SEARCHLIGHT
GROUNDWATER EXPLORATORY WELLS

FINAL ENVIRONMENTAL ASSESSMENT

Las Vegas Valley Water District

August 28, 2006

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Prepared for

Las Vegas Valley Water District
1001 South Valley View Boulevard
Las Vegas, Nevada 89153

Prepared by

SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, Utah 84111
*801) 322-4307

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Lead Agency:
Bureau of Land Management
Las Vegas Field Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
(702) 515-5000

Contact:
Holly Johnson
Las Vegas Valley Water District
1900 East Flamingo Road
Las Vegas, Nevada 89119
(702) 258-3930

SUMMARY

This Environmental Assessment (EA) has been prepared pursuant to the National Environmental Policy Act of 1969, as amended. It describes an environmental analysis and potential consequences of the proposed Searchlight Groundwater Exploratory Wells Project (Proposed Action). The Proposed Action is the issuance of rights-of-way (ROWs) by the Bureau of Land Management (BLM) for six exploratory well sites. These wells would be used to collect water quality and quantity data. This data would then be used to determine the potential for effective production wells that could help lower arsenic concentrations and augment the existing potable water supply. All six exploratory wells are on public lands administered by the BLM, and within the Piute-Eldorado Area of Critical Environmental Concern (ACEC), roughly four miles west of the town of Searchlight, Nevada. The project encompasses a total of 6.2 acres, including six 1-acre well sites and 0.2 acres of new access routes. The project would also use roughly 14 miles of existing dirt roads for access. No grading would occur with the exception of a small amount of excavation necessary for catch basins (typically 50 x 50 feet) at each well site. Instead, vehicles would drive overland, crushing vegetation, thus allowing surface soils and seed bank to remain in place. Potential environmental consequences identified during this EA analysis include: a loss of sensitive wildlife and vegetation species, a reduction in wildlife and vegetation productivity, the spread of invasive weeds, visual quality degradation, modification to surface water channels, soil disturbance and erosion, and fugitive-dust-related air quality degradation. Mitigation measures proposed as part of the Proposed Action would reduce these potential impacts.

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CHAPTER 1 – PURPOSE AND NEED

1.1 BACKGROUND

The town of Searchlight, Nevada, is located in the Mojave Desert, approximately 60 miles south southwest of Las Vegas, Nevada, in Piute Valley. The town relies exclusively on groundwater located in an alluvial aquifer west of town as its potable water source. The Las Vegas Valley Water District (LVVWD) has operated the Searchlight Water System since 1988. Water is supplied to the town by two groundwater wells in Piute Valley: Well S-1 and Well S-2.

Well S-1 is located approximately 0.5 miles west of U.S. Highway 95 (US-95) and about 1.5 miles north of the town center. It was drilled and became operational in 1983 for use as the primary water supply for Searchlight. However, as demands on the system increased, the ability of the aquifer to respond to pumping rates and continue to provide water through Well S-1 diminished. As an emergency measure to ensure an adequate water supply would be available, Well S-2 was drilled in 1990 and became operational in 1992. Well S-2, now the primary supply well, is located approximately 4 miles west of Searchlight and 1.5 miles south of Nevada State Route 164 (SR-164). Well S-1 is now an emergency backup well, with limited resource and pumping capacity.

The groundwater level and production rate at Well S-2 have steadily declined since it was drilled, and the well is currently approaching its production capacity limit with regard to meeting Searchlight's water consumption demands (SNWA 2006). This production capacity limit is a factor of both the well's pumping rate and the ability of the aquifer to respond. As the town of Searchlight continues to grow, new water facilities are necessary to access groundwater and meet present and future requirements of a safe and reliable water system.

The Nevada State Engineer has permitted 4,354 acre-feet per year (afy) of groundwater rights in Piute and Eldorado Valleys to the LVVWD. Of this, approximately 3,854 afy are permitted for appropriation in Piute Valley. In 2005, approximately 212 afy was pumped and used by the town of Searchlight.

1.2 PROJECT PURPOSE

The purpose of this project is to obtain data on the quality and quantity of groundwater in Piute Valley. If sufficient quality and quantity of new groundwater is found, reliable planning for future water supply infrastructure for the town of Searchlight will subsequently be conducted.

1.3 PROJECT NEED

The town of Searchlight is primarily dependant upon a single well for its entire water supply. There is only one emergency backup well, which has a limited pumping capacity. These facilities have insufficient capacity to meet projected needs of the town. Although there are available groundwater rights, there are no facilities to develop these rights. Additionally, the Searchlight

water distribution system requires an upgrade to meet fire protection and emergency storage requirements.

The water supply for Searchlight also needs to comply with the Safe Drinking Water Act's Revised Arsenic Rule that went into effect January 23, 2006. Under this rule, the EPA lowered the standard for the maximum contamination level of arsenic in community water supply systems from 0.05 mg/L (milligrams per Liter) to a standard of 0.01 mg/L. The current average arsenic concentration level in the Searchlight water system is 0.012 mg/L, which does not meet the new standard.

In order to obtain data on the quality and quantity of groundwater in Piute Valley, groundwater exploratory wells need to be drilled, and the aquifer tested for water quality and production capability. A specific water supply project for the town of Searchlight cannot be developed until such hydrological information, which currently does not exist, is collected. Only after this information is collected, can a determination be made as to whether future groundwater production wells in Piute Valley could supply Searchlight with additional water that could also be used to dilute and thus lower arsenic concentrations in the existing supply.

CHAPTER 2 – ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action consists of the issuance of rights-of-way by the Bureau of Land Management (BLM) to the LVVWD for drilling six groundwater exploratory wells in Piute Valley, Nevada. The exploratory wells would be used to collect groundwater quality and quantity data in order to determine the potential for future production wells and water supply infrastructure for the town of Searchlight.

The proposed Piute Valley Exploratory (PVE) wells are labeled PVE-A, PVE-C, PVE-DE, PVE-G, PVE-HI, and PVE-K, as shown on Figure 2.1. All six exploratory wells are within the Piute-Eldorado Area of Critical Environmental Concern (ACEC), roughly four miles west of the town of Searchlight, Nevada.

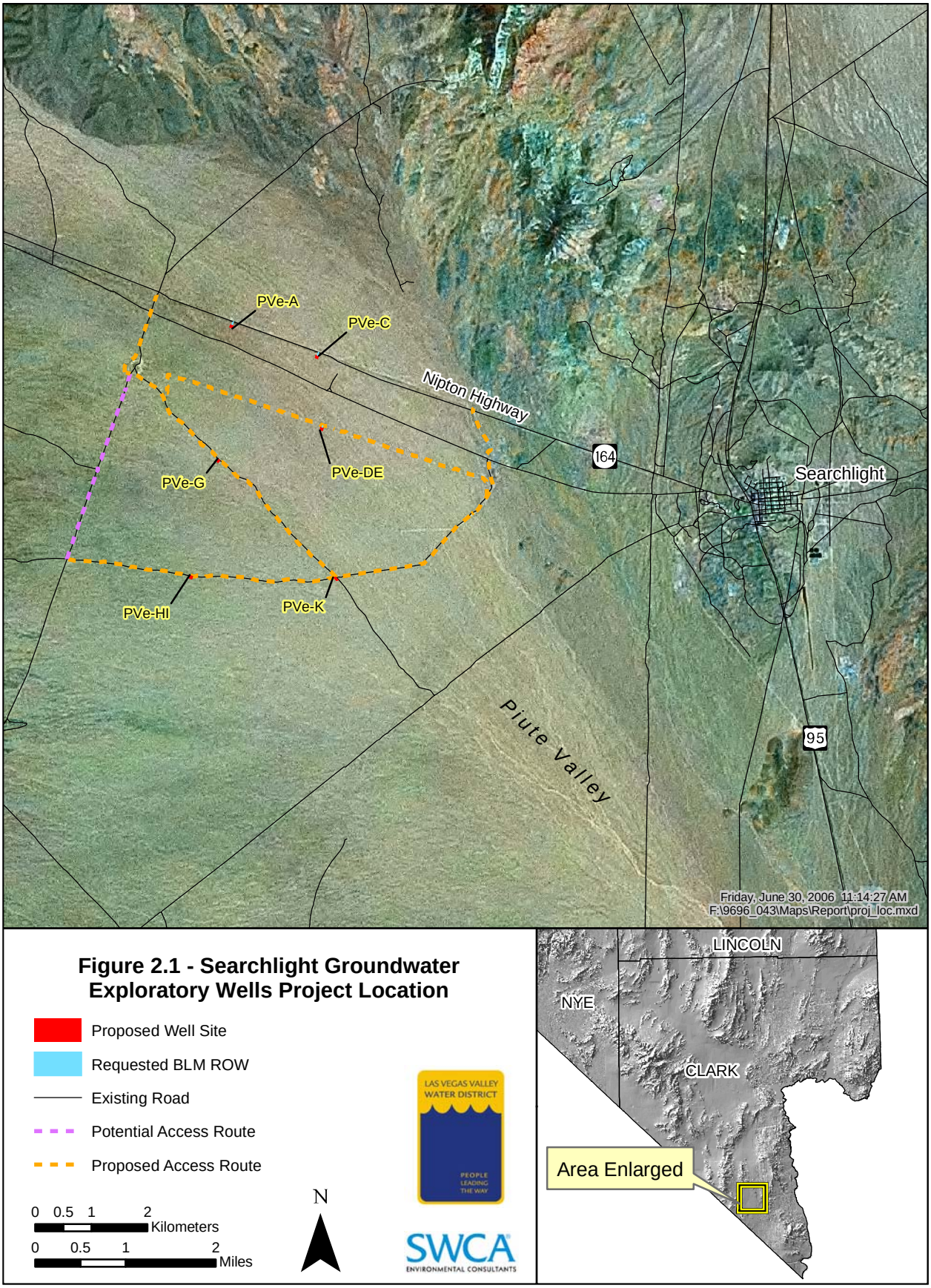
The six proposed exploratory wells were sited based on geophysical data collected in 1989 and 2005 that shows these locations as having the highest probability of producing a long-term supply of potable groundwater in Piute Valley (SNWA 2006). The ability of an aquifer to produce a long-term supply of groundwater is dependent on siting wells in areas with thick saturated alluvial deposits. The basis for selecting these locations was also a successful siting of Well S-2, which is in an area of deep alluvial deposit. All six sites were slightly reconciled so they would be adjacent to existing roads and easily accessible.

The project, as shown in Figure 2.1, would encompass a total of 6.2 acres:

6.0 acres of well sites: An area of 210 feet by 210 feet square (1.0 acres) would be needed for drilling each of the six exploratory wells, totaling 6.0 acres. The actual area to be disturbed within each 1-acre site would be as small as possible while allowing sufficient maneuvering for the drill rig, backhoes, and other equipment.

0.2 acres of access routes: An area totaling 0.2 acres is comprised of undisturbed land over which vehicles would drive to access well sites PVE-A and PVE-C (each roughly 187 feet off Nipton Road and within NDOT ROW), and PVE-DE (roughly 125 feet from an existing dirt road).

All vehicles would drive overland, crushing vegetation. No grading at well sites or their access routes is proposed, except for a small amount of excavation (typically 50 x 50 feet) necessary for catch basins (i.e., settling ponds) at each well site. This would allow the surface soil and seed bank to remain in place. In addition, the project would use up to 14 miles of existing dirt roads, all of which are open to the public. A few locations along these roads, where they are in poor condition, may need to be


PVe-A
PVe-C
Nipton Highway
164
PVe-G
PVe-DE
Searchlight
PVe-HI
PVe-K
Piute Valley
95
Friday, June 30, 2006 11:14:27 AM
F:\9696_043\Maps\Report\proj_loc.mxd
Figure 2.1 - Searchlight Groundwater Exploratory Wells Project Location
Proposed Well Site
Requested BLM ROW
Existing Road
Potential Access Route
Proposed Access Route
0 0.5 1 2 Kilometers
0 0.5 1 2 Miles
N
LAS VEGAS VALLEY WATER DISTRICT
PEOPLE LEADING THE WAY
SWCA
ENVIRONMENTAL CONSULTANTS
LINCOLN
NYE
CLARK
Area Enlarged

slightly improved (i.e., graded or filling ruts) in order for the drill rig to successfully maneuver. It is also possible the drill rig may crush vegetation on edges of roads where they have narrowed.

After drilling all exploratory wells is complete, the exploratory wells would continue to be used for monitoring purposes. The Proposed Action does not include the actual development of groundwater production wells and conveyance facilities to Searchlight. If sufficient quality and quantity of new groundwater is found, planning for future water supply infrastructure for the town of Searchlight would commence, and would be subject to a separate BLM right-of-way application process and full environmental analysis.

2.1.1 Exploratory Well Drilling

Each exploratory well is anticipated to be drilled to approximately 1,000 feet below ground surface. Well casing would be two inches in diameter with an approximate wall thickness of 0.25 inches. A temporary conductor casing may be used during drilling, which would be removed at the completion of the well. Anticipated well construction would have blank casing extending from ground level to approximately 100 feet below the encountered groundwater level. The remaining submerged depth would be perforated or slotted casing. The void (annulus) between the well casing and borehole would consist of silica gravel pack to approximately 100 feet above the screened interval and cement seal from the top of the gravel to land surface.

Equipment and materials used to drill the wells would include: (1) a self-contained drilling rig, (2) a front loader / backhoe, (3) a water tanker, (4) a settling tank for containing drilling fluids, and (5) a pick-up truck. A flatbed trailer would be used for transporting drilling pipe and well-casing material. A dump truck would be used to transport gravel pack to the site, and concrete grout would be transported to each well via a ready-mix concrete truck. A small construction trailer and portable restroom would be temporarily located on site during drilling activities. The estimated time for drilling each exploratory well is four to six weeks (SNWA 2006).

Table 2.1 describes the location and size of each exploratory well site.

Table 2.1 General Locations of Exploratory Well Sites

Well Site	Aliquot Part	Section	Township	Range	Proposed Disturbance (Acreage)
PVE-A	SW4NW4	23	28 South	62 East	1.0
PVE-C	SW4SW4	24	28 South	62 East	1.0
PVE-DE	NW4SW4	25	28 South	62 East	1.0
PVE-G	SW4SW4	26	28 South	62 East	1.0
PVE-HI	NE4NE4& SE4NE4	3	29 South	62 East	1.0
PVE-K	SW4NE4& SE4NW4	1	29 South	62 East	1.0
TOTAL					**6.0**

Source: SNWA 2006.

Water necessary for drilling would be drawn from Well S-1 and trucked to the drilling site. A minimal amount of water is anticipated to be discharged during the drilling process. Very little water would be discharged while drilling in the unsaturated zone because drilling fluid (a mixture of air and groundwater) would consist primarily of air. If the air/water drilling mixture is determined to be inadequate in achieving the desired drilling rate, then a foam or polymer would be added to the drilling fluid. Bentonite mud would be used as drilling fluid only as a last resort. The amount of water discharged is expected to be so minimal, a Temporary Discharge Permit from the Nevada Division of Environmental Protection would not be required.

The drilling technique used would provide data about the saturated thickness of water-bearing zones in the aquifer, and thus the potential production capacity of the aquifer at the well location. As saturated zones are encountered, there will be an increase of fluids in the drilling returns. With this data, a determination can be made if a particular site would be suitable for a production well. All water discharged from drilling operations would be contained in the on-site catch basin (i.e., settling pond) where water will evaporate and rapidly percolate into alluvial sediments, and drill cuttings and mud sediment will settle and drop out of suspension. Remaining sediments and/or polymer, foam, or mud ingredients would then be excavated from the catch basin and hauled to an approved disposal site. There would be no structural changes to any natural or other drainage channel or wash.

After drilling of the well, it would be developed by airlift methods. A small diameter airline would be installed below the water level in the well and compressed air applied to the airline. This method would force water to the surface and allows sand and drilling debris to be removed from the well.

After development of the well is complete, a pump test would begin. The purpose of the pump test is to remove any remaining drilling additives and fine-grained sediments from the completed well, and conduct water quality sampling for arsenic. To begin the pump test, a submersible pump would be inserted into the well casing and lowered to a depth of approximately 75 feet below the measured water level. The pump would be powered by a portable electrical generator, either trailer-mounted or on the bed of a truck. The pump would then run at a rate of less than 10 gallons per minute (gpm) for a maximum of 48 hours, which is sufficient to ensure little to no drilling additives or fine-grained sediments remain in the well. This water would be directed onto a shallow, plastic-covered area on the ground containing energy absorbing materials, such as anchored straw bales. The energy-absorbing material would prevent any scouring or erosion, and potential overflow would then be directed into a natural channel where it will evaporate and rapidly percolate. The rate of potential overflow would be so small; there would be no structural change to any drainage channel or wash.

Lastly, during all drilling and pumping test operations, plastic tarps would be placed on the ground beneath the engine areas of all vehicles to capture any petroleum fluids that could drip or leak from the undercarriages. A Spill Prevention and Response Plan will be prepared to eliminate and/or minimize impacts of drilling fluid and/or hazardous materials spills. Fire prevention and suppression measures will be implemented to reduce risks of wildland fire during construction.

Following completion of all drilling and testing, a small well approximately two feet high with an 8-12 inch diameter steel casing would remain.

2.1.2 Design Features

A number of design features have been incorporated into the project to protect the environment.

There is one federally-listed species (the desert tortoise) and seven sensitive species that have potential to occur in the project area. The project is also located entirely within the BLM-designated Piute-Eldorado ACEC, and the U.S. Fish & Wildlife Service (FWS) designated Piute-Eldorado Critical Habitat Unit (PECHU), which provides critical habitat for the federally-threatened desert tortoise. See Chapter 3 for a detailed discussion of these species and land designations.

The measures described below would be implemented as part of the Proposed Action to lessen potential impacts of the project on federally-listed and sensitive species, and their habitat.

Vegetation

1. Before construction begins, temporary tortoise-proof fencing will be installed around drill sites to ensure impacts are minimized to the maximum extent practicable.
2. Within the fenced ROW boundaries, all activities will be confined to the absolute minimum area necessary to drill the monitoring well.
3. No vegetation clearing will occur except to construct small catch basins. Instead, construction vehicles will drive overland and crush vegetation, in order to preserve the surface soil and seed bank.
4. Before construction begins, the top 3-6 inches of topsoil will be removed on areas where excavation is required for catch basins, stockpiled, and replaced following construction.
5. Cactus and yucca that would be impacted by construction activities will be salvaged, stored in a temporary nursery location, and replanted following construction.
6. Erosion and runoff will be controlled using Best Management Practices (BMPs) during and after construction, including hay bales or other sediment filtering / surface water directing devices and structures, settling basins as a water-sediment separating structure, and water or other dust reduction measures.
7. All construction equipment, vehicle, and implements will be washed / steam-cleaned prior to entering the project area to prevent the spread of noxious weeds. Any construction equipment, vehicle, or implement that leaves the project area will be washed / steam-cleaned prior to re-entering the project area.

Wildlife

1. A litter-control policy will be implemented to minimize predation on tortoises by ravens, coyotes etc., drawn to the project area. This policy will include the use of covered, predator-proof trash receptacles, removal of trash from the construction site to the trash receptacles at the end of each work day, and proper disposal of trash in a designated solid waste disposal facility.
2. A maximum speed limit of 25 miles per hour will be maintained while traveling on unpaved access roads. This effort will reduce the potential for vehicle-wildlife related accidents.

3. Migratory bird surveys will be conducted between March 15 and July 30 prior to construction activities at each well site. Construction activities will be conducted so as to avoid nests as feasible and minimize effects to nests and fledglings. Evidence of active nests or nesting will be reported immediately to FWS and BLM to determine appropriate minimization measures on a case-by-case basis.
4. Any fuel or hazardous waste leaks or spills will be contained immediately and cleaned up at the time of occurrence. Contaminated soil will be removed and disposed of at an appropriate facility.
5. During drilling and pumping test operations, waterproof tarps will be placed on the ground beneath the engine areas of all vehicles to capture any petroleum fluids that could drip or leak from the undercarriages.
6. The project will require temporary fencing. Fenced areas will undergo an initial tortoise clearance of the fenceline prior to fence construction, and a tortoise clearance following fence construction. Project sites to be fenced with permanent tortoise-proof fencing will be fenced prior to the commencement of surface disturbance activities within the project site. Fencing will consist of 1-inch horizontal by 2-inch vertical mesh. The mesh will extend at least 18 inches above ground. The lower 6-12 inches of the fence will be bent at a 90-degree angle towards the potential direction of encounter with a tortoise and covered with cobble or other suitable material to ensure tortoises or other animals cannot dig underneath.
7. All project areas, including construction sites, access routes, and fence lines, will be cleared by a qualified biologist before the start of construction or ground disturbance. The site will be surveyed for desert tortoises using survey techniques that provide 100-percent coverage. During the tortoise active season, the pre-construction clearance will be no more than 3 days before initiation of construction. During the tortoise inactive season, the pre-construction clearance shall be within 5 days before work begins. Tortoise burrows found in the construction areas will be searched for resident tortoises, and if no tortoises are found within the burrow, it will be collapsed to prevent re-entry.
8. If found, tortoises will be relocated by a qualified tortoise biologist in accordance with FWS-approved protocol (Desert Tortoise Council 1994, revised 1999). Tortoises moved offsite and released into undisturbed habitat on public land, will be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow. Tortoises that cannot be appropriately relocated will be placed with the Desert Tortoise Conservation Center.
9. Desert tortoises moved during their inactive or estivation seasons (regardless of date), will be placed into an adequate burrow; if none is available, a burrow will be constructed in accordance with Desert Tortoise Council protocol (1994, revised 1999).
10. A Worker Environmental Awareness Program (WEAP) will be implemented for construction crews prior to commencement of construction activities. Training materials and briefings will include, but not be limited to discussion of the Endangered Species Act (ESA), the consequences of noncompliance with it, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all design features of the Proposed Action. Additionally, a qualified tortoise biologist will present a tortoise-education program to all personnel who

will be working on site. The program will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of Federal and State laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the biological opinion, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained

11. A qualified tortoise biologist will be on site during all phases of construction during the tortoise active period (March 1 through October 31), and the biologist will be on call during the tortoise inactive period (November 1 through February 28/29).

12. A dust permit from the Clark County Department of Air Quality Management will be obtained prior to construction, and requisite dust control measures and Best Management Practices (BMPs) will be implemented during the proposed project.

2.2 NO ACTION ALTERNATIVE

The National Environmental Policy Act (NEPA) requires the evaluation of a No Action Alternative, defined in Council on Environmental Quality (CEQ) regulations as a continuation of present conditions (40 CFR §1502.14). Under the No Action Alternative for this project, no BLM ROWs would be granted to LVVWD for the Proposed Action, thus no exploratory wells would be drilled, and no exploration for new groundwater resources for Searchlight would occur.

Without additional information on groundwater quality and quantity in Piute Valley, Searchlight would be unable to conduct reliable planning for future water supply infrastructure. Current conditions and trends of groundwater production from Wells S-1 and S-2 and current water consumption rates and trends in Searchlight would continue.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Siting the proposed exploratory wells at other locations in Piute Valley such as on private land, or other federally-managed lands surrounding Searchlight, was initially considered to determine their potential for producing a long-term supply of groundwater. However, these locations were eliminated from further consideration for several reasons.

Privately owned land in Piute Valley is scarce and mostly located over igneous bedrock or a thin veneer of alluvium overlying igneous bedrock. These areas are unreliable and unsuitable groundwater sources due to rapid dewatering and slow aquifer recovery consistent with existing wells drilled into igneous bedrock in the vicinity of Searchlight (SNWA 2006).

The area to the north of Searchlight is Eldorado Valley, where approximately 500 afy of groundwater rights are appropriated and permitted to the District. This limited supply in addition to the area's geology, which is fractured bedrock and thus has little storage capacity and de-waters at a much faster rate, make this area an impractical option for this project.

The area to the east of Searchlight is comprised of mountains reaching 2,000 to 3,000 feet in elevation. These elevations, the surrounding variable topography, variable water quality, and the

lack of existing access roads make this area problematic and much less suitable for groundwater exploration activities.

The area to the south of Searchlight is lacking adequate, deep, saturated gravels having high permeability and a sizable storage capacity. For this reason, and also because there are few existing access roads, which means much more ground disturbance for exploration activities would be required, this area is an impractical option for this project.

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 AIR QUALITY

Air quality within the airshed of the proposed project area is regulated through federal, state and county agencies, including the Environmental Protection Agency (EPA), the Nevada Department of Environmental Protection Bureau of Air Quality, and Clark County Department of Air Quality and Environmental Management (CCDAQEM). The EPA has established National Ambient Air Quality Standards (NAAQS) that limit the amount of pollutants that can be present in the atmosphere. There are six criteria pollutants EPA uses as indicators of air quality, and each has a maximum concentration above which negative effects on human health could occur: lead (Pb), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$ [particles with a diameter less than or equal to 10 or 2.5 microns, respectively]), and carbon monoxide (CO). Table 3.1 shows current NAAQS. Areas that meet or exceed the pollutant standards (i.e., are in compliance and are less polluting) are called "attainment" or "unclassified" areas and are not routinely monitored.

Table 3.1. National Ambient Air Quality Standards (NAAQS)

Pollutant	Standard	Standard Value*	Standard Type
Carbon Monoxide (CO)	8-Hour Average	9 ppm (10 mg/m^3)	Primary
	1-Hour Average	35 ppm (40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 µg/m_3)	Primary
Ozone (O_3)	1-Hour Average	0.12 ppm (235 µ/m^3)	Primary & Secondary
	8-Hour Average	0.08 ppm (157µ/m^3)	Primary & Secondary
Lead (Pb)	Quarterly Average	1.5 µ/m^3	Primary & Secondary
Particulate Matter (PM_{10})	Annual Arithmetic Mean	15 µ/m^3	Primary & Secondary
	24-Hour Average	150 µ/m^3	Primary & Secondary
Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	15 µ/m^3	Primary & Secondary
	24-Hour Average	65 µ/m^3	Primary & Secondary
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.03 ppm (80 µ/m^3)	Primary
	24-Hour Average	0.14 ppm (365 µ/m^3)	Primary
	3-Hour Average	0.5 ppm (1300 µ/m^3)	Secondary

* Parenthetical value is an approximate equivalent concentration Primary Standards are those that set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.

Secondary standards are those that set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Source: CCDAQEM 2006.

The proposed project area is currently in attainment for CO, NO_2, O_3 (1-hour standard), PM_{10}, $PM_{2.5}$, and SO_2 (EPA 2006). The EPA has designated Clark County (including the project area) as a non-attainment area for the new national 8-hour ozone (O_3) standard (69 CFR 23919-20). Clark County was classified as marginal non-attainment, which is the least severe of the possible

classifications (CCDAQEM 2005). Lead has been phased out of gasoline, which has considerably reduced the contamination of air by lead, and so a measurement of this criteria pollutant is not included for the project area. The only sources of air pollutants within the vicinity of the proposed project area are vehicles traveling along Nipton Highway, and occasional vehicles traveling along existing dirt roads in the ACEC.

3.2 CULTURAL RESOURCES

3.2.1 Site and Project File Review

Section 106 of the National Historic Preservation Act of 1966 requires Federal agencies to take into account the effects of their undertakings on historic properties, which are those cultural resources listed in or eligible for listing in the National Register of Historic Places (NRHP). In compliance with Section 106, cultural resource investigations were conducted for the Proposed Action.

SWCA Environmental Consultants (SWCA) conducted a site and project file review at the Harry Reid Center in Las Vegas to identify potential cultural resources in the project area. Additional historical information pertaining to the project area was obtained from General Land Office (GLO) maps available at the BLM, Nevada State Office in Reno. Files maintained by the Nevada Department of Transportation in Reno were also consulted.

These searches resulted in the identification of 17 projects and 10 cultural resource sites in or within approximately 1 mile of the proposed project Area of Potential Effect (APE). These sites encompass a variety of types, and all are from the historical period. Of the 10 sites, one has been recommended Eligible for listing on the NRHP, eight have been recommended Not Eligible for listing on the NRHP, and one is unevaluated. The single NRHP-Eligible resource, Site 26CK004626, is a historical ranch (Walking Box Ranch) located near the APE, but would not be impacted by the Proposed Action.

3.2.2 Historical Overview

In addition to the site and project file review, a historical overview of the project area was written as part of the report written to satisfy requirements of the National Historic Preservation Act of 1966, as amended (Stokes et al. 2006). Based on the historical overview and results of the file search, it is clear a variety of historical cultural resources are present in the vicinity of the proposed project area, with historical resources encountered much more frequently than prehistoric resources, which may be due to a lack of surface water in the area that would limit prehistoric occupations.

The file search and historical overview also indicate historical mining was a significant activity in the area. Old mine sites related to the Searchlight Mining District are visible on topographic quadrangles, and sites related to historical mining are the predominant type of previously identified sites. Historical ranching is also represented. Historical sites in the area include mines and mining features (e.g. prospect pits, ore processing facilities, etc.), and ranches and ranching features (e.g., homesteads, fencelines, ranch houses and complexes, corrals, etc.). Trash deposits

associated with any or all of these activities are also present in the vicinity of the proposed project area, and based on inspection of GLO maps, transportation and infrastructure features, such as historical roads, telephone lines, and powerlines are also present in the general area.

3.2.3 Cultural Resource Inventory

Subsequent to the site and project file review, SWCA conducted an intensive pedestrian cultural resource inventory—at the six proposed 1-acre wells sites, and three short access routes (totaling 0.2 acres) over which vehicles would drive to access three well sites (PVE-A, PVE-C, PVE-DE)—in order to identify cultural resources. Methods used are described in detail in the National Historic Preservation Act report written for this project (Stokes et al. 2006). All methods, including identification of cultural resources; and discrimination among sites, isolated occurrences, and isolated features followed Nevada BLM Guidelines, as well as specific instructions from BLM, Las Vegas Field Office.

As a result of the cultural resources inventory, one isolated feature (IF) was identified within the Area of Potential Effect (APE). This is IF-1, a historical rock cairn located within proposed exploratory well site PVE-C. The cairn probably marks a mining claim; however, no archaeological artifacts or other features were observed in association with the cairn. Because IF-1 is an isolated feature in the landscape and not associated with any additional evidence of human activity, it is categorically not eligible for nomination to the NRHP as set forth in Appendix E.B of the State Protocol Agreement between the BLM and the Nevada State Historic Preservation Office (SHPO).

Thus, based on the searches of the project and site files and the intensive pedestrian inventory of the project area, there are no historic properties within the proposed APE. The proposed action should have no effect.

3.3 GEOLOGY AND SOILS

3.3.1 Geology

Piute Valley is aligned north to south, with New York and Castle Mountains to the south and west, McCullough Mountains and the Highland Range to the north, and Newberry Mountains to the southeast. The valley is comprised mainly of alluvium, which is material eroded from surrounding mountains and transported down-slope by surface water flow. The north end of Piute Valley is largely composed of volcanic rock fragments. Metamorphic type rocks are more abundant to the south, where alluvium is partly derived from the southern McCullough Range. The alluvium varies in thickness and age, as wash channels carrying alluvial sediments shifted direction over time (NRCS 2005).

3.3.2 Soils

The only soil map unit located within the project area is the Lanip-Kidwell Association (NRCS 2005). The Lanip-Kidwell Association is restricted to Clark County, Nevada. Specifically, it occurs at the northern end of Piute Valley, between 2,400 and 4,200 feet.

This soil association consists of very deep, well-drained soils, which formed in alluvium derived from mixed volcanic sources. They are very gravelly, sandy loams covered with 45-50% pebbles, and have bare soil interspaces containing biological soil crust. Low to moderate susceptibility to wind and water erosion can be expected when surface cover (e.g., vegetation, soil crust) is removed. Since mean annual precipitation is about six inches, the soil is usually dry, becoming moist only intermittently following winter rains. However, soils often retain moisture for 10-20 days after convection storms between July and October. Mean soil temperatures range between 59-65 °F, a factor of hot, dry summers, and cool, moist winters (NRCS 2005).

3.3.3 Soil Crust

A biological soil crust covers most of the spaces between plants throughout the project area. These crusts are a matrix of cyanobacteria, lichens, mosses, fungus, and algae, and exist in varied species compositions across the landscape. These crusts provide a critical role in ecosystem stability by fixing atmospheric nitrogen into a plant-available form. Biological soil crusts also present a layer composed of cyanobacterial sheaths that hold soil particles in place, thus reducing wind and water erosion. High winds common in the Mojave Desert (which includes the proposed project area) can remove the finer soil particles in non-crusted areas; fine particles are associated with essential plant nutrients. Biological soil crusts can also increase water infiltration rates by creating barriers to water movement, thereby increasing the retention time on the soil surface and movement down into the soil profile. Loss of the crust can lead to sheet erosion, soil loss, and a decreased ability for water to penetrate the soil surface (NRCS 2005).

3.4 NOISE

3.4.1 Introduction

Noise is defined as unwanted or objectionable sound, and noise intensity (or loudness) is typically measured as sound pressure in units of decibels (dBs). The decibel scale is logarithmic (not linear) because the range of sound that can be detected by the human ear is so great, it is convenient to compress the scale to encompass all the sounds that need to be measured. As a reference, each 20-unit increase in the decibel scale increases the sound loudness by a factor of 10. A long-term average sound level that would include brief, but relatively intense sounds, such as over-flying airplanes or passing vehicles as well as sounds of lower intensity, such as humming transformers, is considered to be the best measure for quantifying the magnitude of environmental noise, and this measurement is referred to as the Equivalent Sound Level (L_{eq}).

The L_{eq} correlates well with the effects of noise on people, even for wide variations in sound levels and durations, but it is used only when the durations and sound levels are important, and not when their times of occurrence (day or night) are important. A measurement used to gain a description of environmental noise for both day and night is the Day-Night Sound Level (L_{dn}). The L_{dn} is derived from the average sound levels for a 24-hour period, with an additional 10 dB added for sounds that occur during nighttime hours (10 p.m. to 7 a.m.) (EPA 1978).

3.4.2 Ambient and Existing Noise Levels

Ambient sound levels within the Piute Valley portion of the Piute-Eldorado ACEC, and the proposed project area, would be similar to wilderness areas that exhibit an L_{dn} of 30 to 40 dB, where sound sources are predominantly natural, and include those sounds produced by insects, birds, and wind (EPA 1974, Cunniff 1977, Harris 1991).

The project area is unpopulated, with few potential noise sources except for intermittent vehicle noise from State Route (SR) 164 (Nipton Highway), a moderately high-speed road bordering the project area. Although roadway traffic contributes to noise, this source is transient, produced primarily by passenger vehicles traveling across Piute Valley between Searchlight and Interstate-15 in California. Thus, existing noise levels in the project area consist almost entirely of vehicles traveling along the highway.

Existing vehicle-caused noise is localized along the northern border of the project area, but there are very few noise pollution problems associated with this vehicular traffic. This is due to a combination of, (1) the project area's remoteness, (2) the lack of any long-term human presence within or adjacent to the project area, (3) the low level of vehicle traffic within the project area, and (4) the intermittent level of vehicle traffic along Nipton Highway.

Residences, motels, hotels, schools, libraries, religious institutions, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise than commercial and industrial land uses. Currently, there are no human sensitive noise receptors in the project area that would be impacted by noise as a result of the Proposed Action with the exception of project workers who would be exposed to increased noise levels during well drilling and testing activities.

3.4.3 EPA Noise Standards

The EPA has published recommended sound levels it considers necessary to protect public health and welfare, classified according to areas where human activity is most likely to occur. Table 3.2 presents a summary of the EPA's recommended sound levels. The EPA-recommended noise level for the project area is 70dB.

Table 3.2. Yearly Average[1] Equivalent Sound Levels Requisite to Protect the Public Health and Welfare With an Adequate Margin of Safety

	Measure	Indoor			Outdoor		
		Activity Interference	Hearing Loss Consideration[2]	To Protect Against Both Effects	Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects
Residential with Outside Space and Farm Residences	L_{dn} $L_{eq}(24)$	45	70	45	55	70	55
Residential with No Outside Space	L_{dn} $L_{eq}(24)$	45	70	45			
Commercial	$L_{eq}(24)$	(a)	70	70(b)	(a)	70	70(b)
Inside Transportation	$L_{eq}(24)$	(a)	70	(a)			
Industrial	$L_{eq}(24)$(c)	(a)	70	70(b)	(a)	70	70(b)
Hospitals	L_{dn} $L_{eq}(24)$	45	70	45	55	70	55
Educational	$L_{eq}(24)$ $L_{eq}(8)$(c)	45	70	45	55	70	55
Farm Lands, General Unpopulated Areas	$L_{eq}(24)$				(a)	70	70(b)

[1] Refers to energy rather than arithmetic averages.

[2] The exposure period which results in hearing loss at the identified level is a period of 40 years.

a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.

b. Based only on hearing loss.

c. An $L_{eq}(8)$ of 75 dB may be identified in these situations so long as exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an L_{eq} of 60 dB.

Source: EPA 1974.

3.5 SOCIOECONOMICS

Established in 1898, the town of Searchlight, Nevada was founded on gold mining. At the height of the town's mining boom, in 1907, Searchlight's population was approximately 1,500. As the production cost of ore went up, the quality of ore went down, and the mines became played out, miners left the area and by 1927 only 50 people remained in Searchlight (Hill 2006). Today, the town consists of retirees, small business owners, artists, miners, and ranchers. In 2004 there were an estimated 1,127 people living in Searchlight. This is a 49% increase from 2000, when the population was 576 (Table 3.3).

Table 3.3. Population Trends in Searchlight, Nevada and in All of Clark County, Nevada

Location	1990	2000	2004
Clark County	797,142	1,428,690	1,747,025
Searchlight	577	769	1,127

Source: Clark County 2006.

Searchlight is a part of the fastest-growing county in the United States. In 2004 Clark County had an estimated population of 1,747,025. While this is only an 18% increase from 2000, it is a 56% increase from 1990 (see Table 3.3). Clark County encompasses the Las Vegas metropolitan area, which was ranked first in the nation in percentage change (83.3%) in population from 1990 to 2000 according to 2000 Census data. Of the total population in Clark County, 96% live in the Las Vegas Valley Urban Area and 4% live in outlying cities and unincorporated areas within Clark County (including Searchlight) (Clark County 2005).

In 1990, there were 315,229 housing units in Clark County, but by 2000 the number had increased to 559,382, a 44% increase (Clark County 2006). In 2004, Clark County reported the total housing units had increased to 675,558 in the county, a 17% increase from 2000. Housing unit increases in the town of Searchlight have followed Clark County trends, but not to the same degree as Clark County as a whole. In 1990, Searchlight had 306 housing units and in 2000 there were a reported total of 368 housing units, a 17% increase. By 2004 there were 418 housing units in the town of Searchlight, an 11% growth from 2000.

3.6 SPECIAL STATUS SPECIES

3.6.1 Federally-Listed Species

The FWS has federally-listed 17 species within Clark County, Nevada, as threatened or endangered species. Of these, the desert tortoise (*Gopherus agassizii*) is the only species with the potential to occur within the project area.

The FWS emergency-listed the Mojave population of the desert tortoise as endangered on August 4, 1989 (54 FR 32326), in response to the dramatic decrease in numbers of the tortoise throughout its entire range. The tortoise was then proposed under normal listing procedures on

October 13, 1989 (54 FR 42270), and subsequently listed as threatened on April 2, 1990 (55 FR 12178) (FWS 1990). The State of Nevada has listed the desert tortoise as a fully protected species and has also designated the desert tortoise as its official state reptile.

The range of the desert tortoise roughly approximates the distribution of the creosote bush scrub, community and includes southern Nevada, southeastern California, northwestern Arizona, and the southwestern corner of Utah. Habitat requirements for the desert tortoise are somewhat variable with regard to different regions where it occurs. In Nevada, tortoises typically occur on flats, valleys, bajadas, and rolling hills, generally 2,000 to 3,500 feet in elevation. Tortoises prefer areas characterized by scattered shrubs and abundant inter-space for growth of herbaceous plants, with soils ranging from sand to sandy gravel, and with friable soils for digging burrows.

According to Southwest Regional Gap Analysis Project (SWReGAP) analysis (EPA 2005), three primary habitat types are present in the project area: (1) Mojave Mid-elevation Mixed Desert Scrub (blackbrush community), (2) Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (creosote bush community), and (3) Inter-mountain Basins Semi-desert Shrub Steppe (mixed desert shrub community). SWReGAP analysis identified the blackbrush plant community as dominant in the area; however, field biologists observed the blackbrush community to be overestimated and the creosote community underestimated. (Note: No formal vegetation survey methods were used for this determination.)

Field Surveys

Between November 1, 2005 and November 15, 2005, SWCA biologists performed biological surveys of the following areas: (1) the six 1-acre well sites, (2) the 0.2 acres of proposed access routes to three well sites, (3) existing dirt roads upon which project vehicles would drive to access well sites, and (4) a zone of influence (ZOI) or buffer zone of 600 feet extending beyond and surrounding project area boundaries. Parallel transects were walked throughout the entire project area at 30-foot intervals, and the ZOI was surveyed at 300- and 600-foot intervals per FWS recommendation. Note: The existing dirt road along the western portion of the general project area, from Walking Box Ranch south toward Castle Mountain Mine (see Figure 2.1), was not surveyed as this is only a potential access route to well sites PVE-HI and PVE-K in the event proposed access routes cannot be used. This road is also open to the public, well traveled, 30-feet wide, and maintained in good condition.

Status of Desert Tortoise in the Project Area and ZOI

All 6.2 acres of the project fall entirely within the Piute-Eldorado Critical Habitat Unit (PECHU), which is an area set aside by the FWS in 1994 for recovery of the desert tortoise (USFWS 1994a). The PECHU is also part of the larger, Piute-Eldorado Desert Wildlife Management Area (DWMA), which was designated by BLM and is the largest expanse of desert tortoise habitat in Nevada. This DWMA contains the highest concentrations of desert tortoise in the state (40-90 adults per square mile), though population density varies throughout the DWMA (Krzysik 2005).

Desert tortoise habitat in and around the project area has friable soils and vegetation typical of high quality tortoise habitat. There is very little development, with the exception of Walking Box

Ranch on the western edge of the project area and a few small dirt roads scattered throughout the project area. There is also very little evidence of off-highway vehicle (OHV) use or litter, except along Nipton Highway.

Biological surveys conducted by SWCA in November 2005 confirmed the project area contains potential desert tortoise habitat. Although desert tortoises could potentially utilize this habitat, survey results showed desert tortoise activity to be limited in the project area and Zone of Influence (ZOI) (a 600 foot buffer surrounding the project area representing the furthest distance at which the project could affect sensitive species). Twenty-seven (27) tortoise burrows were found during field surveys of the project area and ZOI. No live desert tortoises or scat were observed during field surveys, and all 27 burrows exhibited no evidence of recent use.

The documentation of only a few, inactive sign in the area indicates that tortoises have inhabited the area, but there are few, if any individuals currently using the area. A linear regression model specific to Nevada for estimating relative population densities of desert tortoise was developed by Karl (1980) (Table 3.4). Using this model and field survey data for this project, it was determined the project area supports a low density of tortoises (10-45) per square mile (27 burrows/50.5-ac = 0.53). Because the most current survey of the project area did not record any sign of active tortoise in the area, it is assumed the project area falls on the low end of the density range (i.e. 10 tortoises per square mile).

Table 3.4. Estimated Tortoise Density Ranges for Nevada

Number of Corrected Sign per Triangular-Strip Transect	Corrected Sign/Acre*	Density Estimates	
		Nevada Range (Number per Square Mile)	Relative Density
0	0	0-10	Very Low
1-3	0.1-0.5	10-45	Low
4-7	0.6-1.1	45-90	Moderate
8-11	1.3-1.8	90-140	High
12+	1.9+	140+	Very High

* Based on approximation of 6 acres surveyed during a typical triangular survey.

Source: From information developed by Las Vegas District of BLM (based on work by Karl 1980). Density ranges were developed because it was believed estimated ranges for California overestimated actual tortoise population densities in Nevada.

3.6.2 Sensitive Species

Of the various sensitive species that occur within Clark County, Nevada, there are seven that have potential to occur in the project area (Table 3.5). These include BLM Special Status Species and State of Nevada Protected Species, both of which are on a sensitive species list maintained by the Nevada Natural Heritage Program (NNHP).

The NNHP identified one plant and two reptiles as having potential to occur in the project area. In addition, four sensitive avian species not identified by the NNHP were observed and documented while performing desert tortoise surveys.

Status of Sensitive Species in the Project Area and ZOI

Records from NNHP list three occurrences of rosy two-tone beardtongue (*Penstemon bicolor* spp. *roseus*), all located to the west of the project area. These surveys were performed in 1961 (1 record) and 1992 (2 records). Two occurrences were closer than 1.25 miles to the project area, and the third was approximately 1.25 miles away. Although it is impossible to distinguish this species from other *Penstemon* species without flowers, the surveys performed by SWCA between November 1, 2005 and November 15, 2005 did not detect any species of the genus *Penstemon* in the project area. Therefore, it can be assumed that no rosy two-tone beardtongues are present in the project area. It should be noted however, that potentially suitable habitat for this species may be found along ephemeral washes within the survey area.

Table 3.5. Sensitive Species Observed or with Potential to Occur in the Project Area

Common Name / Scientific Name	Regulatory Status	Habitat and Distribution	Individuals Observed in Project Area
Banded Gila monster (*Heloderma suspectum cinctum*)	BLM: N State: FP	Occurs in desert scrub habitats in southernmost Nevada. Usually found in the rockier, wetter areas at middle elevations in desert scrub.	No
Chuckwalla (*Sauromalus obesus*)	BLM: N State: None	Found in rocky hillsides and rock outcrops within the desert scrub community.	No
Rosy two-tone beardtongue (*Penstemon bicolor* spp. *roseus*)	BLM: N State: None	Occurs in gravelly or rocky soils within the creosote or blackbrush scrub.	No
Loggerhead shrike *(Lanius ludovicianus)*	BLM: N State: FP	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground and low or sparse herbaceous cover.	Yes
Crissal thrasher *(Toxostoma crissale)*	BLM: N State: FP	Fairly common, but elusive, in dense cover along desert washes.	Yes
Prairie falcon (*Falco mexicanus*)	BLM: N State: FP	Found in wide-open areas of the west. Fairly common over desert, grassland, and mixed shrub communities. Commonly nests on cliff ledges.	Yes
Golden eagle *(Aquila chrysaetos)*	BLM: N State: FP	Commonly seen over rolling foothills, mountain terrain, wide arid plateaus, open mountain slopes and cliff and rock outcrops.	Yes

Source: NNHP 2005.

BLM

S= Nevada Special Status Species - FWS listed, proposed or candidate for listing, or protected by Nevada state law

N= Nevada Special Status Species - designated Sensitive by State Office

STATE

FP=Listed as Fully Protected in the State of Nevada

None=No listing

Biological surveys of the project area, performed by SWCA between November 1, 2005 and November 15, 2005, did not detect either of the sensitive wildlife species identified by NNHP. Suitable habitat for the Gila monster (*Heloderma suspectum cinctum*) and common chuckwalla (*Sauromalus ater*) does not occur within the project area. Indeed, there are only three recorded sightings of Gila monsters in Clark County, and little is known about the population. These occurrences have all been more than 3.1 miles from the project area (RECON 2000). The common chuckwalla is widely distributed in Nevada, and there are many occurrences of this species southeast of the project area; however all of these occurrences are greater than 3.1 miles away. In Clark County, populations have declined due to the development in the Las Vegas Valley and from the filling of Lake Mead. The chuckwalla primarily inhabits the rocky terrain in the hills and mountain ranges surrounding the valley (RECON 2000).

The golden eagle (*Aquila chrysaetos*) has been placed on the Clark County Multiple Species Habitat Conservation Plan (MSHCP) Watch List (RECON 2000). It is considered scarce in Nevada, but it is most common over open country of the western U.S. (Kaufman 2000). The prairie falcon (*Falco mexicanus*) is also considered scarce in Nevada, but again is most common over open country of the western U.S. (Kaufman 2000). Within the project area, it does not appear that there is any suitable nesting habitat for the golden eagle or prairie falcon, which typically nest on large cliffs. However, there is hunting habitat and prey species available for both of these raptors. The loggerhead shrike (*Lanius ludovicianus*) is an MSHCP Low Priority Evaluation Species (RECON 2000), and is fairly common in the western U.S. The Crissal thrasher (*Toxostoma crissale*) is also an MSHCP Low Priority Evaluation Species (RECON 2000) and is scarce throughout southern Nevada (Kaufman 2000).

3.6.3 Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703 *et seq.*) and Executive Order 13186. While performing sensitive species surveys in November 2005, eleven (11) migratory bird species were observed, including the common raven (*Corvus corax*), Brewer's sparrow (*Spizella breweri*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), sharp-shinned hawk (*Accipiter striatus*), Crissal thrasher (*Toxostoma crissale*), sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), loggerhead shrike (*Lanius ludovicianus*), and red-tailed hawk (*Buteo jamaicensis*) (SWCA 2005).

Nesting habitat can be found throughout the project area for all of these species, except the golden eagle and prairie falcon. While these two species may only use this area as hunting habitat, all of the other species listed above could use this habitat for both nesting and hunting/foraging. The black-throated sparrow, brewer’s sparrow, Crissal thrasher, white-crowned sparrow, and loggerhead shrike are commonly found nesting in creosote and blackbrush communities and are regularly seen in southern Nevada. Within the project area there are also many Joshua trees that could support nesting habitat for both ravens and red-tailed hawks.

3.7 VEGETATION

According to SWReGAP analysis (EPA 2005), there are four vegetation communities present in the project area: (1) Mojave Mid-Elevation Mixed Desert Scrub (blackbrush community), (2) Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (creosote bush community), (3) Inter-Mountain Basins Semi-Desert Shrub Steppe (mixed desert shrub community), and (4) Sonora-Mojave Mixed Salt Desert Scrub (saltbush community).

Using the SWReGAP analysis, the percentage of each vegetation community in the general project area was estimated. Approximately 63% is blackbrush community, 36% is creosote bush community, 2% is mixed desert shrub community, and 0.3% is saltbush community. It is important to note however, the SWReGAP analysis provides small-scale (1:100,000) mapping data, which does not differentiate between vegetation communities and dirt roads. Due to this limitation and the fact that the general project area incorporates roughly 14 miles of existing dirt roads, these vegetation community percentages are undoubtedly overestimated. The percentage of each vegetation community within each of the six well sites and three access routes was also estimated and is shown in Table 3.6.

Table 3.6. Acres of Vegetation by Site

Site	Communities	Acres
PVE-A	blackbrush	1.00
	creosote bush	0.00
PVE-C	blackbrush	0.98
	creosote bush	0.02
PVE-DE	blackbrush	0.95
	creosote bush	0.05
PVE-G	blackbrush	1.00
	creosote bush	0.00
PVE-HI	blackbrush	1.00
	creosote bush	0.00
PVE-K	blackbrush	0.66
	creosote bush	0.34
Access Route to PVE-A	blackbrush	0.07
	creosote bush	0.00
Access Route to PVE-C	blackbrush	0.03
	creosote bush	0.04
Access Route to PVE-DE	blackbrush	0.01
	creosote bush	0.04
Total	blackbrush	5.70
	creosote bush	0.49
Total		**6.19**[1]

[1] Differences in area between this table and area of potential disturbance in text is due to SWReGAP data limitations and differences in GIS rounding calculations.

Additionally, SWReGAP analysis identified the blackbrush plant community as dominant in the area; however, field biologists for this project observed the blackbrush community to be overestimated and the creosote community underestimated. (Note: No formal vegetation survey methods were used for this determination.)

3.7.1 Vegetation Communities

3.7.1.1 Blackbrush Community

The blackbrush community is usually found between 4,000 and 6,600 feet (1,220 and 2,000 m) in elevation in shallow soils restricted by bedrock or a caliche horizon. Typically, blackbrush forms monotypic stands and gives the landscape a dark blackish-gray cast. Blackbrush (*Coleogyne ramosissima*) is the dominant species within this community. Associated species include Mormon tea (*Ephedra viridis*), threadleaf snakeweed (*Gutierrezia microcephala*), and banana yucca (*Yucca baccata*). The blackbrush community is the most common vegetation community in the project area.

3.7.1.2 Creosote Bush Community

The creosote bush community is typically dominated by creosote bush (*Larrea tridentata*), with white bursage (*Ambrosia dumosa*) as a co-dominant species. This community is usually found on alluvial slopes, mountain slopes, and valley floors below 4,000 feet (1,219 m) in elevation in the Mojave Desert region. Plant species found in association with the creosote bush community include creosote bush, threadleaf snakeweed, Mexican bladdersage (*Salizaria mexicana*), spiny menodora (*Menodora spinescens*), turpentine broom (*Thamnosma montana*), Nevada joint-fir (*Ephedra nevadensis*), Mormon tea, banana yucca, and Joshua tree (*Yucca brevifolia*). The creosote bush community is the second most common vegetation type in the project area.

3.7.1.3 Mixed Desert Shrub Community

Mixed desert shrub communities appear as dense thickets of multiple shrub species. Geomorphic features often associated with the mixed desert shrub community include large boulders and rock outcrops with varying levels of exposure. Vegetation found within this community is highly variable and lacks a true dominant species. Associated plant species include blackbrush, creosote, threadleaf snakeweed, Mexican bladdersage, spiny menodora, turpentine broom, Nevada joint-fir, Mormon tea, indigo bush (*Psorothamnus fremontii*), banana yucca, and Joshua tree. The mixed desert shrub community is found scattered throughout the proposed project area.

3.7.1.4 Saltbush Community

Saltbush communities appear as sparse to densely vegetated shrublands. Typically this community is dominated by various saltbush (*Atriplex* spp.) species, and is often found in low-lying areas such as valley floors, or in rings around small playas. Associated plant species include bud-sage (*Artemisia spinescens*), winterfat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and smooth horsebrush (*Tetradymia glabrata*). The saltbush community occupies a very small portion of the project area.

3.7.2 Cacti and Yucca

Cacti and yucca are protected under Nevada Revised Statute NRS 527.050-527.110, and salvaging cacti and yucca from projects that disturb public land has become standard policy in the BLM, Las Vegas Field Office. The State of Nevada Division of Forestry (NDF) regulates salvaging desert vegetation under Nevada Revised Statute NRS 527.050–527.110, and the BLM coordinates all plant salvages on public lands with the State of Nevada.

In October 2005, SWCA completed cactus, yucca, and sensitive plant surveys of the project area and surrounding buffer areas. Several cacti and yucca species occur in the project area, though density and distribution varies greatly. Most of the proposed well site areas are dominated by Mojave yucca and Joshua tree yucca, followed by cholla and beaver tail cactus. Barrel cacti and pencil cholla are present on the southwest portions of the project area on either side of (within 60 foot buffer areas) dirt and powerline roads and within proposed well sites PVE-G, PVE-K, and PVE-HI. The highest density of Joshua tree and Mojave yucca are found on either side of (within 60 foot buffer areas) dirt roads and within well sites in the south and west portions of the project area. Pencil chollas are restricted to the southern and eastern portions of the project area.

To accurately depict this variability (change in distribution across the landscape), the numbers of cacti and yucca found during surveys -- of the six wells sites, three access routes, and a 60 foot buffer area on either side of existing dirt roads -- have been organized by locations in which they were found (Table 3.7). Note: No cacti or yucca were found within existing dirt roads.

3.7.3 Invasive Plant Species

The presence of invasive, non-native plants in any ecosystem is a concern because they often spread uncontrollably, creating problems for wildlife, land managers, and recreationists. Non-native plants can reduce water levels, alter runoff patterns, and increase soil erosion, thus diminishing wildlife habitat. Some nitrogen-fixing non-native species increase soil fertility, allowing other non-natives to out-compete native plants (Belnap et al. 2001). The growth and spread of invasive, non-native species can also alter an ecosystem by changing fire patterns and intensities (Brooks and Matchett 2003). Lastly, non-native plants can spread easily during and immediately following ground disturbance activities (Mack 1981).

The most abundant invasive plant in the project area is red brome (*Bromus rubens*), a grass which is especially prevalent along SR-164 (Nipton Highway), but was also found beneath many shrubs in the project area. Additional invasive plant species observed in the area include bristly fiddleneck (*Amsinckia tessellata*), Arabian schismus (*Schismus arabicus*), Russian thistle (*Salsola tragus*), and tall tumblemustard (*Sisymbrium altissimum*).

Table 3.7. Cacti and Yucca Species in the Project Area

Location (Site + ZOI)	Barrel cactus	Cotton-top cactus	Engel-mann hedgehog cactus	Mojave pineapple cactus	Fishhook cactus	Beaver tail cactus	Old-man cactus	Brown spine cactus	Joshua tree	Mojave Yucca	Buckhorn cholla	Devil cholla	Pencil cholla	TOTAL
PVE-A	0	0	0	0	0	5	0	0	8	20	1	0	0	**34**
PVE-C	0	3	0	0	0	3	0	0	8	53	1	0	0	**68**
PVE-DE	0	2	0	0	0	2	0	0	3	91	2	1	0	**101**
PVE-G	5	0	4	0	0	6	0	0	5	72	4	0	0	**96**
PVE-HI	19	0	0	0	0	1	0	0	19	100	14	0	0	**153**
PVE-K	0	0	0	0	0	2	0	0	8	100	3	2	28	**143**
SUBTOTAL	**24**	**5**	**4**	**0**	**0**	**19**	**0**	**0**	**51**	**436**	**25**	**3**	**28**	**595**
Walking Box Rd.*****	0	0	3	0	1	11	1	0	81	121	25	2	0	**245**
Dirt road east *****	2	2	6	0	0	37	1	0	134	423	21	4	48	**678**
Dirt road north *****	20	4	15	0	0	93	3	1	343	1,933	184	6	113	**2,715**
Dirt road south *****	133	0	48	0	0	84	73	19	726	2,831	766	8	73	**4,761**
PVE-A road *****	0	7	2	0	0	27	1	0	93	267	5	0	0	**402**
PVE-C road *****	0	0	0	0	0	10	0	0	98	669	4	4	0	**785**
Powerline Road *****	7	9	3	0	0	254	0	0	484	1,760	145	10	18	**2,690**
SUBTOTAL	**162**	**22**	**77**	**0**	**1**	**516**	**79**	**20**	**1,959**	**8,004**	**1,150**	**34**	**252**	**12,276**
TOTAL	**186**	**27**	**81**	**0**	**1**	**535**	**79**	**20**	**2,010**	**8,440**	**1,175**	**37**	**280**	**12,871**

Source: SWCA 2005.

*** These plants were found within a 60 foot survey buffer on either side of the road, *not* within the road itself.**

3.8 VISUAL RESOURCES

3.8.1 Visual Resource Management

The BLM uses a Visual Resource Management (VRM) system to inventory and manage visual resources on public lands. The primary objective of VRM is to maintain the existing visual quality of BLM-administered public lands and to protect unique and fragile visual resources. The VRM system uses four classes to describe different degrees of modification allowed to the landscape. VRM classes are visual ratings that describe an area in terms of visual quality, viewer sensitivity to the landscape, and the distance in which a viewer would observe an area. Once an area has been assigned a VRM class, that class can be used to analyze and determine visual impacts of proposed activities and to gauge the amount of disturbance an area can tolerate before it exceeds the visual objectives of its VRM class (BLM 1980).

The Las Vegas Field Office's Resource Management Plan (RMP) (BLM 1998) has designated lands in the project area as VRM Class III. In these areas, authorized actions may alter the existing landscape, but not to the extent they attract or focus attention of the casual viewer. This designation was based on the area's visual sensitivity and is a result of a combination of factors, including the degree of visitor interest in and public concern for the area's visual resources, the area's public visibility, the level of use by the public, and the type of visitor use the area receives (BLM 1992).

3.8.2 Visual Character

The dominant landscape characteristic within and surrounding the proposed project area's flat to gently rolling topography is the diversity of vegetation typical of the Mojave Desert environment. Large Joshua trees and other yucca species are interspersed with numerous species of cacti, creosote bush, and other shrubs and grasses that are highly scenic and contribute to the scenic quality of the area. Distant, long, rugged, dry ranges that are oriented north-south and lie to the east and west of the project area provide stark contrasts to the variegated green vegetation within Piute Valley. Naturally exposed buff and tan-colored soils also add scenic contrasts and scenic quality to the area. The area appears to be pristine and undeveloped, with the exception of the Walking Box Ranch on the western boundary of the proposed project area.

3.8.3 Key Observation Points and Contrast Rating

The method BLM uses to determine whether proposed projects conform to VRM class objectives is a contrast rating system that evaluates effects of proposed projects on visual resources. Contrast rating is done from critical viewpoints, known as Key Observation Points (KOPs), which are usually along commonly traveled routes, such as highways, access roads, or hiking trails. A KOP can either be a single point of view that an observer/evaluator uses to rate an area or panorama, or a linear view along a roadway, trail, or river corridor. Factors considered in selecting KOPs for the proposed project were:

- Angle of observation or slope of the proposed project area

- Number of viewers of the project area
- Length of time that the project would be in view
- Relative size of the project
- Season of use
- Light conditions

The primary public views of the proposed project would be from the one major travel route (Nipton Highway) within the vicinity of the project area. The two KOPs were selected to represent effects of the project as seen from public areas that permit a high degree of visibility to the project area. The evaluator visited each KOP and rated the degree of visual contrasts based on form, line, color, and texture changes between the existing landscapes and how the landscapes would look after project surface disturbances. The contrast ratings, recorded on a BLM Contrast Rating Form (Appendix A), were then used to determine whether or not the level of disturbance associated with the Proposed Action would exceed the VRM objectives for the area (BLM 1986). Two KOPs were selected to determine the potential impacts of the proposed project on visual resources within Piute Valley.

3.8.3.1 KOP 1 – Nipton Highway at Well Site PVE-A

KOP 1 is located along the Nipton Highway road shoulder at the PVE-A location stake, which marks the proposed intersection of the well site ROW access road with the highway. The KOP point of view is to the east and south: east toward the town of Searchlight and south into the Piute-Eldorado Valley ACEC. This view was chosen because it is similar to the view that vehicle passengers might see of the project area from vehicles approaching Searchlight along Nipton Highway. Foreground views are of the relatively flat, sparsely vegetated, and gravelly road shoulder bordered by low growing desert vegetation. Tan to buff-colored desert soil is visible, and provides color and texture contrasts with the green colors and spikey stems and thorns of yucca and cactus. Occasional Joshua trees and larger cacti rise above the surrounding vegetation and provide form and color contrasts. Middleground views are similar to the foreground views: flat or gently rolling topography of uniformly spaced, low-growing desert vegetation interspersed with thorny cacti and Joshua trees that break up the uniformity of desert vegetation. Background views are of the indistinct, distant, dark-colored mountain ranges to the south and east. No structures are visible from this point of view.

3.8.3.2 KOP 2 – Nipton Highway at Well Site PVE-C

KOP 2 is located along the Nipton Highway road shoulder at the PVE-C location stake, which marks the proposed intersection of the well site ROW access road with the highway. The KOP point of view is to the west and south: west into Piute Valley and south into the ACEC and proposed project area. This view was chosen because it is similar to the view that vehicle passengers might see of the project area from a vehicle along Nipton Highway as it crosses Piute Valley, heading west. In the foreground, the Nipton Highway road shoulder defines the boundary of desert vegetation. Similar to KOP 1, the topography is flat to gently undulating. Low-growing desert vegetation and buff to tan-colored soil are visible, interspersed with tall cacti and Joshua trees that provide form, texture, and color contrasts with the surrounding landscape. Middleground views are similar to foreground views, with color, texture, and form contrasts

becoming more indistinct with increased distance. The Walking Box Ranch structures are partially visible in the middleground, creating form, color, and linear contrasts with the natural landscape. Background views are of rugged, rocky mountain ranges that are in distinct form and color contrast with the middle and foreground views.

3.9 WATER RESOURCES

The project area is located in the Piute Sub-basin of the Lower Colorado Hydrographic Basin. The area receives an average annual precipitation of approximately 6 inches (15 cm) per year, as rainfall during July and August, and November through February. Daytime temperatures average in the mid-90° F range during the summer and mid-40° F range during winter months, with temperature drops below freezing an average of 12 days per year (TNC and FWS 2002, NRCS 2005).

Intense, localized, convection summer storms of short duration produce surface water runoff in the form of sheet flow that is then channelized into an extensive network of ephemeral washes (TNC and FWS 2002). These unnamed washes drain into the Piute Wash approximately 17 miles southeast of the project area. The Piute Wash drains into the Colorado River approximately 5 miles north of Needles, California. Most surface water runoff from the project area evaporates or rapidly percolates into the alluvial sediments prior to reaching the Piute Wash.

The Piute Valley Groundwater Basin underlies the project area. This groundwater basin is primarily recharged from percolation of runoff from snowmelt in the surrounding mountains. Water reaches the groundwater basin via streams, which eventually discharge into alluvial aprons or percolate directly into the aquifer. The most developed and utilized water-bearing stratum is valley fill alluvium (BLM 1998).

The valley fill alluvium extends to a depth of at least 1,044 feet (318 m) in the central portion of the basin and is estimated to yield a maximum of 1,500 gallons per minute (gpm). Natural recharge is estimated to occur at a rate of 1,200 afy (CDWR 2003). The estimated rate of sustainable groundwater production for consumptive use is 600 afy and the current consumptive use for the entire Piute Valley Groundwater Basin is 388 afy (LVVWD 2006a).

3.10 WILDLIFE

The proposed project area occurs in typical desert upland habitat that supports various small mammals, reptiles, invertebrates, and birds. Mojave Desert vegetation occurs throughout the project area, and supports a wide variety of animals; however, few wildlife species were directly observed during field surveys (SWCA 2005). Observations of indirect evidence of reptiles, birds, and small mammals, including burrows and tracks, were relatively common. Species and/or their sign observed in the project area include:

Mammals

- Black-tailed jackrabbit (*Lepus californicus*)
- Kangaroo rat (*Dipodomys* spp.)

- Desert cottontail (*Sylvilagus audonboni*)
- White-tailed antelope ground squirrel (*Amnospermophilus leucurus*)

Reptiles

- Desert tortoise (Gopherus agassizii)
- Mojave-green rattlesnake (Crotalus scutulatus)
- Side-blotched lizard (Uta stansburiana)

Invertebrates

- Desert tarantula (*Aphonopelma chalcodes*)

Birds

- Golden eagle (Aquila chrysaetos)
- Prairie falcon (Falco mexicanus)
- Sharp-shinned hawk (Accipiter striatus)
- Red-tailed hawk (Buteo jamaicensis)
- Crissal thrasher (Toxostoma crissale)
- Common raven (Corvus corax)
- Brewer's sparrow (Spizella breweri)
- Sage sparrow (Amphispiza belli)
- Black-throated sparrow (Amphispiza bilineata)
- White-crowned sparrow (Zonotrichia leucophrys)
- Loggerhead shrike (Lanius ludovicianus)
- Gambel's quail (Callipepla gambelii)

Four raptor species were noted during field surveys: the golden eagle, prairie falcon, sharp-shinned hawk, and red-tailed hawk (SWCA 2005). The presence of raptors could be attributed to a high concentration of rodents, hares, and rabbits. For further discussion of raptors, see Section 3.6.2, Sensitive Species.

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CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

4.1 AIR QUALITY

4.1.1 Proposed Action

The Proposed Action would generate temporary engine exhaust emissions from construction vehicles and the drill rig, and PM_{10} and $PM_{2.5}$ dust particles (fugitive dust) from site surface disturbance and vehicles traveling along existing dirt roads. Generation of these emissions and fugitive dust would have an impact on air quality; however, these impacts would be reduced because, (1) drilling activities would be short-term in duration, (2) these emissions would cease at the end of construction, (3) the number of construction vehicles and drill rigs producing air pollutants is small, (4) existing air quality within the proposed project area is generally good, and (5) fugitive dust generation would be reduced through design features listed in Section 2.1, Proposed Action. These measures include pertinent actions such as maintaining a maximum speed limit of 25 miles per hour while traveling on unpaved access roads. In addition, a dust permit from the Clark County Department of Air Quality Management (CCDAQM) would be obtained prior to construction, and requisite dust control measures and BMPs would be implemented during the proposed project, including applying water during grading for catch basins.

4.1.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled. Air quality conditions would continue under current conditions and be subject to current regional trends. Existing impacts to air quality from vehicles traveling along Nipton Highway and occasional vehicles traveling along existing dirt roads in the project area would continue.

4.2 CULTURAL

4.2.1 Proposed Action

There are no NRHP-eligible cultural resources located within the project area. Therefore, the Proposed Action would have no impact on cultural resources, as long as all activity is confined to the area inventoried for cultural resources.

4.2.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled. There would be no impact to cultural resources. Cultural resources within the project area would continue to be subject to existing conditions.

4.3 GEOLOGY AND SOILS

4.3.1 Proposed Action

The Proposed Action will have no impact to geological resources in the project area because it would not alter existing topography or landforms.

The Proposed Action is likely to cause the following impacts to soils in the project area: (1) soil loss due to wind erosion caused by vehicles traveling in the project area, (2) soil loss from water erosion resulting from well testing discharges to catch basins, (3) soil compaction caused by maneuvering of vehicles and the drill rig, (4) soil contamination from incidental fluid leaks from construction equipment, and (5) soil disturbance from construction of catch basins.

These impacts would be reduced because, (1) the area of proposed surface disturbance is small (<6.2 acres), (2) potential soil loss and loss of soil productivity would occur within soil types very common in the project area, and (3) surface disturbance would be reduced through design features listed in Section 2.1, Proposed Action.

4.3.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and there would be no impact to geology or soils. Geologic and soil characteristics of the area would continue to be subject to existing conditions and trends.

4.4 NOISE

4.4.1 Proposed Action

The Proposed Action would temporarily generate noise from operation of construction equipment (e.g., drill rig, backhoe) and vehicles. Currently, there are no human sensitive noise receptors in the project area that would be impacted by noise as a result of the Proposed Action with the exception of project workers. Impacts to project workers would be reduced through minimization measures including, (1) the use of mufflers on all engines where applicable, (2) maintenance of all engines per manufacturer's recommended specifications, and (3) the use of protective equipment for workers including safety ear plugs and/or headphones.

The EPA has recommended sound levels it considers necessary to protect public health (see Table 3.4), and has established 70 dB as the recommended maximum noise level for general unpopulated areas, such as the project area. Table 4.1 shows noise levels typical of construction equipment, some of which may be used for the Proposed Action. It is anticipated that within 50 feet of any well site, short-term noise levels from general drilling activities would be above the EPA-recommended noise level of 70 dB. However, the only sensitive noise receptors that would be within 50 feet of any well site will be project workers, and measures to reduce the impacts of project noise (described above) would be implemented.

Table 4.1. Typical Construction Equipment Noise[1]

Equipment	Noise Level (dB)		
	50 feet	500 feet	1000 feet
Bulldozer	89	69	63
Crane	88	68	62
Dump Truck	88	68	62
Tractor	80	60	54
Backhoe	85	65	59

Source: BLM 1999.

[1] Differences in dB are calculated from the formula: Decibels of Change=20xlog (distance 1/distance 2) (MC^2 2006).

Passengers traveling in vehicles along Nipton Highway may have the potential to be temporarily impacted by noise from drilling activities at well sites PVE-A and PVE-C; however, exposure would be only momentary as the vehicle passes the site. In addition, such vehicle passengers would be more than 50 feet away from any well site (the highway is 187 feet away), and would be temporarily exposed to decibel levels far below the EPA-recommended level for this area.

4.4.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and ambient noise levels would remain the same as current conditions.

4.5 SOCIOECONOMICS

4.5.1 Proposed Action

Construction of exploratory wells and the collection of information would have no impact on socioeconomics. No existing residences, businesses, or populations would be displaced or otherwise affected. There may be temporary economic benefit for the town of Searchlight if drilling personnel utilize hotels or other community services; however, because of the small size of the drilling operation (approximately four people per crew) this benefit would be inconsequential.

Development of water supply infrastructure to the town of Searchlight, and associated potential socioeconomic impacts is not part of the Proposed Action. Any future water supply infrastructure would require federal rights-of-way and be subject to future environmental compliance, including analysis of potential socioeconomic impacts.

4.5.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and information on groundwater quality and quantity would not be collected. Existing socioeconomic conditions would continue to be subject to existing conditions and trends, and the town of

Searchlight would have to conduct water supply planning without additional information on groundwater quality and quantity in Piute Valley

4.6 SPECIAL STATUS SPECIES

4.6.1 Proposed Action

4.6.1.1 Federally-Listed Species

The Proposed Action has the potential to impact the desert tortoise and less than 6.2 acres of its habitat. As described in Section 2.1, Proposed Action, only 6% (0.37 acres) of the 6.2 acres of proposed new surface disturbance would be graded for small catch basins at each well site. The remaining 94% (5.83 acres) would remain in place with vehicles driving overland, crushing vegetation, and allowing desert tortoise habitat to remain in place.

Potential impacts to desert tortoises may include, (1) harassment from human presence, (2) temporary disturbance from noise and vibration resulting from drilling activities, (3) loss of cover due to crushing or removal of vegetation, (4) increased predators such as common ravens and coyotes that may be attracted to the area by litter often associated with construction sites, (5) direct mortality or injury from crushing by construction equipment or vehicle accidents, and (6) difficulty digging burrows following construction if soil alteration or compaction from heavy equipment occurs.

These impacts would be reduced because, (1) drilling activities would be short-term in duration, (2) field survey data and a linear regression model showed tortoise population density in the project area is low, (3) survey results showed tortoise activity in the project area and ZOI to be limited, thus, the likelihood of a tortoise moving into the area during project activities is low, and (4) impacts would be reduced through design features listed in Section 2.1, Proposed Action.

The greatest potential for "take" of desert tortoises resulting from the Proposed Action is from driving vehicles and heavy equipment on existing dirt roads where there is potential to encounter a tortoise crossing the road, and thus a vehicle-wildlife related accident. This particular risk would be reduced by the measures listed in Section 2.1, Proposed Action, including, (1) maintaining a maximum speed limit of 25 miles per hour while traveling on unpaved access roads, and (2) having a qualified tortoise biologist on site during all phases of construction during the tortoise active period.

4.6.1.2 Sensitive Species

As described in Section 3.6, Special Status Species, the NNHP identified one plant and two reptiles as having potential to occur in the project area: the rosy two-tone beardtongue, banded Gila monster, and common chuckwalla. In addition, four sensitive avian species were observed during field surveys: the golden eagle, prairie falcon, loggerhead shrike, and Crissal thrasher.

No impact to the rosy two-tone beardtongue (*Penstemon bicolor* spp. *roseus*) is expected to occur from the Proposed Action. The rosy two-tone beardtongue was identified by NNHP as

rosy being present within one mile of the project area, and although suitable habitat is present throughout the project area, no *Penstemon* species were observed during field surveys.

No impact to the banded Gila monster (*Heloderma suspectum cinctum*) is expected to occur from the Proposed Action. The banded Gila monster was identified by NNHP as having potential habitat in the area, although none were observed during field surveys and habitat appeared marginal. Nevertheless, pre-construction clearance surveys conducted for the desert tortoise would identify any banded Gila monster on site.

No impact to the common chuckwalla (*Sauromalus ater*) is expected to occur from the Proposed Action. The common chuckwalla was identified by NNHP as having potential habitat in the area, although none were observed during field surveys and rocky habitat required for chuckwalla survival is absent from the project area.

No impact to the golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*) is expected to occur from the Proposed Action. One juvenile golden eagle (on three separate occasions) and one prairie falcon were observed in the project area during field visits. However, cliff habitat required for nesting and breeding is not present, thus no nesting or breeding activities would be disturbed by the Proposed Action.

No impact to the loggerhead shrike (*Lanius ludovicianus*) and the Crissal thrasher (*Toxostoma crissale*) is expected to occur from the Proposed Action. Loggerhead shrikes were observed daily in the project area during field visits, one Crissal thrasher was observed, and nesting habitat for these birds exists in the project area. However, birds are able to quickly relocate to other suitable habitat, which is abundant in the area surrounding the project area, and drilling activities would be short-term in duration. In addition, if nesting individuals are noted on site, they would be handled in accordance with measures for migratory birds listed in Section 2.1, Proposed Action.

4.6.1.3 Migratory Birds

No impacts to migratory birds from noise are anticipated. Birds are able to quickly relocate to other suitable habitat, which is abundant in the area surrounding the project area, and drilling activities would be short-term in duration. In addition, the Section 2.1, Proposed Action, includes design features that would reduce impacts to migratory birds.

4.6.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and there would be no impact to the federally-listed, sensitive, and migratory bird species discussed above. Instead they would continue to be subject to current local conditions and regional trends.

4.7 VEGETATION

4.7.1 Proposed Action

4.7.1.1 General Vegetation

The Proposed Action has the potential to impact up to 6.2 acres of vegetation. As described in Section 2.1, Proposed Action, only 6% (0.37 acres) of the 6.2 acres of proposed new surface disturbance would be graded for small catch basins at each well site. The remaining 94% (5.83 acres) would remain in place with vehicles driving overland, crushing vegetation, and allowing the seed bank to remain in place.

As discussed in Section 3.7, Vegetation, there are four vegetation communities present in the project area, and within the 6.2 acres: (1) blackbrush, (2) creosote bush, (3) mixed desert shrub, and (4) saltbush. All four vegetation types are considered common in the area, and impacts would be reduced by measures listed in Section 2.1, Proposed Action; including removing, stockpiling, and replacing the top 3-6 inches of topsoil on areas where excavation is required for catch basins; and salvaging and replanting cactus and yucca that would be impacted by construction activities.

4.7.1.2 Cacti and Yucca

The Proposed Action would result in the salvaging, storage, and replanting of cacti and yucca within exploratory well sites. Not all cacti/yucca identified at each well site (see Table 3.10) would be impacted by drilling activities and need salvaging, as the actual area to be disturbed would be as small as possible while allowing sufficient maneuvering for the drill rig, backhoes, and other equipment. The drill rig and associated equipment will be carefully sited so as to impact as few cacti/yucca as possible.

4.7.1.3. Invasive Plant Species

There is potential for the Proposed Action to contribute to the introduction and establishment and/or spread of invasive plant species in the project area, by way of surface disturbing activities, and by seeds brought in and dispersed by heavy equipment and project vehicles. However, potential impacts would be reduced by design features listed in Section 2.1, Proposed Action, including the washing and steam-cleaning of all construction equipment, vehicles, and implements prior to entering and re-entering the project area.

4.7.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and current trends and conditions of vegetation communities, cacti and yucca, and invasive plant species would continue.

4.8 VISUAL RESOURCES

As described in Section 3.8, Visual Resources, BLM uses the VRM system to manage visual resources on public lands, analyze and determine visual impacts of proposed activities, and gauge the amount of disturbance an area can tolerate before it exceeds the visual objectives of its VRM class.

Generally, impacts to visual resources are considered important if impacts of the Proposed Action exceed VRM objectives. VRM objectives for the project area, which is classified as VRM Class III, are, "to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape."

4.8.1 Proposed Action

The Proposed Action has the potential to impact visual quality and visual resources in the project area. Drilling equipment, vehicles, and associated project activities including ground disturbance would be temporarily visible during drilling activities. Following completion, a small well approximately two feet high with an 8-12 inch diameter steel casing would be visible.

As described in Section 3.8, Visual Resources, two KOPs were selected to represent effects of the project as seen from public areas that permit a high degree of visibility to the project area. These two points exist along the one major travel route (Nipton Highway) near the project area.

4.8.1.1 KOP 1 – Nipton Highway at Well Site PVE-A

Under the Proposed Action, Well PVE-A would be drilled about 187 feet south of Nipton Highway centerline. Visual analysis indicates there would be landform and vegetation contrasts with the natural landscape, created by line and color changes, and produced from crushing of vegetation by driving overland, and soil disturbances for construction of small (typically 50 x 50 feet) catch basin. There would also be structurally-related form and line contrasts, produced by a tall drill rig, construction vehicles, and support structures such as a trailer, portable restroom, and stacks of drilling pipe.

Impacts of the Proposed Action (both short-term and long-term) to visual resources at the PVE-A well site would be reduced because, (1) drilling activities would be short-term in duration, (2) the area of driving overland and crushing vegetation to access this well site would be small (<0.2 acres), (3) the area of new soil disturbance for construction of a catch basin would be small (<0.06 acres), and (4) all disturbed areas will be restored upon project completion. Although impacts would be visible to observers from Nipton Highway, they would not exceed VRM Class III objectives, which allow a moderate degree of change to the natural landscape.

4.8.1.2 KOP 2 – Nipton Highway at Well Site PVE-C

Under the Proposed Action, Well PVE-C would be drilled about 187 feet south of Nipton Highway centerline, roughly one mile to the east of Well PVE-A. All project activities would be

the same as those for Well PVE-A. Thus, impacts of the Proposed Action to visual resources at the PVE-C well site would be the same as those described for Well PVE-A, above.

4.8.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and there would be no impact to visual resources.

4.9 WATER RESOURCES

4.9.1 Proposed Action

The Proposed Action includes the temporary pumping a portion of LVVWD's existing groundwater rights in Piute Valley for the purpose of collecting water quality and quantity data from exploratory wells. No measurable impact to aquifer production capacity or other existing water rights would occur, since the Proposed Action would produce less than 0.53 acre-feet total (<10gpm x 48 hours x 6 wells), which is roughly one tenth of one percent (0.13%) of the current consumptive use of 388 afy for the entire Piute Valley Groundwater Basin.

Temporary discharges (maximum of 48 hours) associated with the testing of the wells would result in discharges into adjacent ephemeral washes and dry channels. Discharge rates would be less than 10 gpm. While there may be a temporary cone of depression in the immediate area of the well during the pump test, due to the limited duration of pumping, no declines are expected to propagate to the closest well, which is Well S-2.

To reduce the potential for scouring or erosion, all water discharged from pump testing would be directed onto a shallow, plastic-covered area on the ground containing energy absorbing materials, and potential overflow would be directed into a natural channel where it will evaporate and rapidly percolate. The rate of potential overflow would be so small; no structural change to any surface water channel is expected.

After drilling all exploratory wells is complete, the exploratory wells would continue to be used for monitoring purposes. No water would be pumped from these monitoring wells; thus, there would be no impacts to water resources.

The Proposed Action does not include the actual development of groundwater production wells and conveyance facilities to Searchlight. Future water supply infrastructure for the town of Searchlight and associated potential water resource impacts would be considered under a separate BLM right-of-way application process and full environmental analysis.

4.9.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and there would be no impact to water resources. Water resources would be subject to current conditions and trends.

4.10 WILDLIFE

4.10.1 Proposed Action

The Proposed Action has the potential to impact up to 6.2 acres of wildlife habitat. As described in Section 2.1, Proposed Action, only 6% (0.37 acres) of the 6.2 acres of proposed new surface disturbance would be graded for small catch basins at each well site. The remaining 94% (5.83 acres) would remain in place with vehicles driving overland, crushing vegetation, and allowing wildlife habitat to remain in place.

Potential impacts to wildlife and wildlife habitat are similar to those for the desert tortoise, and may include, (1) harassment from human presence, (2) temporary disturbance from noise and vibration resulting from drilling activities, (3) loss of cover due to crushing or removal of vegetation, (4) temporary increased predators such as common ravens and coyotes that may be attracted to the area by litter often associated with construction sites, and (5) direct mortality or injury from crushing by construction equipment or vehicle accidents.

Impacts to wildlife would be reduced because, (1) the majority of the species inhabiting the area such as reptiles, birds, and small mammals, are mobile species and would likely move away from the area prior to being directly impacted, and (2) drilling activities would be short-term in duration. Potential impacts would also be reduced by the design features listed in Section 2.1, Proposed Action, including pre-construction surveys to flush species such as burrowing owls from the site, maintaining a maximum speed limit of 25 miles per hour while traveling on unpaved access roads, and having a qualified tortoise biologist on site.

Impacts to wildlife habitat would be reduced because, (1) the area of new surface disturbance is small (<6.2 acres), (2) drilling activities would be short-term in duration, and (3) the project would occur within vegetation communities very common throughout the Mojave Desert.

4.10.2 No Action Alternative

Under the No Action Alternative the groundwater exploratory wells would not be drilled, and there would be no impact to wildlife, which would remain subject to current conditions and environmentally related trends in and adjacent to the project area.

4.11 COMPARISON OF ALTERNATIVES

A comparison of impacts of the Proposed and No Action alternatives is shown in Table 4.2.

Table 4.2 Comparison of Alternatives Impacts

Resource	Proposed Action	No Action
Air Quality	Short-term impacts from fugitive dust and exhaust emissions. Design features would reduce fugitive dust impacts.	No change from current conditions.
Cultural	No impact.	No change from current conditions.
Geology and Soils	No impacts to geology. Short-term impacts to soils from vehicle/equipment disturbance to roads and well sites, and wind erosion. Design features would reduce impacts.	No change from current conditions.
Noise	Short-term impacts from construction noise on project workers. Minimization measures would reduce impacts.	No change from current conditions.
Socioeconomic	No impact.	The town of Searchlight would conduct water supply planning without information on groundwater quality and quantity.
Special Status Species	Potential impacts from harassment, drilling noise, loss of cover due to vegetation crushing/removal, and vehicle-wildlife related accidents. Design features would reduce impacts.	No change from current conditions.
Vegetation	Potential impacts from vehicle/equipment disturbance, and invasive weed infestation and spread. Design features would reduce impacts.	No change from current conditions.
Visual	Short-term impacts to visual quality; however, project activities would not exceed VRM class objectives.	No change from current conditions.
Water	No impact.	No change from current conditions.
Wildlife	Potential impacts from harassment, drilling noise, loss of cover due to vegetation crushing/removal, and vehicle-wildlife related accidents. Design features would reduce impacts.	No change from current conditions.

4.12 CUMULATIVE IMPACTS

NEPA and its implementing regulations require BLM to consider cumulative environmental impacts that may result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions [40 CFR §1508.7 and 1508.25(c)]. Past, present, and reasonably foreseeable future actions relative to the Proposed Action were identified and are listed in Table 4.3.

The following cumulative impact analysis is limited to past, present, and reasonably foreseeable future actions that involve impacts on a resource value that overlaps with the Proposed Action's impacts on that same resource value. Thus, not all actions identified in Table 4.3 are discussed for each resource.

Table 4.3 Actions Considered for Cumulative Impacts Analysis

Action	Description	Area of Impact	Resources Impacted	Status
Piute-Eldorado Critical Habitat Unit (PECHU) Designation	FWS formally designated more than 10,000 square miles of critical habitat for the desert tortoise on February 8, 1994 (USFWS 1994b).	10,000 square miles including the entire project area	Special Status Species	Past
Piute-Eldorado Area of Critical Environmental Concern (ACEC) Designation	BLM designated 329,577 acres of land as the ACEC in 1998, because the area provides a critical link between desert tortoise management areas.	329,577 acres including the entire project area	Special Status Species	Past
Walking Box Ranch Acquisition and Restoration	BLM acquired the 160-acre ranch for preservation/conservation of environmentally sensitive lands in August 2005. BLM executed an agreement with UNLV in December 2005 for management, protection, maintenance, and development of the property. UNLV has the option of constructing a Field Research and Training Center at their expense.	160-acre area with the Walking Box Ranch	Special Status Species Vegetation Wildlife	Past
Well S-2 and Pipeline Development	LVVWD developed the Well S-2 and a pipeline that stretched from the well to the town of Searchlight, in 1990. The well included a 200'x200' disturbance area and the pipeline included a 20' ROW that was 30,518 linear feet.	Eastern portion of the project area	Special Status Species Vegetation Wildlife	Past
Searchlight Water System Improvements	If sufficient quality and quantity of new groundwater is found, LVVWD would initiate planning and construction of groundwater production wells and water conveyance facilities for the town of Searchlight.	Project facilities have not yet been defined; however, they are anticipated to be within 1 mile and to the northwest of Searchlight, and within project area	Soils Special Status Species Vegetation Wildlife	Future
Waste Water Treatment Plant Improvements	The Clark County Water Reclamation District (CCWRD) plans to improve the existing wastewater treatment plant in Searchlight to accommodate projected growth.	Preliminary site is roughly 0.4 miles southeast of Searchlight on private lands	Visual	Future

4.11.1 Searchlight Water System Improvements Project

The Searchlight Water System Improvements Project, which may include new water resources and associated infrastructure for the town of Searchlight, is a conceptual project that has not yet been defined. Its definition currently relies on implementation of the Proposed Action, because only after hydrological information in Piute Valley is collected, can a determination be made as to whether future groundwater production wells in Piute Valley could supply Searchlight with additional water.

Because there is incomplete and unknown information regarding the potential Searchlight Water System Improvements Project, cumulative impacts cannot be analyzed at this time. If in the future the Searchlight Water System Improvements Project becomes a defined, proposed project, it would be subject to a separate BLM right-of-way application process and full environmental analysis.

4.11.2 Air Quality

The cumulative resource area for air quality is the Piute Valley Basin. The Proposed Action would generate temporary engine exhaust emissions from construction vehicles and the drill rig, and fugitive dust from site surface disturbance and vehicles traveling along existing dirt roads. However, because the Proposed Action would not occur at the same time as any actions identified in Table 4.3, there is no potential for cumulative impacts to air quality.

4.11.3 Cultural Resources

The cumulative resource area for cultural resources is the proposed project Area of Potential Effect (APE).There are no NRHP-eligible cultural resources located within the APE and the Proposed Action would thus have no impact to historic properties; however, improving vehicular access to the area by grading and filling existing roads may cause indirect cumulative impacts to cultural resources, as increased accessibility has the potential to increase threats from vandalism and accidental damage from vehicles.

4.11.4 Geology and Soils

The cumulative resource area for geology and soils is comprised of the six well sites and associated existing dirt road access routes. With regard to geology, there is no potential for cumulative impacts to geology, because the Proposed Action would have no impact to geological resources in the project area.

With regard to soils, the Searchlight Water System Improvements Project is the only other known action in the cumulative resource area that may impact soils. However, this project would not occur at the same time as the Proposed Action. Thus, short-term cumulative impacts to soils, such as wind erosion, water erosion, and soil disturbance, would not occur.

Longer-term potential cumulative impacts to soils such as on-site soil compaction caused by maneuvering of vehicles/equipment and incidental soil contamination from equipment fluid leaks could occur if the Searchlight Water System Improvements Project utilized the same six wells sites; however, since development of that project is dependent upon information obtained from the Proposed Action, it is not known at this time if it would affect any of the six well sites. Any potential soil compaction impacts would be minimized by restoration actions that would be taken in accordance with a future BLM right-of-way grant for that project.

4.11.5 Noise

To have a cumulative impact to sensitive noise receptors, the Proposed Action would need to occur in the same area and at the same time as the other cumulative actions identified in Table 4.3. The LVVWD S-2 Well and Pipeline Project, Searchlight Water System Improvements Project, and Walking Box Ranch Acquisition and Restoration Project are the only other known actions that may occur within 1,000 feet of the Proposed Action. However, none of these actions would occur at the same time as the Proposed Action; therefore, there is no potential for cumulative noise impacts.

4.11.6 Socioeconomics

There is no potential for cumulative impacts to socioeconomics, because the Proposed Action would have no impact to socioeconomics near the project area.

4.11.7 Visual Resources

The cumulative resource area for visual resources is comprised of the six well sites and the surrounding area from which they could be seen. The Proposed Action may temporarily impact visual quality in the project area as equipment and vehicles would be visible during drilling activities. To have a cumulative impact to visual resources, temporary project drilling activities associated with the Proposed Action would need to occur simultaneously with other actions identified in Table 4.3. However, none would occur simultaneously with the Proposed Action; therefore, there is no potential for short-term cumulative impacts to sensitive noise receptors.

The Proposed Action would not impact visual quality in the long-term, as only a small well approximately two feet high with an 8-12 inch diameter steel casing (not visible from a distance) would be visible at each well site upon project completion. Thus, there is no potential for long-term cumulative impacts to visual resources.

4.11.8 Water Resources

There is no potential for cumulative impacts to water resources, because the Proposed Action would have no measurable impact to water resources in the project area. As described in Section 4.9, Water Resources, the proposed action would produce roughly one tenth of one percent of the current consumptive use of the Piute Valley Groundwater Basin, and no declines resulting from the pump test are expected to propagate to the closest well, which is S-2. Potential future water supply infrastructure for the town of Searchlight would be subject to a separate BLM right-of-way application process and full environmental analysis.

4.11.9 Special Status Species, Vegetation, and Wildlife

The cumulative resource area for special status species, vegetation, and wildlife is comprised of the six well sites and associated existing dirt road access routes. The LVVWD S-2 Well and Pipeline Project, Walking Box Ranch Acquisition and Restoration Project, and Searchlight Water System Improvements Project are the only other known actions in the cumulative resource

area that may impact these resources. Each of these actions did/would require federal action by issuance of BLM ROW.

Federal actions that may impact the federally-listed desert tortoise are required to undergo an ESA Section 7 consultation with the FWS. As a result, cumulative impacts would be minimized through implementation of reasonable and prudent measures identified and required under the Section 7 consultation. In addition, actions that occur within the PECHU are subject to another level of protection for the tortoise, because when consulting with the FWS on projects that occur in designated critical habitat, federal agencies must ensure their activities do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery.

Finally, BLM has an obligation to ensure no net unmitigated loss of desert tortoise habitat within ACECs. The 329,440-acre Piute-Eldorado ACEC has an estimated 2,940 acres[1] of existing disturbance, which is less than 1% of the ACEC's total area. The Proposed Action would add up to 6.2 acres of additional disturbance, and would keep the total disturbance to less than 1%. Additionally, BLM has implemented a number of actions that protect and maintain the quantity and quality of habitat in the ACEC.

Each of the above actions also did/would occur within the Piute-Eldorado ACEC, designated by BLM to provide special management attention to protect critical environmental values. Accordingly, potential cumulative impacts to sensitive non-listed species, vegetation, and wildlife and wildlife habitat would be reduced by implementation of design features typically identified in BLM ROW grants/leases and common for projects in ACECs.

[1] The BLM LR2000 database indicates 280 out of 724 sections comprising the Piute-Eldorado ACEC have rights-of-way or other land use authorizations. In August 2006, BLM digitized habitat/linear disturbance using aerial photos at a 1:3000 scale on 14 representative sections of the ACEC, for the purpose of estimating the amount of disturbance in those sections. Approximately 147 acres of disturbance was calculated in those 14 sections. Based on this estimation, BLM was able to determine that roughly 2,940 acres of disturbance exist in the Piute-Eldorado ACEC.

CHAPTER 5 – LIST OF PREPARERS AND CONTRIBUTORS

Table 5.1 SWCA List of Preparers

Name	Education and Experience	Responsibility
Laura Burch	M.P.A. Environmental Mgt 5 Years Experience	Socioeconomics
Janet Guinn	B.S. Psychology/Anthropology 5 Years Experience	Project Coordinator
David Harris	M.S. Environmental Science 9 Years Experience	Project Manager; Noise and Visual Analysis
Sean Harris	M.S. Biology 1 Year Experience	Wildlife
Kristin Knippenberg	M.F.A. Creative Writing 7 Years Experience	Technical Editor
Eric Koster	B.A. Environmental Biology 6 Years Experience	Biological Resources
Heather Stettler	Ph.D. Anthropology 10 Years Experience	Cultural Resources
Spencer Martin	M.E.M. Resource Ecology 16 Years Experience	NEPA QA/QC
Kelli Nagamine	B.A. Healthcare Administration 3 Years Experience	Administrative Support
Ryan McCluskey	B.S. Mining Engineering B.S. Environmental Science 7 Years Experience	Water Resources
Dave Reinhart	B.S. Anthropology 4 Year Experience	GIS
Lynda Sperry	M.S. Biology 4 Years Experience	Geology and Soils, Vegetation
Justin Streit	B.S. NR and Wildlife Biology 4 Years Experience	Special Status Species; Air Quality
Matt Villaneva	B.S. Environmental Biology 2 Years Experience	Vegetation

Table 5.2 Las Vegas Valley Water District

Name	Responsibility
Holly Johnson	Project Management
Lisa Luptowitz	Technical Review

Table 5.3 Las Vegas BLM

Name	Responsibility
Adrian Garcia	Lead Technical Review
Jeffrey Steinmetz	Environmental Technical Review
Mark Slaughter	Biological Resources Technical Review
Susanne Rowe	Cultural Resources Technical Review

CHAPTER 6 – REFERENCES

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APPENDIX A – KOP CONTRAST ANALYSIS WORKSHEETS

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(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP #1

Date 1-5-06

District LAS VEGAS

Resource Area PIUTE-ELDORADO VALLEY ACEC

Activity (program) EXPLORATORY WATER WELLS

SECTION A. PROJECT INFORMATION

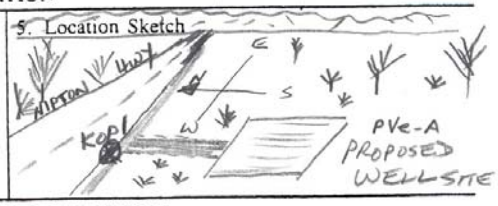
1. Project Name: SEARCHLIGHT EA

2. Key Observation Point: PVe-A STAKE ON NIPTON HWY

3. VRM Class: III

4. Location
Township 28S
Range 62E
Section 23

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT TO SLIGHTLY ROLLING	DIVERSE, LOW TO HIGH	—
LINE	DIFFUSE, INDISTINCT	BOLD VERTICAL TO WEAK HORIZONTAL	—
COLOR	TAN TO BUFF	GREEN TO TAN	—
TEXTURE	EVEN, SMOOTH	SMOOTH TO MEDIUM	—

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT	IRREGULAR TO SIMPLE	TALL TO LOW
LINE	DISTINCT, STRONG	DISTINCT	STRONG VERTICAL, ANGULAR
COLOR	TAN TO BUFF	GREEN TO TAN	VIVID
TEXTURE	SMOOTH	SMOOTH	COARSE TO SMOOTH

SECTION D. CONTRAST RATING ☒ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			/				/			/		
Line		/				/				/		
Color	\				\				\		\	
Texture			\				\				\	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: DAVID HARRIS

Date: 1-5-06

SECTION D. (Continued)

Comments from item 2.

MODERATE LINE, FORM, AND COLOR CONTRASTS CREATED BY ROAD CLEARING, WELLPAD/WELL-DRILLING STRUCTURES WOULD CREATE CONTRASTS THAT ATTRACT THE ATTENTION OF VIEWERS FROM THE HIGHWAY, BUT STILL RETAIN VISUAL CHAR. OF THE LANDSCAPE

Additional Mitigating Measures (See item 3)

IF WELL-HEAD REMAINS, (1) RECLAMATION OF THE WELL-PAD (AND ACCESS ROAD) WITH NATIVE VEGETATION; AND (2) APPLYING CAMOUFLAGE COLOR TO WELL-HEAD STRUCTURES WOULD REDUCE LINEAR AND COLOR CONTRASTS IN THE LONG-TERM.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP #2

Date 1-5-06

District LAS VEGAS

Resource Area PIUTE - ELDORADO VALLEY ACEC

Activity (program) EXPLORATORY WATER WELLS

SECTION A. PROJECT INFORMATION

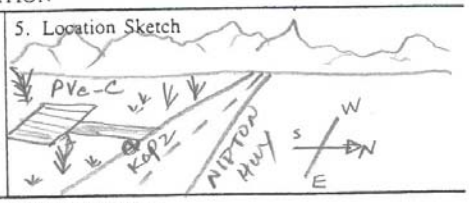
1. Project Name: SEARCH LIGHT EA

2. Key Observation Point: PVe-C STAKE ON NIPTON HWY

3. VRM Class: III

4. Location
Township 28S
Range 62E
Section 24

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT TO ROLLING	DIVERSE, LOW TO HIGH	LOW, SOLID, SIMPLE
LINE	DIFFUSE, INDISTINCT	STRONG VERTICAL TO WEAK HORIZONTAL	STRAIGHT, WEAK
COLOR	TAN, BUFF	GREEN TO TAN	LIGHT TO INDISTINCT
TEXTURE	SMOOTH	SMOOTH TO MEDIUM	UNIFORM, SMOOTH

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT	IRREGULAR TO SIMPLE,	TALL TO LOW
LINE	DISTINCT, STRONG	DISTINCT	ANGULAR, STRONG VERTICAL
COLOR	TAN TO BUFF	GREEN TO TAN	VIVID
TEXTURE	SMOOTH	SMOOTH TO MEDIUM	COARSE TO SMOOTH

SECTION D. CONTRAST RATING ☒ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			/				/			/		
Line		/				/				/		
Color			/			/					/	
Texture			/				/				/	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: DAVID HARRIS

Date: 1-5-06

SECTION D. (Continued)

Comments from item 2.

MODERATE FORM, LINE, AND COLOR CONTRASTS CREATED BY ROAD CLEARING, WELL PAD CLEARING, AND DRILLING STRUCTURES WOULD CREATE CONTRASTS THAT ATTRACT VIEWER ATTENTION FROM NIXTON HWY, BUT STILL RETAIN LANDSCAPE CHARACTER.

Additional Mitigating Measures (See item 3)

IF WELL-HEAD REMAINS, RECLAMATION OF WELL PAD AND ACCESS ROAD WITH SALVAGED NATIVE VEG, and CAMOUFLAGE COLOR TREATMENT OF WELL HEAD STRUCTURES WOULD REDUCE CONTRASTS IN THE LONG-TERM.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1988—461-988/33084

APPENDIX B – CONSULTATION LETTERS

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LAS VEGAS VALLEY WATER DISTRICT
PEOPLE LEADING THE WAY

1001 SOUTH VALLEY VIEW BLVD.
LAS VEGAS, NV 89153
TELEPHONE, 702/870-2011

LVVWD.COM

October 20, 2005

Cynthia Martinez
Assistant Field Supervisor
U.S. Fish and Wildlife Service
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130

Dear Ms. Martinez:

SUBJECT: REQUEST SPECIES LIST FOR SECTION 7 CONSULTATION FOR THE SEARCHLIGHT WATER SYSTEM IMPROVEMENTS PROJECT IN SOUTHEAST CLARK COUNTY, NEVADA

The Las Vegas Valley Water District (LVVWD) is submitting a right-of-way (ROW) application to the U.S. Bureau of Land Management (BLM) for the purpose of constructing and operating additional water supply facilities for the town of Searchlight, Nevada. LVVWD holds 3,853 acre-feet per year of groundwater rights in Paiute Valley. These facilities would pump and convey a portion of those rights to the Searchlight area.

Potential facilities include: (1) six exploratory wells, two of which would become production wells and the remaining four would become monitoring wells, (2) four additional monitoring wells, (3) one arsenic treatment facility, (4) one reservoir, (5) roughly seven to ten miles of new pipeline, (6) overhead electrical distribution lines, and (7) access roads to the production wells. Enclosed is a map showing potential facility locations and possible pipeline alignments.

To facilitate compliance with Section 7 of the Endangered Species Act, the Southern Nevada Water Authority, acting on behalf of LVVWD, is hereby requesting a list of threatened, endangered, and candidate species in the proposed project area, along with a synopsis of any designated Critical Habitat.

Please send this list to:

Holly Johnson, Environmental Biologist II
Southern Nevada Water Authority
Department of Resources
1900 East Flamingo Road
Las Vegas, NV 89119

If you have any questions, please contact Holly Johnson at (702) 862-3796.

Sincerely,

Zane L. Marshall
Senior Biologist

ZM:HJ:cec

Enclosure

c: Kristen Murphy, Wildlife Biologist, U.S. Bureau of Land Management
Mao Fang, Senior Civil Engineer, LVVWD

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502
Ph: (775) 861-6300 ~ Fax: (775) 861-6301

December 1, 2005
File No. 1-5-06-SP-429

Ms. Holly Johnson, Environmental Biologist II
Southern Nevada Water Authority
Department of Resources
1900 East Flamingo Road
Las Vegas, Nevada 89119

Dear Ms. Johnson:

Subject: Species List Request for Searchlight Water System Improvements Project in Southeast Clark County, Nevada

In response to your letter received on October 25, 2005, the following federally listed species may occur in the subject project area:

- Desert tortoise (*Gopherus agassizii*) (Mojave population), threatened

This list fulfills the requirement of the Fish and Wildlife Service (Service) to provide information on listed species pursuant to section 7(c) of the Endangered Species Act of 1973, as amended (Act), for projects that are authorized, funded, or carried out by a Federal agency. The Federal agency or its designated representative is responsible for determining whether or not the proposed project may affect a listed species. Critical habitat for the desert tortoise has been designated in southern Nevada. However, designated critical habitat for the desert tortoise does not occur within the proposed project area.

The Nevada Fish and Wildlife Office no longer provides species of concern lists. Most of these species for which we have concern, are also on the sensitive species list for Nevada maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's sensitive species list and are partnering with them to provide distribution data and information on the conservation needs for the sensitive species to agencies and project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or are in serious decline. Consideration of these sensitive species and exploring management alternatives early in the planning process can provide long-term conservation benefits and avoid future conflicts.

For a list of sensitive species by county, visit Heritage's website at www.heritage.nv.gov. For a specific list of sensitive species that may occur in the project area, you can obtain a data request form from the website or by contacting Heritage at 1550 East College Parkway, Suite 137, Carson City, NV 89706, 775-687-4245. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the Act. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address. Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (see http://www.leg.state.nv.us/NAC/NAC-503.html). Before a person can hunt, take, or possess any parts of wildlife species classified as protected, they must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (visit http://www.ndow.org or call 702-486-5127).

Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*), we are concerned about potential impacts the proposed project may have on migratory birds in the area. Under the MBTA, nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing or other surface disturbance be conducted outside the avian breeding season to avoid potential destruction of bird nests or young of birds that breed in the area. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Please reference File No. 1-5-06-SP-429 in future correspondence concerning this species list. If you have any questions regarding this correspondence or require additional information, please contact Heather Adams in our Southern Nevada Field Office at (702) 515-5230.

Sincerely,

Cynthia T. Martinez

for Robert D. Williams
Field Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502
Ph: (775) 861-6300 ~ Fax: (775) 861-6301

January 19, 2006
File No. 1-5-06-SP-429

Ms. Holly Johnson, Environmental Biologist II
Southern Nevada Water Authority
Department of Resources
1900 East Flamingo Road
Las Vegas, Nevada 89119

Dear Ms. Johnson:

Subject: Species List Request for Searchlight Water System Improvements Project in Southeast Clark County, Nevada

In a letter dated December 1, 2005, the Fish and Wildlife Service responded to the species list request for the above mentioned project. However, we would like to clarify that critical habitat for the federally listed as threatened desert tortoise (*Gopherus agassizii*) (Mojave population) does occur in a portion of the project area and should be considered in any analyses for your project.

Please reference File No. 1-5-06-SP-429 in future correspondence concerning this species list. If you have any questions regarding this correspondence or require additional information, please contact Heather Adams in our Southern Nevada Field Office at (702) 515-5230.

Sincerely,

Cynthia T. Martinez

for Robert D. Williams
Field Supervisor

APPENDIX C – NEVADA NATURAL HERITAGE PROGRAM (NNHP) AT-RISK SPECIES LIST

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Nevada Natural Heritage Program

Nevada Department of Conservation and Natural Resources
Richard H. Bryan Building
901 South Stewart Street, suite 5002 • Carson City, Nevada 89701-5245, U.S.A.
tel: (775) 684-2900 • internet: http://heritage.nv.gov

07 November 2005

Lynda J. Sperry
SWCA Environmental Consultants
2820 W. Charleston Blvd., Suite 15
Las Vegas, NV 89102

RE: Data request received 25 October 2005

Dear Ms. Sperry:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or at risk plant and animal taxa recorded within or near the SNWA Searchlight EA project area. We searched our database and maps for the following, a five kilometer radius around:

Township 28S Range 62E Sections 22-27 and 33-36
Township 28S Range 63E Sections 26-34
Township 29S Range 62E Sections 1-4 and 12
Township 29S Range 63E Section 06

The enclosed printout lists the taxa recorded within the given area. Please be aware that habitat may also be available for, the chuckwalla, *Sauromalus ater*, a Nevada Bureau of Land Management (BLM) Sensitive Species, and the banded Gila monster, *Heloderma suspectum cinctum*, a Nevada BLM Special Status Species. We do not have complete data on various raptors that may also occur in the area; for more information contact Ralph Phenix, Nevada Division of Wildlife at (775) 688-1565. Please note that all cacti, yuccas, and Christmas trees are protected by Nevada state law (NRS 527.060-.120), including taxa not tracked by this office.

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact usfor additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist/Data Manager

At Risk Taxa Recorded Near the SNWA Searchlight EA Project Area

Compiled by the Nevada Natural Heritage Program for SWCA
07 November 2005

Scientific name	Common name	Usfws	Blm	Usfs	State	Srank	Grank	Lat	Long	Prec	Last observed
Plants											
Penstemon bicolor ssp. *roseus*	rosy twotone beardtongue	xC2	N	S		S3	G3T3Q	352753N	1145544W	M	1961-04-12
Penstemon bicolor ssp. *roseus*	rosy twotone beardtongue	xC2	N	S		S3	G3T3Q	352725N	1145819W	S	1992-05-18
Penstemon bicolor ssp. *roseus*	rosy twotone beardtongue	xC2	N	S		S3	G3T3Q	352658N	1145642W	S	1992-05-18
Reptiles											
Gopherus agassizii	desert tortoise (Mojave Desert pop.)	LTNL	S	T	YES	S2S3	G4	352611N	1150412W	S	1987-1990
Gopherus agassizii	desert tortoise (Mojave Desert pop.)	LTNL	S	T	YES	S2S3	G4	352511N	1145649W	S	1987-1990

U. S. Fish and Wildlife Service (Usfws) Categories for Listing under the Endangered Species Act:

- LT — Listed Threatened - likely to be classified as Endangered in the foreseeable future if present trends continue
- x C2 — Former Category 2 Candidate, now species of concern
- NL — Not Listed (no status) in a portion of the species' range

Bureau of Land Management (Blm) Species Classification:

- S — Nevada Special Status Species - USFWS listed, proposed or candidate for listing, or protected by Nevada state law
- N — Nevada Special Status Species - designated Sensitive by State Office

United States Forest Service (Usfs) Species Classification:

- S — Region 4 (Humboldt-Toiyabe NF) sensitive species
- T — Region 4 and/or Region 5 Threatened species

Nevada State Protected (State) Species Classification:

Fauna:

- YES — Species protected under NRS 501.

Precision (Prec) of Mapped Occurrence:

Precision, or radius of uncertainty around latitude/longitude coordinates:

- S — Seconds: within a three-second radius
- M — Minutes: within a one-minute radius, approximately 2 km or 1.5 miles
- G — General: within about 8 km or 5 miles, or to map quadrangle or place name

Nevada Natural Heritage Program Global (**Grank**) and State (**Srank**) Ranks for Threats and/or Vulnerability:

- G — Global rank indicator, based on worldwide distribution at the species level
- T — Global trinomial rank indicator, based on worldwide distribution at the infraspecific level
- S — State rank indicator, based on distribution within Nevada at the lowest taxonomic level
  - 1 — Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, imminent threats, or other factors
  - 2 — Imperiled due to rarity or other demonstrable factors
  - 3 — Vulnerable to decline because rare and local throughout its range, or with very restricted range
  - 4 — Long-term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery
  - 5 — Demonstrably secure, widespread, and abundant
    - A — Accidental within Nevada
    - B — Breeding status within Nevada (excludes resident taxa)
    - H — Historical; could be rediscovered
    - N — Non-breeding status within Nevada (excludes resident taxa)
    - Q — Taxonomic status uncertain
    - U — Unrankable
    - Z — Enduring occurrences cannot be defined (usually given to migrant or accidental birds)
    - ? — Assigned rank uncertain