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Bureau of Land Management

Environmental Assessment
DOI-BLM-NV-S010-2008-0225-EA
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Searchlight Water and Wastewater System Improvements Project

APPLICANT

Las Vegas Valley Water District

GENERAL LOCATION

The proposed action is generally located within the Piute Valley

BLM CASE FILE SERIAL NUMBER(S)

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SEARCHLIGHT
WATER AND WASTEWATER SYSTEMS IMPROVEMENTS PROJECT

FINAL ENVIRONMENTAL ASSESSMENT

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Summary

This Environmental Assessment has been prepared pursuant to the National Environmental Policy Act of 1969, as amended, and describes an environmental analysis and potential consequences of the proposed Searchlight Water and Wastewater Systems Improvement Project (the Proposed Action). The Proposed Action consists of: (1) the issuance of rights-of-way ROW by the Bureau of Land Management (BLM) for drilling permanent groundwater production and monitoring wells; (2) the issuance of ROW for construction of electrical utility, groundwater treatment facilities and an aboveground reservoir; (3) the issuance of ROW for construction of a water conveyance pipeline system; and (4) the improvement to the Searchlight wastewater treatment facility (WWTF) and infrastructure enhancement. The wells, pipelines, facilities, and infrastructure improvements would be used to provide a safe and reliable drinking water system, to meet EPA required standards for arsenic in potable water, to meet fire protection and emergency storage requirements, and to provide sufficient wastewater treatment for the Town of Searchlight.

The project encompasses a total of 83.84 acres in Piute Valley, 45.59 acres of which are on public lands administered by the BLM and 38.25 acres of which are on non-federal land managed by the Clark County Water Reclamation District (CCWRD). A portion of the project area (15.56 acres) lies within the Piute-Eldorado Critical Habitat Unit for the federally threatened desert tortoise. The project area also includes 13.53 acres within the BLM Piute-Eldorado Area of Critical Environmental Concern, designated for the protection of desert tortoise habitat.

Potential environmental consequences identified during this environmental assessment analysis include socioeconomic improvements to the Town of Searchlight, fugitive dust-related air quality degradation, a loss of sensitive wildlife and vegetation species and habitat, a loss of federally listed desert tortoise habitat, a reduction in wildlife and vegetation productivity, the spread of invasive weeds, visual quality degradation, geologic and soil disturbance, and erosion. Mitigation measures proposed as part of the Proposed Action would reduce potentially adverse 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-southeast of Las Vegas, Nevada, in Piute Valley (see Figure 1). In 2007 there were an estimated 816 people living in Searchlight (Clark County 2007). The town relies exclusively on groundwater, located in an alluvial aquifer west of the town, as its potable water source. The Las Vegas Valley Water District (LVVWD) has operated the Searchlight Water System since 1988, and the system's water is currently supplied to the town by two groundwater wells in Piute Valley. The primary water source for Searchlight consists of an existing groundwater production well, S-2. Well S-2 has steadily declined in pumping capacity and requires repair to the well casing. These repairs may potentially collapse the well, and cannot be undertaken without an available replacement well. The other existing well, S-1, is an emergency backup well with limited resource and pumping capacity. The engineer for the State of Nevada has permitted 3,854 acre-feet per year (afy) of groundwater rights in Piute Valley to the LVVWD for the Town of Searchlight. In 2007, approximately 240 acre-feet were pumped and used.

The Safe Drinking Water Act's Revised Arsenic Rule came into effect January 23, 2006. Under this rule, the Environmental Protection Agency (EPA) lowered the maximum allowable contamination level of arsenic in community water supply systems from 0.050 mg/L (milligrams per liter) to a standard of 0.010 mg/L. The current average arsenic concentration level in the Searchlight water system is 0.012 mg/L, which requires LVVWD to bring the water supply for Searchlight into compliance with the new EPA standard. LVVWD applied for and received a time extension for the Searchlight Water System to 1) help determine if a new groundwater source would yield lower arsenic levels and 2) to construct any necessary arsenic treatment facility.

The Searchlight Water System also requires an upgrade to meet fire protection and emergency storage requirements. The existing water system does not meet standards regarding fire flow and storage. These standards consist of (1) all of the requirements set forth by Nevada Administrative Code for sufficient operating storage, emergency reserve, fire demand, and system capacity; (2) Uniform Design and Construction Standards for Potable Water Systems for adequate water pressure and capacity under all circumstances of fire services; and (3) Clark County Fire Code for the minimum fire flow and fire duration.

The CCWRD constructed wastewater collection and treatment facilities for Searchlight in 1976, known as the Searchlight Wastewater Treatment Facility (WWTF). The WWTF was expanded in 1985 and consists of facultative ponds. The wastewater collection system consists of sewer lines, force main, manholes, and a lift station. All new development is required to connect to the sewer system, as are any existing septic systems once they fail. In order to renew the groundwater discharge permit from the State of Nevada for the WWTF, upgrades to the treatment processes are necessary. Treatment process upgrades may also facilitate recharge credit for the percolation of treated effluent, providing for more efficient water resource management for the Town of Searchlight.

The LVVWD and CCWRD have executed an interlocal agreement outlining a joint effort with respective responsibilities and provisions for completion of the water and wastewater improvements. LVVWD is responsible for coordinating with federal agencies on completion of necessary environmental compliance documentation.

1.2 PROJECT PURPOSE AND NEED

The BLM administers federal public land in Piute Valley. The LVVWD has applied to the BLM for ROW to drill replacement groundwater production wells, monitoring wells, pipelines, a groundwater treatment facility, and a water reservoir.

The U.S. Army Corps of Engineers (USACE) administers the distribution of funding for design and construction assistance for water-related, environmental infrastructure projects in rural Nevada, under Section 595 of the Water Resources Development Act of 1999. The LVVWD has applied for funding under this authorization on behalf of Searchlight for the design of the proposed water facilities and the construction of the proposed water and wastewater facilities.

The Environmental Protection Agency (EPA) will administer the distribution of funding for the Searchlight wastewater systems improvements under the Consolidated Appropriation Act of 2005 and the Department of Interior, Environment, and the Related Agencies Appropriations Act of 2006. CCWRD has applied for funding under this authorization on behalf of Searchlight for the design of the proposed wastewater facilities.

The purpose of the proposed federal ROW and funding is to facilitate the construction and operation of groundwater production, conveyance, and treatment facilities by LVVWD, and wastewater treatment facilities by CCWRD, in order for these agencies to meet their mandated responsibilities to provide water and wastewater services to the Town of Searchlight.

Federal action is required for the reasons outlined below.

1. To provide a safe and reliable water system for Searchlight that would
    - utilize existing permitted groundwater rights in Piute Valley to meet water supply needs
    - meet the EPA standards for arsenic in potable water
    - meet fire protection and emergency storage requirements for existing customers.
2. To provide wastewater treatment for Searchlight that would
    - have sufficient capacity to meet town needs
    - upgrade treatment processes sufficient to meet groundwater discharge permit requirements
    - allow treated effluent to be used for recharge.

1.3 CONFORMANCE WITH RESOURCE MANAGEMENT PLAN AND APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

The Proposed Action would occur on land administered by the BLM. This environmental assessment (EA) is being prepared to fully satisfy requirements under the National Environmental Policy Act (NEPA) of 1970, as amended [42 U.S.C. 4321 et seq.] and the CEQ (Council on Environmental Quality) Regulations for Implementing the Procedural Provisions of

NEPA (40 CFR 1500-1508), dated 1 July 1998, which require the lead federal agency to evaluate and to publicly disclose the environmental effects of their federal undertaking. Table 1.1 lists relevant environmental laws and regulations and the sections of this document that implement compliance with these acts. The lead agency for this EA (the BLM) and other state and federal land management agencies, as appropriate, would monitor project construction and maintenance activities to ensure that the proposed project complies with federal regulations. The ROW that would be issued by the BLM for this project would be in accordance with the requirements of the Federal Land Policy and Management Act (FLPMA), Southern Nevada Public Land Management Act (SNPLMA) and the BLM's ROW regulatory requirements.

The BLM land uses in southern Nevada are managed under the Las Vegas Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1998). The RMP provides management objectives and directions for lands within the Las Vegas District of the BLM. The BLM manages approximately 2.5 million acres of public land in Clark County. The Searchlight Water and Wastewater Systems Improvements Project is in conformance with the RMP, specifically objectives RW-1 (providing legal access to major utility transmission lines and related facilities) and RW-1h (public land is available for ROW at agency discretion under the FLPMA).

Table 1.1. Applicable Environmental Laws and Regulations

Regulation	Citation	Description	Section
American Religious Freedom Act of 1978	42 U.S.C. 1531	The Act that established national policy to protect and preserve for Native Americans their inherent right of freedom to believe, express, and exercise their traditional religions, including the rights of access to religious sites, use and possession of sacred objects, and freedom to worship through traditional ceremonies and rites.	3.7 Cultural Resources and 4.7 Cultural Resources
Antiquities Act of 1906	16 U.S.C. 431 et seq.	The Act requires that any historic and prehistoric sites on Federal lands be protected and not excavated or destroyed unless a permit (Antiquities Permit) is obtained from the Secretary of the department, which has the jurisdiction over the federal lands.	3.7 Cultural Resources and 4.7 Cultural Resources
Archaeological Resources Protection Act, as amended	16 U.S.C. 470aa et seq.	Required when cultural resources may be impacted when working on federal lands or there is another federal connection. The Act allows for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed.	3.7 Cultural Resources and 4.7 Cultural Resources
Clean Air Act (CAA)	42 U.S.C. 7401 et seq.	CAA was enacted to regulate/reduce air pollution and establish ambient air quality emission standards.	3.3 Air Quality and 4.3 Air Quality
Clean Water Act (CWA)	Section 404	*Section 404 (b)* prohibits the discharge of dredged or fill materials into waters of the United States, including wetlands, except as permitted under separate regulations by the U. S. Army Corps of Engineers (Corps) and U. S. Environmental Protection Agency (EPA). Waters of the United States is defined in 33 CFR 328.3 as All waters which are currently used, or were used in the past or may be susceptible to use in	

Table 1.1. Applicable Environmental Laws and Regulations

Regulation	Citation	Description	Section
		interstate or foreign commerce; All interstate waters including interstate wetlands; All other waters such as intrastate lakes, rivers, streams, (including intermittent streams), the use, degradation or destruction of which could affect interstate or foreign commerce; All impoundment of waters otherwise defined as Waters of the U. S. under the definition; and Tributaries of waters defined in the bullets above.	
Council of Environmental Quality (CEQ) general regulation implementing NEPA	40 CFR Parts 1500-1508	CEQ Regulations for implementing NEPA establish the requirements and procedures for preparation of an EA, and the process by which Federal agencies fulfill their obligations under NEPA. The regulations also define such key terms as “cumulative impact”, “mitigation”, and “significant” (as it relates to impacts) to ensure consistent application of these terms in environmental documents.	
Endangered Species Act (ESA)	16 U.S.C. 1531 et seq.	The Endangered Species Act (ESA) protects threatened and endangered species, as listed by the USFWS, from unauthorized take, and directs Federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines Federal agency responsibilities for consultation with the USFWS. The Act requires preparation of a Biological Assessment to address the effects on listed and proposed species of a project.	3.6 Special Status Species and 4.6 Special Status Species
Federal Actions to Address Environmental Justice in Minority Populations and Low-	Executive Order 12898	This order was intended to direct Federal agencies “To make achieving environmental justice part of its mission by identifying and addressing... disproportionately high and	4.8.3 Socioeconomics

Table 1.1. Applicable Environmental Laws and Regulations

Regulation	Citation	Description	Section
Income Populations		adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the [U.S.]..."	
Federal Compliance with Pollution Control Standards	Executive Order 12088	The head of each Executive agency is responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.	
Federal Land Policy and Management Act of 1976 (FLPMA)	43 U.S.C. 1701 et seq.	FLPMA regulates management of the public lands and their various resource values so that resources are utilized in a combination that will best meet the present and future needs of the American people.	
Healthy Forests Restoration Act of 2003	P.L. 108-148	The general purpose of this act is to improve the capacity of the Secretary of Agriculture and the Secretary of the Interior to conduct hazardous fuels reduction projects on National Forest System lands and Bureau of Land Management lands aimed at protecting communities, watersheds, and certain other at-risk lands from catastrophic wildfire, to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape, and for other purposes.	3.4.3 Invasive Plant Species and 4.4.1.3 Invasive Plant Species
Invasive Species	Executive Order 13112	Federal agencies are to expand and coordinate efforts to prevent the introduction and spread of invasive plant species and to minimize the economic, ecological, and human health impacts that invasive species may cause.	3.4 Vegetation and 4.4 Vegetation
Migratory Bird Treaty Act	16 U.S.C. 703-711; 40 Stat. 755, as amended	All migratory birds, eggs, nests, or their parts are protected in the project area under this act.	3.6 Special Status Species and 4.6 Special

Table 1.1. Applicable Environmental Laws and Regulations

Regulation	Citation	Description	Section
			Status Species
National Environmental Policy Act of 1969 (Public Law 91-190) as amended	42 U.S.C. 43221, as amended	NEPA requires that agencies of the Federal Government shall implement an environmental impact analysis program in order to evaluate "major federal actions significantly affecting the quality of the human environment." A "major federal action" may include projects financed, assisted, conducted, regulated, or approved by a Federal agency.	
National Historic Preservation Act (NHPA)	Executive Order 11593	Federal Government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation.	3.7 Cultural Resources and 4.7 Cultural Resources
NHPA and regulations implementing NHPA	16 U.S.C. 470 et seq. 36 CFR Part 800	Requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.	3.7 Cultural Resources and 4.7 Cultural Resources
Noise Control Act of 1972 (NCA), as amended	42 U.S.C. 4901 et seq.	Noise generated by any activity, which may affect human health or welfare on federal, state, county, local, or private lands, must comply with noise limits specified in the Noise Control Act.	3.10 Noise and 4.10 Noise
Pollution Prevention Act (PPA) of 1990	42 U.S.C. 13101 et seq.	The un-permitted release of any pollutant into the environment must be cleaned up and reported in accordance with Pollution Prevention Act. This Act is designed to govern pollution that is not specifically addressed by other regulations. There are no official minimum amounts of pollutants exempt from the PPA.	
Resource Conservation and Recovery Act (RCRA)	42 U.S.C. 6901 et seq.	Regulation of the generation, storage, transportation, treatment and disposal of hazardous waste.	
Safe Drinking Water Act (SDWA)	42 U.S.C. s/s 300f et seq. (1974)	The Safe Drinking Water Act is the driver behind other state, county, and local water quality requirements. Therefore, compliance with the	1.2 Project Purpose and Need

Table 1.1. Applicable Environmental Laws and Regulations

Regulation	Citation	Description	Section
		Safe Drinking Water Act is accomplished by obtaining state, county, or local permits when there are any discharges to surface water, groundwater, or an aquifer.	
U.S. Fish and Wildlife Coordination Act	16 U.S.C. 661	This Act requires Federal agencies to coordinate with the USFWS and local state agencies when any stream or body of water is proposed to be modified. The intent is to give fish and wildlife conservation equal consideration with other purposes of water resources development projects.	3.6.1 Federally Listed Species and 4.6.1.1 Federally Listed Species

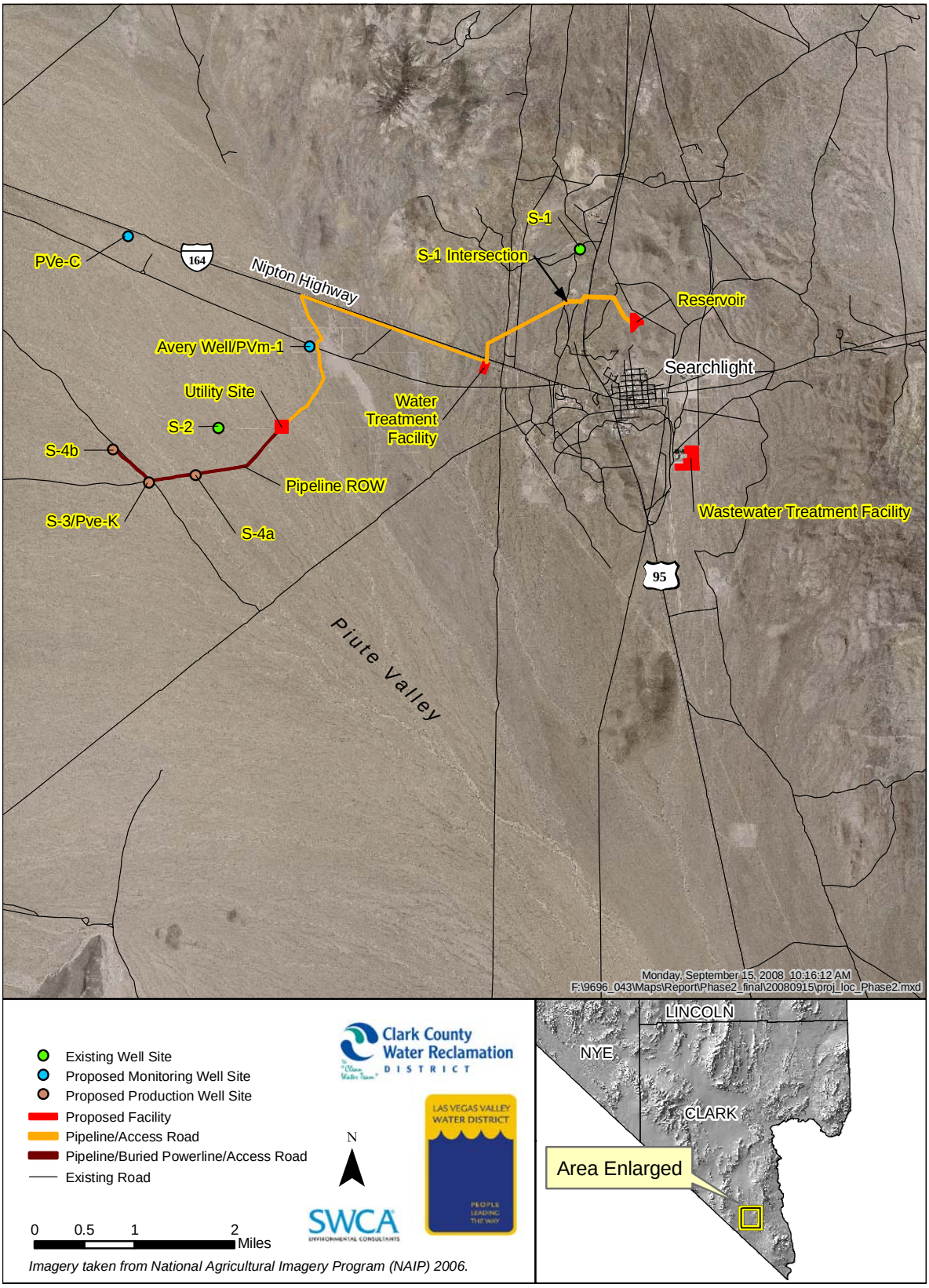

Figure 1. Project location for Searchlight Water and Wastewater Systems Improvements Project.

CHAPTER 2 – ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action would consist of the development of improvements to the water and wastewater systems for Searchlight, Nevada. The proposed project would provide a safe and reliable water supply and adequate wastewater treatment capabilities for Searchlight. See Figure 1 for the locations of the water and wastewater systems components. See Figures 2 and 3 in Appendix B for a detailed depiction of the project area. The Proposed Action would create a potential total surface disturbance of 83.84 acres, of which 63.64 acres would be new surface disturbance and 20.20 acres would be previously disturbed. Surface disturbances caused by the proposed construction of the water and wastewater systems improvements are discussed below. Tables 2.1 through 2.4 show the acres of project area potentially impacted by the Proposed Action.

Table 2.1. Project ROW Impacts

Facility	BLM Right-of-Way (acres)	
	Permanent	Temporary
Electrical Utility Site	0.01	--
Monitoring Well Sites (2)	2.02	--
Pipeline	19.52	8.18
Production Well Sites (3) [a]	3.03	--
Reservoir	8.6	--
Water Treatment Facility	4.13	--
Total	**37.31**	**8.18**

Table 2.2. Project Impacts to Habitat

Facility	Habitat Disturbance (acres)			
	Previous Disturbance		New Disturbance	
	BLM[1]	Private	BLM[1]	Private
Electrical Utility Site	--	--	0.01	--
Monitoring Well Sites (2)	1.01		1.01	--
Pipeline	2.35	--	25.45	--
Production Well Sites (3)	1.01	--	2.02	--
Reservoir	--	--	8.6	--
Sewer Mains	--	0.3	--	--
Utilities to WWTF	--	0.95	--	--

Habitat Disturbance (acres)				
Facility	**Previous Disturbance**		**New Disturbance**	
	BLM[1]	**Private**	**BLM[1]**	**Private**
Water Treatment Facility	--	--	4.13	--
WWTF Upgrades	--	14.58	--	22.42
Subtotal	**4.37**	**15.83**	**41.22**	**22.42**
Total		**20.2**		**63.64**
Grand Total				**83.84**

[1] Includes all BLM land in project area

Table 2.3. Project-related New Surface Disturbances Within and Outside the Piute-Eldorado Area of Critical Environmental Concern (ACEC)

New Disturbance on BLM land (acres)		
Facility	**Non-ACEC**	**ACEC**
Electrical Utility Site	--	0.01
Monitoring Well Sites	1.01	--
Pipeline	20	5.45
Production Well Sites	--	2.02
Reservoir	8.6	--
Water Treatment Facility	4.13	--
Subtotal	**33.74**	**7.48**
Total		**41.22**

Table 2.4 Project-related New Surface Disturbances within and outside the Piute-Eldorado Critical Habitat Unit (PECHU)

New Disturbance on BLM land (acres)		
Facility	**Non-PECHU**	**PECHU**
Electrical Utility Site	--	0.01
Monitoring Well Sites	--	1.01
Pipeline	17.3	8.15
Production Well Sites	--	2.02
Reservoir	8.6	**--**
Water Treatment Facility	4.13	--
Subtotal	**30.03**	**11.19**
Total		**41.22**

2.1.1 WATER SYSTEM IMPROVEMENTS

The proposed Searchlight water system improvements would be located on BLM-managed lands and would encompass 45.59 acres of potential surface disturbances, of which 41.22 acres would be new, long-term or permanent disturbance (see Tables 2.2, 2.3, and 2.4). The proposed activities and potential surface disturbances are detailed in the above tables.

2.1.2 WASTEWATER SYSTEM IMPROVEMENTS

The proposed wastewater system improvements would be located on private land, CCWRD-patented land, or within an existing CCWRD ROW. These actions would encompass a total of 38.25 acres, with 22.42 acres of new permanent surface disturbances (see Table 2.2).

2.1.3 FACILITY AND INFRASTRUCTURE CONSTRUCTION

WATER SYSTEM IMPROVEMENTS

Groundwater Production Wells

The Proposed Action consists of the construction of two new groundwater production wells to replace existing wells S-1 and S-2. An area 210 feet by 210 feet (1.01 acres) would be required for the drilling and construction of each well. This would provide an adequate amount of land for the infrastructure associated with the groundwater production well and for maintenance vehicles and equipment to assess the site as required. Each groundwater production well would be drilled to a depth of approximately 1,200 feet below the land surface, and completed with a casing at least 18 inches in diameter.

Based on exploratory well drilling conducted by LVVWD in 2007, one existing well site, PVe-K, has proven to be suitable for groundwater production well development. A new groundwater production well, S-3, would be drilled within the 1-acre site, adjacent to this exploratory well.

Two other sites, S-4a and S-4b, have been identified as possible locations for the second groundwater production well. The LVVWD proposes to drill S-4a first to determine if this site would generate adequate groundwater quality and quantity for groundwater production. If adequate groundwater quality and quantity are verified, S-4a would become the second production well and be identified as well S-4. If S-4a is shown to be inadequate for groundwater production, S-4b would be drilled as the second production well and if adequate groundwater quality and quantity are verified it will be identified as S-4. If neither S-4a nor S-4b generate adequate groundwater for production, additional wells would have to be drilled to locate the second groundwater production well. The proposed locations of the groundwater production well sites were based on the results obtained during a completed groundwater exploration study.. These data confirmed that adequate groundwater and groundwater production from the underlying aquifer would be obtained in the vicinity of proposed production well S-3. Thus, S-4a and S-4b were located near this well. Other geographic areas in the vicinity of Searchlight lack the geologic conditions for suitable groundwater production wells.

The equipment and materials used to drill the wells would consist of a self-contained drilling rig, a front loader/backhoe, a water tanker, a settling tank or shallow excavated pit for holding

drilling fluids, and a pickup truck. A flatbed trailer would be used for transporting drilling pipe and well casing material to the site. A dump truck would transport gravel pack to the site and grout would be brought to each well via a concrete mixing truck. A small construction trailer and portable restroom would also be located temporarily on site during construction. The gravel would be purchased from providers who offer a clean, well sorted, well rounded, siliceous material and would be delivered to the site in "supersacks" to maintain sterility, as needed.

During drilling operations, necessary drilling water would be obtained from Searchlight's existing S-1 or S-2 well. Fluids discharged as a result of drilling activities and well installation would be contained in a small settling pit or above ground tank to allow the drill cuttings and sediment to settle and drop out of suspension. When this process has been completed, the remaining fluid would be allowed to flow to the natural drainage network surrounding the site where it would evaporate and/or percolate into the alluvial sediments. There would be no structural change to any stream or other body of water. A Temporary Discharge Permit from the Nevada Division of Environmental Protection's Bureau of Water Pollution Control would be obtained if required.

No native soils would be moved off site during or after the well construction process. The small amount of excavated soils from the drilling process would be scattered evenly around the well site. No off-site soils material or hazardous materials would be imported to the well sites for construction purposes.

Each well would be equipped with a new pump and motor, a separate waste pipeline for well start up, and a discharge pipe with a flow meter. The well would also be equipped with electrical devices and instrumentation for data acquisition, supervisory control, and power control. Upon completion of each new production well, the 1-acre site would be enclosed within a gated chain-link fence, and these enclosures would be fitted with tortoise-proof fencing.

Existing well S-2 has corrosion-related casing damage and requires repair. The repair activities have the potential to cause collapse of the well. If the well collapses during repair, it would be abandoned in accordance with the State of Nevada permit requirements. If the well can be successfully repaired, it would serve as an additional backup well for Searchlight.

The current energy use to operate the Searchlight water system is approximately 400,000 kw/h. The power is primarily used to run the pumps and motors for groundwater production. The proposed improvements would include new larger diameter pipelines that reduce energy losses due to friction and new pumps and motors that are more energy efficient. It is estimated that only 300,000 kw/h would be required to operate the system after the project is completed. More precise energy requirements cannot be identified until engineering design is completed.

Monitoring Wells

One monitoring well (PVm-1) would be drilled outside of the BLM-designated ACEC. An area 210 feet by 210 feet (1.01 acres) would be required for construction of the monitoring well for parking, turnaround areas, equipment staging, and other activities, and disturbance would be limited to crushing vegetation. The monitoring well would measure up to 8 inches in diameter, would be drilled approximately 1,200 feet below ground surface, and would be capped and completed with casing. The equipment and processes for drilling the monitoring well would be the same as described above for the production wells. Upon completion, the monitoring well

would consist of approximately 1 to 2 feet of aboveground casing without any other appurtenances. The casing may be set on an approximately 2-foot by 2-foot concrete pad.

In addition to PVm-1, an additional existing exploratory well (PVe-C) that was drilled by LVVWD in 2007 would also be utilized as a monitoring well (Figure 1). Well PVe-C would be converted from an exploratory well to a monitoring well. No additional construction activities would be necessary, except the installation of a 2-foot by 2-foot concrete pad around the exiting well head. A permanent ROW is requested to monitor this well. It should be noted that these wells (PVm-1 and PVe-C) were chosen as project monitoring wells because their locations would minimize potential impacts to desert tortoise within the ACEC. As noted, PVm-1 is located outside the designated boundary of the ACEC and PVe-C lies adjacent to the SR-164 (Nipton Highway) ROW at the northwestern boundary of the ACEC.

Both of the proposed monitoring well sites (and the proposed PVe-K/S-3 production well site) can be accessed using existing roads. Improvements to these existing access roads or the establishment of new access roads are not anticipated to be required for either construction or use of the monitoring wells. Upon completion, the monitoring wells would be visited monthly, quarterly, or as needed, to measure water levels.

Pipelines

The Proposed Action would require new buried pipelines situated from the replacement groundwater production well sites to a new water treatment plant site. Depending on the location of the final site for the production well S-4, approximately 2,600 feet of 8-inch and 27,100 feet of 12-inch diameter pipelines would be constructed from the two new production wells to the water treatment plant. The proposed pipelines would be constructed along an existing access road and parallel to the existing pipeline from well S-2. The pipelines would be installed adjacent to the western edge of the existing well S-2 access road/pipeline ROW and out to the existing ROW within Nevada State Highway Route 164 (SR-164-Nipton Highway), and would continue in a northerly direction. The pipelines would then continue southeasterly, adjacent, and parallel to the north side of the existing pipeline at the southerly ROW of Nipton Highway to the site of the proposed water treatment facility.

A 30-foot wide permanent ROW is necessary to accommodate the pipelines, communication infrastructure, electrical facilities, and construction activities which would include trenching, construction equipment, pipeline materials, and excavated soils. No pipeline staging areas or other temporary ROW would be required because the pipes would be temporarily stored along the existing roadway or within the pipeline ROW.

The existing pipeline from well S-2 would be left in place and could continue to be used if repairs to well S-2 are successful. However, a new pipeline parallel to the existing S-2 pipeline is needed to ensure reliability of the groundwater supply system. Recent main breaks have challenged the system's ability to continue to supply water to Searchlight and its ability to provide adequate water storage.

In addition to the pipelines connecting the new groundwater production wells to the water treatment plant, inlet and outlet pipelines from the new reservoir site are needed. Approximately 5,600 feet of 12-inch and 8,000 feet of 24-inch diameter pipelines would connect the reservoir from the water treatment plant to the existing Searchlight distribution system. A new 12-inch

diameter pipeline would be installed between the water treatment plant to the point where it intersects the existing pipeline from well S-1. Between that point and the new reservoir, the proposed pipe diameter would be enlarged to 24 inches. This would allow for the blending of water from the new groundwater production wells with the water in well S-1, which has generally lower arsenic levels. The outlet pipeline from the new reservoir would be installed in a westerly direction, paralleling the inlet pipeline to the point where it intersects the existing well S-1 pipeline. At this point, the 24-inch diameter pipeline would be reduced to a new 12-inch diameter pipeline and would be connected to the existing Searchlight water distribution system. Permanent and temporary construction ROWs would be required for trenching, installation equipment, pipeline materials, and placement of excavation material. A permanent 25-foot-wide ROW would be needed for the 12-inch diameter pipeline, and a 50-foot-wide ROW for the 24-inch diameter pipeline. To accommodate pipe laying and construction equipment, an additional, temporary 25-foot-wide ROW would be needed for the 12-inch diameter pipeline and a 50-foot-wide ROW would be needed for the 24-inch diameter pipeline.

Within the existing Searchlight water distribution system, approximately 9,000 feet of 12-inch diameter pipeline would be replaced and 3,300 feet of existing 2-inch through 6-inch diameter pipeline would be replaced with new 6-inch through 8-inch diameter pipeline. Approximately eight fire hydrants would also be added to the system with the pipeline replacement. The pipeline replacement would be conducted within the existing ROW, and no additional temporary or permanent ROW would be required. These pipeline replacements would be conducted to enhance fire flow availability and water distribution system reliability for existing customers, and are not designed to serve new development. If additional development projects were approved in the future by the Town of Searchlight, additional distribution infrastructure would likely be required.

Pipeline construction would be conducted using a tracked backhoe to dig trenches measuring approximately 36 inches wide and 6 feet deep. Excavated materials would be placed to one side of the trench opening and pipeline material and equipment would be stored on the other side of the trench opening. The pipe would be placed at the bottom of the trench and the pipeline sections would then be bolted together. After pipe installation, the trench would be backfilled with the excavated material. As needed, air vacuum, air relief valves would be placed along the pipeline and would be visible above the ground surface. Isolation valves would also be fitted in the pipeline to shut down portions of it while still keeping the other sections of the pipeline in operation. Access covers to the valves would be level with the ground surface.

Power lines

Electrical power lines would be required to carry power to the new production well sites. The power lines would be underground and encased in plastic conduits, approximately six feet below the surface. This would eliminate overhead power lines and associated power poles which could create perch sites for predatory birds to harass and prey on desert tortoise. It would also eliminate adverse visual impacts within the area. The power lines and pipelines would be at the opposite outer edges of the 30-foot-wide ROW. The spoils resulting from trenching for the power lines would be contained within the ROW.

Utility Site

The utility site (0.01 acre) that would provide power to the production wells would be located on a 30-foot by 20-foot, aboveground concrete pad. The site would consist of a transformer and connections to the existing Nevada Power Company power line. The utility site would not be fenced.

Water Treatment Facility

A 4.13-acre water treatment facility would be located along the Nipton Highway ROW. The site would include a chlorination building and an arsenic treatment facility, and would be enclosed with a 6-foot high, chain link fence with permanent tortoise-proof fencing along the site perimeter. Access to the site would be from a Nevada Department of Transportation approved approach, directly connecting to Nipton Highway.

The 20-foot by 28-foot chlorination building would be constructed with a concrete slab floor, concrete block walls, steel roof trusses, and a standing seam metal roof cover. The building would house two 240-gallon sodium hypochlorite storage tanks, two metering pumps, and two chlorine analyzers. A solar power generation unit and batteries would also be installed at the site to power lighting, metering pump, and communication equipment.

Arsenic treatment would be provided at the site using arsenic-adsorption technology. The treatment system would include a backwash water storage and recycling system to eliminate water waste and on-site backwash water discharge by returning the backwash water to the arsenic treatment plant intake. The media may require replacement on an annual basis depending on the arsenic level in the raw groundwater drawn from the new production wells. The spent or exhausted media would be disposed of in ordinary landfill facilities based on the completion of a Toxic Characteristic Leaching Procedures analysis. A concrete pad would be constructed to mount the units.

Reservoir

An approximately one million-gallon aboveground, fully enclosed tank would be constructed on 8.60 acres and located approximately 0.75 miles east of Highway 95 (US-95) and north of Searchlight. Access to the site would be from US-95 via existing roads and along a 12-foot-wide gravel road within the permanent ROW for the reservoir inlet and outlet pipelines. The reservoir is needed to comply with Nevada Administrative Code 445A, which states that a water supplier must maintain storage capacity to meet water demands. These demands would include operating storage and emergency reserves and fire protection storage. At present, the combined pumping capacity of the existing and proposed wells is not sufficient to meet fireflow without additional storage capacity.

The base of the reservoir would initially be graded and compacted to accommodate placement of a concrete pad, upon which a tank would be constructed. Once complete, the tank would be painted in an appropriate color to blend in with the surrounding natural landscape. A solar powered, electricity-generating unit would be installed at the site to power lighting and communication equipment. An area 20 feet around the tank would be graded to allow for access to maintain the structure and also to accommodate drainage away from the tank. Additional grading would also be conducted to allow for adequate site storm water drainage and to direct

water away from the site. Stormwater would be directed into a nearby wash. A chain-link fence would be erected around the reservoir site to provide security. This enclosure would also be fitted with tortoise-proof fencing.

WASTEWATER SYSTEM IMPROVEMENTS

Searchlight Wastewater Treatment Facility (WWTF)

All proposed wastewater treatment facility improvements would occur within the existing Searchlight WWTF site. A new, mechanical wastewater treatment facility would be constructed for biological nutrient removal. The capacity of the plant could be expanded to 0.5 million gallons per day with activated sludge secondary treatment processes. This system would be capable of fully nitrifying and partially denitrifying flows. The target nitrate concentration in the treated effluent is 10 mg/L.

Plant effluent would remain on site. The existing facultative ponds at the WWTF would have the asphalt lining removed and would be converted into rapid infiltration basins. Treatment process upgrades may also facilitate recharge credit for the percolation of treated effluent, providing for more efficient water resource management for the Town of Searchlight. In order to protect the groundwater, the CCWRD and LVVWD have set a goal for the effluent water quality not to exceed 10 mg/l total nitrate.

The existing wastewater treatment facilities consist solely of facultative ponds. No power is currently required to run the system. Based on the CCWRD pre-design reports, the estimated energy requirements of the proposed WWTF is 416 kw/h with a connected load of 520 kVA and a power factor of 80%. More precise energy requirements cannot be identified until engineering design is completed.

Searchlight WWTF Access Road and Utilities

Currently, there are no utilities at the WWTF site. With the construction of the new treatment facilities, power and telephone lines would need to be brought to the site. These utilities would be buried within Nugget Lane, which is the existing unpaved access road to the WWTF (see Figure 2 below). Approximately 2,700 feet of Nugget Lane (between Encinitas Avenue and the WWTF) would be paved as a part of the Proposed Action. The existing CCWRD ROW would allow for the placement of the new utilities.

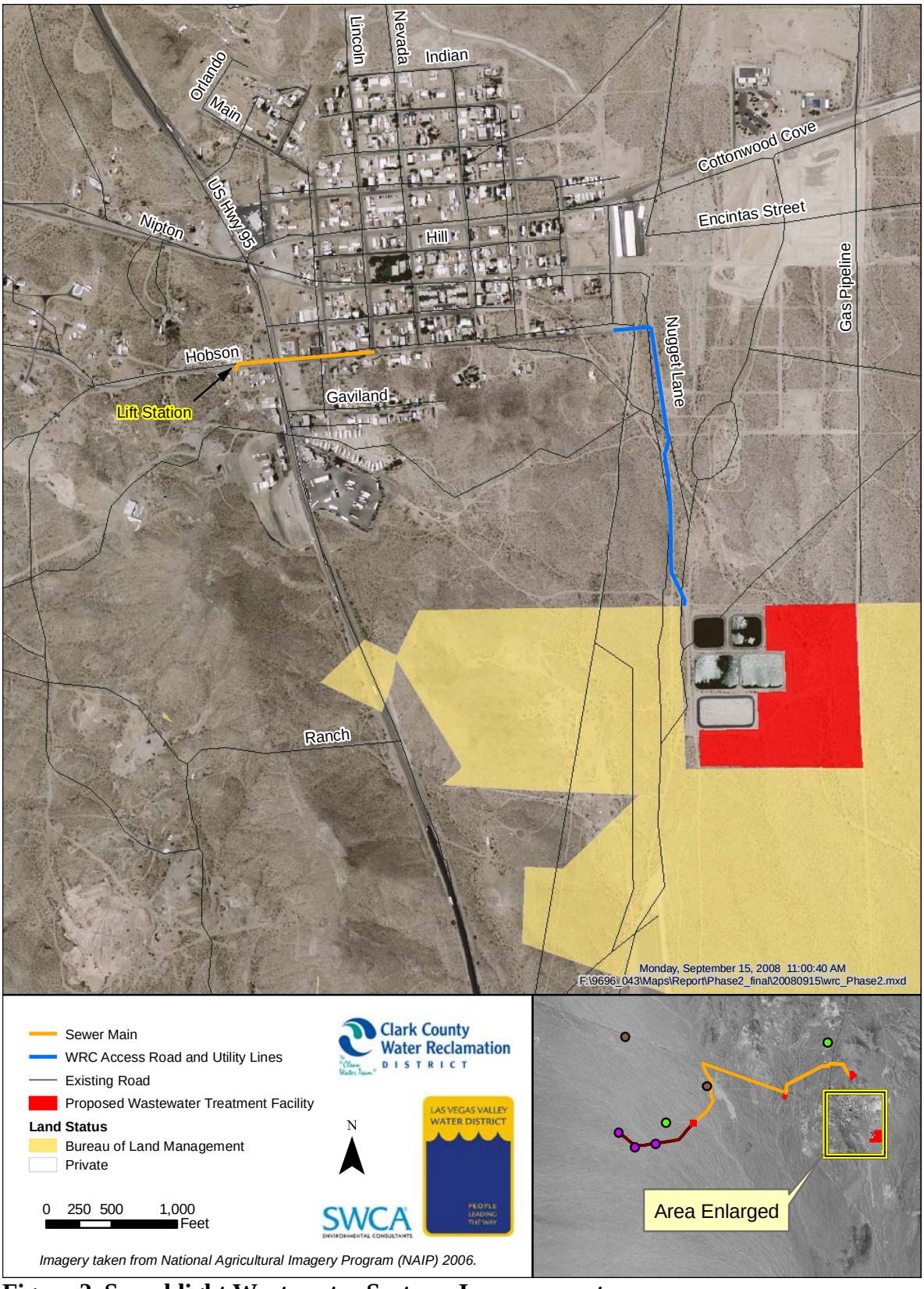

Figure 2. Searchlight Wastewater Systems Improvements.

Searchlight Sanitary and Sewer Force Mains

CCWRD is also evaluating improvements to the wastewater collection system. These improvements would occur on private lands and within existing easements. They consist of abandoning the existing, asbestos cement pipe force main, and replacing it with two new separate sanitary sewer mains, each approximately 1,100 feet in length and eight inches in diameter. These sewer lines would originate at the existing sewer lift station located 350 feet west of US-95 on Hobson Street (see Figure 2).

2.1.4 ENVIRONMENTAL PROTECTION DESIGN FEATURES

The project activities described under the Proposed Action would include features to protect the environment, and are discussed in detail below.

There is one federally listed species (the desert tortoise) and seven sensitive species that have the potential to occur in the project area. The project is also located within the BLM-designated Piute-Eldorado ACEC, and the U.S. Fish and Wildlife Service (USFWS) designated 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 mitigate potential impacts of the project on federally listed and sensitive species and their habitat.

VEGETATION

1. Before construction commences, temporary tortoise-proof fencing will be installed around work 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 complete project activities.
3. No vegetation clearing will occur during drilling of new permanent monitoring and production wells except to construct small catch basins. Instead, construction vehicles will drive overland and crush vegetation to preserve the surface soil and seed bank.
4. Before construction begins, the top 3 to 6 inches of topsoil will be removed in areas where excavation is required for catch basins. The soil will be stockpiled, and replaced following construction.
5. Cactus and yucca that would be impacted by construction activities will be salvaged, stored in an approved temporary nursery location, and replanted following construction.
6. All threatened, endangered, and BLM sensitive plant species located within the survey areas will be inventoried. A plant inventory and site location plan will be prepared to assist in rehabilitation or restoration of disturbed areas.
7. Erosion and runoff will be controlled using Best Management Practices (BMPs) during and after construction, including placement of weed-free hay bales or other sediment-filtering/surface-water directing devices and structures. Settling basins will also be used as water sediment-separating structures. Water or other dust-reducing measures will be used to control fugitive dust production. A NPDES Plan or stormwater pollution prevention plan will be prepared for the project to ensure that project-related drainage will be retained on site.

8. A noxious weed management plan will be prepared and implemented to prevent and control the spread of noxious weeds during and following construction. The plan will consist of the following three measures: (1) avoiding the transportation of weed parts (e.g., steam cleaning/washing construction equipment and vehicles), (2) monitoring the site after construction, and (3) treating (and eradication if possible) weeds at all revegetation and construction locations.

WILDLIFE

1. A litter-control policy will be implemented to minimize predation on tortoises by ravens, coyotes, or other predators drawn to the project area. This policy will include the use of covered, predator-proof trash receptacles; the removal of discarded food and drink; the transportation of food wrapping and drink container trash from the construction site to the trash receptacles at the end of each work day; and the proper disposal of this type 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. Prior to drilling and construction activities, migratory bird surveys will be conducted between March 15 and July 30 at each well site and within the WWTF. Construction activities will be conducted to avoid nests as feasible and minimize effects to nests and fledglings. Evidence of active nests or nesting will be reported immediately to the USFWS and the BLM and appropriate minimization measures will be determined on a case-by-case basis as needed.
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. Related to the above stipulation, spill prevention and response plan will be prepared to eliminate and/or minimize the impacts of drilling fluid and hazardous material spills. 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. A hazardous materials and pollution prevention plan will also be prepared to further ensure that hazardous materials spills would be prevented or immediately contained if there was a spill.
6. Fire prevention and suppression measures will be implemented to reduce the risk of fire during construction. Specific measures include parking vehicles and storing mechanized equipment in areas cleared of vegetation; limiting smoking to areas clear of vegetation, where designated by the field safety officer, or as otherwise posted; prohibiting fires of any kind including lunch or warming fires, unless a proper permit is obtained; ensuring that all vehicles are equipped with spark arrestors in good working order, a fire extinguisher (Type ABC), and a shovel.

7. The project will require temporary fencing. Fenced areas will undergo an initial tortoise clearance survey of the fence line *prior* to fence construction, and a tortoise clearance survey *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 aboveground. The lower 6 to 12 inches of the fence will be bent at a 90-degree angle toward the potential direction of encounter with a tortoise, and will be covered with cobble or other suitable material to ensure tortoises or other animals cannot dig underneath.
8. 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% coverage. During the active tortoise season, the pre-construction clearance will be no more than three days before initiation of construction. During the inactive tortoise season, the pre-construction clearance shall be within five days before work begins. If tortoise burrows are found in the construction areas, resident tortoises will be searched for, and if no tortoises are found within the burrow, it will be collapsed to prevent reentry.
9. If found, tortoises will be relocated by a qualified tortoise biologist in accordance with USFWS-approved protocol (Desert Tortoise Council 1994, revised 1999). Tortoises moved off site 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.
10. Desert tortoises moved during their inactive or estivation seasons (regardless of date), will be placed in an adequate burrow; if none is available, a burrow will be constructed in accordance with the Desert Tortoise Council protocol (1994, revised 1999).
11. A Worker Environmental Awareness Program 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, consequences of noncompliance, 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, information on federal and state law penalties for violations, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the Biological Opinion issued for the project, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained.
12. 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).
13. If a heat-stressed desert tortoise is encountered, a qualified tortoise biologist will place the tortoise in a tub with one inch of water for several hours in an environment with a temperature between 76˚ F and 95˚ F until heat stress symptoms are no longer evident.

14. For project sites that require trenching, trenches will be dug in such a manner that the side walls are contoured to allow any tortoises or other wildlife that inadvertently fall in a means to climb out. If such contouring is not feasible, trenches must be covered with ply board or similar materials during hours of construction inactivity.
15. A fugitive dust permit from the Clark County Department of Air Quality Management will be obtained prior to construction, and requisite dust control measures and BMPs will be implemented during the proposed project.
16. A Biological Opinion (84320-2009-F-002) has been issued by the USFWS for the project and is included as Appendix C. The project will adhere to all terms, conditions, and stipulations presented in the Biological Opinion. The Reasonable and Prudent Measures described in the Biological Opinion will be incorporated as conditions of the right-of-way grant issued for the project.

HAZARDOUS MATERIALS

1. A Spill Prevention and Contingency Plan will be implemented to minimize the risks of hazardous materials spills related to the proposed project. When operations of the treatment plant commence, sodium hypochlorite (NaOCl) will be stored on site to be used for disinfection and water quality control. Biweekly, the LVVWD will use a tanker truck to transport a 12% solution of NaOCl to the reservoir site to be stored on site. The truck will travel along public ROWs to reach the site and will enter the site at the northerly boundary. A coupler with an associated containment/recovery pit will be located on the exterior of the building. This will allow the dispensing hose on the tanker truck to connect to the piping to pump the NaOCl to the storage tanks in the disinfection equipment room.
2. The NaOCl solution will be stored in two 240-gallon polyethylene storage tanks. These tanks will be situated on concrete bases within a concrete containment pit. In the unlikely event of a spill, the NaOCl solution will be fully contained within the pit. The containment capacity of the pit will hold 110% of the amount of the NaOCl solution stored on the site. The containment pit will have a sump that will be connected to a sump on the outside of the building. A manually operated valve in the pipeline connecting the inside and outside sumps can be opened, and the contents of the containment area can be pumped into a truck for recycling without entering the containment area. Hazardous materials and chemicals used in the WWTF wastewater treatment system and support facilities will be stored in weatherproof building structures constructed of corrosion-resistant materials, designed with containment walls, and designed to withstand seismic vibration and wind loading.
3. Training of personnel for the handling, storage, and disposal of NaOCl will be conducted to comply with federal, state, and local government requirements.

SITE RECLAMATION

1. The permanent size of the exploratory well sites that will be converted to monitoring well sites will be reduced significantly. A 4-×-4-foot concrete pad will be poured around the wellhead. The remaining area around the pad will be reclaimed to pre-existing grade conditions to minimize the impacts of soil disturbance and improve soil stability. The perimeter of the monitoring well sites will not be fenced.

2. Reclamation of the groundwater distribution and WWTF-disturbed site areas will occur in coordination with BLM Las Vegas Field Office BMPs. The short-term goals of site reclamation will be to control soil erosion and sedimentation. The long-term goals will include erosion and sedimentation control, water resource protection, visual impacts minimization, and site revegetation with native plants.
3. Disturbed areas not occupied by permanent aboveground facilities or access roads will be graded, re-contoured, and compacted as applicable prior to replacing segregated/salvaged topsoil, reseeding, and replanting. Topsoil will be redistributed on graded slopes to a depth of 3 to 6 inches, and will be left in a roughened condition to discourage erosion. In coordination with the BLM Las Vegas Field Office, project-specific BMPs will be implemented to minimize soil erosion. A detailed discussion of soil erosion methods and measures will be presented in the project's Storm Water Pollution Prevention Plan.
4. Where soil compaction has occurred and is not desired, the seedbed will be scarified, tilled, or harrowed to enhance revegetation. Seeding mixtures, seeding rates and methods, and scheduling will then be implemented in accordance and coordination with the BLM Las Vegas Field Office. Disturbed sites will be revegetated with local, native species seeds or salvaged plants. A reclamation plan, including techniques for salvaging native plants, use of native plant species, native plant seed collection, and monitoring, will be developed prior to implementation of the project.
5. Following completion of the project, all debris, trash, construction materials, and solid waste will be removed from the sites. Reclamation success will be evaluated through site monitoring. Plant species will be monitored to ensure that they become established on the sites. Erosion control and sediment control measures will be assessed to ensure that they are effective. Remedial action will be taken to correct problem areas.

2.1.5 SEARCHLIGHT CONSERVATION MEASURES

A Conservation Plan for the Searchlight community was developed in 2006 and outlines specific measures to promote conservation in Searchlight (Las Vegas Valley Water District 2006). New and existing developments are also subject to county water conservation regulations under Clark County Title 24 and 30.

The LVVWD has installed and programmed 86 Permalog+ leak detection units in the community to improve the efficiency and accuracy of data collection, as well as improve the reliability of the water system by identifying possible leaks. It allows the LVVWD to better manage, monitor, and safeguard Searchlight's water resources.

Additionally, the LVVWD has initiated conservation outreach to Searchlight residents to help decrease unnecessary water use and water waste. The LVVWD mails notification letters to owners of properties where continuous water use has been detected during routine meter reads. The letters are intended to promote conservation by reducing water waste and unnecessary strain on the system. Free resources such as how-to videos and publications are provided upon request to assist customers in finding undetected leaks from faucets or worn toilet flappers that may be contributing to continuous water use.

Natural desert landscaping is embraced within the community, limiting the amount of water used outdoors. With limited water use outdoors, implemented conservation measures, and on-going leak detection program, low rates of water use and wastewater discharge have been maintained.

2.2 NO ACTION ALTERNATIVE

The National Environmental Policy Act requires the evaluation of a No Action Alternative, defined in Council on Environmental Quality (CEQ) regulations as a continuation of present trends and conditions (40 CFR §1502.14).

Under the No Action Alternative, replacement water supply facilities would not be constructed, and expansion and treatment process upgrades of the existing Searchlight WWTF would not occur. Repairs would be attempted on the existing well S-2 without replacement facilities in place. LVVWD would still need to construct an arsenic treatment facility or implement other measures to meet the EPA's new arsenic standard. The Searchlight Water System would continue to be operated without sufficient capacity for fire protection and emergency storage. Wastewater treatment process upgrades would not be constructed, and the system would not meet groundwater discharge permit requirements. Furthermore, the wastewater treatment facility effluent would not meet the drinking water standards for possible artificial recharge of groundwater in the future.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The Colorado River (approximately 15 miles east of the proposed project area) was initially considered as an alternative source of replacement potable water for the Searchlight Water System. This alternative was eliminated from further consideration for several reasons, including the distance of the river to the Town of Searchlight, the associated cost to construct the pipeline and supporting infrastructure, and the lack of existing water rights for Colorado River water.

Alternative pipeline alignments from the proposed production well sites to the existing water system were also analyzed during the initial stages of the project. These alternative alignments were considerably longer than the alignments selected in the Proposed Action and would have impacted a significantly larger area of undisturbed desert habitat. Most of this undisturbed desert habitat is within the Piute-Eldorado ACEC. The alignments selected in the Proposed Action impact the least amount of undisturbed desert habitat within the Piute-Eldorado ACEC and are the shortest alignments possible that utilize existing roads.

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 GEOLOGY AND SOILS

3.1.1 GEOLOGY

Piute Valley is aligned along a north-south axis, 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 composed mainly of alluvium, which is material eroded from surrounding mountains and transported downslope 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 because wash channels carrying alluvial sediments shifted direction over time (NRCS 2005).

3.1.2 SOILS

For the purposes of this section, terminology consistent with that used by the Natural Resources Conservation Service (NRCS) was used to identify specific soil types in the proposed project area.

Six types of soil are located within the project area. These are the Newera Association, Tenwell-Crosgrain Association, Crosgain-Tenwell Association, Haleburu extremely gravelly, sandy loam, 4% to 15% slopes Association, and the Lanip-Kidwell Association (USDA 2008).

The Newera Association has very gravelly, sandy loam soils that are often excessively drained and usually occur on hills. This association is derived from colluvium (gravity-induced accumulations of rock and soil at the foot of a slope) and/or residuum weathered from volcanic and metamorphic rock. This soil type has a low to moderate susceptibility to wind and water erosion when surface disturbances are left unstable. Water availability in this association occurs to a depth of 60 inches, with no zone of water saturation occurring within a depth of 72 inches. These soils have a very slow infiltration rate (and thus a high runoff potential) when thoroughly wet. The soil depth to a vegetation root-restrictive layer is 4 to 14 inches. This soil association generally has 220 frost free days a year, and there is very little organic matter in the surface horizon (near 0%). There are two major components in this association: Newera and Newera Steep. The Newera component has slopes that are 4% to 15% and the Newera Steep has slopes that are 15% to 50%.

The Tenwell-Crosgrain Association has very gravelly, loamy coarse sand soils that are well drained and usually occur on fan remnants. This association is derived from metamorphic rock mixed alluvium. A moderate to high susceptibility to wind and water erosion can be expected when surface disturbances are left unstable. Water availability in this association occurs to a depth of 60 inches with no zone of water saturation occurring within a depth of 72 inches. These soils have a very slow infiltration rate (and a high runoff potential) when thoroughly wet. Depth to a vegetation root-restrictive layer is 20 to 35 inches. This soil association generally has 230 frost free days a year, and there is very little organic matter in the surface horizon (near 0%). There are two major components in this association: Tenwell and Crosgrain. The Tenwell

component has slopes that are 2 % to 4% and the Crosgrain component has slopes that are 4 to 15%.

The Crosgrain-Tenwell Association has extremely gravelly, sandy loam soils that are well drained and usually occur on fan remnants. The parent material for this association is alluvium derived from metamorphic rock and mixed alluvium. This soil association has a low susceptibility to wind and water erosion when surface disturbances are left unstable. Water availability occurs to a depth of 60 inches with no zone of water saturation occurring within a depth of 72 inches. These soils have a very slow infiltration rate (with a high runoff potential) when thoroughly wet, and because flooding rarely occurs, ponding is not probable. Depth to a vegetation root-restrictive layer is 20 to 35 inches. This soil association generally has 245 frost free days a year, with very little organic matter in the surface horizon (near 0%). There are two major components in this association: Crosgrain and Tenwell. The Crosgrain component has slopes that are 2% to 8% and the Tenwell component has slopes that are 2% to 4%.

The Haleburu extremely gravelly, sandy loam, 4% to 15% slopes Association is, as its name implies, extremely gravelly, sandy loam soils that are well drained and usually occur on hills. This association is derived from colluvium and/or residuum weathered from volcanic rock. These soils have a low susceptibility to wind and water erosion when soil surface disturbances are left unstable. Water availability occurs to a depth of 60 inches with no zone of water saturation occurring within a depth of 72 inches. These soils have a very slow infiltration rate (with a high runoff potential) when thoroughly wet. Depth to a vegetation root-restrictive layer is 4 to 14 inches. This soil association generally has 280 frost free days a year, and the organic matter in the surface horizon is near 0%. The major component in this association is Haleburu, with slopes that are 4% to 15%.

The Lanip-Kidwell Association has very gravelly, sandy loam soils that are well drained and usually occur on fan remnants. These soils formed in alluvium derived from mixed volcanic sources, and have a low to moderate susceptibility to wind and water erosion when soil surface disturbances are left unstable. Water availability occurs to a depth of 60 inches with no zone of water saturation occurring within a depth of 72 inches. This soil association has a slow infiltration rate when thoroughly wet, and although there may be occasional to rare flooding events, ponding is not probable. Depth to a vegetation root-restrictive layer is greater than 60 inches. This soil association generally has 210 frost free days a year, and there is very little organic matter in the surface horizon (near 0%). There are two major components in this association: Lanip and Kidwell. Both of these components have slopes are 2% to 4%.

3.1.3 Soil Crust

Throughout the project area, biological soil crust covers most of the spaces between plants. 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 include a layer composed of cyanobacterial sheaths that hold soil particles in place, thus reducing wind- and water-caused soil 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).

3.2 WATER RESOURCES

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

Local convection summer storms, typically brief but intense, produce surface water runoff in the form of sheet flow that is then channeled into an extensive network of ephemeral washes (TNC and USFWS 2002). These unnamed washes drain into the Piute Wash approximately 17 miles southeast of the proposed project area. The Piute Wash drains into the Colorado River approximately 5 miles north of Needles, California. Most surface water runoff within the project area evaporates or rapidly percolates into the alluvial sediments prior to reaching the Piute Wash. U.S. Army Corps of Engineers permitting requirements associated with ephemeral washes will be addressed prior to construction.

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 (see Section 3.1). 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 Nevada Division of Water Resources has identified the perennial yield of Piute Basin to be 600 afy (NDWR 2008). LVVWD estimates that the current consumptive use for the entire Piute Valley Groundwater Basin is approximately 460 afy.

3.3 AIR QUALITY

Air quality within the airshed of the proposed project area is regulated through federal, state, and county agencies, including the EPA, the Nevada Department of Environmental Protection-Bureau of Air Quality, and Clark County Department of Air Quality and Environmental Management (CCDAQEM). All actions within the project area must be in compliance with the Clean Air Act (42 U.S.C. 7401 et seq.). 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 that EPA uses as indicators of air quality, and each has a maximum concentration above which negative effects on human health could occur. These pollutants consist of 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 below shows current NAAQS.

Table 3.1. National Ambient Air Quality Standards

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)	8-hour average	0.08 ppm (157µ/m^3)	primary and secondary
	1-hour average	0.12 ppm (235 µ/m^3)	primary and secondary
Lead (Pb)	quarterly average	1.5 µ/m^3	primary and secondary
Particulate Matter (PM_{10})	annual arithmetic mean	15 µ/m^3	primary and secondary
	24-hour average	150 µ/m^3	primary and secondary
Particulate Matter ($PM_{2.5}$)	annual arithmetic mean	15 µ/m^3	primary and secondary
	24-hour average	65 µ/m^3	primary and 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 values are 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

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. The proposed project area is currently in attainment for CO, NO_2, O_3 (1-hour standard), and 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; therefore a measurement of this criteria pollutant is not included for the project area. The sources of air pollutants within the vicinity of the proposed project area are vehicles traveling through Searchlight along Nipton Highway and US-95, local Searchlight traffic, and occasional vehicles traveling along existing unpaved OHV (off-highway vehicles) roads and access roads on public lands.

3.4 VEGETATION

According to the Southwest Regional Gap Analysis Project (SWReGAP) analysis (EPA 2005), there are five vegetation communities present within the proposed project area: (1) Inter-Mountain Basins Semi-Desert Shrub Steppe, (2) Mojave Mid-Elevation Mixed Desert Scrub, (3) North American Arid West Emergent Marsh, (4) North American Warm Desert Wash, and (5) Sonora-Mojave Creosotebush-White Bursage Desert Scrub.

Using the SWReGAP analysis, the percentage of each vegetation community in the general project area was estimated. The Sonora-Mojave Creosotebush-White Bursage Desert Scrub

makes up 61.27%, the Mojave Mid-Elevation Mixed Desert Scrub makes up 16.78%, the Inter-Mountain Basins Semi-Desert Shrub Steppe makes up 20.81%, the North American Warm Desert Wash makes up 0.42%, and the North American Arid West Emergent Marsh makes up 0.52%. It is important to note, however, that the SWReGAP analysis provides small-scale (1:100,000) mapping data, which do not differentiate between vegetation communities and unpaved OHV roads or tracks that lie within these communities. The limitations created by the small-scale mapping data and known existence of OHV roads within the proposed project area strongly suggest that these vegetation community percentages are overestimated. It should also be noted that only the 22.42 acres of proposed new disturbance are included in the vegetation analysis for the Searchlight WWTF.

The percentage of each vegetation community within proposed production and monitoring well sites and associated infrastructure were estimated and are shown in Table 3.2 below.

Table 3.2. Acres of Vegetation Community Type by Site

Site	Communities	Acres
Production Wells	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	1.41
	Mojave Mid-Elevation Mixed Desert Scrub	1.63
Monitoring Wells	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	1.16
	Mojave Mid-Elevation Mixed Desert Scrub	0.86
Inlet/Outlet Pipelines	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	8.28
	Inter-Mountain Basins Semi-Desert Shrub Steppe	1.57
Water Treatment Facility	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	1.70
	Mojave Mid-Elevation Mixed Desert Scrub	2.43
Well Discharge Pipeline	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	8.10
	Mojave Mid-Elevation Mixed Desert Scrub	3.14
Treatment Plant Discharge Outlet Pipeline	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	4.58
	Mojave Mid-Elevation Mixed Desert Scrub	1.91
Reservoir Site	Sonora-Mojave Creosotebush-White Bursage	1.07
	Mojave Mid-Elevation Mixed Desert Scrub	1.20
	Inter-Mountain Basins Semi-Desert Shrub Steppe	6.32
Wastewater Treatment Facility (WWTF)	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	15.24
	Mojave Mid-Elevation Mixed Desert Scrub	0.21
	Inter-Mountain Basins Semi-Desert Shrub Steppe	6.22
	North American Warm Desert Wash	0.42
	North American Arid West Emergent Marsh	0.35
Utility Site	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	0.01
Sewer Mains	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	0.34
Utilities to WWTF	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	0.78
	Mojave Mid-Elevation Mixed Desert Scrub	0.14
Subtotal	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	42.67
	Mojave Mid-Elevation Mixed Desert Scrub	11.52

Site	Communities	Acres
	Inter-Mountain Basins Semi-Desert Shrub Steppe	14.11
	North American Warm Desert Wash	0.42
	North American Arid West Emergent Marsh	0.35
Total		**69.07**[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.

3.4.1 VEGETATION COMMUNITIES

3.4.1.1 SONORA-MOJAVE CREOSOTEBUSH-WHITE BURSAGE DESERT SCRUB COMMUNITY

This 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 (*Gutierrezia microcephala*), Mexican bladdersage (*Salizaria mexicana*), spiny menodora (*Menodora spinescens*), turpentine broom (*Thamnosma montana*), Nevada joint-fir (*Ephedra nevadensis*), mormon tea (*Ephedra viridis*), banana yucca (*Yucca baccata*), and Joshua tree (*Yucca brevifolia*). The creosote bush community is the most common vegetation type in the project area.

3.4.1.2 MOJAVE MID-ELEVATION MIXED DESERT SCRUB COMMUNITY

This community is typically located between 4,000 and 6,600 feet (1,220 m and 2,000 m) in elevation in shallow soils restricted by bedrock or a caliche horizon. In general, blackbrush (*Coleogyne ramosissima*) forms monotypic stands and gives the landscape a dark, blackish gray cast. Blackbrush is the dominant species within this community. Associated species include mormon tea, threadleaf snakeweed, and banana yucca. The blackbrush community is the second most common vegetation community in the project area.

3.4.1.3 INTER-MOUNTAIN BASINS SEMI-DESERT SHRUB STEPPE 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.

3.4.1.4 NORTH AMERICAN WARM DESERT WASH COMMUNITY

These communities occur in areas which are typically dry washes or arroyos, where intermittent, but rapid waters flow. They appear as linear or braided strips in between bajadas, mesas, and basin floors. Vegetation associated with these communities typically occurs along banks and range from bare to fairly dense. Dominant vegetation in these communities include catclaw

acacia (*Acacia greggii*), splitleaf brickellbush (*Brickellia laciniata*), desertbroom (*Baccharis sarothroides*), desert willow (*Chilopsis linearis*), Apache plume (*Fallugia paradoxa*), burrobrush (*Hymenoclea salsola*), singlewhorl burrobrush (*Hymenoclea monogyra*), mesquite (*Prosopis* spp.), smoketree (*Psorothamnus spinosus*), desert almond (*Prunus fasciculata*), littleleaf sumac (*Rhus microphylla*), Mexican bladdersage, and greasewood (*Sarcobatus vermiculatus*).

3.4.1.5 NORTH AMERICAN ARID WEST EMERGENT MARSH COMMUNITY

These marsh communities are quite widespread and occur in depressions around lakes, rivers, and streams and occur in arid to semiarid regions with desert vegetation. Here, water levels may fluctuate but the marsh remains frequently or continually inundated. Because of the saturated, anaerobic soil conditions, vegetation is characterized by herbaceous plants and emergent and floating vegetation species in the following genera: *Scirpus* and/or *Schoenoplectus, Typha, Juncus, Potamogeton, Polygonum, Nuphar, Phalaris, Lemna, Potamogeton,* and *Brasenia*. Submergent vegetation may also be present, including species in the following genera: *Myriophyllum, Ceratophyllum,* and *Elodea.*

3.4.2 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 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 December 2007 SWCA Environmental Consultants (SWCA) completed cactus, yucca, and sensitive plant surveys of portions of the project area that were not surveyed in October 2005 (BLM 2006, 2008). 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 (*Yucca schidigera*) and Joshua tree yucca followed by pencil cholla (*Cylindropuntia ramosissima*), and two other cholla species, gold cholla (*Cylindropuntia echinocarpa*) and buckhorn cholla (*Cylindropuntia acanthocarpa*) (Table 3.3). Gold cholla and buckhorn cholla look fairly similar, hybridize regularly, and generally receive the same protection when it comes to salvage and were therefore recorded together during surveys. The highest density of Joshua tree and Mojave yucca are found at the Searchlight WWTF site and along the inlet-outlet pipeline and well discharge pipeline within the project area. Pencil chollas are most abundant along the well-discharge pipeline.

To accurately depict this variability (change in distribution across the landscape), the numbers of cacti and yucca found during surveys have been organized by locations in which they were found (Table 3.3).

Table 3.3. Cacti and Yucca Species in the Project Area

Location	Mojave Yucca[1]	Joshua Tree	Cottontop	Johnson's Fishhook Cactus	Matted Cholla	Pencil Cholla	Buckhorn and Gold Cholla	Beavertail Prickly Pear	Grizzly Bear Prickly Pear	Fishhook Cactus	Barrel Cactus	Engelmann's Hedgehog Cactus	Total
Discharge Pipeline[3]	1,549	217	12	0	5	124	9	63	7	0	5	9	2,000
Inlet-Outlet Pipeline	1,836	215	9	12	1	0	0	39	0	0	0	59	2,171
PVE-C	53	8	3	0	0	0	0	3	0	0	0	0	67
PVM-1[2]	-	-	-	-	-	-	-	-	-	-	-	-	-
Reservoir Site	1,085	185	0	10	0	0	0	25	0	0	0	20	1,325
S-3	177	6	0	0	3	20	5	2	0	0	0	0	213
S-4a	84	14	0	0	0	4	1	2	0	0	0	0	105
S-4b (Alternate)	220	12	0	0	3	9	3	6	0	0	0	0	253
Treatment Plant Discharge Pipeline	1174	64	18	1	0	0	0	5	0	1	0	5	1,268
Utility Site	16	5	0	0	0	0	0	1	0	0	0	0	22
WWTF	2,347	36	8	0	0	0	44	10	0	0	0	1	2,446
Water Treatment Facility	468	11	3	0	0	0	0	1	0	0	0	0	483
Total	**9,009**	**773**	**53**	**23**	**12**	**157**	**62**	**157**	**7**	**1**	**5**	**94**	**10,353**

1 = These numbers represent the individual heads of Mojave Yucca as they have individual root systems and may be salvaged separately.

Source: SWCA 2007

2 = Well Site PVM-1 is within fenced NDOT gravel yard and data were not obtainable at the time of survey.

3 – Approximately 3700 feet of pipeline from Nipton road, south, is within the NDOT gravel yard and data were not obtainable at the time of survey.

3.4.3 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 outcompete 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). Invasive species are regulated by EO 13112, as described above in Table 1.1.

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

3.5 WILDLIFE

The proposed project area occurs in typical desert upland habitat that supports numerous species of small mammals, reptiles, invertebrates, and birds. Although the Mojave Desert vegetation occurs throughout the project area and supports a wide variety of animals, few wildlife species were directly observed during the SWCA December 2007 field surveys within the proposed project area (SWCA 2007). Indirect, survey-related observations and evidence of reptile, bird, and small mammal species that typically inhabit the project area's desert upland habitat (including burrows and tracks) were relatively common. Species and/or their sign observed in the project area include the following.

2007 SURVEYS

MAMMALS

- Black-tailed jackrabbit (*Lepus californicus*)
- Desert cottontail (*Sylvilagus audonboni*)
- Coyote (*Canis latrans*)

REPTILES

- Desert tortoise (*Gopherus agassizii*)

BIRDS

- Red-tailed hawk (*Buteo jamaicensis*)
- Common raven (*Corvus corax*)
- White-crowned sparrow (*Zonotrichia leucophrys*)
- Gambel's quail (*Callipepla gambelii*)
- Say's phoebe (*Sayornis saya*)
- Cactus wren (*Campylorhynchus brunneicapillus*)

In addition, the following species were observed during biological surveys conducted by SWCA in November 2005.

2005 SURVEYS

MAMMALS

- Kangaroo rat (*Dipodomys merriami*)
- White-tailed antelope ground squirrel (*Amnospermophilus leucurus*)

REPTILES

- 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*)
- Crissal thrasher (*Toxostoma crissale*)
- Brewer's sparrow (*Spizella breweri*)
- Sage sparrow (*Amphispiza belli*)
- Black-throated sparrow (*Amphispiza bilineata*)
- Loggerhead shrike (*Lanius ludovicianus*)

Four raptor species were noted during these field surveys: the golden eagle, prairie falcon, sharp-shinned hawk, and red-tailed hawk (BLM 2006). The presence of raptors could be attributed to a high concentration of rodents, hares, and rabbits in the project area.

3.6 SPECIAL STATUS SPECIES

3.6.1 FEDERALLY LISTED SPECIES

Section 7 of the Endangered Species Act (Act) [16 U.S.C. 1531 et seq.] outlines the procedures for Federal interagency cooperation to conserve federally listed species and designated critical habitats. Section 7(a) (1) directs all federal agencies to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of species listed pursuant to the Act. This section of the Act makes it clear that all Federal agencies should participate in the conservation and recovery of listed threatened and endangered species.

Section 7(a) (2) states that each federal agency shall ensure, in consultation, that any action they authorize, fund, or carry out is not likely to jeopardize existence of a listed species or result in the destruction or adverse critical habitat. In fulfilling these requirements, each agency is to use the best scientific and commercial data available. This section of the Act defines the consultation further developed in regulations promulgated at 50 CFR §402.

Although it is the responsibility of the USFWS to make the determination of jeopardy or destruction/adverse modification in the biological opinion, action agencies and applicants should be fully informed and involved in the development of Reasonable and Prudent Alternatives, Reasonable and Prudent Measures, and Terms and Conditions to minimize the impacts of incidental take. Biologists should be creative in problem solving and look for ways to conserve listed species while still accommodating project goals. By law, Section 7 consultation is a cooperative effort involving affected parties engaged in analyzing effects posed by proposed actions on listed species or critical habitat(s). Latitude exists within Section 7 to work with applicants and agencies during this analytical process.

The USFWS has 15 federally listed, threatened or endangered species within Clark County, Nevada. Of these, the desert tortoise (*Gopherus agassizii*) is the only species with the potential to occur within the project area.

The USFWS emergency listed the Mojave population of the desert tortoise as endangered on August 4, 1989 (54 FR 32326) in response to a 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) (USFWS 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 consists of 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 (610m to 1,067m) in elevation. Tortoises prefer areas characterized by scattered shrubs and abundant interspace for growth of herbaceous plants, with soils ranging from sand to sandy gravel, and with friable soils for digging burrows.

According to SWReGAP analysis (EPA 2005), five primary habitat types are present in the project area: (1) Inter-Mountain Basins Semi-Desert Shrub Steppe, (2) Mojave Mid-Elevation Mixed Desert Scrub, (3) North American Arid West Emergent Marsh, (4) North American Warm Desert Wash, and (5) Sonora-Mojave Creosotebush-White Bursage Desert Scrub (see Section 3.4, Vegetation). The SWReGAP analysis identified the Mojave Mid-Elevation Mixed Desert Scrub community as dominant in the area; however, field biologists observed this community to be overestimated and the Sonora-Mojave Creosotebush-White Bursage Desert Scrub community underestimated (see Section 3.4). No formal vegetation survey methods were used for this determination.

FIELD SURVEYS

In December 2007 SWCA biologists performed biological surveys in the proposed project area of the following.

- Proposed monitoring and production well sites
- The proposed ROWs along the existing unpaved access roads upon which project vehicles would drive to access the monitoring and production well sites

- The ROWs for the proposed pipeline routes
- The site of the proposed water treatment facility
- The site of the proposed improvements to the Searchlight WWTF
- The site of the proposed reservoir
- A USFWS-recommended 300- and 600-foot interval zone of influence (ZOI) extending beyond and surrounding project area boundaries. The ZOI was surveyed according to USFWS protocols (BLM 2008).
- The status of desert tortoise in the project area and in the ZOI.

A total of 15.56 acres (19% of the proposed 83.84-acre project area) lies within the PECHU, an area set aside by the USFWS in 1994 for recovery of the desert tortoise (USFWS 1994a). The PECHU is also part of the larger, Piute-Eldorado Desert Wildlife Management Area (WMA), which was designated by the BLM. The Piute-Eldorado Desert WMA is the largest expanse of desert tortoise habitat in Nevada and contains the highest concentrations of desert tortoise in the state (40–90 adults per square mile), though population density varies throughout the Desert Wildlife Management Area (Krzysik 2005).

Desert tortoise habitat in and around the project area is characterized by friable soils and vegetation typical of high quality, tortoise habitat. There is very little development in the western portion of the project area, with the exception of Walking Box Ranch on the western edge and a few narrow, unpaved OHV and access roads scattered throughout the project area. There is also very little evidence of OHV use or litter within this western portion, except along Nipton Highway. Development and signs of human impact do occur in the eastern portion of the project area, as the project area boundary approaches the Town of Searchlight. There are also signs of OHV use, mining, as well as signs of heavy trash dumping in this eastern portion.

SWCA's biological field surveys in December 2007 confirmed that the project area contains suitable desert tortoise habitat. However, the survey results also indicate that desert tortoise activity is limited in the project area and the ZOI. The ZOI is a 600-foot wide buffer surrounding the project area representing the furthest distance at which the project could affect sensitive species. Twenty-three tortoise burrows were recorded during field surveys of the project area and the ZOI. Four instances of scat were encountered, totaling 19 individual pieces. Two of the burrows recorded exhibited recent signs of tortoise use. No live desert tortoises or tortoise carcasses were observed during field surveys.

The limited documentation of the desert tortoise, or signs of the tortoise, in the area, as described above, indicates that tortoises have inhabited the area, but there are few 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 that the proposed project area supports a low density of tortoises (10–45 per square mile), based on a calculation of 26 total signs per 136.7 acres totaling 0.19 corrected signs per acre (Table 3.4). Based on the calculations for determining the number of tortoises per square mile, it is estimated that tortoise density within the project area and ZOI lies at 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

Seven of the sensitive species that occur within Clark County, Nevada have the potential to occur within the proposed 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 by SWCA biologists while performing 2005 desert tortoise surveys (BLM 2006).

Status of Sensitive Species in the Project Area and ZOI

Records from NNHP list three occurrences of rosy two-tone beardtongue (*Penstemon bicolor* ssp. *roseus*), all located to the west of the project area. These surveys were performed in 1961 (one record) and 1992 (two 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 difficult to distinguish this species from other *Penstemon* species when it's not in bloom, surveys performed by SWCA in December 2007 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. However, it should be noted that 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_1

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
Chuckwalla (*Sauromalus obesus*)	BLM: N State: None	Found in rocky hillsides and rock outcrops within the desert scrub community.	No[1]
Rosy Two-tone Beardtongue (*Penstemon bicolor* ssp. *roseus*)	BLM: N State: None	Occurs in gravelly or rocky soils within the creosote or blackbrush scrub.	No[1]
Crissal Thrasher *(Toxostoma crissale)*	BLM: N State: FP	Fairly common, but elusive, in dense cover along desert washes.	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*
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*
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*

Source: 1= NNHP 2005
* Observed in 2005
BLM
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
STATE
FP=Listed as Fully Protected in the State of Nevada
None=No listing

SWCA surveys in December 2007 did not detect any of the sensitive wildlife species identified by NNHP or observed in the SWCA 2005 field surveys. Although none were seen during these surveys, habitat for the common chuckwalla (*Sauromalus obesus*) was found on the eastern edge of the project area. The 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 from the project area boundary. In Clark County, populations have declined due to the development in 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). Habitat for the Gila monster (*Heloderma suspectum cinctum*) appears to be marginal in the project area. There are only three recorded sightings of Gila monsters in Clark County, and little is known about the population. All of these occurrences are more than 3.1 miles from the project area (RECON 2000).

Four sensitive bird species were detected within the project area during surveys conducted by SWCA in November 2005. 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 is also 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, both of 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 December 2007, SWCA biologists observed nine migratory bird species, including the common raven (*Corvus corax*), black-throated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), Say's phoebe (*Sayornis saya*), northern flicker (*Colaptes auratus*), cactus wren (*Campylorhynchus brunneicapillus*), an unknown species of owl, Gambel's quail (*Callipepla gambelii*), and red-tailed hawk (*Buteo jamaicensis*) (BLM 2008).

Nesting and foraging habitat for these nine species can be found throughout the project area. Within the project area there are also many Joshua trees that could support nesting habitat for both ravens and red-tailed hawks.

SWCA biologists found two nests during field surveys. The first appeared to be a cactus wren nest and was found in a silver cholla (*Cylindropuntia echinocarpa*). The second, likely belonging to a verdin (*Auriparus flaviceps*), was found near a wash in an acacia bush.

3.7 CULTURAL RESOURCES

A cultural resource inventory was conducted from February 12, 2008 to March 18, 2008 (Whitesides et al. 2008). The inventory included a complete investigation of proposed monitoring wells, production wells, water pipelines, reservoir, arsenic treatment plant, and the expansion of the Searchlight WWTF facility. Access roads that would be used for the project have been previously inventoried for cultural resources (Stokes et al. 2006) and were not resurveyed during this project

The goal of this effort was to identify significant cultural resource within the proposed project area, and to assess impacts to them from the Proposed Action. The cultural investigations were conducted in compliance with NEPA, the National Historic Preservation Act (NHPA) of 1966 as amended, and respective implementing regulations and guidelines (36CFR 60; 36CFR 800). Compliance with the Antiquities Act of 1906 (16 U.S.C. 431 et seq.), Archaeological Resources Protection Act, as amended (16 U.S.C. 470aa et seq.), and American Religious Freedom Act of 1978 (42 USC 1531) is also completed while complying with the NHPA.

The NHPA governs the management of historic properties and requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are defined as those cultural resources listed on or eligible for listing to the National Register of Historic Places (NRHP).

Tribal consultation and/or coordination (if traditional cultural properties or prehistoric sites are subsequently identified within the project area) would be managed through the lead agency (the BLM). The need for consultation and coordination would be determined by the BLM based on a determination of need through its internal review process. As required by law, all tribal consultation must be formally initiated and coordinated through a federal agency.

3.7.1 Literature and Previously Recorded Site Review

In order to identify previously identified cultural resources within the project area, SWCA requested a site and project file review from the Harry Reid Center in Las Vegas, NV, and conducted a review of records made available from the Nevada Cultural Resource Inventory System (NVCRIS) maintained by the Nevada State Historic Preservation Office (NVSHPO). 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.

These searches resulted in the identification of 30 projects and 21 cultural resource sites in or within approximately one mile of the proposed project area. These sites encompass a variety of types and are all from the historical period. Of the 21 sites, 2 have been recommended as eligible for the NRHP (sites 26CK004626 and 26CK007460), 15 have been recommended not eligible for the NRHP, and 4 are unevaluated.

Site 26CK004626 is a historical ranch (the Walking Box Ranch) and Site 26CK007460 is a historic mine; both are located near but not in the project area.

A historical overview of the proposed project area is provided as part of the cultural resources inventory report, and is included as supporting documentation for this EA (Boatman et al. 2008). Based on the historical overview and results of the file search, it is evident that a variety of historical cultural resources are present in the vicinity of the proposed project, with historical resources encountered much more frequently than prehistoric resources; this may be due to a lack of surface water in the area that would have limited prehistoric occupations.

The file search and historical overview also indicate that 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, fence lines, 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 power lines, are also present in the general area.

3.7.2 Cultural Resource Inventory

Following the literature review, SWCA conducted an intensive, pedestrian, cultural resource inventory. Archaeological field methods used to conduct the survey are described in detail in the cultural resource inventory report produced for the project (Boatman et al. 2007). All methods, including the identification of cultural resources, discrimination among sites, isolated occurrences, and isolated features, followed Nevada BLM Guidelines (BLM 1990), as well as

specific instructions from BLM, Las Vegas Field Office. Eligibility evaluations followed the NHPA implementing guidelines 36 CFR 60.

As a result of the cultural resources inventory, seven isolated objects and five archaeological sites (26CK008264, 26CK008265, 26CK008266, 26CK008267, and 26CK008268) were identified within the Area of Potential Affect (APE). Both prehistoric and historic archaeological isolated objects were recorded and by definition, determined not eligible to the National Register of Historic Places with NVSHPO concurring with the BLM in a letter dated July 28, 2009.

3.8 SOCIOECONOMICS

Established in 1898, Searchlight, Nevada was founded on gold mining. In 1907 at the height of the town's mining boom, Searchlight's population was approximately 1,500. As the production cost of ore went up, the quality of ore went down, and the mines were exhausted. 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 2007 there were an estimated 816 people living in Searchlight. This was a 41% increase from 1990, when the population was 577 (Table 3.6). Searchlight's decline in population from 2004 to 2007 was due to changes in reporting methods. In 2006 the method used to gather data was modified from the previous method in 1990, and the recent change in the geographic approach to population recordation more accurately reflects the Searchlight population (Staite 2008).

Table 3.6. Population Trends in Searchlight, Nevada and in Clark County, Nevada

Location	1990	2000	2004	2007
Clark County	797,142	1,428,690	1,747,025	1,996,542
Searchlight	577	769	1,127	816

Source: Clark County 2007

Clark County is one of the fastest growing counties in the United States. In 2007 Clark County had an estimated population of 1,996,542. This was a 40% increase from 2000, and a 150% increase from 1990 (see Table 3.6). Clark County encompasses the Las Vegas metropolitan area, and according to 2000 Census data, was ranked first in the nation in percentage change (83.3%) in population from 1990 to 2000. 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 77% increase (Clark County 2006) (Table 3.7). In 2007 Clark County reported that the total housing units had increased to 769,875 in the county, a 37% 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 20% increase. By 2007 there were 416 housing units in Searchlight, a 13% increase from 2000. The majority of these housing units

in Searchlight are mobile homes. The 2007 population estimates data indicate that out of the 416 housing units, 344 units are mobile homes, 46 are single family homes, and 24 are apartments.

Table 3.7. Housing Trends in Searchlight, Nevada and in all of Clark County, Nevada

Location	1990	2000	2007
Clark County	315,229	559,382	769,875
Searchlight	306	368	416

Source: Clark County 2007

3.9 VISUAL RESOURCES

3.9.1 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. The VRM classes are visual ratings that describe an area in terms of visual or scenic quality and viewer sensitivity to the landscape (the degree of public concern for an area's scenic quality). Once an area has been assigned a VRM class, the management objectives of 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 management objectives of its VRM class (BLM 1980).

The Las Vegas Field Office's Resource Management Plan (RMP) (BLM 1998) has designated the majority of lands in the proposed project area as VRM Class III. Management objectives of VRM Class III allow authorized actions that may alter the existing landscape, but not to the extent that they attract or focus the attention of the casual viewer. The VRM class designations are based on the area's visual sensitivity and are 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).

3.9.2 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 form and color-related contrasts to the variegated green vegetation within Piute Valley. Naturally exposed buff and tan colored soils also add color-related scenic contrasts and scenic quality to the area. The proposed project area appears to be undeveloped, with the exception of the historic Walking Box Ranch on the western boundary of the project area, the existing wastewater treatment ponds at the Searchlight WWTF south of town, the historic mining-related surface disturbances north of town near the proposed WWTF, US-95 and Nipton Highway, and the dispersed OHV and access routes. The Town of Searchlight lies between the proposed water distribution system to the north and west and the proposed WWTF to the south and east.

3.9.3 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 the effects proposed projects have 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 as follows:

- 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

Three KOPs were selected to determine the potential impacts of the proposed project on visual resources within Piute Valley: (1) Nipton Highway, (2) US-95, and (3) Searchlight's Chevron Travel Center (See Figure 1). These three 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 degree of visual contrasts was rated at each KOP based on the 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).

3.9.3.1 KOP 1 – NIPTON HIGHWAY (SR-164)

This view was chosen because it is similar to the view that vehicle passengers might see of the project area while traveling along Nipton Highway. Foreground views are of the relatively flat, sparsely vegetated, 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 leaves of yucca plants and spine-covered cactus stems. Occasional Joshua trees and larger cacti rise above the surrounding vegetation and provide form and color contrasts. Middle ground views are similar to the foreground views and consist of flat or gently rolling topography, low rising hills of uniformly spaced, and low growing desert vegetation interspersed with thorny cacti and Joshua trees that break up the uniformity of desert vegetation. A distinctive power line crosses the landscape from north to south providing color and line contrast to the low vegetation. Background views are of the rugged, indistinct, dark colored mountain ranges to the west.

3.9.3.2 KOP 2 – US-95

This view was chosen because it is similar to the view that vehicle passengers might see of the project area while traveling along US-95. Foreground views are of the sparsely vegetated and gravelly road shoulder bordered by rolling hills and low growing desert vegetation. Tan to buff colored desert soil is visible, and provides color and texture contrasts with the green leaves of yucca plants and spine-covered cactus stems. Occasional Joshua trees and larger cacti rise above the surrounding vegetation and provide form and color contrasts. Middle ground views are of the more distinct, rugged topography and uniformly spaced, low-growing desert vegetation. Three bold, tall communication towers are visible on the rugged hills to the south and east as well as residential areas consisting of light colored, low single story structures, transmission lines, and taller dark green evergreen trees contrasting with the visible tan colored soils. Background views are not visible from this KOP because the rugged topography of the middle ground screens the low rolling hills of the background to the south and east of the project area.

3.9.3.3 KOP 3 – CHEVRON TRAVEL CENTER

This view was chosen because it is one of the few places where people might see the project area from the Town of Searchlight. Foreground views are primarily of the tall, planted evergreen trees that provide some visual screening to the travel center. Middle ground views are of the sparsely vegetated, rolling hills and low growing desert vegetation. Occasional Joshua trees and larger cacti rise above the surrounding vegetation and provide form and color contrasts. The existing Searchlight wastewater treatment ponds and proposed WWTF site are visible at the low point of the valley, creating color and line contrast to the grey-green vegetation and tan colored soils. Background views are of the low rolling hills to the east.

3.10 NOISE

3.10.1 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) and 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 airplanes flying overhead, passing vehicles, and other sounds of lower intensity such as humming transformers, is considered to be the best measure for quantifying the magnitude of environmental noise. 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 pm to 7 am) (EPA 1978).

3.10.2 Ambient and Existing Noise Levels

Ambient noise 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).

There are no residences within the proposed project area and very little development, with few potential noise sources except for intermittent vehicle noise from Nipton Highway and US-95, and occasional noise from OHVs traveling along unpaved access routes in the proposed project area. Although roadway traffic contributes to noise, this source is transient, produced primarily by commercial and passenger vehicles traveling north-south along US-95 through Searchlight and east-west along Nipton Highway (see Figure 1). Thus, existing noise levels in the project area consist almost entirely of vehicles traveling along these highways.

Existing vehicle-caused noise is localized along the Nipton Highway and US-95, 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) little development and low 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 and US-95.

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. Beyond the highways discussed above, there are no human sensitive noise receptors in the proposed project area that would be impacted by noise.

3.10.3 EPA Noise Standards

The EPA has published recommended sound levels it considers necessary to protect public health and welfare and has classified them according to areas where human activity is most likely to occur. Table 3.8 presents a summary of the EPA's recommended sound levels. The EPA-recommended maximum L_{eq} noise level to protect public health, based on the low level of human presence within in the project area, is 70 dB. Noise generated by any activity, which may affect human health or welfare on federal, state, county, local, or private lands, must comply with noise limits specified in the Noise Control Act.

Table 3.8. 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
Commercial	$L_{eq}(24)$	(a)	70	70(b)	(a)	70	70(b)
Educational	$L_{eq}(24)$ $L_{eq}(8)$(c)	45	70	45	55	70	55
Farm Lands and General Unpopulated Areas	$L_{eq}(24)$				(a)	70	70(b)
Hospitals	L_{dn} $L_{eq}(24)$	45	70	45	55	70	55
Industrial	$L_{eq}(24)$(c)	(a)	70	70(b)	(a)	70	70(b)
Inside Transportation	$L_{eq}(24)$	(a)	70	(a)			
Residential with No Outside Space	L_{dn} $L_{eq}(24)$	45	70	45			
Residential with Outside Space and Farm Residences	L_{dn} $L_{eq}(24)$	45	70	45	55	70	55

[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) Because 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

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

4.1 GEOLOGY AND SOILS

4.1.1 PROPOSED ACTION

The soil associations in the proposed project area are poorly developed desert soils with very little or no organic matter in the surface horizon and with a high rock, sand, and gravel content. As discussed in Section 3.1, these soils typically occur on gentle slopes of the valley floor and are not highly susceptible to erosion by wind and water. Implementation of the Proposed Action (with construction activities that would include well drilling, pipeline trenching, site grading, and excavation for facility construction) would result in adverse impacts to geology and soils in the proposed project area, as detailed in the list below. Direct, adverse impacts would be caused by construction-related surface disturbances. Indirect impacts would be caused by wind and water erosion of disturbed soils between the time of construction disturbance and successful reclamation by vegetation and/or soil stabilization by biological crust formation. These impacts may include the following:

- Long-term, direct, and indirect soil disturbance-related impacts on 83.84 acres (45.59 acres of BLM-administered public land and 38.25 acres of private land) caused by grading and excavation during construction of the Proposed Action.
- Short-term, indirect soil loss due to wind erosion from the excavated and stockpiled soils.
- Short-term, indirect soil loss from water erosion resulting from temporary discharges during well development and pipeline testing.
- Short-term, direct impacts from potential soil contamination from accidental fluid leaks from construction equipment.

Due to the commonality of geology and soils in the area because the project occurs in a predominantly flat area, and because the soils are not highly susceptible to erosion from wind and water, it is likely that adverse, disturbance-related impacts from construction of the Proposed Action on geology and soils would occur in the short term. The adverse impacts to soils would be mitigated during and following construction activities through implementation of BLM BMPs and the mitigation measures discussed in Section 2.1.4, Environmental Protection Design Features.

4.1.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water and wastewater systems improvements would not be constructed, therefore no project-related impacts would occur to geology or soils. Geologic and soil characteristics of the area would continue to be subject to existing conditions and trends, locally and regionally.

4.2 WATER RESOURCES

4.2.1 PROPOSED ACTION

Construction of the Proposed Action would disrupt the ground surface within the ROWs, including several ephemeral washes. These washes are dry and only carry water during periods

of heavy rainfall, most often associated with heavy summer thunderstorms. Washes crossed by the pipelines would be restored at completion of construction, and no changes in drainage patterns would occur. The Proposed Action would be permitted under the NPDES General Permit for construction projects and would implement a Storm Water Pollution Prevention Plan. BMPs implemented under that authorization, including the use of silt fences and straw bales, would minimize potential for erosion due to runoff during construction activities. Because original drainages would be restored, and the surface stabilized after construction, sedimentation would not exceed current levels typical of desert-wash systems. However, it should be noted that the project area is located on the boundary of the Mojave Desert and receives approximately 6 inches of precipitation annually, therefore the likelihood for encountering wet weather and stormwater runoff during construction is relatively low.

The existing well S-2 has been in use for groundwater production for Searchlight since 1992. Since then, the static water level in the well has declined approximately 30 feet. Currently, the elevation of the static water level at well S-2 is approximately 3,010 feet above mean sea level (917 m). The closest monitoring well is well PVe-K, approximately 1 mile away. The static water level at well PVe-K is at an elevation of 3,043 feet (927 m) which is the same as the elevation of the water level measured in well S-2 prior to developing water from that well. This relationship indicates little or no change in the water level elevation a mile away from well S-2. The proposed replacement groundwater production wells S-3 and S-4 are located less than one mile from well S-2, and would be drilled in the same geologic units. Similar to historical experience with well S-2, little or no change in water level elevations would be expected more than a mile away from the new well sites. There are no existing groundwater production wells, wetlands, springs, or other water resource features within one mile of the proposed new well sites. Thus, groundwater production from the new well sites would not result in short-term or long-term adverse impacts to water resources.

The current consumptive uses of groundwater in Piute Valley consist of commercial, domestic, industrial, municipal, stock, and wildlife purposes. The current use for the entire Piute Valley is estimated by LVVWD to be approximately 460 afy. Piute Valley is recharged by precipitation and snowmelt runoff from the Lucy Gray Range, the Castle Mountains, and the McCullough Mountains, as well as from groundwater flows from adjacent up-gradient valleys. The Nevada Division of Water Resources estimates that the perennial yield of Piute Valley is approximately 600 afy (NDWR 2008). The proposed replacement groundwater production wells would continue to be used to pull existing permitted water rights within perennial yield of Piute Valley, and no long-term adverse impacts on water rights would occur.

The EPA's Safe Drinking Water Act's Revised Arsenic Rule lowered the current Maximum Contamination Level (MCL) of arsenic from 0.050 mg/L to 0.010 mg/L. The rule was effective January 23, 2006. The current average arsenic concentration in the Searchlight Water System is 0.012 mg/L. LVVWD applied for and received an extension of time (2009) to meet the new arsenic standard in order determine if the new groundwater well sites would yield lower arsenic levels. Based on preliminary results from exploratory drilling conducted in 2007, LVVWD anticipates the new wells S-3 and S-4 would yield lower arsenic levels within the new EPA standard. These replacement production wells, along with the expansion and upgrade of the existing Searchlight WWTF as part of the Proposed Action, would ensure that the arsenic standards are met and would have a beneficial impact on water quality for the Town of Searchlight.

The existing wastewater treatment at the Searchlight WWTF would be upgraded as part of the Proposed Action. The treatment upgrades would allow for the treated water to be used to recharge the groundwater aquifer, which would result in better water resource management in the Searchlight area.

The Proposed Action would help promote the sustainability of the Piute Valley groundwater basin by developing a system-wide monitoring network, enhancing efficiency of groundwater use with improved infrastructure, and implementing direct water recharge.

4.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the groundwater production wells and associated infrastructures would not be built. Searchlight would continue to rely on wells S-1 and S-2 for water supply. Needed repairs to well S-2 would be undertaken without having replacement production wells in place. If those repairs resulted in collapse of well S-2, water supply to the Town of Searchlight would be completely reliant on existing well S-1. Because this well does not have full backup capacity, this would result in adverse impacts to the town's water supply.

Groundwater produced from the existing well sites does not meet the new EPA standards for arsenic concentration. Under the No Action Alternative, LVVWD would still need to construct an arsenic treatment facility or implement other measures to meet the new standard.

Without treatment process upgrades, the Searchlight WWTF may not be able to obtain a renewal of its groundwater discharge permit, and treated wastewater would not be suitable for recharge. There would be no potential benefits for local water resource management. Without treatment capacity, existing and future Searchlight users would continue to use individual septic systems. If managed properly, individual septic systems can provide adequate handling of wastewater flows. However, if the septic systems fail or are not properly managed, they could pose risks to water resources.

4.3 AIR QUALITY

4.3.1 PROPOSED ACTION

The Proposed Action would generate short-term, engine exhaust emissions from pipe laying machinery, site construction heavy equipment, construction vehicles, and well drilling heavy equipment. Fugitive dust-related particulates (PM_{10} and $PM_{2.5}$) would be generated from well pad, pipe laying, and site construction-related surface disturbance. Fugitive dust would also be generated from project-related vehicles traveling along existing access road ROWs and on temporary and permanent pipeline ROWs. Short-term fugitive dust and engine exhaust emissions would also result from construction surface disturbances at the treatment facility, the reservoir, the utility sites, and new construction and improvements within the WWTF. Generation of these exhaust emissions, and vehicle and construction-related fugitive dust would have short-term, adverse impacts on air quality during the period of construction. These impacts would be mitigated by (1) maintaining a small number of construction vehicles and drilling rigs to minimize exhaust emissions and fugitive dust production, and (2) implementing the fugitive dust measures described in Section 2.1.4, and the dust control mitigation measures included in the project's Clark County fugitive dust permit. Long-term impacts to air quality are not expected.

The existing air quality within the proposed project area is generally good and is in attainment for all criteria air pollutants except for ozone (see Section 3.3), and the impacts from construction would be in the short term (during the period of well drilling, pipe installation, and site construction). Therefore it is unlikely that fugitive dust and exhaust emissions impacts on air quality would exceed NAAQS for criteria pollutants. There would be fugitive dust production in the long term from vehicles traveling to and from production and monitoring wells, the reservoir, and the water treatment facilities along unpaved access roads; however, these impacts to air quality would be unquantifiable because of the relative infrequency of these site visits, and are similar to current levels of intermittent and occasional OHV use and access road traffic within the proposed project area.

4.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water and wastewater improvements would not be constructed. Air quality conditions would continue under current conditions and current regional trends. Existing impacts to air quality from vehicles traveling along Nipton Highway and US-95 and vehicles traveling along existing OHV and access roads in the project area would continue.

4.4 VEGETATION

4.4.1 PROPOSED ACTION

4.4.1.1 GENERAL VEGETATION

As discussed in Section 3.4, there are five vegetation communities present in the project area: (1) Sonora-Mojave Creosotebush-White Bursage Desert Scrub, (2) Mojave Mid-Elevation Mixed Desert Scrub, (3) Inter-Mountain Basins Semi-Desert Shrub Steppe, (4) North American Warm Desert Wash, and (5) North American Arid West Emergent Marsh.

Within all five vegetation communities, a total of 83.84 acres of vegetation would be disturbed as a result of implementing the water distribution and Searchlight WWTF improvement construction activities under the Proposed Action (see Table 4.1). Based on the proposed location of well pads, construction areas, proposed ROWs, and pipeline alignments, more than 99% of all surface disturbance-related impacts to vegetation would occur in the Sonora-Mojave Creosotebush-White Bursage Desert Scrub, Mojave Mid-Elevation Mixed Desert Scrub, and Inter-Mountain Basins Semi-Desert Scrub communities. Of the total disturbance, 63.64 acres of vegetation would be permanently (and adversely) removed (41.22 acres of BLM-managed land and 22.42 acres of CCWRD-managed land) from the construction and operation of aboveground facilities, access roads, and digging and trenching for the installation of underground pipelines. There would be short-term, adverse impacts to vegetation on approximately 8.18 acres from vehicles driving overland and crushing vegetation.

The potentially adverse impacts to vegetation would be reduced during and following construction activities through implementation of the mitigation measures described in Section 2.1.4, Environmental Protection Design Features. These measures would consist of 1) removing, stockpiling, and replacing the top 3 to 6 inches of topsoil in areas where excavation is required for the construction of facilities and associated infrastructure, and 2) salvaging and replanting

cactus and yucca that would potentially be impacted by surface disturbance-related construction activities.

Table 4.1. Acres of Permanent and Short-term Disturbance to Plant Communities

Communities	Permanent or Long-term Disturbance	Short-term Disturbance
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	30.53	12.13
Mojave Mid-Elevation Mixed Desert Scrub	7.50	4.04
Inter-Mountain Basins Semi-Desert Shrub Steppe	13.25	0.86
North American Warm Desert Wash	0.42	0.0
North American Arid West Emergent Marsh	0.35	0.0
Subtotal	52.05	17.03
Total		**69.08**[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.

4.4.1.2 CACTI AND YUCCA

As mentioned above, construction activities conducted under the Proposed Action would potentially result in short-term and long-term, adverse impacts to cactus and yucca. Mitigation measures would be applied to reduce the impacts to these species through pre-construction salvaging, storage, and eventual replanting of cacti and yucca impacted by construction activities. Not all cacti and yucca identified within the well pad sites and other construction areas (see Cactus and Yucca Table 3.3) would be impacted by construction activities and need salvaging; mitigation measures would be applied to ensure that the actual disturbed area would be as small as possible, while allowing sufficient maneuvering for the drill rig, backhoes, and other construction equipment. Construction and drilling heavy equipment would be carefully sited to impact as few cacti and yucca as possible; therefore minimizing the adverse impacts to these species.

4.4.1.3. INVASIVE PLANT SPECIES

There is the potential for construction activities to contribute to the introduction and establishment and/or spread of invasive plant species in the project area from surface-disturbing activities, and via seeds brought in and dispersed by heavy equipment and project vehicles. This impact would be adverse in the long term because the introduction and establishment of exotic, non-native, invasive species could increase the risk of wildland fire (e.g., through *Bromus* spp. establishment), and potentially displace existing native vegetation communities in the project area. However, the potentially adverse impacts to vegetation resources from invasive plant species would be mitigated by design features listed in Section 2.1, Proposed Action, and

preventative measures described in the noxious weed management plan. These measures include the avoidance of transporting weed parts, monitoring of the site after construction, and treatment (and eradication if possible) of weeds at revegetation and construction locations.

4.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water and wastewater improvements would not be constructed. The potential surface disturbance-related impacts to project area vegetation would not occur, and the vegetation communities and cacti and yucca species would continue to be subject to the vegetation trends and conditions currently affecting the area. The non-native, invasive plant species that have become established in the area would also continue to be affected by existing conditions and trends.

4.5 WILDLIFE

4.5.1 PROPOSED ACTION

The Proposed Action has the potential to impact up to 45.59 acres of wildlife habitat on BLM-managed lands and 38.25 acres on CCWRD-managed lands in the development of the Searchlight WCR. However, many of the activities under the Proposed Action would occur on previously disturbed soils.

The potential impacts to wildlife and wildlife habitat would be adverse, and similar to those discussed for the desert tortoise (see Section 3). The potential impacts may include the following:

- Short-term harassment or stress from construction-related human presence in the project area.
- Short-term disturbances to individuals and to habitat from human and vehicle noise and vibration resulting from drilling, trenching, and construction activities.
- Long-term loss of habitat from infrastructure construction, including well pads, utility, and water treatment facility construction.
- The loss of potential cover caused by vehicle crushing or construction removal of vegetation.
- The short-term loss of vegetation productivity that would directly and indirectly affect the food sources of some wildlife species.
- The short-term increase in predators, such as common ravens and coyotes, that may be attracted to the area by litter often associated with construction sites.
- Direct mortality or injury to wildlife species from crushing by construction equipment or from vehicle accidents.

The adverse impacts to wildlife from Proposed Action activities would be reduced through wildlife mitigation measures, described in Section 2.1.4, Environmental Protection Design Features, to reduce impacts to wildlife. These measures would include conducting pre-construction surveys to detect and relocate species within areas of potential habitat disturbance, maintaining a maximum speed limits for project-related vehicles on unpaved access roads to reduce the likelihood of vehicles hitting or crushing wildlife, reclaiming short-term disturbances

areas so that wildlife habitat would be restored, and maintaining a qualified biologist on site to respond to potential wildlife concerns. Also, impacts to wildlife would be reduced for the majority of the species inhabiting the area such as reptiles, birds, and small mammals, because (1) these are mobile species and would likely move out or away from the area prior to being directly impacted, and (2) similar habitat lies adjacent to the proposed project's area of disturbances to which these mobile species could move.

4.5.2 No Action Alternative

Under the No Action Alternative, the water and wastewater improvements would not be constructed. There would be no impacts to wildlife within the proposed project area, except for those impacts that would occur under current conditions and environmentally related trends in and adjacent to the project area.

4.6 Special Status Species

4.6.1 Proposed Action

4.6.1.1 Federally Listed Species

As discussed in Section 3.6, the Mojave desert tortoise is the only USFWS federally listed species with the potential to occur within and adjacent to the project area. The surface-disturbing activities that consist of the construction of a water distribution system and the expansion and enhancement of Searchlight's WWTF under the Proposed Action increase the potential for adverse impacts to the species from "take" or loss of individual desert tortoises. However, no tortoises, and few signs of tortoises were observed within the project footprint and ZOI during the SWCA 2005 and 2007 surveys. Therefore, the likelihood of a tortoise moving into the project area and being crushed by construction vehicles or heavy equipment during construction activities would be low.

A total of 83.84 acres of desert tortoise habitat would be adversely disturbed by construction-related activities under the Proposed Action. Of the total disturbance, 75.66 acres of desert tortoise habitat would be permanently lost or disturbed in the long term (37.41 acres within BLM-administered lands and 38.25 acres within the CCWRD-managed Searchlight WWTF); however, 20.20 acres of this 75.66 acres have been previously disturbed. It should also be noted that of the total acres of disturbed desert tortoise habitat, 15.56 acres (11.19 acres of new disturbance) of this habitat (all on BLM-managed PECHU land) would be directly and adversely disturbed permanently or in the long term, within permanent pipeline ROWs, within well pad construction areas, and from facility construction.

Indirect, adverse, short-term impacts may result from construction-related activities under the Proposed Action and would include the displacement of some tortoises from the proposed project area due to human and vehicle noise and ground vibrations caused by heavy equipment. As displaced tortoises re-inhabit the project area following construction, soil alteration or compaction from heavy equipment could have an adverse affect on the species by limiting the ability of tortoises to dig burrows in some areas. Overtime, burrowing conditions would likely return to those that existed prior to construction disturbances; therefore, the long-term, indirect impacts to the species from soil disturbances would be negligible. Other indirect impacts from

construction in the project area would include the potential increase in predators, such as common ravens and coyotes, attracted to the area by litter often associated with construction sites. These impacts would be short term and would have a negligible impact on the species because of the relatively short period of construction, and because mitigation to minimize and control construction-related predator attractants (e.g., discarding food and trash) would be conducted.

The potentially adverse, direct and indirect impacts to species would be reduced because of the following:

1. Drilling activities would be short term; therefore, noise, vibration, and project-related human harassment would be limited to the time of construction.
2. Field survey data and desert tortoise habitat density calculations, based on a linear regression model (see Section 3.6), indicate that tortoise population density in the project area is low; therefore, the likelihood of adversely impacting desert tortoise in the short term and long term would be reduced.
3. Recent survey results indicate that tortoise activity in the proposed project area and within the ZOI is limited; therefore, there would be a low likelihood of a tortoise moving into the area during project activities, and a low likelihood for "take" by construction workers accidentally crushing a tortoise while using project-related vehicles and/or heavy equipment (further discussed below).
4. Potentially adverse impacts to the desert tortoise from project construction would be mitigated through the measures discussed in Section 2.1.

The greatest potential for "take" of desert tortoises resulting from Proposed Action activities would be from project-related vehicles and heavy equipment traveling on existing OHV and access roads where there is the potential to injure or crush a tortoise crossing the road, and thus creating a vehicle-wildlife related accident. This "take" risk would be reduced through application of the mitigation measures discussed as part of the Proposed Action description (see Section 2.1), including (1) maintaining a maximum speed limit of 25 miles per hour while traveling on unpaved OHV and access roads, and (2) having a qualified tortoise biologist on site during all phases of construction during the tortoise active period.

Coordination with the USFWS as required under the Fish and Wildlife Coordination Act and the Endangered Species Act is ongoing for the Proposed Action

4.6.1.2 SENSITIVE SPECIES

As described in Section 3.6, the NNHP identified one sensitive plant and two sensitive reptile species as having the 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 to occur within the project area: the golden eagle, the prairie falcon, the loggerhead shrike, and the Crissal thrasher.

The rosy two-tone beardtongue was identified as 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. Based on the results of the 2005 and 2007 SWCA field surveys within the project area, *Penstemon* presence is likely to be extremely limited or

nonexistent in the area. Thus, it is likely that there would be no quantifiable impacts to the rosy two-tone beardtongue from Proposed Action-related surface disturbances within the project area.

Potential habitat for the banded Gila monster was identified in the proposed project area, but no banded Gila monsters were observed during SWCA field surveys and the project area habitat for this species appears to be marginal. Pre-construction clearance surveys conducted for the desert tortoise would concurrently identify any banded Gila monster on site; therefore, any individuals discovered on site would be removed from potential harm. Consequently, there would be no quantifiable impacts to the banded Gila monster because discovered individuals would be removed from the project area. However, there would be adverse, short-term impacts to its marginal habitat during the time of surface disturbance-related project construction.

The common chuckwalla was identified as having the potential to occur in the project area, and although none were seen during the SWCA field surveys, habitat for the common chuckwalla was identified on the eastern edge of the project area. As discussed for the banded Gila monster, pre-construction surveys conducted for the desert tortoise would also concurrently identify any chuckwalla individuals present that would then be removed from potential harm. Therefore, there would be no measurable impacts to the common chuckwalla from the Proposed Action construction activities because of the relatively small area of potential habitat within the proposed project area that would be affected, and because individuals would be removed from potential harm prior to construction.

One juvenile golden eagle (identified on three separate occasions) and one prairie falcon were observed in the project area during SWCA field surveys. However, cliff habitat required by these species for nesting and breeding is not present in the project area; therefore, there would be no short-term or long-term impacts to golden eagle and prairie falcon nesting or breeding activities by Proposed Action construction activities. There would potentially be short-term, adverse impacts to these bird species' feeding activities in the proposed project area from human presence, construction noise, and vehicle movement; but as discussed below in the Migratory Bird subsection, these aforementioned species are highly mobile, and feeding habitat similar to that within the proposed project area would be available adjacent to the project area.

During the 2005 SWCA field surveys of the project area, one Crissal thrasher was observed and loggerhead shrikes were observed daily. Nesting habitat for both of these species exists in the project area. However, these bird species are able to quickly relocate to other suitable habitat, which is abundant in the area surrounding the project area. Therefore, well drilling, pipeline installation, and site construction activities would have adverse, short-term impacts on these species, but these impacts would be too small to quantify. In addition, if nesting individuals were noted on site during construction, they would be handled in accordance with measures for migratory birds discussed in Section 2.1. Those mitigation measures would consist of (1) conducting bird surveys immediately prior to drilling and construction activities, so as to avoid nests and minimize the adverse impacts to nests and fledglings, and (2) reporting evidence of active nests or nesting to the USFWS and the BLM so that appropriate impact minimization measures could be applied. Therefore, the proposed project's mitigation measures would minimize any potentially adverse, short-term impacts for the loggerhead shrike and the Crissal thrasher.

4.6.1.3 MIGRATORY BIRDS

There would be negligible impacts to migratory birds from project-related noise, human presence, and vehicle movement. The potential impacts would be negligible because these species are highly mobile and are able to quickly relocate to other suitable habitat, which is abundant adjacent to the project area. Also, drilling and other construction-related activities would be short term, and migratory bird mitigation measures would be applied (as discussed in Section 2.1) that would include project design features to reduce the short-term impacts to these bird species.

4.6.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water distribution system and the Searchlight WWTF improvements and enhancements would not be constructed, and there would be no impacts to the federally listed, sensitive, and migratory bird species discussed above because no project-related noise or human presence, and no project-related activities would be conducted in the area. The special status species that use the area as habitat for nesting, breeding, and feeding would continue to be subject to current local conditions and regional trends, which would include (but not be limited to) occasional use of OHV and access roads by recreationists and BLM personnel.

4.7 CULTURAL RESOURCES

4.7.1 PROPOSED ACTION

As discussed in Section 3.7.1, Site 26CK004626, the historic Walking Box Ranch, is recommended as eligible for registry under the NRHP. This site is located near, but not in the project area, and would not be adversely impacted by the Proposed Action. The other site eligible for NRHP recommendation is Site 26CK007460 (a historic mine). Similarly, this site is also near, but not in the project area, and there would be no adverse impacts to the site by the Proposed Action.

A total of five archaeological sites and seven isolated objects were identified during resource inventory surveys. All cultural resources identified are recommended as not eligible for the NRHP. Therefore, the Proposed Action would have no adverse impacts on NRHP-eligible cultural resources, as long as proposed project-related activities are confined to the areas inventoried and surveyed for cultural resources.

It was determined by the lead federal agency (BLM) that tribal consultation and/or coordination was not required for the project. The project area is very low in sensitivity for prehistoric, traditional, and ceremonial Native American uses. No Native American-affiliated sites, rock-art sites, or religious ceremonial sites are located near the area of potential effect. All of the sites recorded for both phases of inventory for the Searchlight Water and Wastewater Systems Improvements Project date to the historic-period and consist of mining, ranching, and transportation-related sites.

4.7.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water and wastewater improvements would not be constructed. There would be no impacts to cultural resources, and cultural resources within the project area would continue to be subject to existing conditions and trends.

4.8 SOCIOECONOMICS

4.8.1 PROPOSED ACTION

The Proposed Action would have direct and indirect beneficial impacts to the Town of Searchlight. The development of water supply infrastructure would directly improve the quality of life for Searchlight residents by providing a safe and reliable water supply, a reliable reserve water supply, adequate wastewater treatment capabilities, and improved effluent disposal. There would be long-term, beneficial, indirect socioeconomic impacts on Searchlight from the construction of a reliable water supply and improved and expanded wastewater treatment facilities because it would (1) provide safe and reliable water supplies, (2) ensure that EPA water quality standards are met, (3) provide fire protection and emergency storage, (4) provide sufficient wastewater treatment capacity to meet town needs, and (5) provide wastewater treatment process upgrades that would ensure that groundwater discharge permit requirements are met and would allow recharge of treated effluent, thereby improving water resource management. There may be indirect, short-term economic benefits for the Town of Searchlight from increased commercial revenue if drilling and construction personnel use local hotels, motels, restaurants, or other community services during the time of project construction. Construction of the monitoring and production wells, wastewater treatment upgrades, and associated infrastructure would have no adverse short-term and long-term impacts on Searchlight socioeconomics as no existing residences, businesses, or townspeople would be displaced.

The alternatives developed for the EA were based on a set of criteria that did not discriminate on the basis of race, color, or national origin. During EA review, all interested members of the public, including minority communities and low-income populations, were invited to participate in the environmental process for this action. To comply with Executive Order 12898, minority and poverty status in the vicinity of the project was examined to determine if any minority or low-income communities would potentially be disproportionately affected by implementation of the Proposed Action. No minority or low-income communities would be disproportionately affected by implementation of the Proposed Action.

4.8.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, replacement water supply facilities would not be constructed and expansion and treatment process upgrades of the existing Searchlight WWTF would not occur. Short-term, adverse, socioeconomic impacts could result if existing well S-2 collapses during repair and water supply to Searchlight is restricted. Additional temporary water would need to be brought in using water trucks and bottled water, resulting in an expense to the Town of Searchlight and the State of Nevada. Long-term, adverse, socioeconomic impacts would result from a lack of water supply to meet existing needs as residents and businesses would be displaced, leading to a decline in the town's population.

Under the No Action Alternative, LVVWD would need to construct an arsenic treatment facility or implement other measures to meet the EPA's new arsenic standard. Adverse socioeconomic impacts would also result if these measures are more costly than the Proposed Action.

Without sufficient capacity for fire protection and emergency storage, under the No Action Alternative, adverse socioeconomic effects could result from perceived increased risk to residents and businesses. Existing socioeconomic conditions could decline if people or businesses relocated out of the area because of their concerns regarding adequate water supply to protect their facilities.

Without treatment process upgrades and collection system improvements, CCWRD would not meet groundwater discharge permit requirements and may not be able to meet Searchlight's wastewater treatment needs. This would result in a decline in socioeconomic conditions if residences and businesses had to implement individual septic system projects for wastewater treatment.

4.9 VISUAL RESOURCES

As described in Section 3.9, Visual Resources, the BLM uses the VRM system to manage visual resources on public lands, 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.

Generally, impacts to visual resources are considered important if impacts caused by project activities exceed a project area's VRM objectives. The VRM management class objectives for proposed project area, which are designated 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" (BLM 1986).

4.9.1 PROPOSED ACTION

The Proposed Action would have the potential to impact visual quality and visual resources in the project area. Drilling equipment, construction vehicles, and associated project activities including ground disturbance would be temporarily visible and visually intrusive during drilling, grading, and trenching activities. In addition, a new water treatment facility, aboveground reservoir, and improvements to the Searchlight WWTF would be constructed and add line, form, color, and texture contrasts to the existing landscape.

As described in Section 3.9, Visual Resources, three 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 three KOPs consist of the two major travel routes (Nipton Highway and Highway 95) within the vicinity of the project area and the Chevron Travel Center at the south end of Searchlight.

4.9.1.1 KOP 1 – NIPTON HIGHWAY (SR-164)

Under the Proposed Action, the following would occur: (1) a groundwater treatment facility would be constructed on 4.13 acres adjacent to the Nipton Highway southern ROW boundary, (2) pipeline ROW surface disturbance-related trenching would occur from the Nipton Highway to the proposed S-4b well site, (3) one exploratory groundwater well would be converted to a production well, (4) a total of two permanent groundwater monitoring wells (of approximately 1 acre each) would be drilled, re-drilled, or developed from existing exploratory wells, and (5) a utility site would be constructed. VRM contrast analysis indicates that there would be project-related landform and vegetation contrasts within the natural landscape. These would be created by form, line, and color changes from crushing of vegetation by heavy equipment, by vehicles driving overland, by line and color soil disturbances by drilling and access road construction, and by trenching for installation of pipelines. There would be structure-related form and line contrasts produced by the installation of both production and monitoring well sites, construction of the water treatment building, and construction of the utility site concrete pad. Form and line contrasts would also be created by the erection of security fencing around the treatment facility, around the utility pad, and around the two, 1-acre production well sites. There would be short-term visually intrusive impacts from the presence of construction vehicles, and support structures such as a trailer, portable restroom, and stacks of drilling pipe.

The impacts of the Proposed Action to visual resources in the project area would be adverse in the short term and long term because of the obvious visual contrasts described above. These impacts would be mitigated to meet designated VRM Class objectives by: (1) reclaiming and revegetating trenching-related surface disturbances, (2) minimizing the areas impacted by overland driving that would create crushed-vegetation contrasts and (3) reclaiming and revegetating all well drilling disturbed areas upon project completion (with the exception of the well pad). Although impacts to visual quality from the Proposed Action would be visible to observers from Nipton Highway, they would not exceed designated VRM Class III objectives, which allow a moderate degree of change to the natural landscape while retaining the landscape's characteristic line, form, color, and texture.

4.9.1.2 KOP 2 – US-95

Under the Proposed Action, the 86-foot diameter, 24-foot tall, enclosed reservoir tank and security fence would be installed approximately 0.75 miles east of the US-95 centerline, and the pipeline would be installed by trenching from the reservoir across US-95 along an existing dirt road. Visual analysis indicates that there would be adverse, short-term form, line, and color contrasts impacts to visual quality from the construction of the proposed reservoir. There would also be long-term, visually intrusive form, line, and color contrasts of the reservoir once the structure was constructed.

Impacts of the Proposed Action (both short term and long term) to visual resources in the project area would be reduced because (1) trenching activities and related impacts to visual resources would be short term, (2) the reservoir tank would be painted an appropriate color to reduce line and color contrast, and (3) all disturbed areas would be re-vegetated and reclaimed upon project completion. Although impacts would be visible to observers from US-95, they would not exceed designated VRM Class III objectives because this VRM class allows visual impacts that attract attention and allows moderate changes to the landscape.

4.9.1.3 KOP 3 – CHEVRON TRAVEL CENTER

Under the Proposed Action, the existing Searchlight WWTF would be improved and expanded adjacent to the existing WWTF ponds south and east of the Town of Searchlight. Visual contrast analysis indicates that there would be adverse, short-term and long-term form and color contrasts from paving the existing dirt access road.

Although the impacts to visual quality would be visible from the Chevron Travel Center, they would not exceed designated VRM Class III objectives because, as discussed under KOP 2, the management objectives for this VRM class allow moderate changes to the characteristic landscape that attract the attention of the casual viewer as long as those visual changes do not dominate the view of the viewer.

It should be noted that standard BLM VRM mitigation measures would be applied to all visually intrusive structures and applied to project-related line, form, color, and texture contrasts to minimize the impacts discussed above. The mitigation measures would be applied site-specifically and would include (but not be limited to) (1) camouflaging visually intrusive well pads and security fences with appropriate BLM colors to reduce color and form contrasts; (2) topographically hiding or naturally screening structures wherever possible to reduce form contrasts; (3) edge-feathering with local rocks, soil, and vegetation to reduce linear contrasts; (4) minimizing cleared areas to reduce color contrasts; (5) minimizing structure height to reduce form contrasts; and (6) revegetating disturbed areas with native plants to reduce texture contrasts.

4.9.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the groundwater production and monitoring wells, pipelines, electrical utility site, new reservoir, new groundwater treatment facility, wastewater treatment plant, and sewer force main improvements would not be constructed. Thus, there would be no impacts to visual resources beyond those impacts already occurring within the proposed project area.

4.10 NOISE

4.10.1 PROPOSED ACTION

Project-related construction activities under the Proposed Action would generate noise in the short term from operation of construction equipment (e.g., drill rig, backhoe, and pipe-laying machinery) and vehicles. There may be short term impacts to residents along Hobson Street during replacement of the CCWRD sewer and force mains. There are no additional residences within the proposed project area and there are no human sensitive noise receptors in the project area that would be impacted by noise resulting from Proposed Action activities—with the

exception of project construction workers and passengers in vehicles traveling along the Nipton Highway and Nugget Lane, and very briefly, along US-95. It is unlikely that the occasional OHV users that recreate along routes within the BLM ACEC would be exposed to unhealthy levels of project-related construction noise, as they would be excluded from the proposed project's construction and well-drilling areas. Impacts to project workers would be reduced to short-term noise levels through noise mitigation measures including (1) the use of mufflers on all engines where applicable, (2) the maintenance of all engines per manufacturer's recommended specifications, and (3) the required use of hearing-protective equipment for workers, including safety ear plugs and/or headphones.

The EPA has recommended sound levels necessary to protect public health (see Section 3.10 and Table 3.8), and has established 70 dB L_{eq} as the recommended maximum safe noise level for general unpopulated areas, such as the proposed project area. Table 4.2 shows noise levels typical of construction equipment, some of which may be used for the well pad and facility construction under the Proposed Action. It is anticipated that within 50 feet of any well site or pipeline ROW, short-term, daytime noise levels from general drilling and pipe laying 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 would be project workers, and noise mitigation measures to reduce the impacts of project noise (described above) to safe levels would be implemented. There would be no noise impacts caused by the Proposed Action at night because construction and pipe installation would not be conducted at night.

Table 4.2. Typical Construction Equipment Noise[1]

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

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 and US-95 may have the potential to be temporarily and directly impacted by noise from drilling and pipe installation construction activities within these highway ROWs; however, exposure would be only momentary as these vehicles pass through the project area at high speeds. In addition, such vehicle passengers would be more than 50 feet away from any well drilling site and would be only temporarily exposed to decibel levels below the EPA-recommended level for this area. Thus, the impacts to vehicle passengers traveling through the proposed project area along these routes would be negligible in the short term and long term.

4.10.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the water and wastewater improvements would not be constructed. The noise levels within the proposed project area would remain at existing ambient levels for unpopulated areas that are normally generated by highway traffic, occasional OHV use, and project area access road traffic.

4.11 COMPARISON OF ALTERNATIVES

A comparison of impacts o the Proposed and No Action alternatives is shown in Table 4.3 below.

Table 4.3. Comparison of Alternatives Impacts

Resource	Proposed Action	No Action
Air Quality	Short-term impacts from fugitive dust and exhaust emissions, and long-term impacts from fugitive dust from routine maintenance. Project fugitive dust plans would reduce PM_{10} and $PM_{2.5}$ impacts.	No change from current conditions.
Cultural	No adverse impacts to historic sites.	No change from current conditions.
Geology and Soils	Long-term, adverse impacts to geology from site grading of aboveground facilities construction. Short-term, direct impacts to soils from vehicle/equipment disturbance to roads and well sites, and indirect impacts to soils from wind and water erosion. Long-term impacts from construction of wells, facilities, and infrastructure. The relative flatness of the project area, the low susceptibility of soils to erosion, and the mitigation measures would reduce impacts during and after construction.	No change from current conditions.
Noise	Short-term, adverse impacts from construction noise on project workers and travelers along Nipton Highway and Hobson St. during drilling, pipeline installation, and site construction. Mitigation to minimize noise and safety measures to protect workers would reduce impacts.	No change from current conditions.

Resource	Proposed Action	No Action
Socioeconomic	Long-term, beneficial impacts by providing safe and reliable water supplies, a reliable reserve water supply, adequate wastewater treatment capabilities, and improved effluent disposal. Potential short-term, beneficial impacts from use of local motels, restaurants, and other community services by drilling and construction personnel.	Potential short-term, adverse impacts if water trucks are needed to bring in water in the event existing well S-2 collapses during repair; cost of a new treatment plant to meet EPA's arsenic standard exceeds that of Proposed Action. Potential long-term, adverse impacts from lack of water supply to meet town needs, resulting in displacement of residents and businesses and a decline in the town's population; cost to residences and businesses to implement individual septic systems for wastewater treatment if CCWRD cannot meet groundwater discharge permit requirements.
Special Status Species	Potentially adverse, short-term, direct and indirect impacts from harassment, drilling noise, loss of cover and habitat due to vegetation crushing/removal, increased predation, and vehicle-wildlife related accidents. Mitigation measures would reduce these potential impacts.	No change from current conditions.
Vegetation	Potential short-term, adverse impacts from vehicle/equipment surface disturbances, and long-term impacts from invasive weed infestation and spread. Surface disturbance, vegetation salvaging, and exotic species control mitigation would reduce impacts.	No change from current conditions.
Visual	Short-term increased line, form, color, texture contrasts from visually intrusive construction vehicles and heavy equipment, and surface disturbances. Long-term impacts from facility and infrastructure construction; however, Proposed Action activities would not exceed project area designated VRM Class II and Class III objectives.	No change from current conditions.
Water	Short-term, adverse impacts to ephemeral washes that may carry water during large rain events. Long-term, beneficial impacts to water quality by ensuring new EPA arsenic standards are met. Long-term, beneficial impacts to the efficiency of groundwater use by the development of a system-wide monitoring network. Long-term, beneficial impact to water resource management in the Searchlight area from wastewater treatment upgrades that would allow for the treated water to be used to recharge the groundwater aquifer.	Potential short-term, adverse impact to water supply if well S-2 collapses during repair. Potential long-term impact to water resource management if CCWRD is not able to renew its groundwater discharge permit and treated wastewater is not available for recharge.

Resource	Proposed Action	No Action
Wildlife	Potentially adverse, short-term impacts from harassment, drilling noise, loss of habitat and loss of cover due to vegetation crushing/removal, increased predation, and increased vehicle-wildlife related accidents. Wildlife mitigation measures (similar to special status species mitigation) would reduce short-term 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 4.4 are applicable for all resource areas discussed below.

Table 4.4. Actions Considered for Cumulative Impacts Analysis

Action	Description	Area of Impact	Resources Impacted	Status
Piute-Eldorado Critical Habitat Unit (PECHU) Designation	USFWS formally designated more than 10,000 square miles of critical habitat for the desert tortoise on February 8, 1994 (USFWS 1994b).	10,000 m^2, including 16 acres of the project	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 14 acres of the project area	Special Status Species	Past
Walking Box Ranch Acquisition and Restoration	In August 2005 BLM acquired the 160-acre ranch for preservation/conservation of environmentally sensitive lands. BLM executed an agreement with University of Nevada, Las Vegas (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 the Ranch. There are currently no specific timeframes for development of those facilities.	160-acre area within the Walking Box Ranch	Socioeconomics Visual Cultural	Past, Future

Action	Description	Area of Impact	Resources Impacted	Status
Searchlight Groundwater Exploratory Well Drilling	LVVWD drilled five exploratory groundwater wells in 2007 within the Piute-Eldorado ACEC to locate potential groundwater production wells for the Town of Searchlight.	Western portion of the project area	Socioeconomics Special Status Species Vegetation Wildlife	Past
Nevada Department of Transportation Gravel Pit	A gravel pit located adjacent to Nipton Highway is utilized by NDOT for materials for ongoing road maintenance.	Western portion of the project area	Air Quality Soils Noise Special Status Species Vegetation Wildlife	Present

4.12.1 GEOLOGY AND SOILS

The cumulative resource analysis area for geology and soils is the ROW and immediate vicinity, including adjacent drainages. Construction activities occurring at the same time and in the same area have the potential to increase soil erosion and sediment transport into drainages. The only cumulative project ongoing at the same time as construction of the Proposed Action is the use of the Nevada Department of Transportation (NDOT) gravel pit. NDOT's use of the gravel pit and the activities under Proposed Action would implement soil erosion control measures in accordance with state permits for storm water and temporary discharges. Restoration for areas disturbed by the Proposed Action would also reduce the potential for erosion and sediment transport after construction is complete. Potential soil contamination from accidental spills from construction vehicles and equipment would be minimized through BLM-required project hazardous materials and spill containment plans.

4.12.2 WATER RESOURCES

The cumulative resource area for water resources is Piute Valley basin. In addition to the groundwater pumped from Piute Valley by LVVWD for Searchlight, other consumptive uses of groundwater in Piute Valley consist of commercial, domestic, industrial, stock, and wildlife purposes. The current use for the entire Piute Valley is estimated by LVVWD to be approximately 460 afy. Other permitted water right holders have the right to develop and use water rights that have been permitted to them by the State of Nevada, Division of Water Resources. Because the Proposed Action would utilize existing permitted water rights and would replace existing groundwater production wells, potential drawdown effects would not reasonably extend more than 1 mile from the well sites. There are no other groundwater production wells

within 1 mile of the proposed production well sites. Cumulative water right impacts are not anticipated.

4.12.3 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 equipment. Fugitive dust would be generated from ground surface disturbance, site grading, excavation, and from vehicles traveling along existing dirt roads. However, these emissions are temporary and would only occur during the construction period. Ongoing use of the NDOT gravel pit is the only cumulative project occurring at the same time as construction of the Proposed Action. Because both actions must implement dust control measures in accordance with Clark County fugitive dust permits, long-term cumulative adverse air quality would not occur.

4.12.4 Vegetation, Wildlife, and Special Status Species

The cumulative resource area for special status species, vegetation, and wildlife would consist of the proposed ROWs and its immediate vicinity.

Federal actions that may impact the federally listed desert tortoise are required to undergo an ESA Section 7 consultation with the USFWS. 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 USFWS on projects that occur in designated critical habitat, federal agencies must ensure that their activities do not adversely modify critical habitat to the point that it would no longer aid in the species' recovery.

The BLM has an obligation to ensure that no net unmitigated loss of desert tortoise habitat occurs 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 create 7.47 acres of new additional disturbance in the ACEC, and would keep the total disturbance to less than 1%.

Each of the proposed actions in Table 4.3 also did and/or would occur partially or entirely 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 habitat restoration measures included in BLM ROW grants.

[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.

4.12.5 CULTURAL RESOURCES

The cumulative resource area for cultural resources is the proposed project APE. No NRHP-eligible cultural resources would be affected by the Proposed Action. The Walking Box Ranch has been determined to be eligible and has been nominated for listing on the NRHP. BLM and The University of Nevada, Las Vegas are planning to enhance historic cultural resources at the site by preserving and maintaining the site's historic structures and by providing education opportunities for the public about ranching in the region. Because the Proposed Action would not impact NRHP-eligible sites, and the Walking Box Ranch is being managed for preservation of its historic resources, cumulative cultural resources impacts would not occur.

4.12.6 SOCIOECONOMICS

The cumulative resource area for socioeconomics includes ROW and the Town of Searchlight. Construction and operation of the Proposed Action, along with the previous Searchlight Exploratory Well Drilling Project and future restoration of the Walking Box Ranch, would be cumulatively beneficial to the local economy of Searchlight. These projects would provide short-term and long-term benefits in jobs and increased revenue created for the town, along with improved water resource management and utility services.

4.12.7 VISUAL RESOURCES

The cumulative resource area for visual resources includes the Proposed Action project area and the surrounding area from which they could be seen. The Walking Box Ranch and NDOT gravel pit are the only cumulative projects within the cumulative resource analysis area. The proposed production and monitoring well sites and pipeline route in the western portion of the project area would potentially be visible from the Walking Box Ranch. There would be temporary, short-term visual effects during construction as equipment and vehicles would be visible. However, because the pipeline and associated electrical line would be buried and the well sites would be minimally visible, long-term cumulative visual impacts on the ranch would be minor. Although the NDOT gravel pit and construction activities in the western portion of the project area would be visible from Nipton Highway, cumulative visual impacts to vehicle passengers traveling through the area would be negligible and short term.

4.12.8 NOISE

The cumulative resource analysis area for noise is the ROW and immediate vicinity of the Proposed Action. Construction activities occurring at the same time and in the same area could temporarily increase noise levels. Ongoing use of the NDOT gravel pit is the only project which could have cumulative noise impacts. However, there are no sensitive noise receptors within 1,000 feet of the Proposed Action project area, with the exception of vehicle travelers along Nipton Highway and US-95. Cumulative noise impacts to vehicle passengers traveling through the proposed project area along these routes would be negligible in the short term and long term.

CHAPTER 5 – LIST OF PREPARERS AND CONTRIBUTORS

Table 5.1. Individuals, Organizations, or Agencies Consulted

Name	Address	Contact
U.S. Environmental Protection Agency	75 Hawthorne Street (WTR-3) San Francisco, California 94105	Cheryl A. McGovern Environmental Protection Specialist
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Searchlight Town Advisory Board	Searchlight, Nevada	Sandra Walters Secretary

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Justin Streit	B.S. NR and Wildlife Biology 6 Years Experience	Special Status Species, Wildlife
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Table 5.3. Las Vegas Valley Water District

Name	Responsibility
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Lisa Luptowitz	Technical Review
Mao Fang	Technical Review

Table 5.4. Clark County Water Reclamation District

Name	Responsibility
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Table 5.5. Las Vegas BLM

Name	Responsibility
Jeff Steinmetz	Lead Planning and Environmental Coordinator
Vanessa Hice	NEPA Coordinator
Susanne Rowe	Cultural Resources Technical Review

CHAPTER 6 – REFERENCES

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APPENDIX A – KOP CONTRAST ANALYSIS WORKSHEETS

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Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

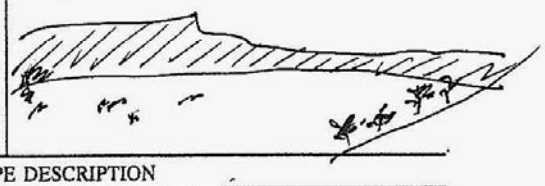
Date 1/29/2008
District LAS VEGAS
Resource Area
Activity (program) WATER TREATMENT FACILITY

SECTION A. PROJECT INFORMATION

1. Project Name: SEARCHLIGHT
2. Key Observation Point: #1 NIPTON HIGHWAY
3. VRM Class: III

4. Location
Township 28 S
Range 62 E
Section 21
687471
3926977

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT TO SLIGHTLY ROLLING TYPICAL MOHAVE OPEN VALLEY	DIVERSE - LOW TO HIGH	REGULAR - CONTRASTING
LINE	DISTINCT HORIZONTAL -ROLLING	REGULAR, REPEATING RUGGED	STRONG VERTICAL + HORIZONTAL
COLOR	TAN TO DARK BROWN + BLACK	GRAY GREEN to TAN	DARK, FLAT GRAY
TEXTURE	EVEN SMOOTH	CONTINUOUS, DENSE	SMOOTH, ORDERED

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT	IRREGULAR	LOW, SQUARE
LINE	BOLD, HORIZONTAL	REGULAR, BOLD EDGE	BOLD, GEOMETRIC
COLOR	LIGHT TAN	MORE TAN	FLAT, NEUTRAL COLOR
TEXTURE	SMOOTH	SAARSE	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			X			X					X	
Line			X			X				X		
Color		X					X				X	
Texture			X			X						X

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: STEVE LESLIE
Date: 1/29/2008

SECTION D. (Continued)

Comments from item 2.

Moderate form, line, color contrasts would be created from the installation of treatment buildings.

The surrounding landscape would keep its current visual character

Additional Mitigating Measures (See item 3)

Painting building a neutral color would reduce color contrasts

☆U.S. GOVERNMENT PRINTING OFFICE: 1985—461-988/33094

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

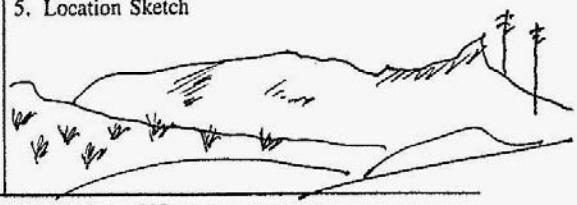
Date 1/29/2008
District LAS VEGAS
Resource Area
Activity (program) WATER TREATMENT FACILITY

SECTION A. PROJECT INFORMATION

1. Project Name: SEARCHLIGHT
2. Key Observation Point # 2: VS 95
3. VRM Class: III

4. Location: Township 28 S; Range 63 E; Section 21; 688456; 3928802

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	ROLLING	LOW, INDISTINCT	TALL, PROMINENT
LINE	IRREGULAR, UNDULATING	WEAK, RUGGED	BOLD, VERTICAL, STRAIGHT
COLOR	TANS to BROWNS	LIGHT TANS to GRAY GREENS	DARK, FLAT
TEXTURE	UNEVEN	PATCHY, RANDOM	SMOOTH, CONTRASTING

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT	IRREGULAR	LOW, SQUARE
LINE	BOLD	BOLD	BOLD, GEOMETRIC
COLOR	TAN	GRAY GREEN TO TAN	TANS
TEXTURE	SMOOTH	SPARSE	SMOOTH

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

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

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: STEVE LESLIE
Date: 1/29/2008

SECTION D. (Continued)

Comments from item 2.

Moderate form, line and color contrast would be created by installation of the new reservoir tank. The tank would attract attention, but would not focus the view of the casual observer.

Much of the tank would be screened by natural topography. It would be in view for a brief amount of time

Additional Mitigating Measures (See item 3)

TANK will be painted a neutral color to reduce color contrast

☆U.S. GOVERNMENT PRINTING OFFICE: 1985—461-988/33094

Form 8400-4
(September 1985)

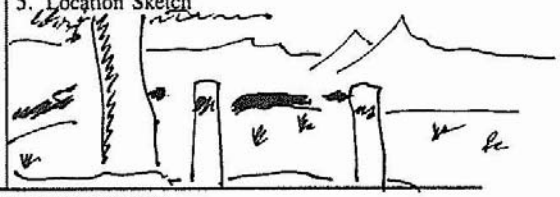
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 1/29/2008
District LAS VEGAS
Resource Area
Activity (program) WATER TREATMENT FACILITY

SECTION A. PROJECT INFORMATION

1. Project Name SEARCHLIGHT
2. Key Observation Point #3 CHEVRON REST STOP
3. VRM Class III / PRIVATE
4. Location
Township 28 S
Range 63 E
Section 21
689018
3926017
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Open valley - Rolling hills FLAT, still water	High trees in foreground Low regular shrubs	Regular posts - Indistinct power lines
LINE	WEAK rolling lines BOLD Distinct Line of water	BOLD Vertical Weak in Middleground	Bold vertical lines
COLOR	TAN DARK blue - reflective	~~Cottonwood, Dense~~ Dark green - Grey	Vivid light posts Subtle rust / TANS
TEXTURE	Smooth to Medium Glossy	Continuous, Dense	Ordered, Smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT	RRegular	FLAT, regular
LINE	BOLD	Weak, edge	BOLD Horizontal
COLOR	TAN	gray green	Reflective Black paved road
TEXTURE	Smooth, glossy	Smooth, sparse	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			X				X					X
Line			X				X					X
Color				X			X			X		
Texture				X		X						1

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 — Date

Steve Leslie — 1/29/08

SECTION D. (Continued)

Comments from item 2.

Additional Mitigating Measures (See item 3)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985—461-988/33094

APPENDIX B – MAPS

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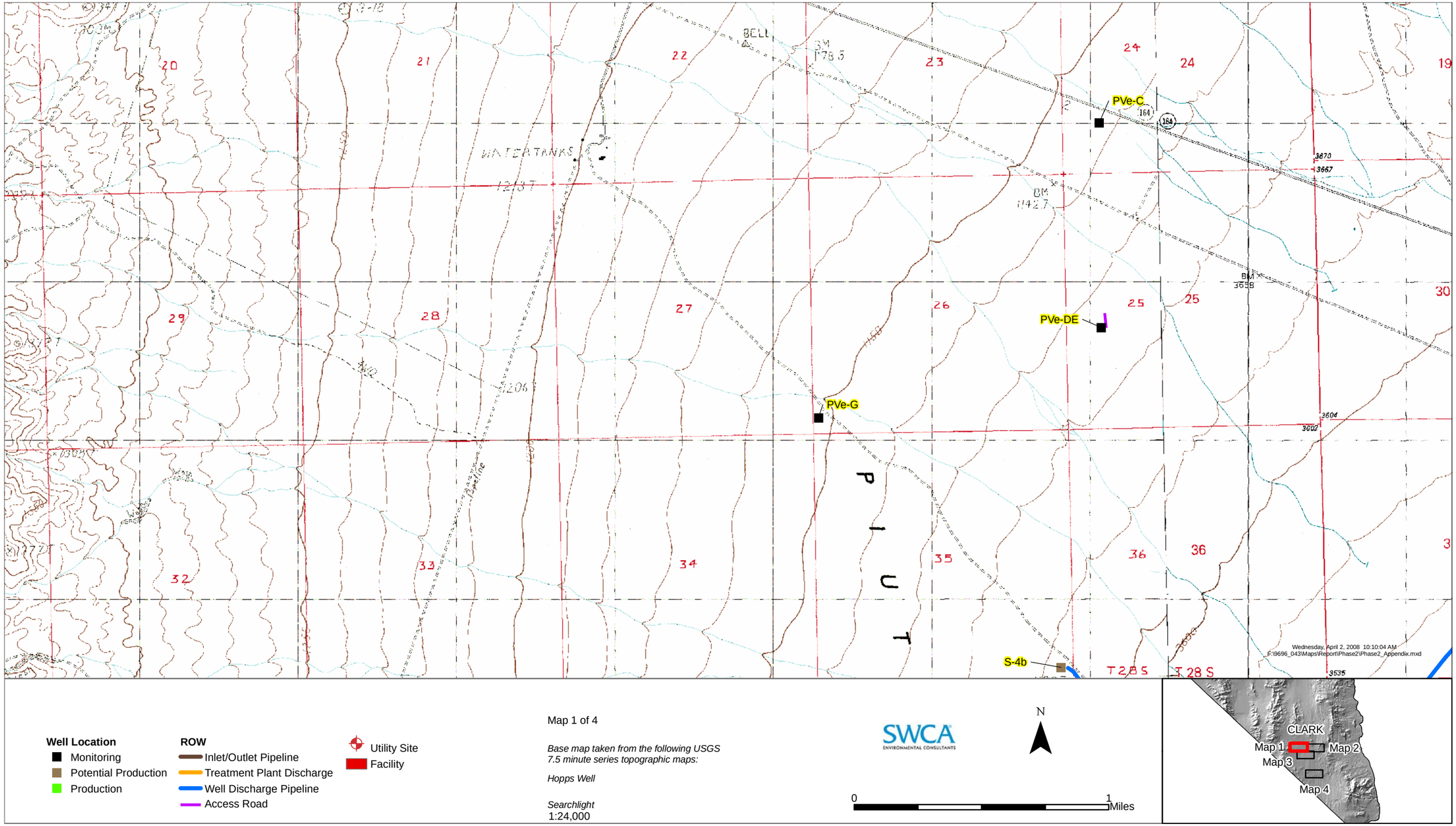

Figure 2. Searchlight Water and Wastewater Systems Improvements Project - Project area (Map 1 of 4).

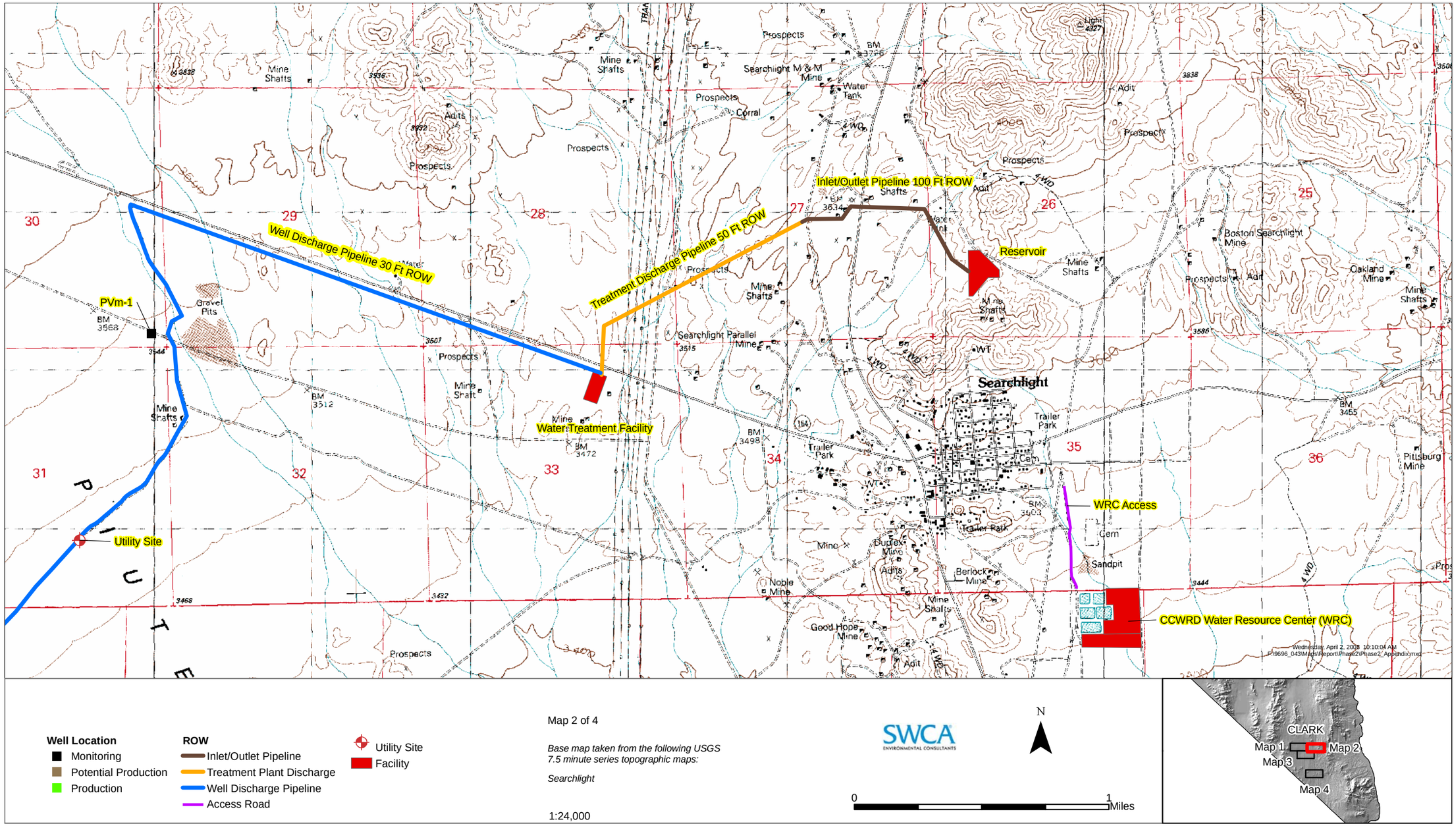

Figure 3. Searchlight Water and Wastewater Systems Improvements Project - Project area (Map 2 of 4).

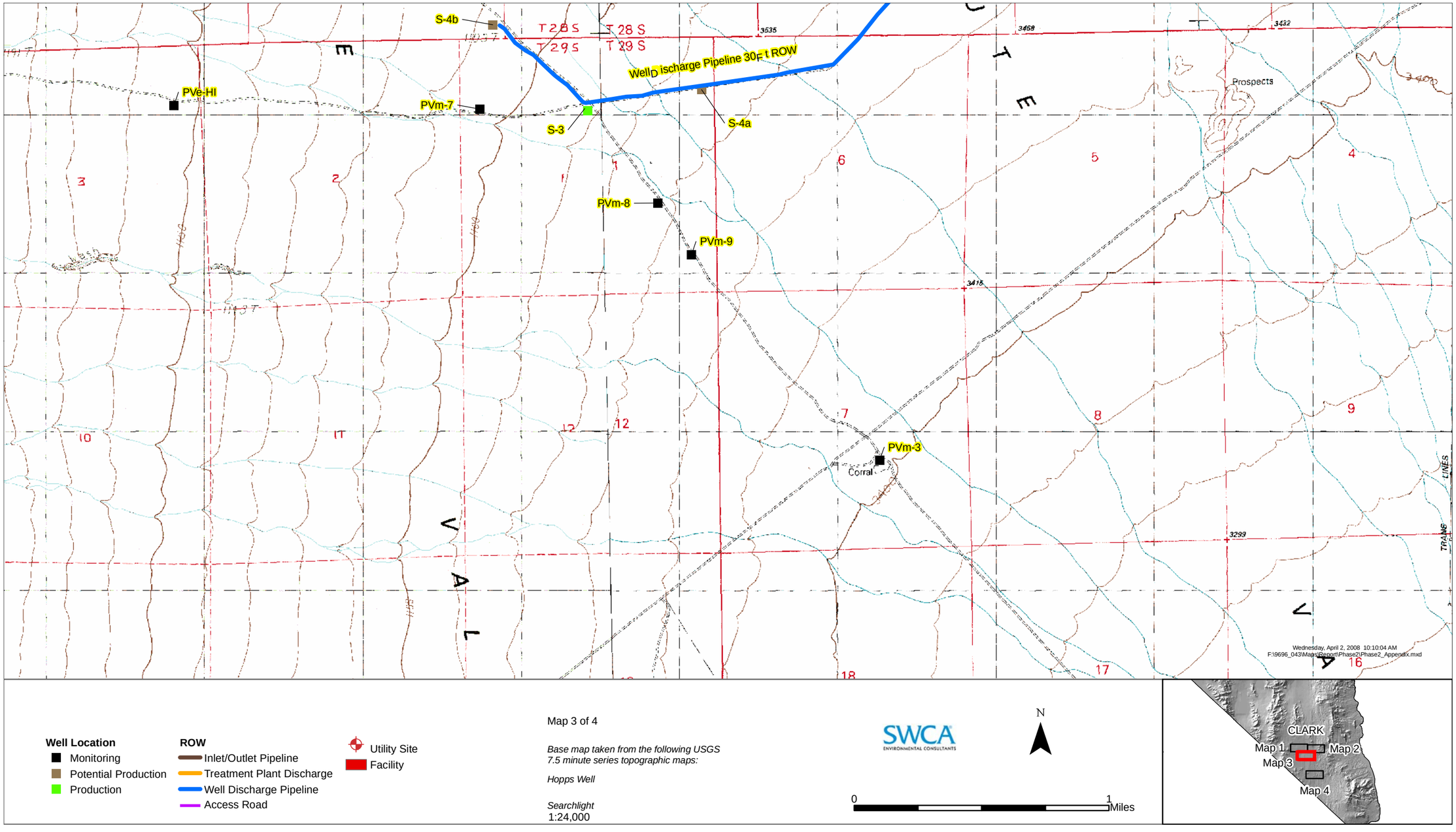

Figure 4. Searchlight Water and Wastewater Systems Improvements Project - Project area (Map 3 of 4).

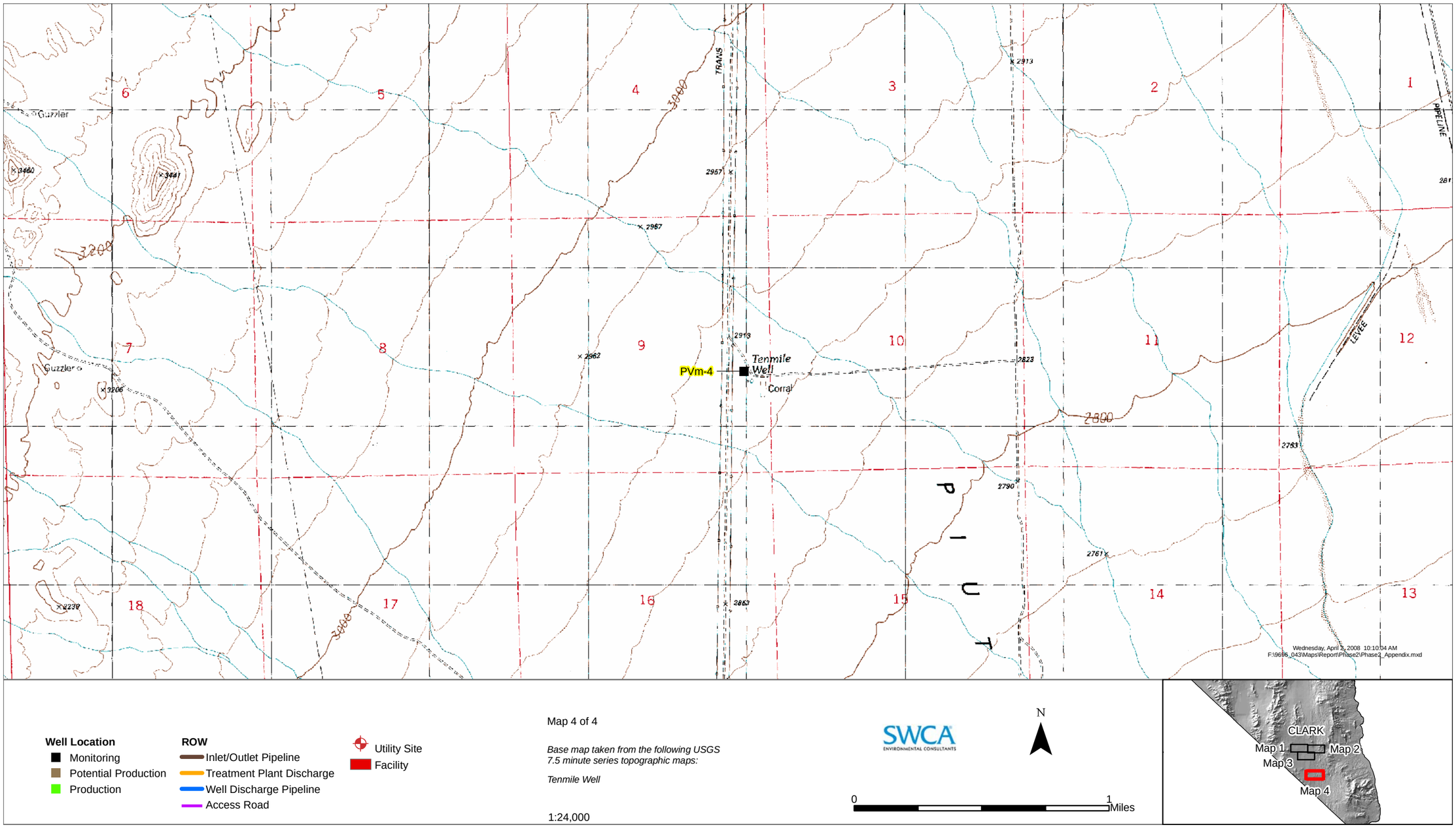

Figure 5. Searchlight Water and Wastewater Systems Improvements Project - Project area (Map 4 of 4).

APPENDIX C - BIOLOGICAL OPINION (FILE NO. 84320-2009-F-002)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Ph: (702) 515-5230 ~ Fax: (702) 515-5231

February 27, 2009
File No. 84320-2009-F-0002

Memorandum

To: Assistant Field Manager, Division of Recreation and Renewable Resources, Southern Nevada District Office, Bureau of Land Management, Las Vegas, Nevada

From: State Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Biological Opinion for the Searchlight Water and Wastewater Systems Improvements Project (6840(NV-052), Clark County, Nevada

This memorandum transmits the Fish and Wildlife Service's (Service) biological opinion (Attachment) based on our review of the proposed Searchlight Water and Wastewater Systems Improvements Project and its possible adverse effects on the desert tortoise (*Gopherus agassizii*) (Mojave population), a species listed as threatened under the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.).

The purpose for your request is to consult on Las Vegas Valley Water District and Clark County Water Reclamation District (collectively referred to as "the Districts") activities on Bureau of Land Management (BLM) land. The Districts work together as cooperative members of the Southern Nevada Water Authority to manage water resources in southern Nevada. A permit has been applied for by the Districts for a BLM right-of-way permit to construct and operate water pumping, delivery, treatment infrastructure, and facilities on BLM-managed land for the Town of Searchlight, Nevada. Federal funding will be applied for from the U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA) under Section 595 of the Water Resources Development Act of 1999 and the Consolidated Appropriation Act of 2005 respectively.

This biological opinion is based on 50 CFR Part 402, revised December 16, 2008; information provided in a letter from BLM to the Service received dated September 17, 2008; a biological assessment received September 19, 2008 (SWCA Environmental Consultants 2008); discussions between BLM and Service biologists; and electronic mail between BLM and the Service. A complete administrative record of this consultation is on file in the Service's Nevada Fish and Wildlife Office in Las Vegas.

If we can be of further assistance regarding this consultation, please contact Corey Kallstrom in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Please reference Service file number 84320-2009-F-0002 in any future correspondence relating to this consultation.

Robert D. Williams

Attachments

cc: (w/o attach)
Environmental Protection Specialist, Environmental Protection Agency, Region IX, San Francisco, California
Los Angeles District, U.S. Army Corps of Engineers, Los Angeles, California
Administrator, Clark County Desert Conservation Program, Department of Air Quality and Environmental Management, Las Vegas, Nevada
Supervisory Biologist - Habitat, Nevada Department of Wildlife, Las Vegas, Nevada

ATTACHMENT

BIOLOGICAL OPINION

A. Consultation History

The following chronology documents the consultation process that culminated in the following biological opinion for the desert tortoise and its designated critical habitat:

On December 1, 2005, the Service sent the Southern Nevada Water Authority (SNWA) a letter containing a species list of endangered, threatened, and candidate species that may occur in or near the proposed Searchlight Water System Improvements Project in southeast Clark County, Nevada (1-5-06-SP-429).

On January 19, 2006, the Service sent SNWA a letter clarifying that critical habitat for the federally listed desert tortoise (*Gopherus agassizii*, Mojave population) does occur in a portion of the project area and should be considered for analyses.

On September 19, 2008 the Service received a Biological Assessment (BA) for the Searchlight Water and Wastewater Systems Improvements Project.

On October 7, 2008, the Service received a memorandum (6840 (NV-052) dated September 17, 2008 from BLM requesting formal consultation on the Searchlight Water and Wastewater Systems Improvements Project for potential adverse effects to the desert tortoise and its designated critical habitat. A BA accompanied the memorandum.

On December 23, 2008, the Service sent an email to BLM requesting clarification about information in the BA regarding additional exploratory wells that would have to be drilled if neither S-4a nor S-4b produces adequate groundwater (page 9' third paragraph, last sentence). The Service also requested clarification of what the duration of the conservation measures were in case work needed to be done in the future.

On January 7, 2009, BLM staff met with Service staff and clarified that a separate consultation would be requested if additional wells were needed. In addition, BLM clarified that the conservation measures were intended for the life of the project which would include operations, monitoring and maintenance.

On January 9, 2009, the Service sent BLM a letter confirming that the information provided to initiate consultation was adequate and that we expected to provide BLM with a biological opinion no later than February 19, 2008.

On January 13, 2009, the Service toured the project area with an SNWA representative.

On January 15, 2009, Service staff requested via email that BLM clarify the involvement of the Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps) for permitting and funding so that Federal actions performed by these agencies are documented in section 7 consultation.

On January 23, 2009, BLM staff met with FWS staff and clarified that the project proponents would be applying for Federal funding assistance from the Corps and EPA for the proposed project.

On February 12, 2009, the Service provided BLM with a draft copy of the biological opinion for review.

On February 19, 2009, the Service left a message via phone with the BLM to determine the status of the review.

On February 24, 2009 the Service was provided with a copy of comments and suggestions from the Las Vegas Valley Water District (LVVWD).

On February 26, 2009 the Service met with the LVVWD to discuss comments and suggestions from the LVVWD. The Service notified that suggestions had been incorporated with the exception of "Wildlife Conservation Measure g.", and Reasonable and Prudent Measures 1.w, 1.x, and 3.b. These items were discussed for clarification.

On February 27, 2009 the Service incorporated clarifications alluded to above as discussed in communications the current and previous day between the BLM, LVVWD, and the Service.

B. Description of the Proposed Action

1. Project Description

The proposed Searchlight Water and Wastewater Systems Improvements Project BA (SWCA Environmental Consultants 2008) describes the proposed action and action area for the improvement of an existing waste water collection system and the development of an improved water system for the town of Searchlight, Nevada (Figure 1). The project proponents are the Las Vegas Valley Water District (LVVWD) and Clark County Water Reclamation District (CCWRD). Both LVVWD and CCWRD (hereafter referred to as "the Districts") are member agencies of the Southern Nevada Water Authority (SNWA). SNWA is providing project oversight and coordination.

The wastewater system improvements include a water resource center (WRC) for wastewater treatment and associated infrastructure which includes access roads with buried power and telephone utilities, and potential improvements to an existing wastewater collection system. The water system improvements include the construction of two new groundwater production wells to replace existing wells, one monitoring well, buried pipelines from the new groundwater production wells to a new water treatment facility, a new reservoir, and reservoir inlet and outlet pipelines. A new utility site for power to the production wells would be constructed and power

lines required for the new well sites would be put underground.

Pipelines and buried utilities will be installed by digging trenches, installing system components and subsequently backfilling. Vegetation will be cleared for catchment basins at new monitoring and production wells. Construction vehicles will drive overland to these wells.

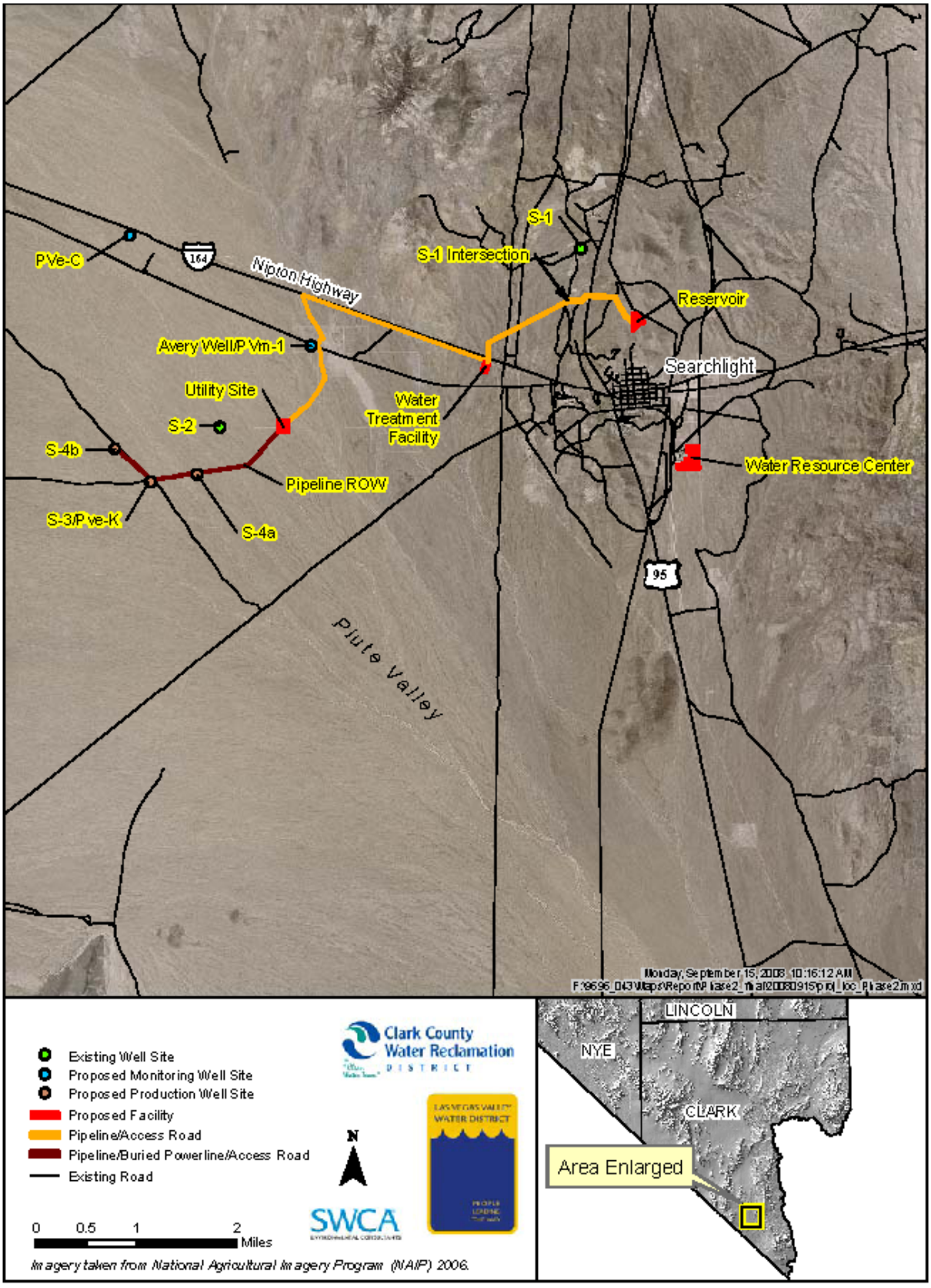

Figure 1 Proposed project area and components (SWCA Consultants 2008).

The project occurs on a mix of BLM, private, and CCWRD patented land or right-of-way. A portion of the proposed water system improvement project occurs within the desert tortoise Piute-Eldorado Critical Habitat Unit (PECHU) (Service, 1994). A map of ownership and land management status is shown in Figure 2. Table 1 shows a breakdown for acreages of habitat disturbance on BLM and private land.

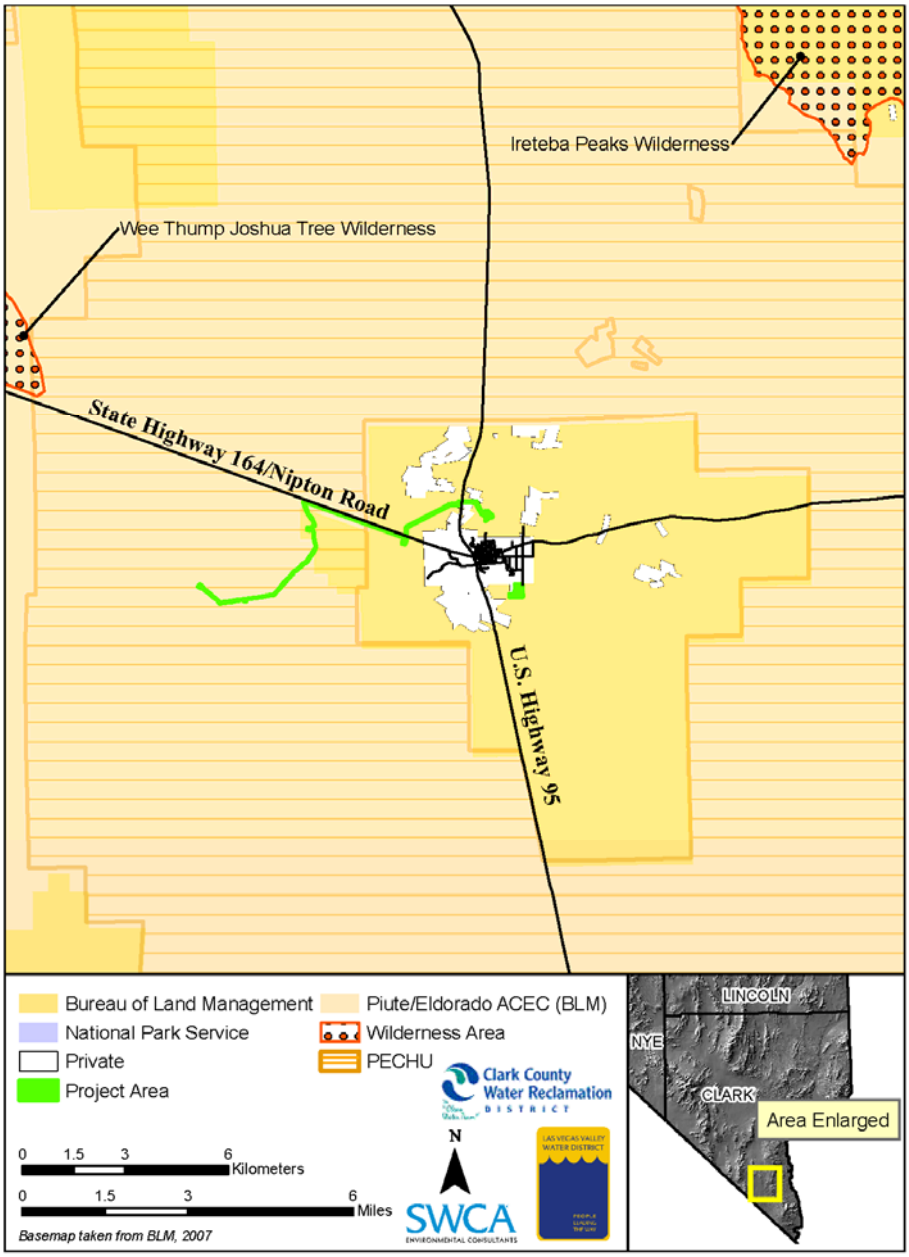

Figure 2 Land ownership / management status (SWCA Environmental Consultants 2008).

Table 1 Habitat disturbance breakdown by facility and land ownership (SWCA Environmental Consultants 2008).

Facility	Previous Disturbance (acres)		New Disturbance (acres)	
	BLM[1]	Private	BLM[1]	Private
Production Well Sites (3)	1.01	--	2.02	--
Monitoring Well Sites (2)	1.01		1.01	--
Pipeline	2.35	--	25.45	--
Electrical Utility Site	--	--	0.01	--
Water Treatment Facility	--	--	4.13	--
Reservoir	--	--	8.60	--
WRC Wastewater Facility Upgrades	--	14.58	--	22.42
Sewer Mains	--	0.30	--	--
Utilities to WRC	--	0.95	--	--
Subtotal	4.37[2]	15.83[3]	41.22[2]	22.42[3]
Total	20.20		63.64	
Grand Total	83.84			

[1] Includes all BLM land in project area

[2] Total acreage of project located on BLM land (4.37 + 41.22 = 45.59)

[3] Total acreage of project located on private land (15.83 + 22.42 = 38.25)

2. Proposed Conservation Measures

Vegetation

BLM proposes to implement the following measures to minimize the potential adverse effects from construction and operation of water pumping, delivery, treatment infrastructure, and facilities on desert tortoises.

a. Before construction commences, temporary tortoise-proof fencing will be installed around work sites to ensure impacts are minimized to the maximum extent practicable.

b. Within the fenced right of-way boundaries, all activities will be confined to the absolute minimum area necessary to complete project activities.

c. No vegetation clearing will occur during drilling of new permanent monitoring and production wells 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.

d. Before construction begins, the top 3-6 inches of topsoil will be removed in areas where excavation is required for catch basins. The soil will be stockpiled, and replaced following construction.

e. Cactus and yucca that would be impacted by construction activities will be salvaged, stored in an approved temporary nursery location, and replanted following construction.

f. All threatened, endangered, and sensitive plant species located within the survey areas will be inventoried. A plant inventory and site location plan will be prepared to assist in rehabilitation or restoration of disturbed areas.

g. Erosion and runoff will be controlled using Best Management Practices (BMPs) during and after construction, including placement of weed-free hay bales or other sediment filtering/surface-water directing devices and structures. Also, settling basins as a water-sediment separating structure will be used. Water or other dust-reducing measures will be used to control fugitive dust production.

h. A noxious weed management plan will be prepared and implemented to prevent and control the spread of noxious weeds during and following construction. The plan will include measures such as avoidance of transporting weed parts (e.g., steam cleaning/washing construction equipment and vehicles), monitoring of the site after construction, and treatment (and eradication if possible) of weeds at all re-vegetation and construction locations.

Wildlife

a. A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied and construction waste will be removed daily from the project area and disposed of in an approved landfill.

b. A maximum speed limit of 25 miles per hour will be maintained while traveling on unpaved access roads. Speed limit signs will be installed. Caution signs indicating the possible presence of desert tortoises will be posted along the access road and project construction sites. Authorized biologists will monitor speed limit compliance during construction.

c. Migratory bird surveys will be conducted between March 15 and July 30 prior to drilling and 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 the Service and BLM to determine appropriate minimization measures, on a case-by-case determination of need.

d. All fuel, transmission or brake fluid leaks, or other hazardous waste leaks, spills, or releases will be reported immediately to the designated environmental supervisor. The environmental supervisor shall be responsible for spill material removal and disposal to an approved offsite landfill, and if necessary, will notify the appropriate Federal agency.

e. A spill prevention and response plan will be prepared to eliminate and/or

minimize the impacts of drilling fluid and hazardous materials spills. 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.

f. Fire prevention and suppression measures will be implemented to reduce the risks of fire during construction. Specific measures include: parking vehicles and storing mechanized equipment in areas cleared of vegetation; limiting smoking to areas clear of vegetation, where designated by the Field Safety Officer, or as otherwise posted; not burning fires of any kind, including lunch or warming fires, unless a proper permit is obtained; ensuring that all vehicles are equipped with spark arrestors in good working order, a fire extinguisher (Type ABC), and a shovel.

g. Project sites requiring permanent fencing will be fenced with permanent tortoise-proof fencing prior to the commencement of surface disturbing activities. Permanent fencing will consist of 1-inch horizontal by 2-inch vertical hardware mesh. The mesh will extend at least 18 inches aboveground and, where feasible, 6 inches belowground. In situations where it is not feasible to bury the fence (i.e. gate entrances), the lower 6-12 inches of the fence shall be bent at a 90-degree angle towards the potential direction of encounter with tortoises and covered with cobble or other suitable material to ensure that tortoises or other animals cannot dig underneath, thus creating gaps through which tortoises may traverse. The height of tortoise-proof fencing will be a minimum of 18 inches aboveground. The fence shall be inspected, and zero clearance maintained between the bottom of the fence and the ground.

   Other project sites will be fenced with temporary fencing prior to the commencement of surface-disturbing activities. Temporary fencing will consist of 1-inch horizontal by 2-inch vertical mesh. The mesh (hardware, cloth, or plastic) will extend 18 inches aboveground. Temporary tortoise-proof fencing should not be buried. Subsequent to completion of construction at these sites, temporary fencing will be replaced with gated chain link fence fitted with permanent tortoise-proof fencing.

h. If fence construction occurs during the tortoise active season (March 1 through October 30), an authorized tortoise biologist shall be onsite during construction of the tortoise-proof fence to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, the authorized biologist shall thoroughly examine the proposed fence line and burrows for the presence of tortoises no more than three days before construction commences.

i. The fencing shall be inspected at least on a daily basis during construction. Monitoring and maintenance shall include regular removal of trash and restoration of zero ground clearance between the ground and the bottom of the fence.

j. Following installation of the temporary fencing and prior to the commencement

of project construction activities, all desert tortoises shall be removed from the site onto adjacent BLM land. During the tortoise active season, the pre-construction clearance will be conducted no more than three days before initiation of construction; during the tortoise inactive season, the pre-construction clearance shall be conducted no more than five days before initiation of construction. An authorized biologist shall oversee the survey for, and removal of, tortoises using techniques providing 100-percent coverage of all areas. Two complete passes of 100-percent coverage will be accomplished. All desert tortoise burrows, and other species burrows which may be used by tortoises, will be examined to determine occupancy of each burrow by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed. Any desert tortoises or eggs found in the fenced area will be removed under the supervision of an authorized tortoise biologist in accordance with Service protocol (Desert Tortoise Council 1994, revised 1999).

k. After an area has been fenced and cleared of tortoises, any desert tortoise found in imminent danger shall be moved out of harm's way and onto adjacent BLM land. If an authorized biologist is not available, an employee that has completed desert tortoise training may move the tortoise. If the tortoise cannot be avoided or moved out of harm's way onto BLM land, it shall be placed in a cardboard box or other suitable container and held in a shaded area until the Clark County pickup service or BLM personnel can retrieve the tortoise.

l. All desert tortoises and desert tortoise eggs will be relocated 300 to 1,000 feet offsite into adjacent undisturbed habitat. A pair of new, disposable latex gloves will be used for each tortoise that must be handled. After use, the gloves will be properly disposed. Tortoises found aboveground will be placed under a marked bush in the shade; in an unoccupied burrow of similar size/orientation; or a burrow constructed by the authorized biologist in accordance with Section B-5-f (Desert Tortoise Council 1994, revised 1999). Any tortoise found within one hour before nightfall will be placed individually in a clean cardboard box and kept overnight in a cool, predator-free location. To minimize stress to the tortoise, the box will be covered and kept upright. Each box will be used only once and will then be discarded. The tortoise will be released the next day in the same area from which it was collected and placed under a marked bush in the shade.

Special precautions will be taken to ensure that desert tortoises are not harmed as a result of their capture and movement during extreme temperatures (i. e., air temperatures below 55° F or above 95° F). Under such adverse conditions, tortoises captured will be monitored continually by an authorized biologist until the tortoise exhibits normal behavior. If a desert tortoise shows signs of heat stress, procedures shall be implemented as identified in Service-approved protocols (Desert Tortoise Council 1994, revised 1999).

m. In accordance with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (Service 1992), an authorized desert tortoise biologist shall possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist shall have the ability to recognize and accurately record survey results. The attached Desert Tortoise Biologist Qualifications Statement (Appendix A) should be completed by potential biologists and submitted to the Service for review.

n. 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).

o. Prior to initiation of construction, the authorized biologist shall present a desert tortoise awareness program to all personnel who will be onsite, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate. The program will contain information concerning the biology and distribution of the desert tortoise and other sensitive species, their legal status and occurrence in the project area; the definition of "take" and associated penalties; the terms and conditions of this biological opinion; the means by which employees can help facilitate this process; and reporting procedures to be implemented in case of desert tortoise encounters or non-compliance with this biological opinion. The name of every individual trained will be recorded on a sign-in sheet.

p. The proposed project would disturb a maximum of 41.22 acres of tortoise habitat on public lands (30.03 acres of non-critical tortoise habitat and 11.19 acres of critical tortoise habitat. Prior to surface-disturbing activities associated with the proposed project, the proponent will pay remuneration fees to be deposited into the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (section 7 account) for compensation of desert tortoise habitat loss.

For disturbance of non-critical habitat on public lands, the fee will be assessed at the rate of $753 per acre of disturbance. For disturbance of critical habitat on BLM lands, the fee will be assessed at the rate of $3,012.00 per acre of disturbance (4 X $753). This rate was determined by the formula described in the Compensation for the Desert Tortoise (Hastey et al.1991). The rate of 4 was determined by the quality of habitat, i.e., critical habitat (factor of 3), plus 1 for the term of effect greater than 10 years, for a total of (4).

These fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the

CPI-U can be found on the internet at: http://stats.bls.govlnews.release/cpi.nws.htm. The next adjustment will occur on March 1, 2009. If paid prior to March 1, 2009, the total fees due will be $56,316.87, calculated as (30.03 X $753.00) + (11.19 X $3012.00). Clark County serves as the administrator of the funds, but does not receive any benefit from administering these funds. These funds are independent of any other fees collected by Clark County under the Multiple Species Habitat Conservation Plan (MSHCP).

The payments shall be accompanied by the attached Section 7 Fee Payment Form(Appendix C), and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County and delivered to:

Clark County Desert Conservation Program
c/o Dept. of Air Quality and Environmental Management
Clark County Government Center
500 S. Grand Central Parkway, first floor (front counter)
Las Vegas, Nevada 89106
(702) 455-5821

q. A qualified tortoise biologist will be onsite 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).

r. If a desert tortoise is encountered that is experiencing heat stress, a qualified tortoise biologist will place the tortoise in a tub with one inch of water in an environment with a temperature between 76° F and 95° F for several hours, until heat stress symptoms are no longer evident.

s. For project sites that require trenching, trenches will be dug in such a manner that the side walls are contoured to allow any tortoises or other wildlife that inadvertently fall in a means to climb out. If such contouring is not feasible, trenches must be covered with ply board or similar materials during hours of inactivity.

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

3. Definition of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action, including interrelated and interdependent actions, and not merely the immediate area involved in the action (50 CFR § 402.02). Subsequent analyses of the environmental baseline, effects of the action, cumulative effects, and levels of incidental take are based upon the action area as determined by the Service.

The action area for Searchlight Water and Wastewater Systems Improvements Project includes all areas within the disturbance footprint, right-of-way grant area, and a zone-of-influence extending 600 feet beyond the project area to cover potential impacts to tortoises that could move onto construction areas or access roads.

C. Status of the Species/Critical Habitat

The range-wide status of the desert tortoise consists of information on its listing history, species account, recovery plan, recovery units, distribution, reproduction, and numbers. This information is dated October 22, 2008, and provided on the Service's website at: http://www.fws.gov/nevada/desert%5Ftortoise/dt_life.html. If unavailable on this web site, contact the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230, and provide File No. 84320-2009-F-0002 along with the date of October 22, 2008.

D. Environmental Baseline

1. Status of the Desert Tortoise in the Action Area

There were 23 burrows and 4 instances of scat (with 19 individual pieces) documented during pedestrian field surveys performed 10 - 18 December 2007, by SWCA biologists in the project area zone-of-influence. A large portion of the project area is developed or consists of low quality desert tortoise habitat because of its close proximity to Searchlight. Based on 2007 surveys of the action area and historic data, it is estimated that desert tortoise density is in the low range outlined by Karl (1980) where there are 10-45 per acre (SWCA Environmental Consultants 2008).

The project area consists predominantly of Mojave Desert shrubland, which includes Mojave Mid-elevation Mixed Desert Scrub (blackbrush community), Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (creosote bush community), Inter-mountain Basins Semi-desert Shrub Steppe (mixed desert shrub community), and Sonora-Mojave Mixed Salt Desert Scrub (saltbush community). Blackbrush (*Coleogyne ramosissima*) and creosote (*Larrea tridentata*) communities are the dominant vegetation in the area. Blackbrush is found mostly in the western half of the project area. Associated species include red brome (*Bromus rubens*), Mormon tea (*Ephedra viridis*), threadleaf snakeweed (*Gutierrezia microcephala*), Joshua tree (*Yucca brevifolia*), and banana yucca (*Yucca baccata*).

Creosote and the co-dominant white bursage (*Ambrosia dumosa*) are found mostly in the eastern half of the project area, on alluvial slopes, valley floors, and mountain slopes below 4,000 feet in elevation. Plant species found in association with the creosote bursage community include threadleaf snakeweed, Mexican bladdersage (*Salizaria mexicana*), spiny menodora (*Menodora spinescens*), turpentine broom (*Thamnosma montana*), red brome, Nevada joint-fir (*Ephedra nevadensis*), and banana yucca.

The mixed desert shrub community is found scattered throughout the project area. The mixed desert shrub community is composed of a variety of shrubs and lacks a true dominant species. Associated plant species include blackbrush, creosote, threadleaf snakeweed, Mexican bladdersage, spiny menodora, turpentine broom, red brome, Nevada joint-fir, Mormon tea, indigo bush (*Psorothamnus fremontii*), banana yucca, and Joshua tree.

There are 11.19 acres of desert tortoise PECHU within the action area that will be directly impacted by the proposed project. Table 2 provides a breakdown of disturbance within critical habitat by project component. The majority of disturbance within critical habitat and for the project will occur from installing pipeline.

Table 2 Critical Habitat disturbance breakdown (SWCA Environmental Consultants 2008).

Facility	Non-PECHU (acres)	PECHU (acres)
Production Well Sites	--	2.02
Monitoring Well Sites	--	1.01
Pipeline	17.30	8.15
Electrical Utility Site	--	0.01
Water Treatment Facility	4.13	--
Reservoir	8.60	--
Subtotal	30.03	11.19
Total	41.22	

2. Factors Affecting the Desert Tortoise in the Action Area

Since the Mojave population of the desert tortoise was first listed under the Act in 1989, three regional-level habitat conservation plans (HCPs) have been implemented for development of desert tortoise habitat in Clark County, Nevada. Approximately 89 percent of Clark County consisted of public lands administered by the Federal government, thereby providing little opportunity for mitigation for the loss of desert tortoise habitat under an HCP on non-Federal lands. Alternatively, funds are collected under HCPs and spent to implement conservation and recovery actions on Federal lands as mitigation for impacts that occur on non-Federal lands.

BLM-managed lands are included in these areas where mitigation funds are used to promote recovery of the desert tortoise.

a. On May 23, 1991, the Service issued a biological opinion on the issuance of incidental take permit PRT-756260 (File No. 1-5-91-FW-40) under section 10(a)(1)(B) of the Act. The Service concluded that incidental take of 3,710 desert tortoises on up to 22,352 acres of habitat within the Las Vegas Valley and Boulder City in Clark County, Nevada, was not likely to jeopardize the continued existence of the desert tortoise. The permit application was accompanied by the *Short-Term Habitat Conservation Plan for the Desert Tortoise in the Las Vegas Valley, Clark County, Nevada* (Regional Environmental Consultants [RECON] 1991) (Short-term HCP) and an implementation agreement that identified specific measures to minimize and mitigate the effects of the action on desert tortoises.

   On July 29, 1994, the Service issued a non-jeopardy biological opinion on the issuance of an amendment to incidental take permit PRT-756260 (File No. 1-5-94-FW-237) to extend the expiration date of the existing permit by one year (to July 31, 1995) and include an additional disturbance of 8,000 acres of desert tortoise habitat within the existing permit area. The amendment did not authorize an increase in the number of desert tortoises allowed to be taken under the existing permit. Additional measures to minimize and mitigate the effects of the amendment were also identified. Approximately 1,300 desert tortoises were taken under the authority of PRT-756260, as amended. In addition, during the Short-term HCP, as amended, approximately 541,000 acres of desert tortoise habitat have been conserved in Clark County on lands administered by BLM and the National Park Service.

b. On July 11, 1995, the Service issued an incidental take permit (PRT-801045) to Clark County, Nevada, including cities within the county and the Nevada Department of Transportation (NDOT), under the authority of section 10(a)(1)(B) of the Act. The permit became effective August 1, 1995, and allowed the "incidental take" of desert tortoises for a period of 30 years on 111,000 acres of non-Federal land in Clark County, and approximately 2,900 acres associated with Nevada Department of Transportation (NDOT) activities in Clark, Lincoln, Esmeralda, Mineral, and Nye counties, Nevada. The Clark County Desert Conservation Plan (DCP) served as the permittees' HCP and detailed their proposed measures to minimize, monitor, and mitigate the effects of the proposed take on the desert tortoise (RECON 1995). The permitees and NDOT imposed and paid a fee of $550 per acre of habitat disturbance to fund these measures. The permittees expended approximately $1.65 million per year to minimize and mitigate the potential loss of desert tortoise habitat. The majority of these funds were used to implement minimization and mitigation measures, such as increased law enforcement; construction of highway barriers; road designation, signing, closure, and rehabilitation; and tortoise inventory and monitoring within the lands managed for tortoise recovery (e.g., ACECs or DWMAs). The benefit to the species, as provided by the DCP, substantially minimized and mitigated those

effects that occurred through development within the permit area and aided in recovery of the desert tortoise.

c. On November 22, 2000, the Service issued an incidental take permit (TE-034927) to Clark County, Nevada, including cities within the county and NDOT which supersedes the DCP permit. In the biological/conference opinion (File No. 1-5-00-FW-575), the Service determined that issuance of the incidental take permit to Clark County would not jeopardize the listed desert tortoise or southwestern willow flycatcher (*Empidonax traillii extimus*), or any of the 76 species that are not listed or proposed for listing under the Act that are covered under the incidental take permit. Under the special terms and conditions of the permit, take of avian species, with the exception of Peregrine falcon (*Falco peregrinus anatum*) and phainopepla (*Phainopepla nitens*), would not be authorized until acquisition of private lands in desert riparian habitats in southern Nevada has occurred. The incidental take permit allows incidental take of covered species for a period of 30 years on 145,000 acres of non-Federal land in Clark County, and within NDOT rights-of-way, south of the 38th parallel in Nevada. The Clark County MSHCP and Environmental Impact Statement (RECON 2000), serves as the permittees' HCP and details their proposed measures to minimize, mitigate, and monitor the effects of covered activities on the 78 species.

As partial mitigation under the DCP, carried forward in the MSHCP, the County purchased a conservation easement from the City of Boulder City in 1994. The term of the Boulder City Conservation Easement (BCCE) is for 50 years and it will be retained in a natural condition for recovery of the desert tortoise and conservation of other species in the area. Certain uses shall be prohibited within the BCCE including motor vehicle activity off designated roads, livestock grazing, and any activity that is inconsistent with the purposes of the BCCE. Much of the BCCE is also designated desert tortoise critical habitat. Within the boundary of the BCCE, Boulder City reserved the Solar Energy Zone for energy development projects in addition to adjacent energy generation facilities described previously.

The action area is interspersed within and adjacent to residential areas and development. The public uses the area for recreation. The close proximity of the project area results in increased human contacts and potential impacts to desert tortoises and their habitat. Feral burros have been, and continue to be removed from Lake Mead National Recreation Area to protect tortoise habitat in the PECHU. Livestock grazing has been discontinued in all areas designated as areas of critical environmental concern (ACEC) on BLM lands which generally overlap CHU boundaries.

E. Effects of the Action

1. Desert Tortoise (Mojave Population)

Direct effects are the immediate effects of the action and are not dependent on the occurrence of any additional intervening actions for the impacts to species or critical habitat to occur. *Indirect effects* are those for which the proposed action is an essential cause, and that are later in time, but still are reasonably certain to occur. If an effect will occur whether or not the action takes place, the action is not an *essential cause* of the indirect effect. In contrast to direct effects, indirect effects are more subtle, and may affect tortoise populations and habitat quality over an extended period of time, long after surface-disturbing activities have been completed. Indirect effects are of particular concern for long-lived species such as the desert tortoise because project-related effects may not become evident in individuals or populations until years later.

Direct impacts to the desert tortoise would be the permanent and temporary loss of habitat utilized by tortoises for foraging, breeding, and cover. Approximately 63.64 (41.22 on BLM and 22.42 on private) acres of new disturbance will occur from production well sites, monitoring well sites, pipeline, electric utility site, water treatment facility, and reservoir. There are 20.2 acres of existing disturbance associated with the project.

Linear construction projects can negatively affect desert tortoise populations. Studies suggest that differences in the extent of the threat are related to the scale of the project, the ability of crews to avoid disturbing burrows, and timing of construction to avoid peak activity periods of tortoises (Boarman 2002). In addition to the discrete disturbance points formed by well, water treatment facility, and utility sites, maintenance roads and repeated operations can (1) introduce continuous sources of disturbance and (2) provide potential sites for invasion of exotic species. Rights-of-way can cause habitat destruction and alteration where vegetation is minimal, possibly increasing mortality, directly or indirectly (Boarman 2002).

Many of these activities will involve driving over, blading, and excavation of the area. Temporarily disturbed areas will be rehabilitated; however, it will take a long time (more than 10 years) before these areas can provide foraging and cover sites for the desert tortoise. Areas where heavy machinery is used will have crushed vegetation and compacted soil. BLM has proposed the following measures to help minimize these impacts: 1) minimize the amount of disturbed areas needed during installation and construction of the facilities; 2) restore temporary disturbance areas after construction is complete; 3) prepare and implement a weed management plan; and 4) stockpile and replace topsoil.

Tortoises within the construction area during work activities would be highly vulnerable. Desert tortoises may be killed or injured by project vehicles and equipment in the project area. Construction equipment and vehicles could crush tortoises or collapse burrows both occupied and unoccupied if not found during clearance surveys. Project vehicles and equipment that stray away from designated access roads and areas may crush desert tortoises aboveground or in their burrows. Tortoises may take refuge underneath project vehicles and equipment and be killed or injured when the equipment or vehicle is moved. Tortoises that wander into the project area

could also fall into holes or trenches that they are unable to escape. The following measures proposed by BLM should reduce these potential effects to desert tortoises: 1) conduct tortoise clearance surveys within the project area; 2) enforce a 25 mile per hour speed limit on project access roads; 3) fence project areas; and 4) provide a tortoise education program to workers. Tortoises moved during clearance surveys and tortoises that are physically moved out of harm's way to prevent mortality or injury could be inadvertently harmed if not handled properly. Urine and large amounts of urates are frequently voided during handling and may represent a severe water loss, particularly to juveniles (Luckenbach 1982). Overheating can occur if tortoises are not placed in the shade when ambient temperatures equal or exceed temperature maximums for the species (Desert Tortoise Council 1994, revised 1999). Tortoise eggs moved during clearance surveys could also be harmed if not handled properly. The following measures proposed by BLM should reduce these potential effects to desert tortoises: 1) providing a tortoise education program to workers; 2) utilizing Service-approved protocols for handling desert tortoises and tortoise eggs; and 3) ensuring that only authorized individuals handle tortoises.

The resulting indirect impacts to the desert tortoise may include the risk of death, injury, or lower reproductive potential through increased predation and degradation and fragmentation of the habitat surrounding the project area. There is a potential for an increase in the number of predatory and scavenger species due to the presence of humans and improper disposal of trash. Workers associated with the proposed project may provide food in the form of trash and litter; or water, which attracts important tortoise predators such as the common raven, kit fox, and coyote (BLM 1990, Boarman and Berry 1995). Natural predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified (BLM 1990). Ravens likely would be attracted to human activities and power lines for perch sites and food sources, increasing the potential for predation on juvenile desert tortoise in adjacent habitats. BLM proposes to minimize these impacts by: 1) implementing a litter-control program during construction and operations; and 2) providing a tortoise education program to workers.

The project may degrade habitat in the surrounding landscape by introducing non-native weeds or plants into the project area, which later spread into the surrounding desert, increasing fuel loads for wildfires and competing with native forbs and shrubs. The following measures proposed by BLM should help reduce these potential effects to desert tortoise habitat: 1) minimize disturbance; 2) restore all temporary disturbance areas; 3) prepare and implement weed management plan.

Following construction, the public may use project access roads which may result in adverse effects to tortoise populations. Humans use the desert for off-road exploration, casual shooting and target practice, personal or commercial collection of animals and plants, searches and digging for minerals and gems, geocaching (GPS guided stash hunts), and even the production of illegal drugs. Desert tortoise shells found in the Mojave Desert with bullet holes were examined forensically with the finding that the tortoises were alive when they were shot (Berry 1986), suggesting that illegal shooting of tortoises could occur. Project personnel could illegally collect tortoises for pets or bring dogs to the project area. The following measures proposed by BLM should help to reduce these potential impacts to tortoises; 1) clear project areas of tortoises, 2) provide a tortoise education program to workers, and 3) impose a speed limit.

Hazardous materials such as diesel fuel, gasoline, propane, oils, and solvents will be stored and used during construction and operation of the project. BLM will manage the use of hazardous materials and will follow all applicable regulations for the procurement, transport, use, and storage of those materials. Hazardous waste such as corrosives and solvents will be shipped to permitted hazardous waste treatment and disposal facilities. All waste will be handled in accordance with applicable environmental, occupational safety, and public health and safety requirements. There could be small spills of hazardous materials such as oils and fuels during construction of the facilities. BLM will immediately remediate any areas affected by such spills.

2. Desert Tortoise Critical Habitat

The proposed project is anticipated to result in the disturbance of up to 11.19 acres of desert tortoise critical habitat on BLM lands within the Piute Eldorado ACEC. Each 1 acre of disturbance at the two proposed production wells will be permanently surrounded with a gated chain link fence fitted with tortoise-proof fencing. One monitoring well will result in 1 one acre of disturbance which will primarily be crushing of vegetation. Well sites will be accessed using existing roads. It is estimated that the proposed pipeline will disturb 8.15 acres of critical habitat. Power lines to the new production well will be buried on the opposite side of the right-of-way from the pipeline. Burying the power line will reduce impacts associated with potential perch sites for predatory birds.

The soil would be removed during trench excavation, blading and equipment operations over a total area of 11.19 acres. If topsoil is removed, stockpiled, and replaced on disturbed areas, these effects should be relatively short-term. Cacti and yuccas which will be impacted by the project will be salvaged and replanted following construction. Removal of native vegetation may facilitate establishment of alien plant species which may be less nutritious for the desert tortoise (Oftedal 2003). A noxious weed management plan will be prepared and implemented which may lessen potential impact of weeds should they colonize the disturbed areas. A relatively small amount of vegetation that serves as shelter and substrates suitable for burrowing, nesting, and overwintering will be affected by the project.

Habitat impacts may be long-term if restoration is not successful or if alien plant species become established and displace native plants necessary to the tortoise. If a native annual and perennial plant composition returns to the rights-of-way that is similar to that currently found along the alignment, the impacts on tortoise habitat would be of shorter duration.

Primary constituent elements of critical habitat would be affected by the proposed project to a minor degree; however, most effects would be short-term and are not anticipated to result in long-term harm to desert tortoises. The CHU will continue to provide for movement, dispersal, and gene flow. With the exception of permanently fenced areas, desert tortoises would continue to move across the project area upon completion of the project.

Considering the low-level of habitat impacts that may result from the proposed action, the Service does not anticipate that the function of the primary constituent elements of critical habitat within the affected CHU would be adversely affected to the point they no longer serve

their role for conservation of the desert tortoise as identified in the Recovery Plan.

F. Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The Searchlight Water and Wastewater Systems Improvements Project may provide an improved capacity for city growth and expansion. Increased growth may increase potential for desert tortoise exposure to human contact. Recreational use in areas surrounding Searchlight could negatively affect desert tortoise and their habitat. Development on non-Federal lands is anticipated to fall under the purview of the MSHCP and associated incidental take permit.

G. Conclusion

1. Desert Tortoise (Mojave Population)

After reviewing the current status of the desert tortoise, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the project, as proposed and analyzed, is not likely to jeopardize the continued existence of the threatened desert tortoise (Mojave population). This conclusion is based on the following:

a. The proposed project will not result in a level of take of desert tortoise that would significantly affect the rangewide number, distribution, or reproduction of the species; tortoises that are taken as a result of the project are anticipated to remain in the wild with no long-term effects except for 1 desert tortoise estimated to be killed or injured by project activities.

b. The desert tortoise densities in the project area are considered low and measures have been proposed by BLM to minimize the effects of the proposed action on the desert tortoise.

2. Critical Habitat for Desert Tortoise (Mojave Population)

The Service has reviewed the current rangewide status of designated critical habitat for the desert tortoise (Mojave population), the environmental baseline, the effects of the project, and the cumulative effects. Based on this review, it is the Service's biological opinion that these actions are not likely to adversely modify designated critical habitat for the desert tortoise (Mojave population). The project actions will not diminish the capability of the area to serve its role for recovery by continuing to provide the PCEs of critical habitat. The basis for this conclusion is summarized as follows:

a. The amount of critical habitat permanently and temporarily disturbed by the project is 11.19 acres, approximately 0.001 percent of the PECHU.

b. Measures have been proposed by BLM and the Districts to minimize the effects of the proposed action on critical habitat for the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The terms and conditions may include: (1) restating measures proposed by BLM; (2) modifying the measures proposed by BLM; or (3) specifying additional measures considered necessary by the Service. Where these terms and conditions vary from or contradict the minimization measures proposed under the Description of the Proposed Action, specifications in these terms and conditions shall apply. The measures described below are nondiscretionary and must be implemented by BLM so that they become binding conditions of any project, contract, grant, or permit issued by BLM or other jurisdictional Federal agencies as appropriate, in order for the exemption in section 7(o)(2) to apply. The Service's evaluation of the effects of the proposed actions includes consideration of the measures developed by BLM, and repeated in the section entitled "Description of the Proposed Action" of this biological opinion, to minimize the adverse effects of the proposed action on the desert tortoise. Any subsequent changes in the minimization measures proposed by BLM may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by BLM as part of the proposed action.

BLM, or other jurisdictional Federal agencies as appropriate, have a continuing duty to regulate the activity that is covered by this incidental take statement. If BLM, or other jurisdictional Federal agencies as appropriate, fail to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to permits or grant documents, and/or fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

A. Amount or Extent of Take Exempted

Desert Tortoise (Mojave Population)

Based on the analysis of effects provided above, measures proposed by BLM, and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed action:

1. One desert tortoise (adult, juvenile, or hatchling) would be incidentally killed or injured as a result of the proposed project. Should any desert tortoise be killed or injured in association with the proposed action, all activity in the vicinity of the incident shall cease and the project proponent shall contact the Service within 24 hours to assess the circumstances and discuss if additional protective measures are necessary.

2. All desert tortoises located during clearance surveys or located in harm's way in work areas may be harassed by capture and removal from the project area. Based on survey data, timing of the proposed project, and description of the project area, the Service estimates that 10 desert tortoises may be taken (other than killed or injured) by non-lethal means as a result of project activities.

3. An unknown number of desert tortoise nests with eggs may be excavated and relocated. The Service estimates that no desert tortoise nests with eggs are anticipated to be destroyed as a result of project activities.

4. An unknown number of desert tortoises may be preyed upon by ravens or other subsidized desert tortoise predators drawn to trash in the project area; however, the Service estimates that the potential increase in ravens will be minimized by litter-control measures proposed by BLM.

B. Effect of Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the desert tortoise. These determinations are based in part on the implementation of conservation measures detailed in the BA for this project.

C. Reasonable and Prudent Measures with Terms and Conditions

The Service believes that the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize take of desert tortoise.

RPM 1: *BLM, the Districts, and other jurisdictional Federal agencies as appropriate, shall ensure implementation of measures to minimize injury or mortality of desert tortoises due to surface-disturbing activities, operation of project vehicles or equipment, and project operations:*

Terms and Conditions:

1.a. An authorized desert tortoise biologist shall be onsite from March 1st through October 31st at all locations where construction related activities are occurring within desert tortoise habitat. The authorized biologist will be responsible for approving, evaluating, and supervising monitors to assist in implementing the desert tortoise measures of this biological opinion. Potential biologists shall complete the Qualifications Form (Appendix A) and submit it to the Service for review and approval as appropriate. Allow 30 days for Service review and response.

1.b. Prior to initiation of construction, maintenance, and operations, an authorized biologist or approved monitor shall present a desert tortoise awareness program to all personnel who will be onsite, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will contain information concerning the biology and distribution of the desert tortoise and other sensitive species, their legal status and occurrence in the project area; the definition of "take" and associated penalties; the terms and conditions of this biological opinion; the means by which employees can help facilitate this process; responsibilities of workers, approved monitors, and biologists; and reporting procedures to be implemented in case of desert tortoise encounters or non-compliance with this biological opinion. The name of every individual trained will be recorded on a sign-in sheet. Each trained individual will be given evidence indicating they have received this training and will keep that evidence with them at all times when they are in the project area.

1.c. Immediately prior to surface-disturbing activities or traveling off of main access roads on the right-of-way, the authorized biologist shall survey for desert tortoises and their burrows using techniques providing 100-percent coverage of the right-of-way and an additional area approximately 90 feet from both sides of the right-of-way. Transects will be no greater than 30 feet apart. All potential desert tortoise burrows will be examined to determine occupancy of each burrow and desert tortoises will be handled in accordance with Term and Condition 1.d. - 1.f and 2.a - 2.c. below.

1.d. All potential desert tortoise burrows located within the project area that are at risk for damage shall be excavated by hand by an authorized biologist, tortoises removed, and burrows collapsed or blocked to prevent occupation by desert tortoises.

1.e. Desert tortoises located in the project area, but outside of an area to be disturbed by ground-disturbing activities, sheltering in a burrow during a period of reduced activity (*e.g.*, winter), may be temporarily penned. Tortoises shall not be penned in areas of moderate or heavy public use. Penning shall be accomplished by installing a circular fence, approximately 20 feet in diameter to enclose the tortoise/burrow. The pen should be constructed with durable materials (*i.e.*,

16 gauge or heavier) suitable to resist desert environments. Fence material should consist of ½-inch hardware cloth or 1-inch horizontal by 2-inch vertical, galvanized welded wire. Pen material should be 24 inches in width. Steel T-posts or rebar (3 to 4 feet) should be placed every 5 to 6 feet to support the pen material. The pen material should extend 18 to 24 inches aboveground. The bottom of the enclosure will be buried several inches; soil mounded along the base; and other measures should be taken to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. An authorized biologist, approved monitor, or designated worker shall check the pen daily.

1.f. Desert tortoises and eggs found within construction sites shall be removed by an authorized biologist in accordance with the most current protocols identified by BLM and the Service. Desert tortoises will be moved solely for the purpose of moving them out of harm's way. Desert tortoises shall be relocated up to 1,500 feet into adjacent undisturbed habitat on protected public land in accordance with Service-approved handling protocol (Desert Tortoise Council 1994, revised 1999). The disposition of all tortoises handled shall be documented in accordance with 5.b. below.

1.g. All fuel, transmission or brake fluid leaks, or other hazardous materials shall not be drained onto the ground or into streams or drainage areas. All petroleum products and other potentially hazardous materials shall be removed to a disposal facility authorized to accept such materials. Waste leaks, spills or releases shall be reported immediately to BLM. BLM or the project proponent shall be responsible for spill material removal and disposal to an approved off-site landfill. Servicing of construction equipment will take place only at a designated area. All fuel or hazardous waste leaks, spills, or releases will be stopped or repaired immediately and cleaned up at the time of occurrence. Service and maintenance vehicles will carry a bucket and pads to absorb leaks or spills.

1.h. Vehicles shall not exceed 25 mph on access roads. Authorized desert tortoise biologists and/or approved monitors will ensure compliance with speed limits during construction.

1.i. Project personnel shall exercise caution when commuting to the project area and obey speed limits to minimize any chance for the inadvertent injury or mortality of species encountered on roads leading to and from the project site. All desert tortoise observations, including mortalities, shall be reported directly to an authorized biologist and the Service.

1.j. Any vehicle or equipment on the right-of-way within desert tortoise habitat shall be checked underneath for tortoises before moving. This includes all construction equipment and the area under vehicles should be checked any time a vehicle is left unattended, as well as in the morning before any construction activity begins. If a desert tortoise is observed, an authorized biologist will be contacted.

l.k. Project activity areas shall be clearly marked or flagged at the outer boundaries before the onset of construction. All activities shall be confined to designated areas. The authorized biologist and approved monitors shall ensure that no habitat is disturbed outside designated areas as a result of the project, including ensuring that all vehicles and equipment remain on the right-of-way or areas devoid of native vegetation.

1.l. To prevent mortality, injury, and harassment of desert tortoises and damage to their burrows and cover sites, no pets shall be permitted in any project construction area.

1.m. All desert tortoises observed within the project area or access road shall be reported immediately to the authorized biologist. The authorized biologist shall halt activities as necessary to avoid harm to a desert tortoise. Project activities that may endanger a desert tortoise shall cease until the desert tortoise moves out of harm's way or is moved out of harm's way by an authorized biologist.

1.n. Only water or an alternative substance approved by BLM shall be used as a dust suppressant. Water application shall avoid pooling of water on roadways. Pools of water may act as an attractant to desert tortoises.

l.o. In the event that blasting is required, a 200-foot-radius area around the blasting site shall be surveyed by an authorized biologist for desert tortoises prior to blasting, using 100-percent-coverage survey techniques. All tortoises located aboveground or within this 200-foot radius of the blasting site shall be moved 500 feet from the blasting site. Additionally, tortoises in burrows within 75 feet of the blasting will be placed into an artificial or unoccupied burrow 500 feet from the blasting site. This will prevent tortoises that leave their burrow upon translocation from returning to the blasting site. Tortoises in burrows at a distance of 75 to 200 feet from the blasting site will be left in their burrows. Burrow locations will be flagged and recorded using a GPS unit and burrows would be stuffed with newspapers. Immediately after blasting, newspaper and flagging will be removed. Blasting would only occur in the brief time period after an area has been cleared by an authorized biologist, but before any relocated tortoises could return to the site.

1.p. If possible, overnight parking and storage of equipment and materials shall be located in previously-disturbed areas or areas to be disturbed that have been cleared by an authorized tortoise biologist. If not possible, areas for overnight parking and storage of equipment shall be designated by the authorized biologist.

1.q. Within desert tortoise habitat, any construction pipe, culvert, or similar structure with a diameter greater than 3 inches stored less than 8 inches aboveground on the construction site for one or more nights shall be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored on the construction site.

1.r. Flagging and wire shall be removed from the project area at the end of project to ensure debris is not consumed by desert tortoises.

1.s. All project activities in desert tortoise habitat, excluding well drilling, shall be conducted from dawn until dusk.

1.t. Any excavated holes left open overnight shall be covered, and/or tortoise-proof fencing (Appendix B) shall be installed to prevent the possibility of tortoises falling into the open holes.

1.u. Open pipeline trenches shall be fenced with temporary tortoise-proof fencing or inspected by an authorized biologist or approved monitor periodically throughout and at the end of the day, and immediately prior to backfilling, and tortoise escape ramps (of at least 3:1 slope) shall be installed at least every quarter mile. Any tortoise that is found in a trench or excavation shall be promptly removed by an authorized biologist in accordance with Service-approved protocol or alternative method approved by the Service if the biologist is not allowed to enter the trench for safety reasons.

1.v. In areas to be encircled by a security fence, such as well yards and well substations, the fence shall be installed at least one foot below the surface of the ground or install permanent desert tortoise fencing around the area, to ensure that tortoises do not get trapped inside. See Appendix B for the Service's recommendations on tortoise exclusion fencing, dated September 2005. Fences should be checked during regular maintenance of the facilities to ensure zero ground clearance.

1.w. Well purge catchment basins at the proposed production wells and existing well S-2 shall be enclosed using screening or other measures to prevent areas of open standing water where desert tortoise may have access and drown.

1.x. Existing facilities associated with the proposed action currently in operation including S-2 and the WRC shall be updated to comply with requirements set forth in this biological opinion. This includes the installation of tortoise-proof fencing.

1.y. Any tortoise injured as a result of the proposed project shall immediately be transported to a qualified veterinarian and reported to the Service's Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

RPM 2: *BLM, the Districts, and other jurisdictional Federal agencies as appropriate, shall ensure implementation of the following measures to ensure that tortoises are not injured as a result of capture and handling:*

Terms and Conditions:

2.a. All appropriate NDOW permits or letters of authorization shall be acquired prior to handling desert tortoises and their parts, and prior to initiation of any activity that may require handling tortoises.

2.b. Tortoises and nests shall be handled and relocated by an authorized tortoise biologist in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Service or Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol shall be implemented for the project area. A pair of new, disposable latex gloves shall be used for each tortoise that must be handled. After use, the gloves will be properly disposed. Burrows containing tortoises or nests shall be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoises less active season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one shall be constructed in accordance with Desert Tortoise Council (1994, revised 1999) criteria. Desert tortoises that are located aboveground and need to be moved from the project area shall be placed in the shade of a shrub. All desert tortoises removed from burrows shall be placed in an unoccupied burrow of approximately the same size and orientation as the one from which it was removed.

2.c. Special precautions shall be taken to ensure that desert tortoises are not harmed as a result of their capture and movement during extreme temperatures (i.e., air temperatures below 55º F or above 95º F). Under such adverse conditions, tortoises captured will be monitored continually by an authorized biologist or approved monitor until the tortoise exhibits normal behavior. If a desert tortoise shows signs of heat stress, procedures will be implemented as identified in the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). The disposition of all tortoises handled shall be documented in accordance with 5.b. below.

RPM 3: *BLM, the Districts, and other jurisdictional Federal agencies as appropriate, shall ensure implementation of the following measures to minimize predation on desert tortoises by predators drawn to the project area:*

Terms and Conditions:

3.a. Trash and food items shall be disposed properly in predator-proof containers with resealing lids. During construction activities, trash containers will be emptied and waste will be removed from the project area daily. Trash removal reduces the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens.

3.b. Any areas of water discharge associated with project construction, operations, or maintenance which may provide an artificial standing water source that attracts

desert tortoise predatory species shall be designed to exclude potential predatory species of desert tortoises.

RPM 4: *BLM, the Districts, and other jurisdictional Federal agencies as appropriate, shall ensure implementation of the following measures to minimize loss and long-term degradation and fragmentation of desert tortoise habitat, such as soil compaction, erosion, crushed vegetation, and introduction of weeds or contaminants as a result of construction activities:*

Terms and Conditions:

4.a. Off-road travel outside construction zones shall be prohibited.

4.b. The designated utilities shall follow the Noxious Weed Management Plan which includes the following: washing vehicles and equipment prior to mobilizing to the project area, providing onsite personnel with BLM, weed identification information, reseeding the project area with a BLM-approved certified weed-free seed mix, and controlling noxious weeds should they be introduced as a result of the proposed action.

4.c. After completion of the project, the designated utilities shall follow the Revegetation Plan to restore all temporarily-disturbed areas to functioning desert tortoise habitat, using native seeds or plants.

4.d. BLM shall ensure payment of remuneration fees by the project proponents, the designated utilities, for compensation of the loss of desert tortoise habitat as a result of the proposed project. BLM shall require a receipt of payment from each designated utility prior to issuing the Notice to Proceed.

The right-of-way applicant is required to submit a Final Plan of Development to BLM, which must be approved by BLM prior to issuance of the Notice to Proceed. It is likely that the amount of disturbance will change with the final engineering design; therefore, BLM will reevaluate the project disturbance and adjust the total compensation fee accordingly. A copy of the Final Plan of Development and a breakdown of the final compensation fee will be provided to the Service. The applicant will be made aware that, depending on final engineering designs, the final compensation fee may be lower than the estimated value provided in this document.

Currently, the basic compensation rate for disturbance to desert tortoise habitat is $3,012 per acre on critical habitat, $753 per acre on Federal land, and $550 on non-Federal land. The proposed project will disturb 41.22 acres of desert tortoise habitat on Federal land of which 11.19 is in the PECHU, and 22.42 acres of non-Federal land in Clark County. The total compensation fee for this project is $56,316.87 for Federal land and $12,331.00 for non-Federal land. Fees for disturbances on Federal land will be deposited into the Clark County Section

7 Account, while fees for disturbance on private land will be deposited into the Clark County MSHCP section 10 mitigation fee account.

The payee will fill out the attached fee payment form (Appendix C) and include it with the payment for disturbance to Federal land. Each year these fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: http://stats.bls.gov/news.release/cpi.nr0.htm. The next rate adjustment will occur on March 1, 2009. Fees deposited in the Clark County Section 7 Account will be used to implement conservation and recovery measures for the desert tortoise.

RPM 5: *BLM, and other jurisdictional Federal agencies as appropriate, shall ensure implementation of the following measures to comply with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion:*

Terms and Conditions:

5.a. BLM, shall designate a field contact representative. The field representative will be responsible for overseeing compliance with protective stipulations for the desert tortoise and coordinating directly with BLM, and the Service. The field contact representative shall have the authority to halt activities or construction equipment that may be in violation of the stipulations. A copy of the terms and conditions of this biological opinion shall be provided to the field contact representative, biologists, and monitors for the project.

5.b. The authorized biologist shall record each observation of desert tortoise handled. Information will include the following: location, date and time of observation; whether tortoise was handled, general health and whether it voided its bladder; location tortoise was moved from and location moved to; and unique physical characteristics of each tortoise. A final report will be submitted to the Service's Nevada Fish and Wildlife Office in Las Vegas within 90 days of completion of the new construction for the project. An annual report shall be submitted during the life of the project by January 31st of every year documenting operations and maintenance activities for which any Term and Condition as described above must be implemented.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take or loss of habitat identified is exceeded, such incidental take and habitat loss represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The designated utilities must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

D. Closing Paragraph

The Service believes that 1 desert tortoises will be incidentally killed or injured during construction, operations, or maintenance of the Searchlight Water and Wastewater Systems Improvement Project. In addition, the Service estimates that up to 10 desert tortoises found in harm's way may be captured and relocated during the construction, operations or maintenance of the water projects.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed actions. If, during the course of the actions, this level of incidental take is reached and anticipated to be exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. BLM or the Districts must immediately provide an explanation of the causes of the taking, and review with the Service the need for possible modifications of the reasonable and prudent measures.

E. Reporting Requirements

Upon locating a dead or injured endangered or threatened species within the action area, notification must be made to the Service's Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Care should be taken in handling sick or injured endangered or threatened species to ensure effective treatment and be taken for handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Service to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. All deaths, injuries, and illnesses of endangered or threatened species, whether associated with project activities or not, will be summarized in an annual report.

Desert Tortoise (Mojave Population)

The following actions should be taken for injured or dead tortoises if directed by the Service:

1. Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal.

2. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions.

3. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the Service.

4. The designated utilities shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises.

5. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. The Service hereby makes the following conservation recommendations:

> *We recommend that the Districts and SNWA provide educational programs to Searchlight residents for water conservation and recreational use of public lands on and adjacent to right-of-way land.*

In order for the Service to be kept informed of actions minimizing or avoiding adverse impacts, or benefiting listed species or their habitats, we request notification of the implementation of our conservation recommendation.

REINITIATION REQUIREMENT

This concludes formal consultation on the actions outlined in your request received July 29, 2008. As required by 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) The amount or extent of incidental take is exceeded; (2) new

information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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BLM (Bureau of Land Management). 1990. Raven Management Plan for the California Desert Conservation Area. Prepared by Bureau of Land Management, California Desert District, Riverside, California. April 1990.

Boarman, W. I. 2002. Threats to desert tortoise populations: a critical review of the literature. unpublished report prepared for the West Mojave Planning Team, Bureau of Land Management. U.S. Geological Survey, Western Ecological Research Center, San Diego, California. August 9, 2002

Desert Tortoise Council. 1994 (Revised 1999). Guidelines for handling desert tortoises during construction projects. Edward L. LaRue, Jr., editor. San Bernardino, California.

Karl, A. 1980. Distribution and relative densities of the desert tortoise in Nevada. Proceedings of the 5th Annual Desert Tortoise Council, pp 75-87.

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Oftedal, O.T. 2003. Are desert tortoises nutritionally constrained by a shortage of high PEP plants, and if so what do we do? Proceedings of the 2003 Desert Tortoise Council Symposium. Pages 130-131.

RECON (Regional Environmental Consultants). 1991. Short-term habitat conservation plan for the desert tortoise in Las Vegas Valley, Clark County, Nevada. Prepared for Clark County, 225 Bridger Avenue, Las Vegas, Nevada 89155. January 1991. 143 pages.

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RECON (Regional Environmental Consultants). 2000. Clark County multiple species habitat conservation plan. Prepared for Clark County, 500 Grand Central Parkway, Las Vegas, Nevada 89155.

SWCA Environmental Consultants. 2008. Biological assessment, Searchlight water and wastewater systems improvement project. Prepared for U.S. Bureau of Land Management, Las Vegas Valley Water District, and Clark County Water Reclamation District. Las Vegas, Nevada.

U.S. Fish and Wildlife Service (Service). 1994. Desert tortoise (Mojave population) recovery

plan. Prepared by Desert Tortoise Recovery Team for Regions 1, 2, and 6, U.S. Fish and Wildlife Service, Portland, Oregon, U.S.A.

Appendix A

GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	
Address	
City, State, Zip Code	
Phone Number(s)	
Email Address	

2. Date:

3. Areas in which authorization is requested (check all that apply):

□ San Bernardino, Kern, and Los Angeles Counties, California (Ventura office)
□ Riverside and Imperial Counties, California (Carlsbad office)
□ Nevada □ Utah □ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP Permit No.		**Date:**
Project Name		
Federal Agency		
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received

7. Desert Tortoise Training.

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes			
2. Field Training			
3. Translocation			
4.			

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or**

other contact that can verify your skills and experience in relation to your job performance. Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates	Project Contact name, phone no., & Email address		Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Relocate DTs (No.)	Excavate, and relocate DT nests (No.)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							

Appendix A

10.							

<u>Experience by project and activity (continued)</u>: Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	**Construct Artificial Burrows (No.)**	**Monitor project equipment and activities (Hrs/Days)**	**Oversee project compliance (Hrs/Days)**	**Supervise field staff (Hrs/Days)**	**DT fence Installation and inspection (Hrs/Days)**	**Present DT Awareness Training (No.)**
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

Appendix A

10.							

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours
OR total number of 8-hour days: _____

Total number of miles/kilometers walked conducting survey transects:

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: _____

≥100 mm: _____

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: _____

Appendix B

RECOMMENDED SPECIFICATIONS FOR
DESERT TORTOISE EXCLUSION FENCING
September 2005

These specifications were developed to standardize fence materials and construction procedures to confine tortoises or exclude them from harmful situations, primarily roads and highways. Prior to commencing any field work, all field workers should comply with all stipulations and measures developed by the jurisdictional land manager and the U.S. Fish and Wildlife Service for conducting such activities in desert tortoise habitat, which will include, at a minimum, completing a desert tortoise education program.

FENCE CONSTRUCTION

Materials

Fences should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. If fence is constructed within the range of bighorn sheep, 6-foot T-posts should be used (see New Fence Construction below). Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing would be attached.

Retrofitting Existing Livestock Fence

Option 1 (see enclosed drawing). Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches aboveground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

Option 2 (see enclosed drawing). In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90E angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to18-inch intervals. The lower section in contact with the ground should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use

larger rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately 24 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smooth-strand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence aboveground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

INSPECTION OF DESERT TORTOISE BARRIERS

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

All fence and cattleguard inventories should be inspected at least twice per year. However, during the first two to three years all inspections will be conducted quarterly at a minimum, to identify and document breaches, and problem areas such as wash-outs, vandalism, and cattleguards that fill-in with soil or gravel. GPS coordinates and mileages from existing highway markers should be recorded in order to pinpoint problem locations and build a database of problem locations that may require more frequent checking. Following two to three years of initial inspection, subsequent inspections should focus on known problem areas which will be inspected more frequently than twice per year. In addition to semi-annual inspections, problem areas prone to wash-outs should be inspected following precipitation that produces potentially

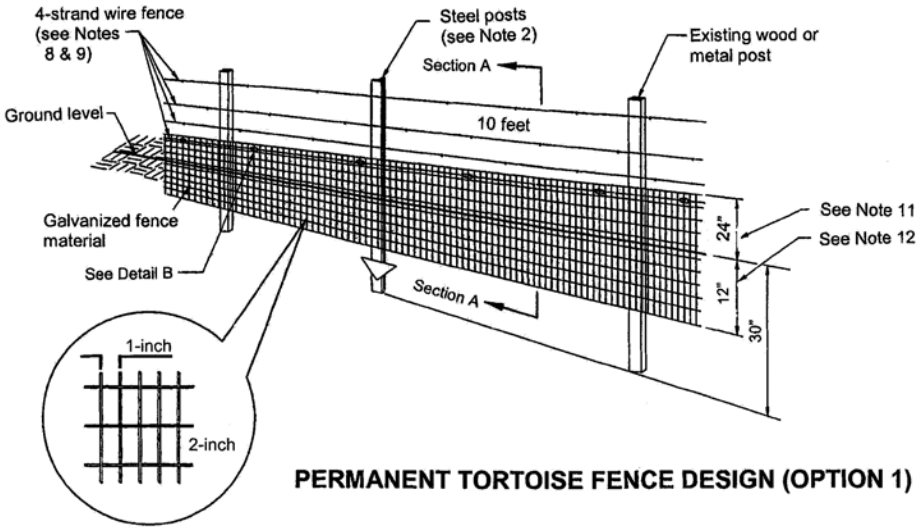
fence-damaging water flow. A database of problem areas will be established whereby checking fences in such areas can be done efficiently.

REPAIR AND MAINTENANCE OF DESERT TORTOISE BARRIERS

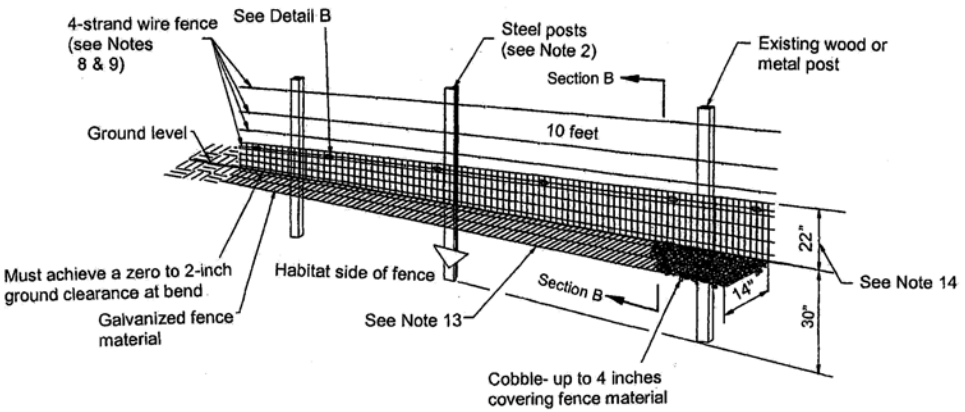
Repairs of fence wash-outs: (1) realign the fence out of the wash if possible to avoid the problem area, or (2) re-construct tortoise-proof fencing using techniques that will ensure that an effective desert tortoise barrier is established that will not require frequent repairs and maintenance.
Gaps and breaks will require either: (a) repairs to the existing fence in place, with similar diameter and composition of original material, (b) replacement of the damaged section to the nearest T-post, with new fence material that original fence standards, (c) burying fence, and/or (d) restoring zero ground clearance by filling in gaps or holes under the fence and replacing cobble over fence constructed under Option 2. Tortoise-proof fencing should be constructed and maintained at cattleguards to ensure that a desert tortoise barrier exists at all times.

All fence damage should be repaired in a timely manner to ensure that tortoises do not travel through damaged sections. Similarly, cattleguards will be cleaned out of deposited material underneath them in a timely manner. In addition to periodic inspections, debris should be removed that accumulates along the fence. All cattleguards that serve as tortoise barriers should be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

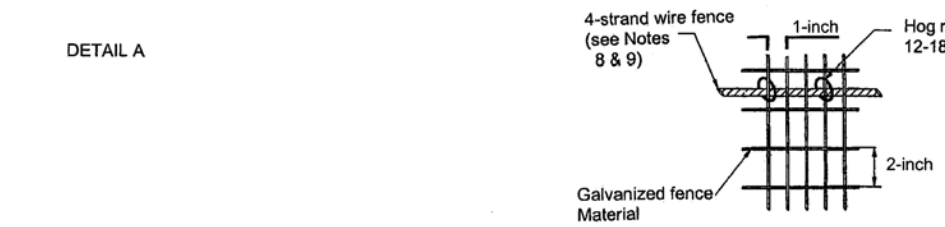
Appendix B



PERMANENT TORTOISE FENCE DESIGN (OPTION 1)

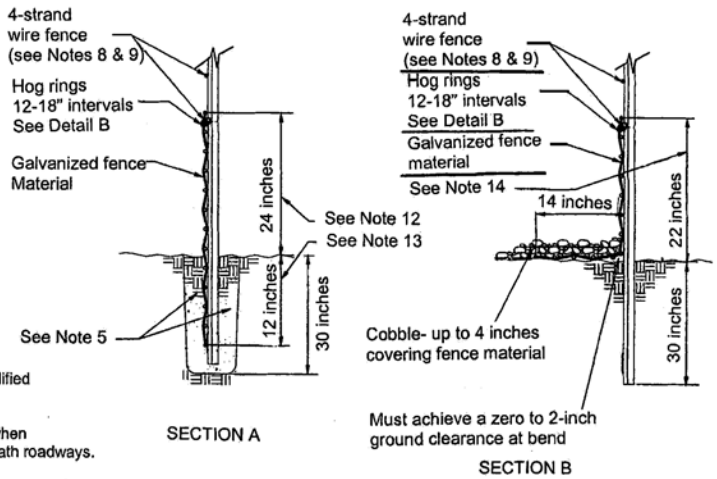


PERMANENT TORTOISE FENCE DESIGN (OPTION 2)



DETAIL A

DETAIL B



SECTION A

SECTION B

GENERAL NOTES:

1. Use Option 2 when fence material cannot be placed 6 inches below existing ground level due to rock or caliche substrate
2. Install steel posts when span between existing fence posts exceed 10 feet.
3. Fence posts and materials shall conform with the standards approved by the U.S. Fish and Wildlife Service.
4. Fence material shall be attached to existing fence or wire using hog rings at 12 to 18-inch intervals.
5. Backfill trench with excavated material and compact.
6. Fence material shall be fastened to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Attach fence material to all gates. Clearance at base of gate should achieve zero ground clearance.
8. Substitute smooth wire for barbed wire if additional support wires are necessary.
9. The number and placement of support wires may be modified to allow sheep and deer to pass safely through.
10. Fence should tie into existing culverts and cattleguards when determined necessary to allow tortoise passage underneath roadways.
11. Option 1: height above ground level should be no less than 18 inches and no higher than 24 inches.
12. Option 1: depth of fence material below ground level should be no less than 6 inches.
13. Erosion at the edge of the fence material where the fence crosses washes may occur and require appropriate monitoring and repair.
14. Option 2: height above ground level should be no less than 22 inches.

Appendix C

SECTION 7 FEE PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 84320-2009-F-0002

Biological Opinion issued by: Nevada Fish and Wildlife Office, Las Vegas, Nevada

Species: Desert tortoise (*Gopherus agassizii*)

Project: Searchlight Water and Wastewater Systems Improvements Project

Number of acres anticipated to be disturbed: 41.22 (11.19 critical habitat, 30.03 other)

Fee rate (per acre): $3.012 critical habitat, $753 other

Total payment required: $56,316.87 ($33,704.28 critical habitat, $22,612.59 other)

Amount of payment received: _____

Date of receipt: _____

Check or money order number: _____

Project proponent: Las Vegas Valley Water District, Clark County Water Reclamation District, Southern Nevada Water Authority

Telephone number: _____

Authorizing agencies: Bureau of Land Management, Las Vegas, Nevada
_____

Make checks payable to: Clark County Treasurer

Deliver check to: Clark County Desert Conservation Program
Dept. of Air Quality and Environmental Management
Clark County Government Center
500 S. Grand Central Parkway, first floor (front counter)
Las Vegas, Nevada 89106
(702) 455-3536

If you have questions, you may call the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.