozone precursors. However, it is not a commuting road and is not prone to traffic slowdowns or engine idling. It is a "long haul" road connecting Las Vegas to Salt Lake City and beyond with only two exits within the Reservation confines. As a long haul road, it is less subject to increased emissions during those times of the day during which ozone conversion is most likely to occur. The Interstate is also comparatively little used where it traverses the Reservation as compared to its use in other parts of Clark County. The Nevada Department of Transportation 2003 Traffic Report states that the annual average daily traffic between the two exits on the Reservation (Exit 75, Valley of Fire and Exit 80, Ute) is estimated at only 18,000 vehicles per day as opposed to 230,000 vehicles per day between exits 41 and 42 in downtown Las Vegas. Interstate traffic across the southeast quadrant of the Reservation is comparable to that passing through Mesquite, which was estimated as having approximately 16,000 vehicles passing per day. Therefore, we would not expect significant impacts from I-15. Nor would activities on the Reservation have material impacts on the I-15 traffic patterns. It is also worth noting that because I-15 is an interstate highway, the Tribe has effectively no jurisdiction over it.

As noted above, there is little in the way of commuting on or off of the Reservation. Most of the Reservation residents live and work in the northeast corner of the Reservation and few people commute from outside the Reservation onto it. Other than the Tribal store near the southeast boundary of the Reservation at the Valley of Fire exit, there is little to attract traffic onto the Reservation. Due to its small population and economic deprivation, the Reservation makes an insignificant contribution to regional traffic patterns.

Reservation traffic and commuting patterns have such a minimal emissions impact that this factor supports excluding the Reservation from the Las Vegas nonattainment area.

6. Expected Growth (including extent, pattern and rate of growth)

The Reservation currently has approximately 425 residents. The population on the Reservation is not expected to increase beyond natural growth within this century. There is very little in-migration, limited to tribal members who may have moved off the Reservation usually to attend school or for work. The Tribe's residential community and tribal headquarters are

concentrated in the northeast corner of the Reservation, separated from off-Reservation communities.

By contrast, the Center for Business and Economic Research, UNLV (the Center) estimates that the 2004 Las Vegas Valley population is 1,601,800 with employment of 884,800 out of a County-wide population of 1,686,100 and employment of 917,300. In 2010, the Center predicts that the Las Vegas Valley population will be 1,817,100 with employment of 941,600 out of a County-wide population of 1,912,800 and employment of 964,400. According to these estimates, 95 percent of the population and 98 percent of the jobs in the County will be in the Las Vegas Valley. This tremendous economic disparity between the Reservation and Las Vegas Valley only further isolates Tribal residents.

If the Reservation population were to increase at the same rate as is predicted for the Las Vegas Valley, the population in 2010 would be only 482 residents. If the Calpine facility and Ash Grove facility are both built, it is expected that they will provide several dozen new jobs. It is expected that this job growth could be absorbed through increasing employment among the many unemployed residents of the Reservation and residents of the local area. Therefore, minimal additional growth in the area is expected if both projects are built. Given the distance of the Reservation from Las Vegas, as well as the Reservation's size and high unemployment, it is not expected that industrial growth on the Reservation will have any material effect on the Las Vegas Valle. Likewise, because of the absence of privately held lands east of Apex, and the prohibition on residential development in and around Apex, there is no expectation of Las Vegas growing in the direction of the Reservation.[5] Therefore, there is no reason to include the Reservation, in whole or in part, within the Las Vegas nonattainment area as growth from the Las Vegas Valley in the direction of the Reservation is not a concern.

7. Meteorology (weather/ transport patterns)

As explained in the attached report from Trinity Consultants, weather/transport patterns within the Apex and Las Vegas valleys are consistent year round. Wind is persistently out of the south and southwest and blowing towards the north and northeast. Winds blowing to the north will carry ozone precursors generated in the Las Vegas metropolitan area further up into the Las Vegas Valley such that the Reservation will not be affected. This transport pattern is consistent with the monitoring results which show the highest ozone levels on the northwest side of the city. Winds blowing to the northeast would potentially carry ozone formed in the Las Vegas Valley into the narrow valley where the Apex Industrial Park is located. As that air moves out of the Apex Valley bottleneck and reaches the intersection of Interstate 15 with Route 93 (the end of the industrial park and of privately held land), the air would be subject to cross currents and topography which would enhance dispersion.

We understand that the County has performed a series of forward and reverse trajectories

[5] The Nellis Air Force Base lies between Apex and Las Vegas. 50 percent of all live ammunition used by Air Force units in the United States is transported over Apex en route to the Nevada Test and Training Range. Because of the risk to human life attributable to an accidental release, the U.S. Air Force has taken extensive steps to ensure that residential development is prohibited in the area.

for high ozone events. We further understand that while the forward trajectories indicate flow from the Las Vegas Valley to the northwest, along the Interstate-15 corridor, the plume is dispersed to background levels by the time it reaches Mesquite. Given the Reservation's location halfway between Las Vegas Valley and Mesquite, as well as the intervening topography, the Las Vegas plume should be well dispersed prior to reaching the Reservation's boundaries.

Ozone conditions typically occur as morning NOx and VOC emissions build up under morning surface inversions. The most severe ozone formation occurs during periods of light and variable winds. As a result, during those relatively stagnant periods where ozone formation is at its height, the topography and distance between Las Vegas Valley and the Reservation insulates the Reservation from significant impacts. It is likely that during some ozone events, some amount of ozone reaches the Reservation. However, for the reasons stated above the Reservation is largely decoupled from Las Vegas Valley's ozone formation and were a monitor placed on the western edge of the Reservation, it would very likely demonstrate compliance with the ozone standard.

8. Geography/Topography (e.g., mountain ranges or other air basin ranges)

There are several topographic features that minimize the potential for Las Vegas Valley air pollution to impact the Reservation. The Reservation is separated from the Las Vegas Valley by a series of mountains and large, flat, open-ended basins. These topographic features minimize the transport of Las Vegas Valley emissions to the Reservation. Specifically, the eastern side of Las Vegas Valley is defined by the Las Vegas Range, Sunrise Mountain (3,364 feet) and Frenchman Mountain (4,052 feet). These features impede the flow of air out of Las Vegas Valley towards Apex. To the extent that the Las Vegas Valley plume does impact Apex, it is subject to additional disruption and dispersion as it leaves Apex Valley and crosses the broad, flat Garnet Valley area. The Arrow Canyon Range lies along the western edge of the Reservation and the Dry Lake Range lies to the south of the Reservation. These low lying mountains disperse air moving from the Las Vegas Valley towards the Reservation in conjunction with distance. Some ozone may be transported along the I-15 corridor towards the Reservation. However, in the 35 miles from downtown Las Vegas to the closest edge of the Reservation, the impacts are greatly diminished. Given the winds, distance and topography between Las Vegas Valley and the Reservation, there is little potential for material ozone impacts on the Reservation. If such impacts were occurring from long range transport, the ozone levels at the Mesquite monitor would be elevated as well--which they are not.

9. Jurisdictional Boundaries

The Reservation presents clear jurisdictional boundaries that should be used in defining the attainment area. The Tribe is a separate sovereign nation and the Reservation is not subject to State or County jurisdiction. Any air quality planning efforts that are implemented within the Reservation would be outside the jurisdiction of the State or the County. Given the separate jurisdictional status of the Tribe and Reservation, the Reservation's boundaries should be respected when defining the borders of the Las Vegas nonattainment area.

We understand that the County is recommending that all land in Hydrographic Area 216,

other than the Tribal lands, be designated part of the Las Vegas nonattainment area. Hydrographic Area 216 is identified on Figure 3. The County's recommendation to exclude the Reservation from the nonattainment area is appropriate and consistent with the Tribe's recommendations. The other segments of this 11 point analysis document that there are minimal impacts from Las Vegas Valley on the Reservation. Any impacts that extend beyond the Apex Industrial Park and into the federally owned property separating that industrial park from the Reservation are attenuated before they reach the Reservation.

We understand that the County may want to include the Apex Industrial Park within the nonattainment area boundaries so that it can be included in the long term planning associated with the attainment process (the Apex Industrial Park is located south of the intersection of I-15 with Route 93). However, there is no reasoned basis to include the portion of the Reservation within Hydrographic Area 216 in the Las Vegas Valley nonattainment area. Hydrographic Area 216 is "U" shaped with Apex Industrial Park located in a small valley that opens off the broad flat plain referred to as Garnet Valley. As Figure 2 demonstrates, the Reservation is well removed from the small valley encircling the Apex Industrial Park and isolated from the Apex emissions by a substantial expanse of flat, publicly held land. In addition, as noted above, the Reservation is not economically linked to the Las Vegas Valley while the Apex Industrial Park is closely linked to Las Vegas. The Apex Industrial Park promotional materials laud that it "offers individuals a unique opportunity to invest in the future of Las Vegas' continued growth." See, http://www.apexindustrialpark.com/history.html. Clearly, the Apex Industrial Park is socially and economically related to Las Vegas. By contrast, the Reservation is disconnected from Las Vegas geographically, topographically, politically, jurisdictionally, socio-economically and culturally.

The Reservation boundary was established with regard to topographical features, running right up to the base of the Arrow Canyon Range and lying at the north tip of the Dry Lake Range. However, as attached Figure 4 shows, the hydrographic area boundary meanders across the Arrow Canyon Range and across flat land, carving out a small section of the Reservation from the adjoining California Wash Hydrographic Area. While the precise positioning of the Hydrographic Area 216 boundary as it crosses the Reservation may or may not have particular significance to the Nevada Division of Water Resources, it clearly lacks relevance for air planning purposes. Much more important is the line defined by the Arrow Canyon Range as it is the dominant topographical feature.

The Tribe recommends that in designating the Reservation's attainment status, EPA consider the Reservation's legal boundaries, as established by Congress, rather than the hydrographic area boundaries established by a state water planning agency with no jurisdiction over the Reservation. The Tribe recognizes that utilization of the Hydrographic Area 216 boundaries is administratively convenient (but not necessary) for the County. Utilization of the Reservation boundary would be equally convenient and more rational, both substantively and jurisdictionally. The fact that the eastern boundary of the hydrographic area extends further than may be appropriate is not of great import to the County because all of the land within Hydrographic Area 216 other than the Apex Industrial Park is either federal land or Tribal land outside the County's jurisdiction. In contrast, the Tribe has a strong interest in maintaining regulatory consistency across the Reservation. Treating the small portion of the Reservation that lies within Hydrographic Area 216 as nonattainment would also create development difficulties

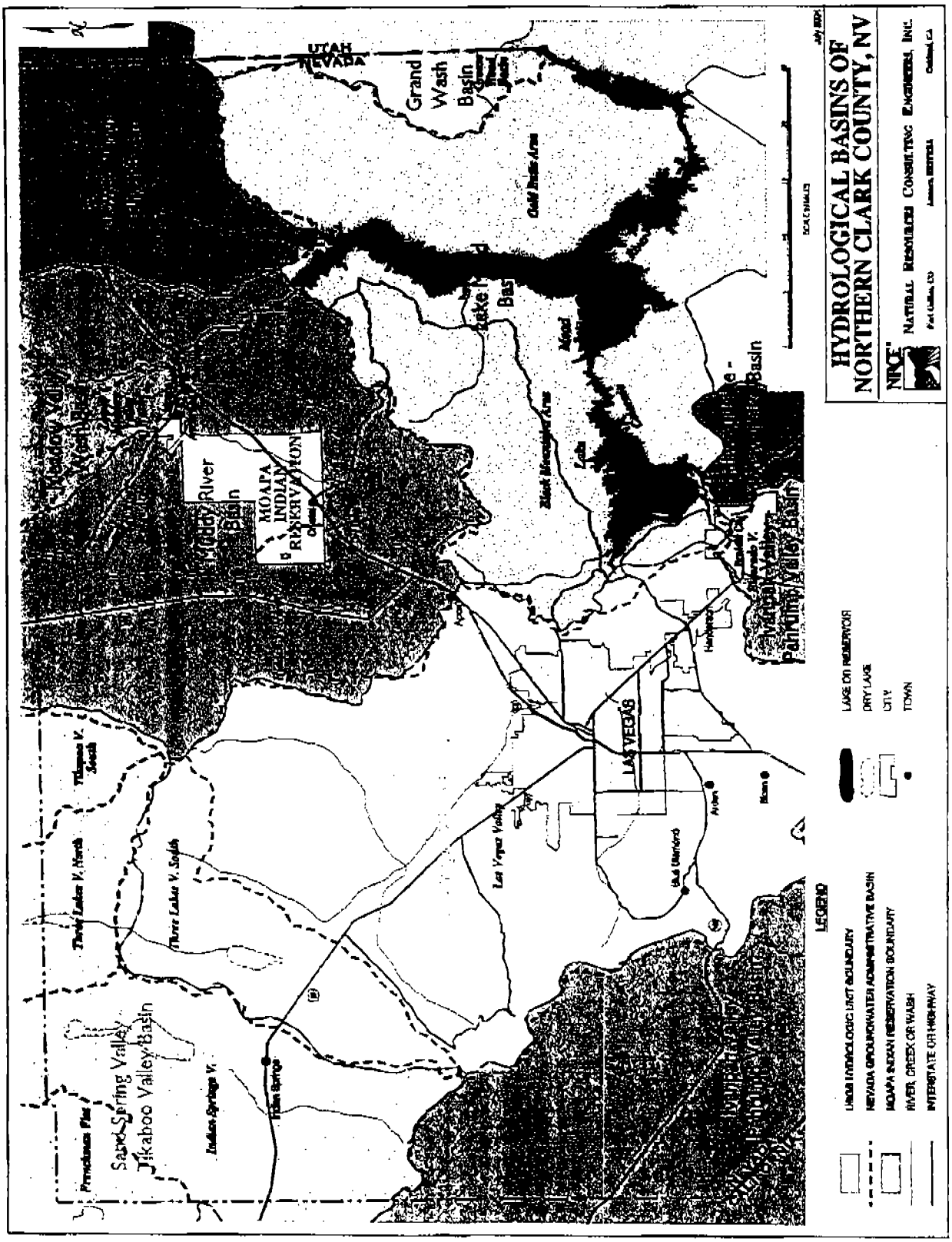


Figure 3. Hydrological Basins of Northern Clark County

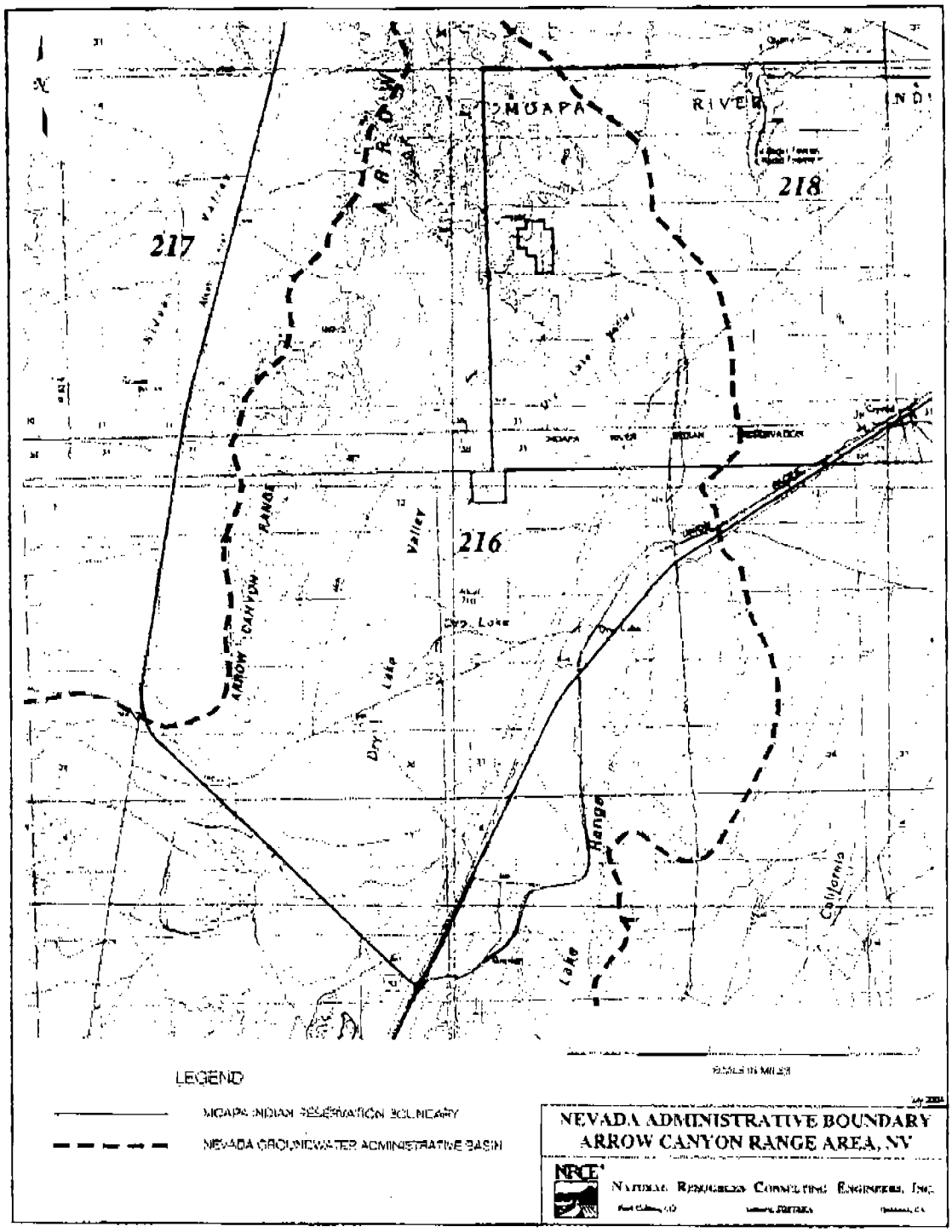


Figure 4. Hydrographic Area 216 Overlap With Reservation

for the Tribe. If that portion of the Reservation is considered nonattainment, the Tribe will have to address that area separately from the rest of the Reservation in both respects. This would impose both air quality planning burdens and economic development hardships on the Tribe. EPA, as the Tribe's trustee, should not jeopardize the Tribe's regulatory and economic development interests unless there is a compelling substantive reason to do so, which is not the case here.

There is no part of the Reservation that is materially impacted by the Las Vegas Valley. Nor does the Tribe believe that the hoped for industrial development on the Reservation would impact the Las Vegas Valley. In fact, there is protection built into the PSD permitting program that will prevent any future development on the Reservation from impacting the Las Vegas nonattainment area, as one critical step in the permitting process is ambient air quality modeling which must demonstrate that a new project will not cause or contribute to a NAAQS exceedance. Therefore, the modeling will ensure that future development will not cause a material impact to the Las Vegas nonattainment area regardless of where on the Reservation that development takes place. Therefore, there is no reason to include that portion of the Reservation within Hydrographic Area 216 in the Las Vegas nonattainment area.

Defining the Reservation, in its entirety, as an attainment/unclassifiable area is consistent with the jurisdictional boundaries established by the Clean Air Act. The county and state have no jurisdictional authority over the Reservation lands, all of which are held in trust for the Tribe. As EPA pointed out when deciding to split the PM_{10} nonattainment area for Power and Bannock Counties in Idaho, there are strong reasons for separating tribal lands from state lands when defining nonattainment areas. Specifically, the state's jurisdiction and Clean Air Act planning responsibilities extend only to the portion of the nonattainment area on state lands, while the Tribe and EPA are authorized to exercise planning responsibility for those lands within the Reservation boundaries. The Tribe expresses no opinion as to whether and what part of the state lands should or should not be considered nonattainment. However, since there is no evidence of any actual or potential exceedances of the 8-hour ozone standard within the boundaries of the Reservation, EPA should honor the Tribe's sovereignty, the special status of the Reservation and trust responsibility and recognize that all of the Reservation lands should be treated as attainment.

10. Levels of Control of Emissions Sources

As noted above, the Reservation lacks any stationary sources of air emissions with the only sources being area and mobile sources. Because any new development on the Reservation would have to undergo new source review, any source would be required to install Best Available Control Technology ("BACT") based upon the area being designated attainment/unclassifiable.

The requirement to install BACT will ensure that any new development uses state of the art emission controls. The PSD permitting process requires a rigorous "top-down" control technology analysis to establish an emissions limitation based on the maximum degree of reduction that EPA determines is achievable for the source. 40 CFR §§ 51.166(b)(12) and 166(j). For the Calpine project, this has resulted in state-of-the-art controls being required that will dramatically reduce NOx and VOC emissions and will result in emissions per megawatt-

hour that are orders of magnitude below older, state permitted generation facilities. Specifically, the Calpine project is being required to meet a 2.0 ppm NOx limitation, which we understand is the most restrictive limit for this type of power plant being achieved anywhere in the country—attainment area or nonattainment area. Any other proposed industrial facility would also be required to install BACT and conduct an air quality modeling analysis which will ensure that at maximum operating rates it does not cause or contribute to a violation of the NAAQS and that ensures compliance with PSD increments. As BACT is extremely restrictive and must take into account within the top-down hierarchy any controls that have been determined technically feasible, designating the Reservation (or any portion thereof) nonattainment would not result in materially greater levels of control than what would already be required.

11. Regional Emission Reductions Impacts

Emissions of ozone precursors from all sources located within the Reservation, both current and potential, are so small that they do not impact the NAAQS on either a local or a regional basis. Meteorology and topography minimize the potential that emissions from the Reservation will impact the Las Vegas Valley in any material way. Likewise, those same factors minimize the possibility of Las Vegas Valley emissions impacting the Reservation in a material way. As a result of these features, what the Tribe decides to do on the Reservation has no impact upon the planning taking place in the Las Vegas Valley and the complete elimination of all Reservation sources, current or potential, would provide no relief to the Las Vegas Valley. Conversely, allowing the Tribe to engage in responsible development as an attainment/unclassifiable area is not going to impact the attainment status of the Las Vegas Valley or any other area on or off the Reservation. Given those facts, the Reservation, in its entirety, should be designated as attainment.

DESIGNATION RECOMMENDATIONS

The Tribe recommends that the Reservation, in its entirety, be designated as attainment for the 8-hour ozone NAAQS. This recommendation is based primarily upon the following considerations:

- The Reservation is a sparsely populated area that is not integrated into the Las Vegas Valley. It does not materially contribute to traffic flows into Las Vegas Valley or attract material numbers of vehicle trips from the Las Vegas Valley.
- There are no stationary sources on the Reservation at this time and the area and mobile source emission inventory is both minimal and concentrated on the northwest side of the Reservation.
- There are two industrial development prospects for the Reservation. One has already been permitted by EPA, is subject to the most stringent NOx emission limit in the country and modeled minimal air quality impacts. The other is a cement plant that would have to model taking into account the ozone nonattainment area in demonstrating that it will not cause or contribute to an exceedance of the 8-hour ozone standard. That plant will be subject to rigorous pollution controls as the result of the BACT process.

- To the extent ozone transport occurs out of Las Vegas Valley along the I-15 corridor, the distance and topography allow for adequate dispersion before that plume reaches the Reservation.
- The design values for the Apex monitor and the Mesquite monitor are both comfortably below the 8-hour ozone standard and 2004 results while neither fully audited nor complete, strongly suggest that the 2004 4th high value will be significantly lower than recent years.

ATTACHMENT 1

Trinity Report: Dispersion Modeling Research Project; Wind Patterns Near Moapa

Trinity Consultants

MEMORANDUM

TO: Tom Wood
FROM: Arron Heinerikson
DATE: May 7, 2004
RE: Dispersion Modeling Research Project – Wind Patterns near Moapa

Figure 1 provides a wind rose for the ozone season (May 1, 2000 – Oct 1, 2000) based on McCarran International Airport data. The wind rose shows the direction that the wind blows from. The larger the shaded area, the greater the percentage of time that the wind is in a particular direction. The winds are predominately from the South, South-West towards the North, North-East.

Figure 1. McCarran International Airport – Wind Rose – May 1, 2000 – Oct 1, 2000

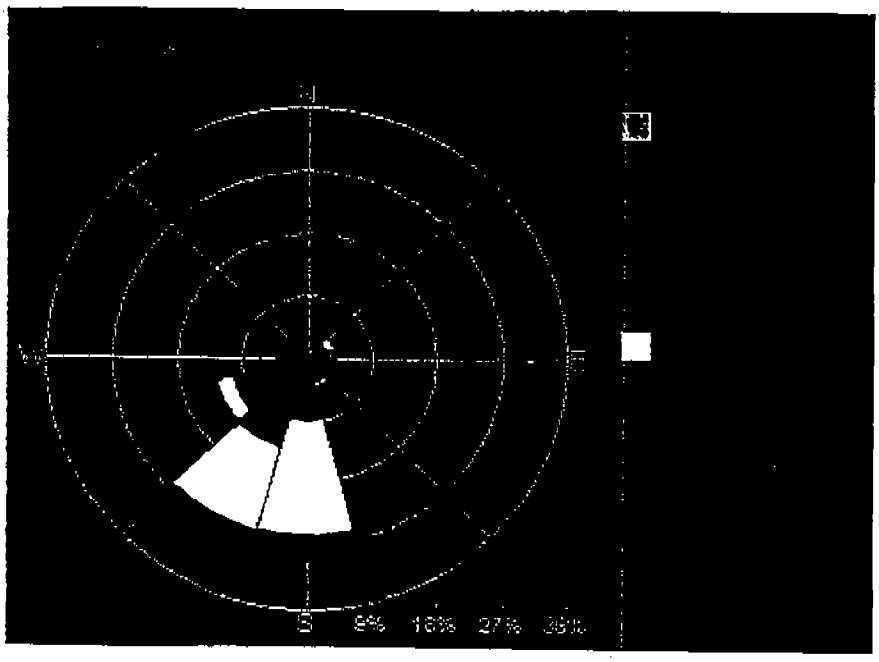


Figure 2 provides a wind rose for the entire year, 2000, based on McCarran International Airport data. The wind rose shows the direction that the wind blows from. The winds are predominately from the South, South-West towards the North, North-East.

Figure 2. McCarran International Airport – Wind Rose – Calendar Year 2000

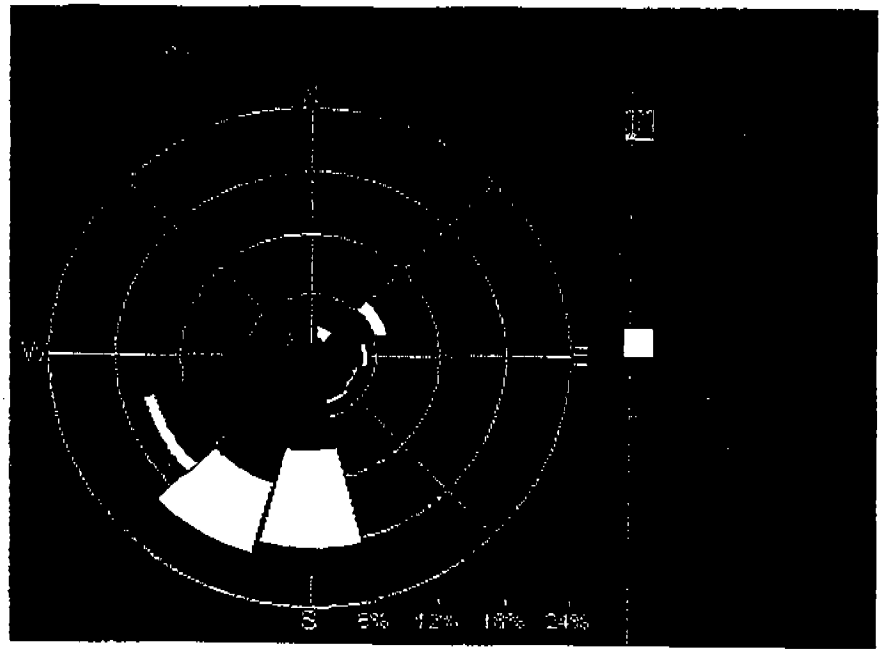
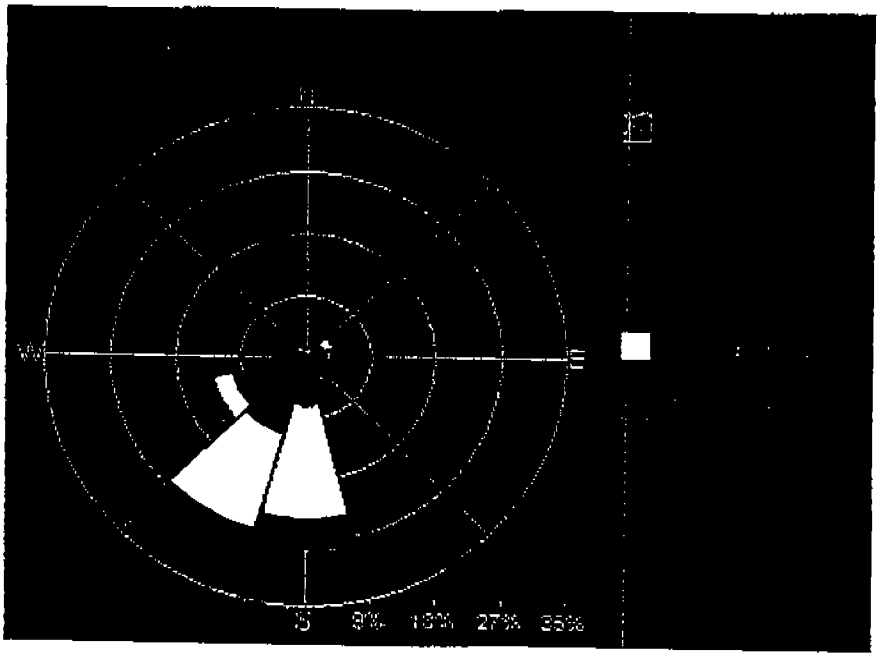


Figure 3 provides a wind rose for the ozone season (May 1, 2000 – Oct 1, 2000) based on a meteorological station in Apex, Nevada (closer to Moapa). The wind rose shows the direction that the wind blows from. The winds are predominately from the South, South-West towards the North, North-East.

Figure 3. Apex Met Station – Wind Rose – May 1, 2000 – Oct 1, 2000



Note that the wind roses do not change significantly with time of year or location of the meteorological station.

The Apex ozone monitor is located to the South of the proposed plant location towards Las Vegas as shown in Figure 4. It is clear from the wind roses that winds blow from Las Vegas towards Apex and Moapa. Sources in the Moapa area would have little, to no, impact on monitored concentrations in the Las Vegas area.

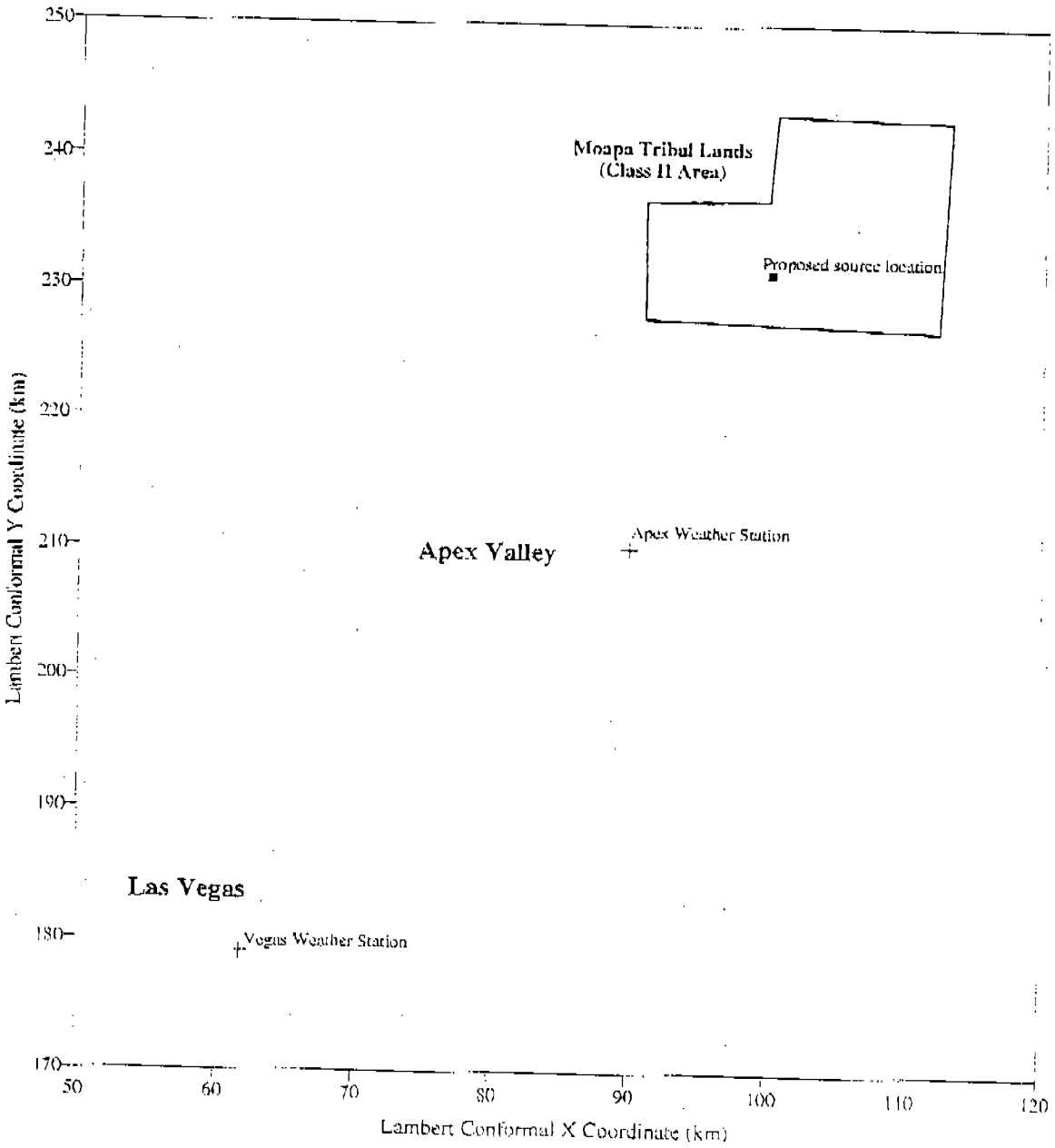



FIGURE 4. RELATIVE LOCATIONS OF WEATHER STATIONS AND MOAPA TRIBAL LANDS